Attachment A

Final Environmental Assessment, Finding of No Significant Impact

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MAR 25 2025

MEMORANDUM

TO: Mary Alice Evans, Director
Office of Planning and Sustainable Development
Environmental Review Program

FROM: Gordon S. Wood
Public Works Administrator

SUBJECT: Final Environmental Assessment (FEA) and
Finding of No Significant Impact (FONSI)
Round Top Radio Facility Tower Replacement and Consolidation
DAGS Job No. 12-10-0942
Makiki/Lower Punchbowl/Tantalus, Honolulu District, Kona Moku,
Island of Oahu
TMK: (1) 2-5-019:003 and 011

With this letter, the Department of Accounting and General Services hereby transmits the Final Environmental Assessment (FEA) for the Round Top Radio Facility Tower Replacement and Consolidation for publication in the upcoming edition of The Environmental Notice. The proposed action includes the construction of a new 180-foot tower, demolition of the two (2) existing 100-foot towers, transition of equipment to the new tower, a new retaining wall and chain link fence, rerouting of an existing waterline, and other site improvements to support the new tower. Based on the comments received during the 30-day public comment period for the Draft Environmental Assessment, and pursuant to the significant criteria specified in the Hawai'i Administrative Rules, Section 11-200.1-13, we hereby issue a Finding of No Significant Impact (FONSI). The FEA has been prepared pursuant to Chapter 343, Hawai'i Revised Statutes and Chapter 11-200.1, Hawai'i Administrative Rules.

An electronic copy of the FEA-FONSI has been uploaded to the Environmental Review Program's online submission portal.

If you have any questions, please have your staff call David DePonte of the Planning Branch at (808) 586-0492 or by email at david.c.deponte@hawaii.gov, or our consultant, Bowers + Kubota Consulting, Inc., Attention: Carah Kadota at (808) 833-1841 or by email at ckadota@bowersandkubota.com.

DD:mo
Attachments
c: Carah Kadota, Bowers + Kubota Consulting, Inc.

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Final Environmental Assessment

ETS Round Top Radio Facility Tower Replacement and Consolidation

Round Top, Tantalus, Island of O'ahu, Hawai'i

Prepared for:

State of Hawai'i Department of Accounting and General Services, Office of Enterprise Technology Services

Prepared by:

Bowers + Kubota Consulting
2153 N. King Street, Suite 200
Honolulu, HI 96819

April 2025

BOWERS + KUBOTA

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ETS Round Top Radio Facility Tower Replacement and Consolidation

DAGS Job No. 12-10-0942

TMKs: (1) 2-5-019: 003 and 011

Makiki/Lower Punchbowl/Tantalus, Honolulu District, Kona Moku,

Island of Oʻahu

FINAL ENVIRONMENTAL ASSESSMENT

April 2025

Proposing Agency:

State of Hawaiʻi Department of Accounting and General Services, Office of Enterprise Technology Services

Kalanimoku Building,

1151 Punchbowl St., Rm. B-10

Honolulu, HI 96813

Prepared by:

Bowers + Kubota Consulting

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Honolulu, HI 96819

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PROJECT SUMMARY TABLE

This Final Environmental Assessment (Final EA) has been prepared in accordance with the requirements of Chapter 343, Hawai‘i Revised Statutes (HRS) and Hawai‘i Administrative Rules (HAR) Title 11-200.1 Environmental Impact Statement Rules.

PROJECT NAME:	ETS Round Top Radio Facility Tower Replacement and Consolidation
PROPOSING/DETERMINING AGENCY:	State of Hawai‘i Department of Accounting and General Services, Office of Enterprise Technology Services Kalanimoku Building, 1151 Punchbowl St. Rm. B-10 Honolulu, HI 96813 Contact: David DePonte Email: david.c.deponte@hawaii.gov Phone: (808) 586-0492
CONSULTANT:	Bowers + Kubota Consulting, Inc. 2153 N King Street, Suite 200 Honolulu, HI 96819-4554 Contact: Carah Kadota Email: ckadota@bowersandkubota.com Phone: (808) 521-5361
HRS §343-5 TRIGGER:	(1) Propose the use of State lands and the use of State funds. (2) Propose any use within any land classified as a conservation district by the State Land Use Commission under Chapter 205.
PROJECT LOCATION:	3286 Round Top Drive, Honolulu, HI 96822
TAX MAP KEYS PARCELS:	(1) 2-5-019:003 (por.) and 011
PROJECT SIZE:	Approximately 0.60 acres
LANDOWNER:	State of Hawai‘i
EXISTING USES:	The Project Site’s existing use includes the Hawai‘i Wireless Interoperability Network (HIWIN) facilities at Round Top, which consist of two 100-foot radio antenna towers that service Federal, State, and City and County of Honolulu agencies. The existing State radio antenna is located on TMK 2-5-019:003 (por.) and includes ancillary buildings to accommodate the tower’s equipment, transmitter, generator and fuel tank. The City and County of Honolulu’s facilities are located on the parcel adjacent to the State facilities on TMK 2-5-019:011 and include a tower and control building.
STATE LAND USE DISTRICT:	Conservation
COUNTY ZONING:	P-1 Restricted Preservation
DEVELOPMENT/SUSTAINABLE COMMUNITIES PLAN:	Primary Urban Center Development Plan
SPECIAL MANAGEMENT AREA (SMA):	Outside of SMA
FLOOD ZONE DESIGNATION:	X – Outside of the 1% annual chance floodplain

PROPOSED ACTION:	The Proposed Action includes the construction of a new 180-foot tower, demolition of the two existing 100-foot towers, and the transition of equipment to the new tower. The Proposed Action will include tree trimming and vegetation clearing to the extent necessary. A new concrete foundation will be constructed to accommodate the new tower. The foundation footprint size will be approximately 1,600 SF and will feature approximately 60-foot-deep drilled shafts to support the tower. A new retaining wall with a chain link fence between 12 to 14 feet high will be installed around the foundation. An existing waterline will be rerouted to accommodate the site of the new tower.
PERMITS AND APPROVALS:	HRS Chapter 6E-8 Review Conservation District Use Permit Building Permit Grading, Grubbing, and Stockpiling Permit Demolition Permit
DETERMINATION:	Finding of No Significant Impact (FONSI)

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ACRONYMS AND ABBREVIATIONS

AAQS Ambient Air Quality Standards

ACS American Community Survey

AMSL above mean sea level

BMP Best Management Practice

BWS Board of Water Supply

CCMAC Hawai‘i Climate Change Mitigation and Adaptation Commission

CDUP Conservation District Use Permit

CIA Cultural Impact Assessment

City City and County of Honolulu

CWRM Commission on Water Resource Management

DAGS State Department of Accounting and General Services

DLNR State Department of Land and Natural Resources

DOH State Department of Health

EA Environmental Assessment

EMR Electromagnetic Radiation

EPA Environmental Protection Agency

ERF ETS Radio Facility

ETS Office of Enterprise Technology Services

FEMA Federal Emergency Management Agency

FIRM Flood Insurance Rate Map

FONSI Finding of No Significant Impact

GHG greenhouse gas

GHz gigahertz

HAR Hawai‘i Administrative Rules

HFD Honolulu Fire Department

HIWIN Hawai‘i Wireless Interoperability Network

HPD Honolulu Police Department

HWMO Hawai‘i Wildfire Management Organization

HRS Hawai‘i Revised Statutes

LRFI Literature Review and Field Inspection

LUC State Land Use Commission

LUO Honolulu Land Use Ordinance

MBTA Migratory Bird Treaty Act

MGD million gallons per day

NPDES National Pollutant Discharge Elimination System

NRCS Natural Resources Conservation Service

OCCL State Office of Conservation and Coastal Lands

OPSD State Office of Planning and Sustainable Development

PCAP Priority Climate Action Plan

PUCDP Primary Urban Center Development Plan

SF square feet

SHPD State Historic Preservation Division

SLR-XA Sea level rise exposure area

SMA Special Management Area

State State of Hawai‘i

TMK Tax Map Key

UIC Underground Injection Control

USCG United States Coast Guard

USDA United States Department of Agriculture

USFWS United States Fish and Wildlife Service

USGS United States Geological Survey

VRLA valve-regulated lead-acid

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1. PROJECT OVERVIEW

1.1 BACKGROUND

The Office of Enterprise Technology Services (ETS), which is attached to the State of Hawai‘i, Department of Accounting and General Services (DAGS), is proposing upgrades to the ETS Radio Facility (ERF) at the Round Top Communication Station Site in Honolulu on the island of O‘ahu. The Proposed Action includes the replacement of the City and County of Honolulu (City) and State of Hawai‘i (State) radio towers with a new 180-foot tower, consolidating State and City equipment to a single tower, constructing a retaining wall and fencing around the new tower, and rerouting an existing water line (the “Proposed Action”). The Proposed Action would occur on portions of Tax Map Keys (TMK): (1) 2-5-019:003 (por.) and 011 (the “Project Site”).

The existing use of the Project Site is for the ERF and a parking lot for Pu‘u ‘Ualaka‘a Park. A public restroom is located next to the ERF site. The ERF houses two 100-foot radio antenna towers which operate under the Hawai‘i Wireless Interoperability Network (HIWIN) System.

1.2 PURPOSE FOR ENVIRONMENTAL ASSESSMENT

Hawai‘i Revised Statutes (HRS), Chapter 343 establishes a system of 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. The State of Hawai‘i, Office of Planning and Sustainable Development’s (OPSD) Environmental Review Program facilitates the environmental review process in Hawai‘i.

The Proposed Action will require the use of State lands and State funds, and will use land classified within the State Land Use Conservation District, thus triggering the preparation of an Environmental Assessment (EA) as prescribed by Hawai‘i Revised Statutes (HRS), Chapter 343-5(a)(1) & (2) and Hawai‘i Administrative Rules (HAR), Title 11, Chapter 200.1-8(1). This Final EA has been prepared in accordance with the requirements of HRS, Chapter 343 and HAR 11-200.1. In addition, a Conservation District Use Permit (CDUP) will also be pursued as the Project Site is located within the State Land Use Conservation District, Resource subzone.

1.2.1. Applicant Background

ETS is the State agency responsible for statewide information processing and telecommunication systems. As part of this role, ETS is responsible for developing and maintaining the State’s public safety communication system, which is composed of microwave radio systems, land mobile radio systems, antennas and towers, communication buildings, and supporting facilities. Proper implementation of these systems directly supports Federal, State, and City and County agencies responsible for first response, law enforcement, and civil defense.

The Hawai‘i Wireless Interoperability Network (HIWIN) is a statewide system supporting our State’s first responder, law enforcement, and civil defense agencies, and their interoperability needs. It is a system architected in such a way that any portion of the system isolated will continue to operate with the full functionality of the system at large. Backed by the State of Hawaii microwave network of links, the system joins sites that are designed to survive a category 4 hurricane. HIWIN consists of State sites as well as United States Coast Guard (USCG) sites and provides mission support for the USCG.

There are 46 radio sites within the HIWIN, with 26 of the sites managed by ETS. The remaining 20 radio sites are managed by partner agencies, such as the City and County of Honolulu, County of Maui, County of Hawai‘i, and USCG. There are approximately 31 agencies across the State that use the HIWIN with over 4,300 users.

The HIWIN facilities at Round Top consist of two radio antenna towers that service a broad range of microwave communications between Federal, State and Local agencies. The existing State radio antenna is located on TMK 2-5-019:003 (por.) and includes ancillary buildings, which accommodate the tower’s equipment, transmitter, generator, and fuel tank. The City facilities are located on the adjacent parcel (TMK 2-5-019:011) to the State facilities and include a 100-foot tower and ancillary control building.

The Anuenue Microwave Communication System is a high-capacity digital microwave network that spans the Hawaiian Islands. It was developed as a collaborative effort between the U.S. Coast Guard and the State of Hawai‘i to replace an aging analog system. This network supports emergency communications for state and federal agencies, including first responders, search and rescue, law enforcement, and other critical government operations. The relationship between the two systems lies in their complementary roles in enhancing Hawai‘i’s emergency communication infrastructure. The Anuenue Microwave Communication System provides the backbone for HIWIN supporting digital data transport necessary for HIWIN’s operations. Together, they ensure that first responders and emergency services have reliable communication channels during critical situations.

1.3 REGIONAL SETTING AND PROJECT SITE

The Project Site is situated on top of Pu‘u ‘Ualaka‘a State Wayside Park (“Pu‘u ‘Ualaka‘a Park”) within the Round Top Forest reserve. Beyond the boundaries of the reserve are undeveloped forested State lands. The Project Site is in the Kona moku (district) on the Island of O‘ahu, and borders the ahupua‘a of Honolulu and Waikīkī. There are no residences within approximately 1,400 feet of the Project Site. The nearest residences are located downhill of the Project Site along Round Top Drive. Access to the Project Site is via Round Top Drive and Nutridge Street.

The Project Site is surrounded by the Round Top Forest Reserve with forested land along the east, south, and west perimeters of the Project Site. Beyond the northern boundaries of Pu‘u ‘Ualaka‘a Park are undeveloped forested State-owned lands. Pu‘u ‘Ualaka‘a Lookout is located approximately 800 feet southwest of the Project Site. This lookout provides views of leeward O‘ahu and downtown Honolulu.

There are two public trails nearby that utilize the parking lot located beside the Project Site. The closest and shortest trail is the Round Top Forest Reserve Park Trail, which starts from the end of the parking lot and runs about one mile southwest to Tantalus Lookout. The other trail, Ualaka‘a Trail, runs from Nutridge Street north into the Round Top Forest Reserve where it connects to the Nā Ala Hele Trail; it is located approximately one and a half miles from the Project Site. There are two structures providing shelter for picnic tables near the Project Site which are accessible from the parking lot.

The Project Site encompasses approximately 0.60 acres across portions of two TMK parcels. The first TMK parcel (1) 2-5-019:011 is a total of 3,920 square feet (SF) (or .09 acres) and control of the site has been granted to the City and County of Honolulu by the State of Hawai‘i through Governor’s Executive Order No. 1215. The second TMK parcel (1) 2-5-018:003 is 120 acres and is owned by the State of Hawai‘i. Governor’s Executive Order No. 4350 set aside 792 SF of parcel 003 for telecommunication purposes to DAGS for the construction of the State tower. In 2011, the State of Hawai‘i, Board of Land and Natural Resources (BLNR) approved DAGS’ request to withdraw .047 acres of land from Governor’s Executive Order No. 4314 (approved for the set aside of land from parcel 003 for State Park purposes for the DLNR Division of State Parks) for the expansion of the State’s microwave tower site. The expansion

included the addition of a power room, generator room, and fuel tank to provide redundancy and support of the State tower's operations. A map showing the existing facilities at the site is provided in Figure 1-2.

1.4 PROJECT PURPOSE AND NEED

The objective of the Proposed Action is to facilitate the modernization and sustained operation of the ETS-managed Round Top Radio Facility. This facility is pivotal for interisland communications within the comprehensive public safety and emergency response network, known as the HIWIN. Currently, the existing radio facility is at full capacity and cannot accommodate the additional infrastructure and equipment required for both the HIWIN and the Anuenue Microwave Communication Systems. The two existing towers are fully utilized, leaving no room for expansion.

In emergency situations, it is imperative for the State of Hawai'i that both the HIWIN and Anuenue Microwave Communication Systems remain fully operational. Any disruption could severely hinder first responder communications between islands. Therefore, this project aims to maintain and enhance the functionality and integrity of the Round Top Radio Facility by replacing the two existing radio towers with a new 180-foot radio tower. This new tower will support the current equipment and operations while also accommodating the comprehensive statewide public safety and first responder communication systems.

1.5 DESCRIPTION OF THE PROPOSED ACTION

The Proposed Action calls for the construction of a new 180-foot Radio Facility Tower at the ERF for the consolidation of emergency communication services for the HIWIN system (see Figure **1**-**3** Proposed Site Plan).

The Proposed Action will include a phased approach for the demolition of the two existing 100-foot towers and the transition to the new tower. During the first phase, the site will be cleared for the new tower, and approximately 27 trees will be removed. A new concrete foundation will be constructed to accommodate the new tower and then a new 180-foot tower will be built. The foundation will be approximately 1,600 SF and will feature approximately 60-foot-deep drilled shafts to support the tower. Once the new tower is constructed, all the State and City antenna equipment will be moved to the new tower and the existing State and City towers will be demolished. Tree and vegetation trimming will be performed only to the extent needed to ensure the continued operation of the ERF facilities involving necessary line of sight requirements. A new retaining wall with a chain link fence between 12 to 14 feet high will be installed around the new 180-foot tower, and waterlines serving the comfort station will be rerouted to accommodate the site of the new tower.

Site Photos

View of existing towers from parking lot facing makai

View of existing Round Top Radio facility and overhead power lines facing mauka

View of existing City and State Radio Towers and facility facing makai

Figure 1-1 Project Location

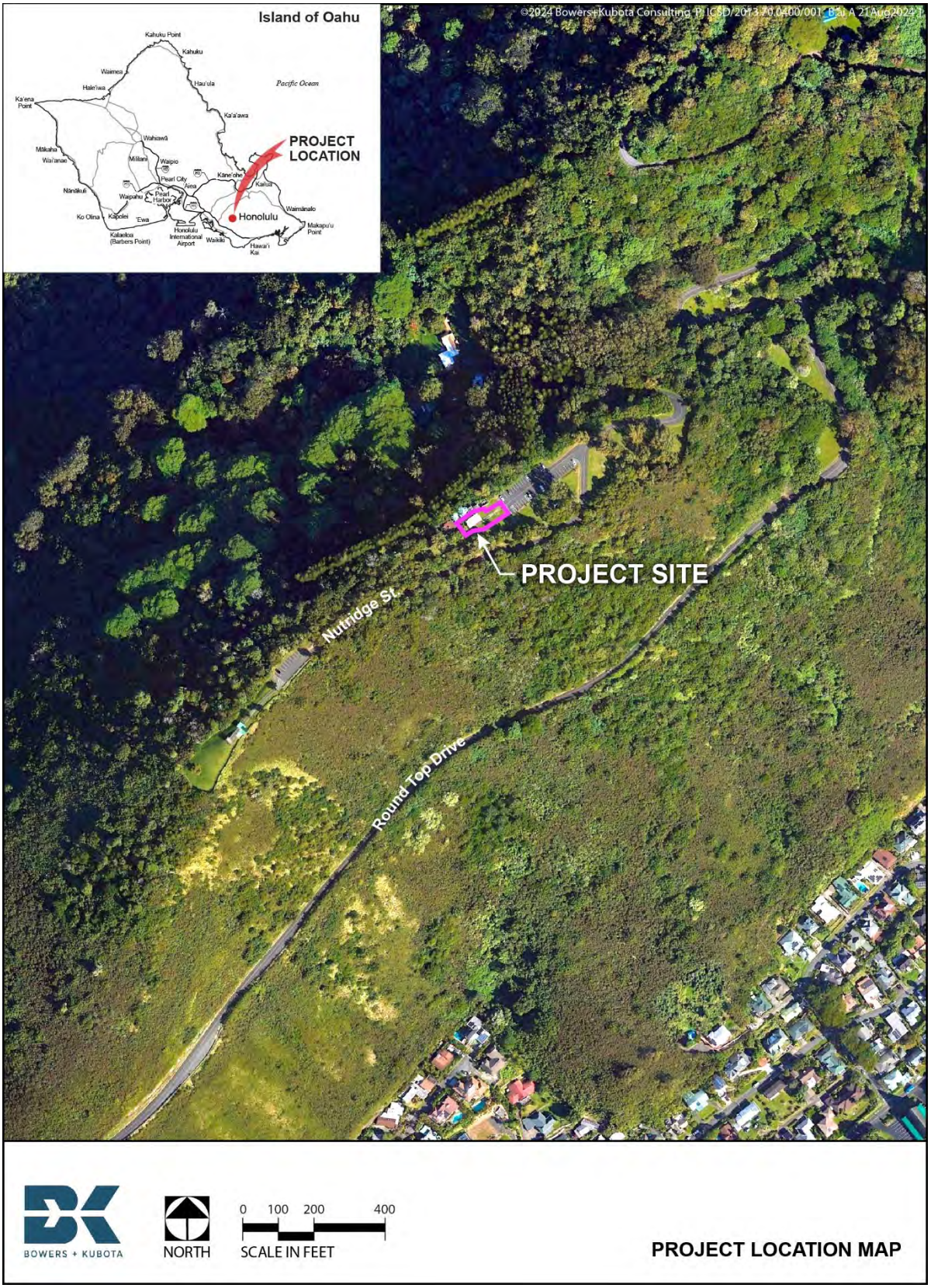


Figure 1-2 Project Site

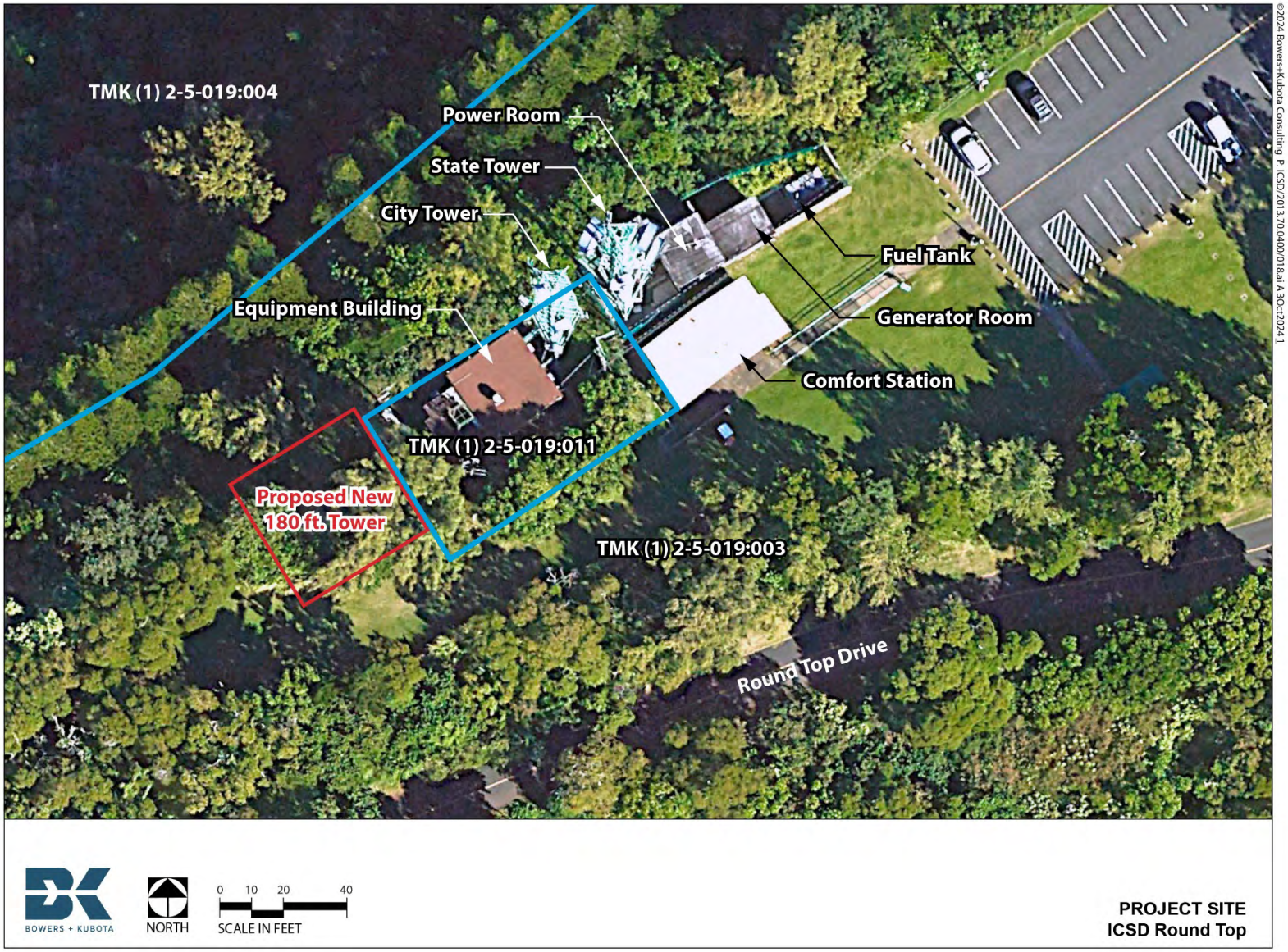
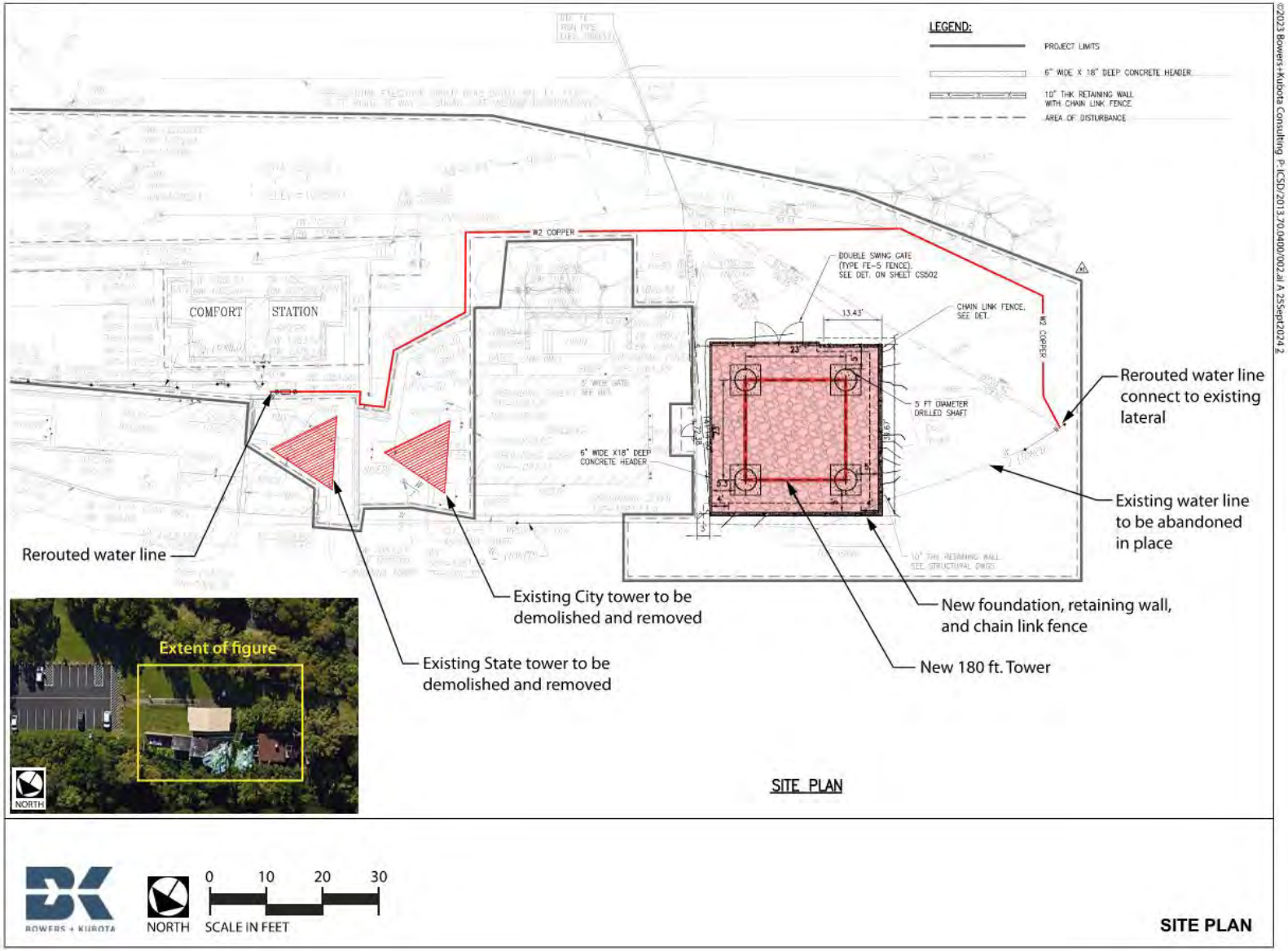


Figure 1-3 **Proposed Site Plan**



1.6 PRELIMINARY PROJECTS SCHEDULE AND COST

The source of funding for the project would be contributed through the State budget, administered by DAGS. The cost of the Proposed Action is estimated at $10 million. Construction is anticipated to begin after permits are secured and would be completed in approximately 1.5 years.

1.7 APPROVALS AND PERMITS

Per Chapter 18, ROH, the Proposed Action by a State government agency is exempt from building, electrical, plumbing, and sidewalk permits, except when permits are specifically requested by the State agency. Chapter 14, ROH, which covers grading, grubbing, and stockpiling, does not provide for State agency work with a similar exemption. In addition to the required City permits and approvals, DAGS intends to acquire all permits that would otherwise be required if the action were not undertaken by a state agency. Table 1-1 provides a summary of the permits and approvals applicable for the Proposed Action.

Table 1-1 Summary of Required Permits and Approvals

Construction Activity	Required Permit/ Approvals	Approving Agency
Pre-construction	EA	ETS
Pre-construction	HRS 6E-8 Review	State Historic Preservation Division (SHPD)
Pre-construction	Conservation District Use Permit (CDUP)	State of Hawai‘i, Department of Land and Natural Resources, Office of Conservation and Coastal Lands (OCCL)
Demolition of existing facilities	Demolition Permit	DPP
Construction of new 180-foot tower, foundation, and retaining wall	Building Permit and Grading, Grubbing, and Stockpiling Permits	DPP

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2. ALTERNATIVES CONSIDERED

As a requirement of HAR §11-200.1-18, alternatives to the Proposed Action that achieve the purpose and need of the Project must be identified and considered. These alternatives are described in this chapter and include the no-action alternative which involves not implementing the project. However, these alternatives were eliminated from further consideration because they would not support the Project's need and objectives as well as the implementation of the Proposed Action. There were also other factors associated with these alternatives that did not make them as feasible and practical as the Proposed Action.

Alternatives that meet the purpose and need of the Proposed Action were identified and considered, and include the No Action Alternative, the construction of a third antenna tower, and the reconstruction of the ERF site.

2.1 ALTERNATIVE 1: NO-ACTION

Under the No Action Alternative, the existing State and City towers would continue to serve State and City emergency telecommunication facilities in their current capacity and the existing facilities would remain in place. No impact or change to the existing natural and man-made environment would occur and the existing environmental setting would be unchanged.

Under the No-Action Alternative, the ERF would not be able to accommodate additional equipment to serve future needs and expansion, and the existing infrastructure would remain susceptible to damage from the environment. This would impede ETS's ability to fulfill its responsibility of providing an efficient and effective statewide telecommunication system. This could negatively impact the numerous government agencies that rely on ETS for communication services and subsequently the residents that rely on those agencies. Therefore, the No-Action Alternative is not preferred.

2.2 ALTERNATIVE 2: CONSTRUCT A THIRD TOWER

One alternative that was considered was to expand the State tower site capacity by constructing a third antenna tower. This alternative would likely require some above-ground utilities to be relocated underground to prevent exposure from the elements, allowing the function of both facilities. Additional trees would need to be removed to accommodate a third tower and line of sight requirements from lower positions due to a shorter tower. Although, tree and vegetation trimming would be performed only to the extent needed to ensure the continued operation of the ERF facilities. The short-term impacts during construction would be similar to the Proposed Action however result in less efficiencies in the future.

Tree trimming would only provide temporary relief from line-of-site issues; however, routine tree trimming would need to be added to the ETS annual operating budget. The construction of an additional tower would also require the demolition and relocation of the Puʻu ʻUalakaʻa Park's comfort station. This would leave Puʻu ʻUalakaʻa Park without a restroom for the duration of the construction. This would be a significant additional cost that is not included in the project budget. Future maintenance and operational costs would increase the addition of the third tower. In addition, the Department of Land and Natural Resources (DLNR) does not concur with the option of relocating the comfort station due to cost. Therefore, this alternative is not preferred.

2.3 ALTERNATIVE 3: RECONSTRUCTION OF STATE AND CITY TOWERS

Another alternative considered is to have both the State and City demolish and reconstruct their respective towers and facilities. Both State and City towers would match the height of the existing towers at 100 feet. To increase the capacity at ERF, both replacement towers would be constructed at a wider width in comparison to the existing towers. The implication of two wider towers would have a larger visual impact of scenic views versus the Proposed Action. Additional trees may need to be removed to accommodate two wider towers. The above-ground utilities would be relocated underground to prevent exposure to the elements, allowing both facilities to function continuously.

In comparison to the Preferred Action, the operating and maintenance costs for two towers are greater than one and are not favorable for both City and State agencies. Therefore, this alternative is not preferred.

3. AFFECTED ENVIRONMENT, LIKELY IMPACTS, AND MINIMIZATION MEASURES

This chapter provides a description of the Project's affected environment, identifies and analyzes the likely environmental impacts of the Proposed Action, and proposes minimization measures to address any identified impacts.

3.1 GEOLOGY, TOPOGRAPHY, AND SOILS

3.1.1. Geology

Puʻu ʻUalakaʻa was created by volcanic ash and cinders during eruptions of the Honolulu Volcanic Series during a 'Rejuvenation Stage' of the Koʻolau Volcano eruptions. The resulting geology sits on top of remnants of previous eruptions of Koʻolau (Mānoa Heritage Center, 2024). The Project Area sits just above Mānoa Valley to the west and is located near three vents: Sugar Loaf, Tantalus, and Round Top. The geology of the area consists of lava flows, tuff, cinder vent deposits, and breccia from the Tantalus Peak and Sugarloaf Vents. The Project Site itself is located within areas of alluvium deposits formed during the Pleistocene Epoch. Alluvial deposits are typically characterized by clay, silt, sand, or gravel that has been deposited by a water source.

Impacts and Mitigation Measures

The Proposed Action is not anticipated to impact the geology of the area. Drilled shafts that will be approximately 5 feet in diameter will be drilled approximately 60 feet deep to support the new 180-foot tower, while deeper than the existing footings, are not anticipated to result in substantive impacts on the existing geological conditions. The drilled shafts will be precisely controlled minimizing the risk of disturbing the surrounding geological formations. While the shafts will be drilled to a depth of about 60 feet, this depth is not anticipated to intersect with any critical geological features or aquifers. Prior to the drilling, thorough engineering assessments are being conducted to ensure that the proposed depth and diameter of the shafts will not adversely affect the geological stability of the area.

3.1.2. Topography

The Project Area is located at an approximate 1,075 feet elevation near the Tantalus Lookout, also known as Puʻu ʻUalakaʻa State Park. The Project Site ranges from an elevation of 1,075 feet at its eastern end to 1,080 feet on its western end, an approximate grade of 3% throughout the site (CCH, 1969).

Impacts and Mitigation Measures

The proposed improvements would have minimal short- or long-term impacts on the existing topography of the site and would be limited to the site grading necessary for the construction of the previously mentioned tower drilled shafts and underground water lines. Considering that the site is already developed with the existing facilities, the Proposed Action is not anticipated to result in a significant amount of soil being removed or to have a significant impact on the site's topography.

3.1.3. Soils

The U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) classifies the soil at the Project Site as Cinder (rCI). This soil type consists of materials associated with the ejecta of cinder cones, such as cinders, pumice, and ash, and is not classified as prime farmland (USDA, 2019).

The Agricultural Lands of Importance to the State of Hawai'i (ALISH) for the islands of Kaua'i, O'ahu, Maui, Moloka'i, Lana'i, and Hawai'i was produced in 1977 by the State Department of Agriculture, the USDA Soil Conservation Service, and the University of Hawai'i College of Tropical Agriculture. The study developed a classification system to identify agriculturally important land in the State of Hawai'i based mainly on soil characteristics as well as some other attributes. ALISH classifications are Prime, Unique, and Other, with lands classified as Prime being the best suited for agriculture. The Project Site is located on lands not classified as important by ALISH (DOA, 1977).

The Land Study Bureau (LSB) created agricultural productivity ratings for each of the main Hawaiian Islands based on overall soil productivity. The ratings range from A to E, with A being the highest productivity rating and E being the lowest. The LSB rating for O'ahu was published in 1972. Properties involved in the analysis included soil texture, type, drainage, stoniness, topography, climate, and rain. As shown in Figure 3-2, soil within the Project Site is rated E, while some areas to the south and northeast along Round Top Drive are rated D (LSB, 1972).

Impacts and Mitigation Measures

The Project would have minimal short- or long-term impacts on the existing soils associated with this site, with no major activities that would significantly alter soil conditions. Importing or exporting soil or materials is not expected to be necessary to complete the Proposed Action. Best Management Practices (BMPs) will be employed during construction to control surface water runoff and provide erosion control.

Effects on soils from construction would be limited to temporary ground disturbances such as grading, excavation and rerouting of the water line, and drilling for the drilled shaft foundation of the new tower. Effects from construction may inevitably result in some soil erosion with high winds or heavy rainfall, however, these effects can be minimized with various measures from standard construction BMPs that will be incorporated through implementation of the Proposed Action. BMPs should be installed before construction and maintained through the construction period. These BMP mitigation measures include but are not limited to:

- Installation of a perimeter construction fence.
- Installation of silt fence or filter socks adjacent to and down slope from disturbed areas.
- Installation of dust screens around disturbed areas.
- Utilization of methods to ensure mud, dirt, or debris would be kept onsite and minimized on roadways.
- Use of temporary sprinklers in non-active construction areas and stationing water trucks nearby during construction to provide sprinkling in active areas.
- Installing stabilized construction entrances, tire wash areas, and concrete washout areas.
- Cleaning affected pavements and roads after construction activities.
- Cleaning construction-related equipment of pollutants before and after construction. Collecting and placing building debris, as it is created, into roll-off bins or trucks for hauling and removal from the site.

Figure 3-1 NRCS Soil Map

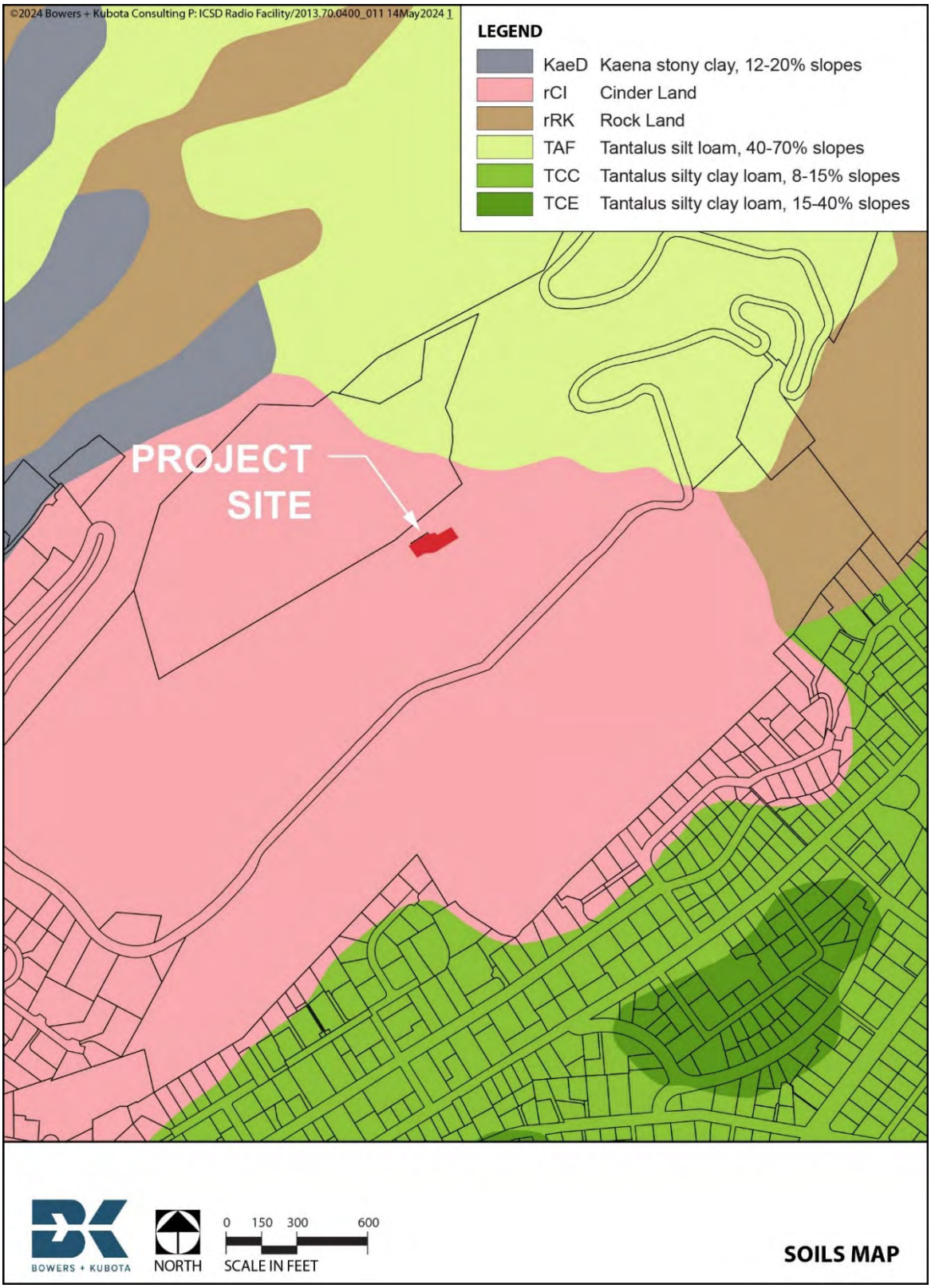
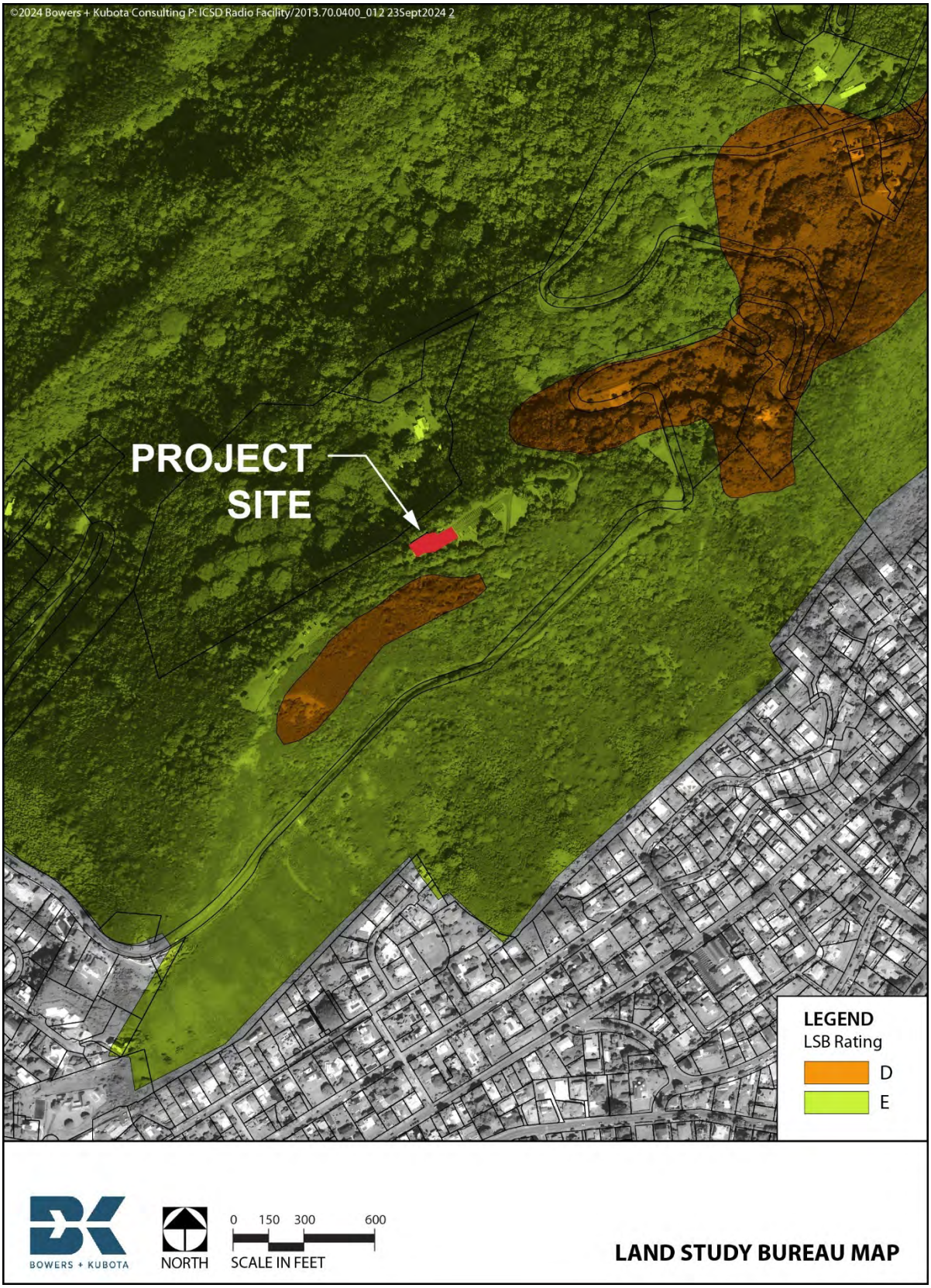


Figure 3-2 Land Study Bureau



3.2 CLIMATE AND CLIMATE CHANGE

The tropical climate of Hawai‘i results in stable year-round weather conditions, with climate on O‘ahu similarly characterized by mild and consistent temperatures throughout the year, moderate humidity, and steady northeast trade winds. Variations in O‘ahu’s climate and weather can be mainly attributed to regional location and topography. For example, areas of higher elevation such as Mount Ka‘ala can reach average annual temperatures as low as 60°F while coastal areas at lower elevations have average annual temperatures as high as 75°F (Giambelluca et al., 2014).

The Project Site is located in Tantalus, which has a moderate climate and is located in the mauka areas of downtown Honolulu near Makiki and Mānoa. The mean annual air temperature in the area is approximately 70°F with an average of approximately 71 inches of rainfall annually (Giambelluca et al., 2013). The Project Site experiences wind speeds of up to 8.6 miles per hour (mph).

3.2.1. Climate Change

Climate change is a long-term threat that arises from human-induced production of greenhouse gas (GHG) emissions and other use and production patterns. The results are rapid global impacts to the atmosphere, ocean, cryosphere, and biosphere. Consequently, impacts from changing weather and climate extremes such as sea level rise, heatwaves, extreme precipitation, extreme drought, and increased frequency of tropical cyclones continue to affect the lives of those in Hawai‘i and abroad (IPCC, 2023).

In 2017, the State of Hawai‘i enacted Act 32 which reaffirmed the State’s commitment to the goals of the 2016 Paris Agreement and established the Hawai‘i Climate Change Mitigation and Adaptation Commission (CCMAC), which is a multi-jurisdictional group of various departments and counties to develop strategies and recommendations for climate change adaptation and mitigation. Two major priorities of the Commission are the reduction of GHG emissions from ground transportation and adaptation to sea level rise. In 2018, the State furthered this commitment by codifying requirements in the HRS for Hawai‘i to become a carbon neutral state by 2045 (State of Hawai‘i, 2024).

In partnership with other State and County agencies, the CCMAC produced the Hawai‘i Priority Climate Action Plan (PCAP) in 2024. The PCAP identifies GHG contributors in the state by sector and outlines priority actions to reduce future climate impacts. In 2019, the energy sector, which includes both energy production and transportation, was identified as the largest contributor of GHG emissions in the state, accounting for 88% of emissions.

Impacts and Mitigation Measures

During construction, diesel and gasoline powered construction vehicles or equipment would contribute to minor short-term GHG emissions that contribute to climate change. However, the levels of emissions and temporary duration in relation to other GHG emissions occurring statewide would have a negligible impact on climate change in the state. During the construction period, contractors would be required to implement emission control methods on their construction equipment as part of BMPs that minimize GHG emissions.

In the long-term, the operation and use of the facilities would be similar to existing conditions, and therefore would not contribute to GHG emissions. The Proposed Action does not include additional uses that will increase long-term GHG emissions, therefore, there is no anticipated long-term impact on climate change.

3.2.1. Sea Level Rise

As the Earth's climate continues to shift around the world, it is recognized that island communities are particularly vulnerable to natural hazards. Current projections of sea level rise anticipate a 3.2-ft sea level rise exposure area (SLR-XA) by 2100. This is associated with a series of consequential impacts such as coastal erosion, intermittent flooding, storm surges, king tides, and contamination of groundwater (HSCC, 2022).

According the State of Hawai'i Sea Level Rise Viewer by the Pacific Islands Ocean Observing System (PacIOOS), the Project Site is not located within the 3.2-ft SLR-XA.

Impacts and Mitigation Measures

The Project Site and new facilities developed should not experience any short- or long-term impact from sea level rise or contribute to issues associated with projected sea level rise. The Project Site is situated approximately 1.6 miles inland from the nearest 3.2-ft sea level rise affected area and approximately 2.6 miles inland from the nearest shoreline. Additionally, the Project Site is more than 1,000 feet above sea level. The proposed project does not include any actions that are anticipated to exacerbate the effects of sea level rise. Therefore, the Proposed Action and its long-term operations are not anticipated to impact or be impacted by the effects of sea level rise.

3.3 HYDROLOGY

3.3.1. Surface Water

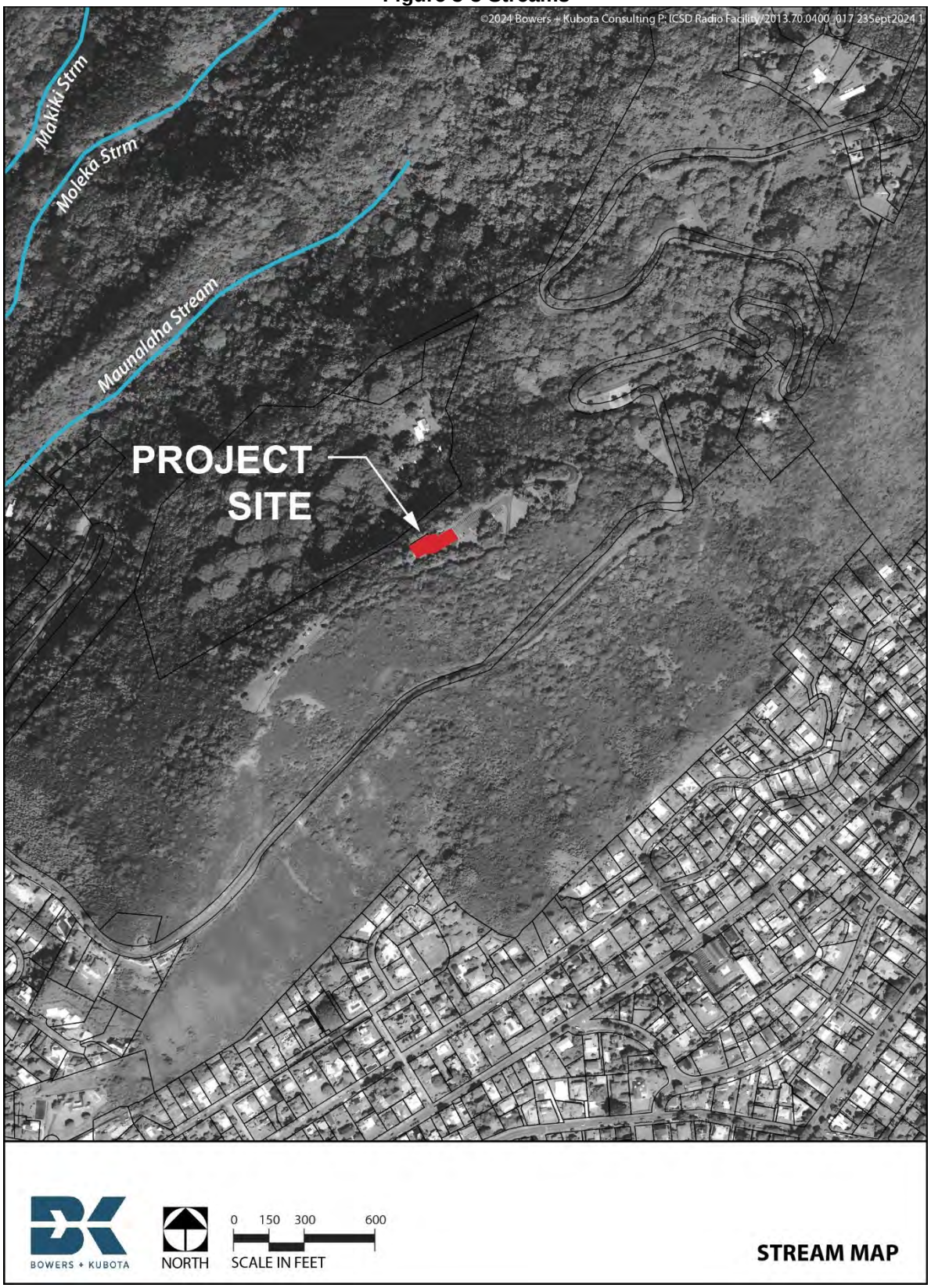
Streams in Hawai'i are smaller than those on the continent and are typically dependent on local rainfall patterns, with a mix of perennial and non-perennial streams throughout the islands. As such, local waterways can often experience flow spikes and flash flood-like conditions during periods of heavy rainfall (DAR, 2008). Conversely, streams can dry up depending on time of year, local rainfall conditions, stream diversions, and other causes. To protect water resources, the Commission on Water Resource Management (CWRM) can designate ground or surface water management areas. The Project Site is located in the Nu'uanu Aquifer System in the Honolulu Sector, which is not a designated surface water management area and therefore does not require CWRM water use permits for withdrawals (CWRM, 2019).

The Project Area is approximately 1,300 feet east of the Maunalaha Stream/Tributary that connects to the Makiki Stream and ultimately the Ala Wai Stream (DAR, 2008) (see Figure 3-3). The Ala Wai Stream is a perennial stream that includes Freshwater Forested/Shrub Wetland resources, according to the United State Fish and Wildlife Service's (USFWS) National Wetlands Inventory (USFWS, 2019). The Ala Wai Stream was also identified in the 1990 Hawai'i Stream Assessment as having "moderate" aquatic resources based on an assessment of the diversity and quantity of both native and invasive species present (State of Hawai'i & National Park Service, 1990).

Impacts and Mitigation Measures

Construction of the Proposed Action would not involve any work within or across existing streams. Improvements for the Proposed Action would include grading and leveling of areas, groundwork for the rerouting of the existing waterline and drilled shaft foundation for the new tower, and tower construction and demolition. Site work should have minimal effects on any surface water resources as those resources are located upstream of the site. During construction, drainage and runoff would be managed through BMPs. Therefore, the Proposed Action is not anticipated to have significant impact on surface water resources such as streams or wetlands.

Figure 3-3 Streams



3.3.2. Groundwater

Groundwater is one of the most important natural resources in Hawai‘i as it is the main source of freshwater statewide. Located beneath the water table within volcanic rock aquifers, groundwater provides about 99% of Hawai‘i’s domestic water use and about 50% of all freshwaters used in the state (USGS, 2016). Much of this groundwater comes from rainfall, fog drip, and irrigation water that isn’t lost to runoff or evapotranspiration.

The Project Site is located in the Nu‘uanu Aquifer System near its boundary with the Pālolo Aquifer System within the Honolulu Aquifer Sector Area, as shown in Figure 3-4 (CWRM, 2019). The Nu‘uanu Aquifer contributes a sustainable yield of approximately 14 million gallons per day (MGD) out of the Honolulu Sector’s 48.5 total MGD sustainable yield. The Honolulu Sector, including the Nu‘uanu Aquifer is a designated ground water management area. Additionally, the Project Site is located within the Ala Wai Watershed, as shown in Figure 3-5.

The underground injection control (UIC) line was established by the State Department of Health (DOH) as a boundary between potable and non-potable groundwater sources. In general, areas upland of the UIC line are considered potable groundwater sources and are subject to Environmental Protection Agency (EPA) water quality standards under the Clean Water Act. The areas below the UIC line are subject to EPA saltwater quality standards under the Clean Water Act. The Project Site is located above (or mauka) of the UIC line, which indicates that the underlying aquifer is considered as a drinking water source and limited types of injection wells are allowed (DOH, 1984).

During interviews conducted for the Cultural Impact Assessment (CIA) of the Proposed Action, a community member expressed concern for any project impact to the Roundtop Reservoir and its related water mains.

As described in Chapter 3.2 (Climate and Climate Change), climate change impacts such as rising sea levels, rising temperatures, and changes in rainfall patterns would pose a threat to Hawai‘i’s natural resources such as freshwater supply. The main factors threatening groundwater availability in Hawai‘i are saltwater intrusion, the reduction of discharge to streams and the ocean, and lowering of water levels from water usage (USGS, 2016).

Impacts and Mitigation Measures

Due to the Project Site’s location near the summit of Pu‘u ‘Ualaka‘a Park, significant impacts to groundwater are not anticipated to occur with the Proposed Action. During construction, BMPs such as the placement of aggregate-filled pouches and erection of a silt fence may be implemented to control surface runoff and soil erosion around the Project Site. Site grading and other actions necessary for construction will not include underground injection and will comply with the State Water Quality Standards established by HAR §11-54, and Water Pollution Control established by HAR §11-55, as applicable. The existing water line will be rerouted to accommodate the site of the new tower, however, there are no proposed changes to the water demand or source. After construction is complete, no long-term adverse impacts to hydrologic resources are anticipated. The Proposed Action will disturb less than one acre of total land area, therefore an NPDES permit is not required for construction activities.

Figure 3-4 O‘ahu Aquifer Map

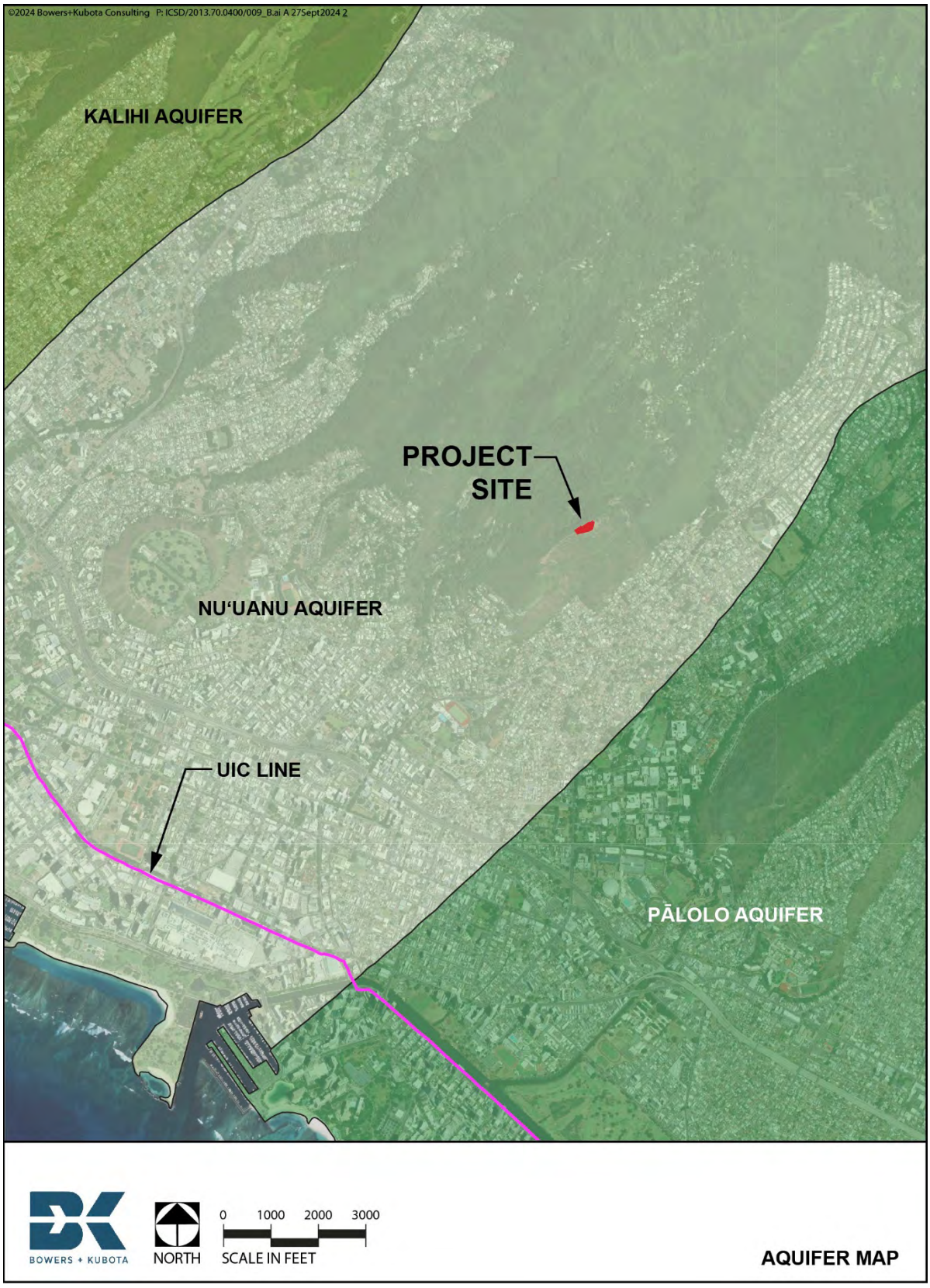


Figure 3-5 Watershed Map

3.4 AIR QUALITY

The Clean Air Act of the 1970s is the U.S. federal air quality law intended to reduce and control air pollution nationwide and was most recently amended in the 1990s. The EPA established National and State Ambient Air Quality Standards (AAQS) to protect public health and welfare from airborne pollutants. These pollutants include carbon monoxide (CO), lead (Pb), nitrogen dioxide (NO_2), particulate matter (PM_{10}), particulate matter ($PM_{2.5}$), and ozone, sulfur dioxide (SO_2). Further, hydrogen sulfide (H_2S) was set as a standard for the State of Hawai'i (DOH, Clean Air Branch, 2015). The DOH Clean Air Branch is responsible for monitoring ambient air quality and enforcing federal and state standards.

The nearest monitoring station is in downtown Honolulu, approximately 2.2 miles away from the Project Site (DOH, Clean Air Branch, 2024b). While Honolulu maintains a satisfactory level of air quality throughout the year, there are still sources of pollution present that cause elevations in the U.S. Air Quality Index and PM2.5 reading. Near the Project Site, there are no major air pollution generators. Air pollution generated by existing uses at the Project Site is limited to vehicle emissions from park visitors and infrequent use of the on-site backup generator.

In addition to the AAQS, the DOH regulates fugitive dust emissions via HAR, Section 11-60.1-33, which states that no person shall cause or permit visible fugitive dust to become airborne without taking reasonable precautions, discharge beyond the property lot line on which the dust originates, or allow dust emissions equal to or in excess of 20% opacity for more than 24 individual readings recorded during any one-hour period (DOH, Clean Air Branch, 2024a). Fugitive dust from activities such as construction, earth-moving, stockpiling, and trucking have the potential to pollute the air and surface water, which can pose health risks. This rule applies to construction projects and would therefore apply to the Proposed Action.

Impacts and Mitigation Measures

During construction, a short-term increase in emissions may occur from the use of construction vehicles and equipment working at the Project Site. Construction activities may cause fugitive dust emissions, however BMPs will be implemented to contain it within the Project Site. BMPs will be employed during construction to minimize air quality and fugitive dust impacts, including following the guidelines established in HAR §11-60.1-33 for fugitive dust control.

Short-term construction-related impacts to air quality are anticipated with the implementation of the proposed project. There are two potential types of air pollution emissions that could result in direct short-term air quality impacts during the project's construction period:

(1) Fugitive dust from earth-moving activities, crushing and screening activities, unregulated stockpiling of soil material, and construction vehicle movements.

(2) Diesel and/or gasoline-powered emissions from construction vehicles and equipment.

BMPs would be described in construction plans as well as specifications to minimize the discharge of air pollutants before and after construction. BMPs for fugitive dust and engine emissions would be installed before construction and maintained throughout the construction period. Some BMPs which are consistent with measures recommended by DOH in the Fugitive Dust Fact Sheet (DOH, 2019), may include, but not be limited to:

- Designing, developing, and implementing a dust control plan.
- Applying water, dust suppressants, or suitable compounds on roads, material stockpiles, and on construction areas.
- Establish and monitor speed limits for onsite vehicles.

- Cover all moving, open-bodied trucks transporting soil or dusty material.
- Install dust screens or wind barriers around the construction site.
- Stabilize and cover stockpile materials.
- Limiting areas to be disturbed at any given time.
- Clean nearby pavements and paved roads affected by construction.
- Providing a buffer zone between the construction site and residential areas.
- Moving heavy construction equipment during periods of lower traffic volume.
- Adjusting schedules of commuting construction workers to avoid peak hours in the project vicinity.
- Implementing emission control methods on construction equipment.

Following the completion of the Proposed Action, air quality would return to pre-project levels. The Proposed Action would not include any improvements or operations that are different from the existing use or operations of the site. Therefore, no long-term adverse air quality impacts are anticipated.

3.5 NOISE

In 1970, Act 147 was passed by the Hawai‘i Legislature and approved by the Governor, which authorized the Department of Health to control excessive noise in the State. The Noise Control Act of 1972 is the U.S. federal noise law intended to protect residents from noise that would jeopardize public health and welfare. Under the Noise Control Act, the EPA created noise control standards in coordination with state and local governments, which are now law under the Hawai‘i Environmental Quality Act and codified under HRS Chapter 342F (DOH, 2017). Administered by the State Department of Health Indoor and Radiological Health Branch, HRS Chapter 342F regulates noise pollution and HAR 11-46 establishes statewide rules on community noise control.

Noise has been recognized as a pollutant like air and water contaminants, which can have an adverse effect on people and the environment. Noise is affected by several factors including the frequency of the sound, period of noise exposure, and changes or fluctuations in the noise levels during exposure. The DOH regulates noise exposure in the following rules:

- HRS, Section 342F – Noise Pollution
- HAR, Section 11-46 – Community Noise Control
- HAR, Section 12-200.1 – Occupational Noise Exposure

HAR, Section 11-46, Community Noise Control, defines maximum permissible sound levels for certain zoning districts and provided minimization and mitigation controls for stationary noises, and equipment related to agriculture, construction, and industrial activities in occur in the zones (HAR, 2015). Accordingly, as shown in Table 3-1, noise emitted from the Proposed Action would be regulated under the Class A Zoning District as the Project Site is located in a County zoned Restricted Preservation District (P-1).

Table 3-1 Maximum Permissible Sound Levels in dba[1]

ZONING DISTRICTS	DAYTIME (7 A.M. TO 10 P.M.)	NIGHTTIME (10 P.M. TO 7A.M.)
CLASS A (LANDS ZONED RESIDENTIAL, CONSERVATION, PRESERVATION, PUBLIC SPACE, OPEN SPACE, OR SIMILAR TYPE)	55 dBA	45 dBA
CLASS B (LANDS ZONED FOR MULTI-FAMILY DWELLINGS, APARTMENT, BUSINESS, COMMERCIAL, HOTEL, RESORT, OR SIMILAR TYPE)	60 dBA	50 dBA
CLASS C (LANDS ZONED AGRICULTURE, COUNTRY, INDUSTRIAL, OR SIMILAR TYPE)	70 dBA	70 dBA

Noise levels at the Project Site are generally low, as expected with the Wayside and Round Top Forest Reserve dominating the land use in the project vicinity. Nearby neighborhoods include lower Round Top, Makiki, and Makiki Heights, lower Punchbowl, Manoa Valley, and Moʻiliʻili which may contribute to ambient noise levels at the site. In general, noise at the site is low and associated with vehicle traffic from Puʻu ʻUalakaʻa Park visitors.

Impacts and Mitigation Measures

During construction, temporary noise is expected to occur from construction activities that may include backhoes, compaction equipment, flatbed trucks, and diesel-powered generators. Table 3-2 shows typical noise levels from commonly used heavy equipment 50 feet away from the source. BMPs to minimize acoustic impacts on the surrounding environment will be utilized, including noise suppressant devices, such as mufflers.

Construction activities will only occur during normal Puʻu ʻUalakaʻa Park hours and will be limited to the site, therefore no construction noise will occur during early morning or evening hours. Due to the distance of approximately 0.4 miles and an approximately 400-foot elevation change to the nearest residence on Round Top Drive, noise impacts during construction are not anticipated to be significant. Construction activities would comply with the State DOH, HAR §11-46, Community Noise Control regulations. Compliance with these regulations will be part of the project's construction contract and the responsibility of the selected contractor.

Table 3-2 Construction Equipment Noise Levels

Equipment	Typical Noise Level 50 Feet from Source
Backhoe	80 dBA
Dozer	85 dBA
Generator	81 dBA
Grader	85 dBA
Loader	85 dBA
Paver	89 dBA
Scraper	89 dBA
Truck	88 dBA

In cases where construction noise exceeds or is expected to exceed the State's "maximum permissible" property line noise levels, a permit must be obtained from the State DOH to allow the operation of vehicles, construction equipment, power tools, etc., which emit such noise levels. This ministerial permit is typical for construction activities. Prior to issuing the noise permit, DOH may require the contractor to incorporate

[1] Hawaiʻi Administrative Rules, Section 11-46, Community Noise Control. 2015.

noise mitigation into the construction plan or require the contractor to conduct noise monitoring or community meetings to discuss construction noise.

The DOH noise permit does not limit the noise level generated at the construction site, but rather the times at which noisy construction can take place. Specific permit restrictions for construction activities are:

1. No permit shall allow the use of certain demolition and construction equipment (such as pile drivers, hydraulic hammers, jackhammers, etc.) before 9:00 AM and after 5:30 PM, Monday through Friday.
2. No permit shall allow any construction activities which emit noise in excess of the maximum permissible sound levels ... before 7:00 AM and after 6:00 PM of the same day, Monday through Friday, without an approved Community Noise Variance.
3. No permit shall allow any construction activities which emit noise in excess of the maximum permissible sound levels... before 9:00 AM and after 6:00 PM on Saturday, without an approved Community Noise Variance.
4. No permit shall allow any construction activities which emit noise in excess of the maximum permissible sound levels on Sundays and on holidays, without an approved Community Noise Variance.

The project's contractor would ensure that the operation of construction equipment and activities would occur during acceptable times to minimize the short-term impact nearby facilities, commercial operations, and residences. The contractor would coordinate with DOH to ensure compliance and provide neighbors with sufficient advanced notice of construction activities.

The use of the property will not change with the Proposed Action and no significant increase in noise levels over existing levels is anticipated from the long-term operation of the proposed project.

3.6 FLORA AND FAUNA

SWCA Environmental Consultants (SWCA) conducted a biological survey for the Project Site. The report is based on field surveys conducted during July 2021 and a review of relevant documents and databases. In addition, a Tree Assessment was conducted by an arborist to assess the trees designated for removal. No State or federally listed threatened, endangered, or candidate animal species were observed on the Project Site. The reports are included in Appendix A and Appendix B of this EA and are summarized in this chapter.

The USFWS Pacific Islands Fish and Wildlife Office (PIFWO) and the DLNR Division of Forestry and Wildlife (DOFAW) responded to the pre-assessment consultation for the Project. The USFWS PIFWO provided a list of protected species that are most likely to be encountered by projects in Hawai‘i. These species included the Hawaiian Hoary Bat, or ‘Ōpe‘ape‘a, (*Lasiurus cinereus sesmotus*), native migratory birds including the band-rumped storm-petrel/‘akē‘akē (*Oceanodroma castro*), Hawaiian petrel/‘ua‘u (*Pterodroma sandwichensis*), and the Newell's shearwater/‘a‘o (*Puffinus* auricularis). Review of the State's critical habitat data and the resources available on the USFWS Information for Planning and Consultation website revealed that the Project Site is not within or adjacent to any identified habitats for protected species. The nearest critical habitat is located over one mile away, north (mauka) of the Project Site.

3.6.1. Flora

SWCA conducted a pedestrian flora (botanical) survey to document plant species and vegetation types in and around the Project Site. Areas more likely to support native plants were more intensively examined. Plants recorded during the survey are indicative of the season (rainy versus dry) and the environmental

conditions at the time of the survey. It is likely that additional surveys conducted at a different time of the year would result in minor variations in the species and abundances of plants observed.

No federally and state-listed threatened, endangered, or candidate plant species or rare native Hawaiian plant species were observed in the survey area. In all, 61 plant species were recorded in the survey area, none of which are native to the Hawaiian Islands. Appendix A contains the complete list of flora species observed.

There are three primary vegetation types within the survey area, which consist of the following:

Ruderal: Ruderal vegetation is found in areas that are not maintained frequently or within a graveled area. This survey found they were most likely to be located within a fenced area. This vegetation type can be classified as weedy and herbaceous. The most common species surveyed in this category were Guinea grass (*Urochloa maxima*) and sourgrass (*Digitaria insularis*), while the rarer types were koa haole (*Leucaena leucocephala*) and prostrate spurge (*Euphorbia prostrata*).

Mixed Non-Native Forest: Mixed non-native forest vegetation occurred outside of the fenced area on the north and western sides. This vegetation type can be classified as a mix of species not indigenous to the area. In the surveyed area the canopy cover included ironwood (*Casuarina equisetifolia*), Formosa koa (*Acacia confusa*), macadamia (*Macadamia integrifolia*), and silk oak (*Grevillea robusta*) while the understory contained fiddlewood (*Citharexylum caudatum*), koa haole, octopus tree (*Schefflera actinophylla*), and Guinea grass (*Urochloa maxima)*

Landscaped: Landscaped vegetation occurs outside of the fenced area on the southern side of the property. This vegetation type includes carpet-grass (*Axonopus compressus*), creeping indigo *(Indigofera spicata*), Bermuda grass (*Cynodon dactylon*), and seashore paspalum (*Paspalum vaginatum*).

A second site inspection was conducted in 2024 by a consulting arborist with Tree Solutions and Environmental Consulting Services, Inc. The inspection observed that no native, endangered or exceptional trees are within the project site, and documented 27 trees on site that would be affected by the Proposed Action. The 27 trees are designated for removal to accommodate the Proposed Action and to mitigate any line-of-sight issues with the new 180 foot tower. Appendix B contains the full list and map of trees on the site.

Impacts and Mitigation Measures

No state or federally listed threatened, endangered, or candidate plant species were observed on the Project Site. The Proposed Action should not have a significant adverse impact on State or federally listed, threatened or endangered, or rare native Hawaiian plant species as none were detected within the survey area. All of the flora identified on-site were nonnative species, including the 27 trees that will be removed which consist of Silk Oak, Christmas Berry, Ironwood, Fiddlewood, and Cook Pine seedlings. Any new landscaping necessary for the Project would consist of grass and other appropriate plants, which will be incorporated into the site development plans to reduce potential erosion.

Per the DOFAW's comment on the Draft EA, the invasive coconut rhinoceros beetle is widespread on the island of O'ahu and host material for the beetle includes entire dead trees; mulch, compost, trimmings, fruit and vegetative scraps, and decaying stumps. Host plants include live palm plants such as *Washingtonia, Livistona, Pritchardia* (all commonly known as fan palms), *Cocos* (coconut palms), *Phoenix* (date palms), and *Roystonea* (royal palms). To reduce the spread of the coconut rhinoceros beetle, the trees and tree trimmings should be inspected before being transported off site.

Construction-related activities could contribute to the minor spread of invasive species present on the site to new areas or habitats through the movement of vehicles and materials within and off the site. To minimize the effects of the unintentional spread of invasive species, the following BMPs would be utilized:

- Washing and inspecting of construction equipment, vehicles, and materials imported from outside of the island of O‘ahu for excessive debris, plant materials, and invasive or harmful nonnative species at a designated location before entering or exiting the project site.
- When possible, purchase raw materials (e.g., gravel, rock, soil) from local suppliers on O‘ahu to avoid introducing nonnative species to the island.
- The use of appropriate native Hawaiian plants or non-invasive plants to the maximum extent possible for landscaped areas.

To minimize the risk of starting a wildfire at the Project Site, the contractor and ETS staff will adhere to the following recommendations provided by DOFAW when engaging in activities that have a high risk of starting a fire:

1. Wet down the area before starting a task
2. Continuously wet down the area as needed
3. Have a fire extinguisher on hand; and,
4. If the contractor or staff’s vision is impaired (i.e. welding goggles), have a spotter to watch for fire ignitions.

3.6.2. Fauna

SWCA conducted a pedestrian fauna survey of the Project Site on June 16, 2021, which consisted of visual observations (aided by 10 × 42–mm binoculars) and auditory vocalization identifications. All birds, mammals, reptiles, amphibians, fish, and invertebrate species seen or heard, and any sign (scat or tracks), were noted.

Avifauna. Most of the bird species observed in the Project Site are species commonly found in disturbed, low- to mid-elevation areas on O‘ahu. Table 3-3 below lists all eight bird species that were documented, all of which are not native to the Hawaiian Islands. Only one observed species, the house finch (*Haemorhous mexicanus*), is listed by the Migratory Bird Treaty Act (MBTA) and is a non-native introduction. The purpose of the MBTA is to protect migratory birds and those native to the United States.

Table 3-3 Birds Observed in and Near Project Site

Common Name	Scientific Name	Status*	MBTA
Feral chicken	*Gallus gallus*	NN	-
House finch	*Haemorhous mexicanus*	NN	X
House sparrow	*Passer domesticus*	NN	-
Japanese white-eye	*Zosterops japonicus*	NN	-
Red-billed leiothrinx	*Leiothrix lutea*	NN	-
Red-crested cardinal	*Paroaria coronata*	NN	-
Red-vented bulbul	*Pycnonotus cafer*	NN	-
Zebra dove	*Geopelia striata*	NN	-
Total		**8**	**1**

* M = migrant; NN = non-native permanent resident.

Amphibians or Reptiles. No amphibians or reptiles were surveyed, and there are no native reptiles or amphibians to Hawai‘i.

Invertebrates. There were no native species detected, though there was one non-native invertebrate, honeybee (*Apis mellifera*) observed during the survey.

Mammals: No mammals were detected during the pedestrian survey, though it should be noted that small Indian mongoose (*Herpestes javanicus*), house mouse (*Mus musculus*), rats (*Rattus* spp.), and feral pig (Sus scrofa) are likely to occur due to the recreation area and disturbed lowland non-native forest. The endangered Hawaiian hoary bat *(Lasiurus cinereus semotus)* was not surveyed, but the habitat near the Project Site may be suitable and has the potential to occur.

Impacts and Mitigation Measures

The SWCA report identified the House finch (*Herpestes javanicus*) as the only observed bird listed by the MBTA. The MBTA prohibits the unregulated "taking" of covered species, which is defined as "hunting, pursuing, killing, possessing or transporting any migratory bird, nest, egg or part thereof." The Proposed Action would not result in a "taking" of the House finch species.

The Proposed Action is not likely to adversely impact any threatened or endangered species. While the Hawaiian hoary bat was not observed at or near the Project Site, the trees and vegetation may be suitable habitats for the bats. To mitigate possible effects to the Hawaiian hoary bat, no trees taller than 15 feet will be trimmed or removed during the roosting season from June 1 through September 15.

In the Draft EA, a 6-foot chain link fence with barbed wire was proposed to be placed on top of the retaining wall surrounding the foundation of the new 180-foot tower to deter trespassers from accessing the tower. However, the DOFAW provided a Draft EA comment letter stating that a barbed wire fence would present a threat to the Hawaiian hoary bat. To mitigate this potential threat, the ETS proposes to use a higher chain link fence between 12 to 14-feet in height in lieu of using barbed wire. This would ensure that the fence still acts as a deterrent to trespassers trying to access the tower and equipment, while not increasing the potential to adversely impact the Hawaiian hoary bat.

Nighttime construction is not currently anticipated for the Proposed Action. Should nighttime work need to be conducted, it will be avoided during the seabird fledging season from September 15 through December 15 to mitigate any potential impacts to seabirds that may pass through the area at night. In addition, all lights used during nighttime construction would be fully shielded to minimize the attraction of seabirds. If a downed seabird is detected, the contractor would be required to follow DOFAW's recommended response protocol.

3.7 NATURAL HAZARDS

3.7.1. Flooding

The Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Map (FIRM), revised January 4, 2021, shows that the Project Site is designated Zone X (See Figure 3-6), which is determined to be outside of the 1% annual chance floodplain (FEMA, 2021). Areas designated as Zone X have a low risk for flooding and do not require the purchase of flood insurance. The City has established regulations in Chapter 21A of the Revised Ordinances of Honolulu (ROH) for the purpose of protecting human life, health, and welfare in flood hazard areas (CCH, 2021). However, this chapter of the ROH does not establish regulations for actions occurring within FIRM Zone X.

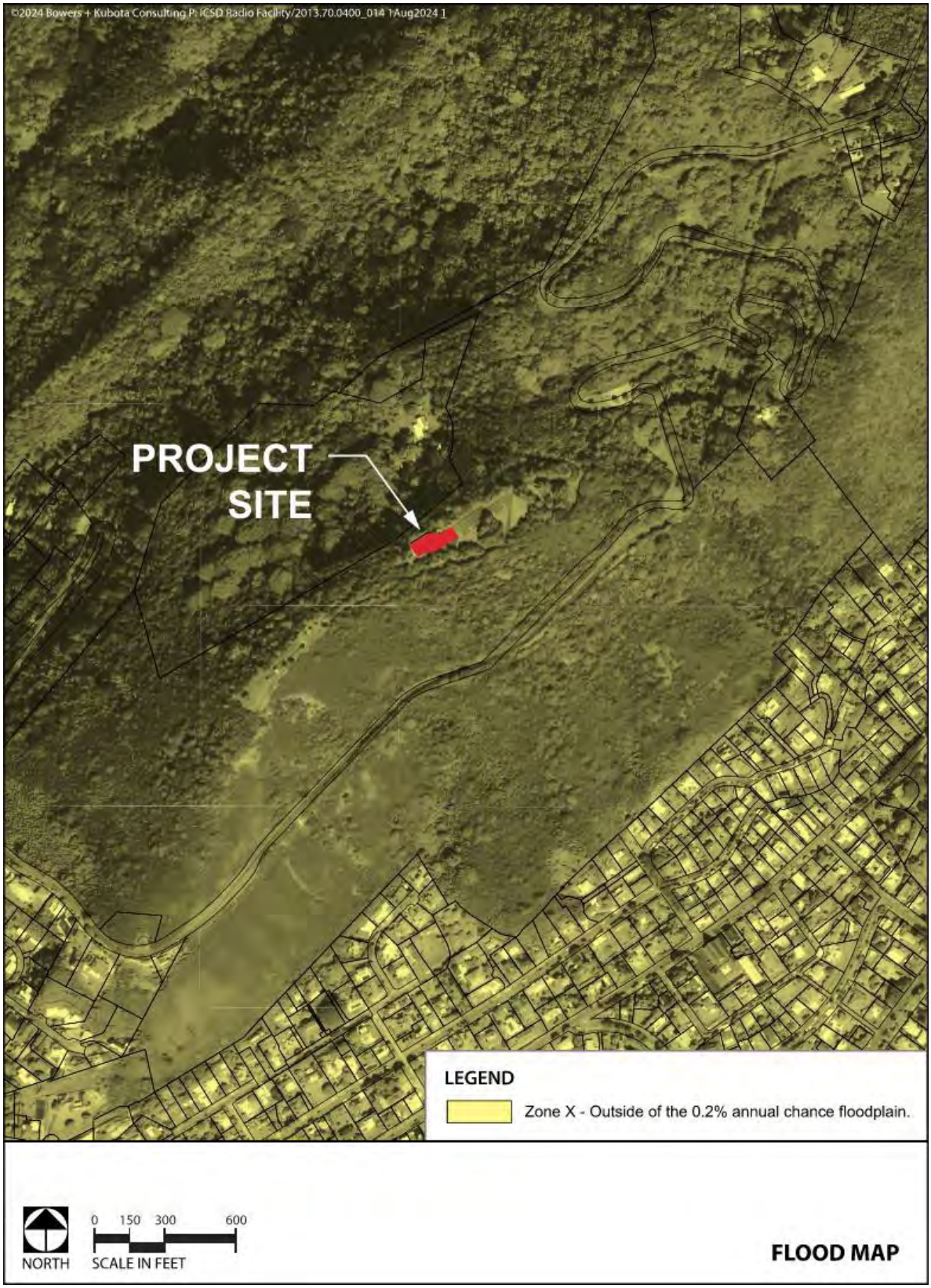
Impacts and Mitigation Measures

Flooding is expected to have minimal or no adverse impact due to the Project Area's location in the lowest risk flood hazard area. No flood mitigation measures are needed; however, the Proposed Action

will include BMPs during construction and design to minimize both short- and long-term effects of the Project in terms of flooding and floodplain management.

In addition, the Proposed Action would not result in a significant amount of impervious surfaces to be added to the project site, and would not significantly increase runoff produced at the site or the vulnerability for flooding of the surrounding environment.

Figure 3-6 FEMA Flood Insurance Rate Map



3.7.2. Tsunami

A tsunami is a series of extremely long ocean waves caused by a large and abrupt displacement of the ocean that are mostly generated by earthquakes in marine or coastal regions, undersea volcanic eruptions, or landslides (NOAA, 2019). A tsunami can cause widespread destruction of coastal structures and communities. Over the past centuries, about 78% of tsunamis have occurred in the Pacific Ocean. While the recent development of deep ocean tsunami detectors and models have improved the ability of communities to prepare for tsunamis, predicting when and where a tsunami will strike is currently impossible. Therefore, tsunami evacuation and extreme tsunami evacuations zones have been established throughout the State of Hawai'i as areas that should serve as a guideline as the minimum safe evacuation distance in the event of a tsunami (HIEMA, 2020).

The Project Site is located approximately 1.7 miles outside of the tsunami evacuation zone and 1.3 miles outside of the extreme tsunami zones. Additionally, the Project Area sits elevated about 1,000 feet above sea level.

Impacts and Mitigation Measures

Due to the Project Site's elevation and distance from the tsunami evacuation zones, the Proposed Action is not anticipated to impact or have an impact on tsunami hazards.

3.7.3. Tropical Storms and Hurricanes

In Hawai'i, seasonal storms and hurricanes have the potential to cause severe damage to property, land, and life, primarily occurring from the late summer and early winter months. Characterized by high winds, heavy rainfall, and large storm surges, these tropical storms (winds between 39 to 73 mph) and hurricanes (winds 74 mph or greater) are tropical cyclones that occur over tropical or subtropical oceans and gain their energy from warm ocean waters (NOAA, 2020).

Hurricane season in Hawai'i begins in July and lasts through November. Hurricanes in the Central Pacific generally originate in the areas off the coasts of southern Mexico and Central America. Few of these hurricanes make it near the Hawaiian Islands region, as most die off as they move northeasterly over cooler waters and less favorable atmospheric conditions. In the past 50 years, three hurricanes have made landfall in Hawai'i, all on the island of Kaua'i. Hurricane Iniki in 1992 was the most destructive of these storms, the Category 4 hurricane (recorded wind speeds of 145 mph) directly hit Kaua'i causing 6 deaths and $2.2 billion in damages. Other hurricanes and tropical storms have caused damage through flooding, high winds, and high waves (DEM, N.d.). Hurricane Douglas in 2020 was about 60 miles north of O'ahu and was classified as a Category 1 hurricane (very dangerous winds, will produce some damage). While hurricane categories are an indicator of danger, it only considers the wind speeds and does not consider effects of flooding from heavy rains or dangerously high surf. Early warning systems provide residents with time to prepare in the event of a tropical storm, but impacts are difficult to predict due to differences in location and storm intensity. Therefore, preparation in the event of a tropical storm or hurricane is the only way to truly mitigate risk.

Impacts and Mitigation Measures

The major elements making a hurricane hazardous are: 1) strong winds and gusts; 2) large waves and storm surge; 3) heavy rainfall; 4) coastal and shoreline erosion; 5) and tidal and coastal flooding (HIEMA, 2023).

A hurricane of significant strength and high winds passing directly over or close to the Project Site could cause damage to project improvements along with surrounding areas. While coastal effects of a tropical storm would be unlikely to affect the Project Site, heavy rainfall and high winds have the potential to

damage project improvements and other structures in the area. To minimize potential hurricane damage, facilities, structures, and other improvements, the Proposed Action would be constructed in accordance with hurricane proofing criteria. In cases of natural disasters and extreme weather events, the Proposed Action would improve the reliability of both the services and the structures of the ERF, which emergency response, disaster management, and civil defense utilize for their communication needs during these events. Therefore, the Proposed Action is not anticipated to be of greater risk to tropical storm or hurricane damage than the ERF facility is currently and is expected to provide a beneficial impact in the event of a hurricane by supporting emergency response.

3.7.4. Earthquake

Most earthquakes in Hawai'i are directly linked to volcanic activities and the islands' volcanic structure. The movement of magma from active volcanoes on the island of Hawai'i causes many small earthquakes every year. Larger tectonic quakes are caused by structural weakness at the volcano's base or movement deep within the earth's crust (USGS, 2021). In 2006, the State experienced a 6.7-magnitude earthquake from west of the island of Hawai'i, which caused island-wide blackouts on O'ahu and Maui. On O'ahu, the earthquake caused automatic switches and operators to shut down the Kahe and Waiau power plants to protect the equipment (HECO, 2006). A more recent earthquake in 2018 reached a magnitude of 6.9, and was located near Kīlauea on the island of Hawai'i. The damage was moderate in comparison to the 2006 earthquake, damaging buildings, roads and landslides.

The most recent earthquake to reach over a 5.0 magnitude happened in 2019 less than three miles north of Hilo and Kailua-Kona on the island of Hawai'i, and 17 miles below sea level according to the United States Geological Survey (USGS). The earthquake was not associated with magma movement or the volcanic process and was attributed to the stress of the weight of the island on the ocean crust. The movement of this earthquake was reported on all the Hawaiian Islands.

In 2021, the U.S. National Seismic Hazard Model for the State of Hawai'i was updated from its previous 2001 version using updated earthquake data (Petersen, Shumway, Powers, et al., 2021). The model, included as Figure 3-7, depicts the chance of a slight or greater damaging earthquake affecting each portion of the State within a 100-year time frame. The Project Area is located in a region of relatively high population density and is designated as having medium risk, between 50 and 75% chance of experiencing a damaging earthquake in 100 years.

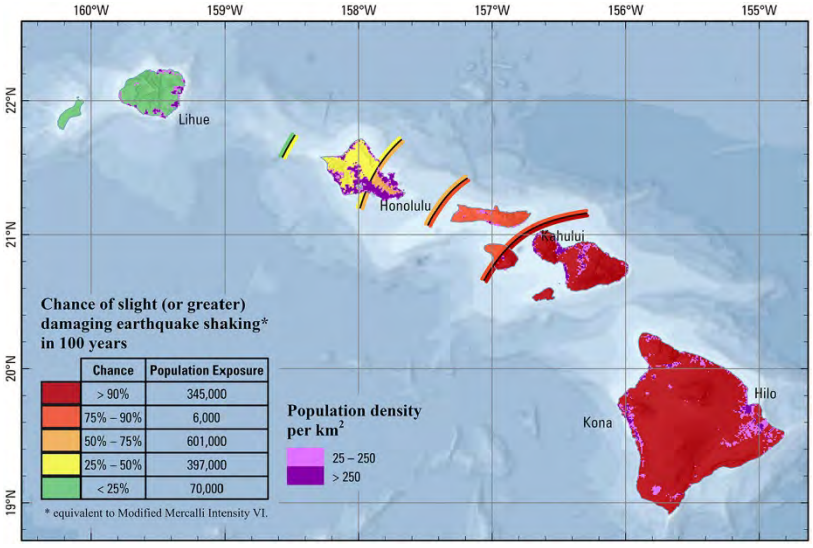


Figure 3-7 U.S. National Seismic Hazard Model (2021)

Impacts and Mitigation Measures

Earthquake hazard to the Project Site is comparable to the rest of the southeastern portion of O'ahu and is not anticipated to have a significant impact on the Proposed Action. The drilled shaft foundation of the

new 180 foot tower would reduce the risk of adverse impacts to the ETS communications and HIWIN operations from earthquakes.

3.7.5. Electromagnetic Radiation

Electromagnetic radiation (EMR) consists of waves of electric and magnetic energy moving together. The EMR emitted by radio waves and microwaves is referred to as radiofrequency radiation and occurs at frequencies between 3 kilohertz and 300 gigahertz (GHz).

Existing sources of EMR on the ERF at Round Top include dish antennas and whip antennas. The EMR generating equipment that is in use as part of the HIWIN system includes multiple radio transmitters that operate in two broad categories: point-to-point microwave and land mobile radio (LMR). When in operation, the point-to-point microwave transmitters operate in the 7-8 GHz bands and transmit continuous frequency energy concentrated in a narrow beam that stays in a consistent direction. When in use the LMR systems operate at fixed frequencies in 100-900 megahertz bands and transmit intermittently, dependent on system traffic, in an omnidirectional pattern with energy concentrated towards the horizon.

Impacts and Mitigation Measures

The Proposed Action will consolidate both City and State antenna towers into a single tower with the same equipment, therefore conditions of EMR are not expected to change.

3.7.6. Wildfires

Wildfires are uncontrolled fires that burn wildland vegetation and can threaten not only Hawai‘i’s landscapes and wildlife, but also its communities. Increased wildfires in the State have been occurring from declining managed agricultural land, which leaves more fire-prone, dry, invasive grasses and shrubs. Prolonged periods of drought exacerbated by climate change also contribute to these conditions. Human caused ignitions are the main cause (98%) of wildfire incidents. Statewide data from 2002 to 2012 indicated that about 76% were accidentally caused, 19% were intentional, and 5% were from lava and lightning. Accidental ignitions include campfires, fireworks, machinery or equipment, and vehicles (HWMO, 2019). The summer to fall months of the year in Hawai‘i is the period of greatest fire risk as areas are hotter and drier, and trade winds are stronger, all of which can fuel a wildfire.

The Hawai‘i Wildfire Management Organization (HWMO) conducted assessments using 36 components of wildfire hazard across the State to identify the wildfire risk of communities. While the results of the Communities At Risk assessment, completed in 2013, are not available for O‘ahu, HWMO produced a vegetation management assessment for the island in 2018-2019. Unmaintained and dry vegetation is identified as fuel for wildfires, which just needs an ignition source to result in a consequential wildfire. The study noted that the Project Area receives vegetation maintenance multiple times per year and is identified as an area of low concern.

There are two fire stations nearest to the Project Site: the Mānoa Fire Station located approximately 0.75 miles east of the Project Site, and Makiki Fire Station located approximately 1.3 miles southwest of the site.

Impacts and Mitigation Measures

The Project Site has a moderate amount of vegetation in its vicinity, including dense forested areas in the adjacent forest and watershed preserve areas. Vegetation in the area is consistently maintained. Therefore, the Proposed Action is not anticipated to have or be negatively impacted from wildfire risk.

3.8 HAZARDOUS MATERIALS

The EPA hosts an online tool called NEPAssist, which facilitates environmental data about sites for the environmental review process (EPA, 2023). NEPAssist provides information on known sites with hazardous waste, air pollution, water dischargers, toxic releases, Superfund sites (CERCLA), and brownfields.

According to NEPAssist, there is only one identified site within a half-mile radius of the Project Site, a water discharger located at 2843 Round Top Drive approximately 2,000 feet southwest of the Project Area. The NPDES permit for this site expired in 2010, therefore, activities for the site are assumed to be ceased. There are no identified hazardous waste facilities, brownfield sites, Superfund sites, toxic release sites, or air emission facilities within a half-mile radius of the site.

Within the Project Site, there is a diesel-powered emergency generator with an above-ground double-walled concrete-encased tank and valve-regulated lead-acid (VRLA) batteries that provide power for various antennas and equipment. The VRLA batteries are not classified as hazardous material but are mounted over a spill containment system.

Impacts and Mitigation Measures

With the Project Site's high elevation and distance from known hazardous sites, the Proposed Action is not anticipated to be impacted from hazardous material. Additionally, on-site materials are not identified as hazardous, and these materials will not change following completion of the Proposed Action. Therefore, the Project is not anticipated to have a significant impact on hazardous materials and no mitigation measures are necessary.

3.9 HISTORIC AND ARCHAEOLOGICAL RESOURCES

An archaeological literature review and field inspection (LRFI) was conducted by Nohopapa Hawai‘i, LLC (Nohopapa) in September 2021 by Lilia Merrin, M.A., Dominique Cordy, M.A., and Kelley L. Uyeoka, M.A. (see Appendix C). The LRFI consisted of a pedestrian inspection, conducted during the pō mahina (moon phase) ‘Olekūkolu, on February 15, 2021, and only required one field technician. Background research included a review of previous archaeological studies on file at the State Historic Preservation Division (SHPD) as shown in Table 3-4; a review of documents at Hamilton Library of the University of Hawai‘i, the Mission Houses Museum Library, and the Hawai‘i Public Library; study of historic photographs at the University of Hawai‘i at Mānoa's Maps, Aerial, Photograph and GIS (MAGIS) library; and study of historic maps at the Survey Office of the DLNR. Reports, historic maps, and photographs from the Nohopapa internal database were also examined. In addition, Māhele records were derived from various databases such as Papakilo Database, Ulukau, AVA Konohiki, Ancestry, the Buke Māhele, and Boundary Commissions. Inoa ‘āina (place names), mo‘olelo (stories), and ‘ōlelo no‘eau (proverbs) were compiled from Hawaiian language and English sources in books, newspapers, online databases, and archives.

History of the Project Site

The LRFI documented accounts of cultivation near the Project Site during the time of Kamehameha I. The Project Site was famous in the annals of Hawaiian agriculture because Kamehameha I established his own plantation of sweet potatoes on the steep slopes. The Project Site was also shown to be a part of the estate of Kamehameha IV in a historical map from 1874. Land Commission Award (LCA) documentation shows evidence of dry and wet agriculture of kalo and sweet potato cultivation in the area with associated house lots.

In 1904, the upper Makiki area was designated to be a forest preserve. By 1957, the Makiki-Tantalus State Park was established, including the Puʻu ʻUalakaʻa State Wayside.

The ʻUalakaʻa trail connects to the Project Site and is an established trail that would have been well used in pre-contact times. The trail is not formal in architecture and has not been given a formal SIHP number, however, it was assumed to be used throughout history and continues to be used today. The trail spans the Koʻolau range above Honolulu and would have been part of a series of ridge trails that provide shorter routes to get from Honolulu to Waikīkī, across the Pali to Koolaupoko, and to Waimānalo, Kailua, or Kāneʻohe.

Previous Archaeological Research

An Archaeological Inventory Survey of Puʻu ʻUalakaʻa State Wayside was conducted in 1994 that included the Project Site. During this survey, a rock shelter [State Inventory of Historic Places (SIHP) #50-80-14-4668] and a series of terraces (SIHP #50-80-14-4866) were documented near a stream and within Makiki Valley. No historic properties were found at the Project Site. It is assumed that the agricultural production and recreational use of the Project Site may have destroyed any archaeological site that may have formerly existed on the slopes or summit of the project area.

In 2010, Cultural Surveys Hawaiʻi completed an LRFI for the installation of the Round Top Radio Facility Building Addition, in which no historic properties were found.

No historic properties were found near the Project Site during the pedestrian survey. Based on prior research, as well as the pedestrian survey, the Project Site has already been impacted by grading and leveling as well as non-native vegetation consistent with the earlier development of the ERF and Puʻu ʻUalakaʻa Park. The LRFI suggests that the probability of encountering historic properties is highly unlikely based on the location and the highly developed environment of the Project Site.

Table 3-4 Summary of Previous Archaeological Studies

Reference	Location	Finding
Carpenter & Yent (1994)	Puʻu ʻUalakaʻa State Wayside Makiki Valley	Historic research indicated likely of archaeological encounters, the area had been altered for agricultural and recreational services, which would have destroyed any historic archeological site. Two sites were recorded. A rock shelter (SIHP #50-80-14-4668) and nine terraces (SIHP #50-80-14-4866).
Hammatt (2010)	Information and Communication Services Division (ICSD) Round Top Facility	Nothing found but did note that prior development would have removed any past evidence.
Yent & Ota (1980)	Kanealole Stream Moleka Stream	Twenty-seven features under one site number.
Bath & Smith (1998) Kawachui (1991) Kawachi (1992) Pietrusewsky (1992b)	Puʻu ʻUalakaʻa Base	Numerous burials but no historic properties within the project area.

Impacts and Mitigation Measures

The LRFI identified the previous ground disturbance related to the construction of the ERF at Round Top would have removed any archaeological resources which might have been present in the area and on the Project Site. Based on these considerations, no significant adverse impacts are anticipated on archaeological resources from the Proposed Action. In addition, the trail segment of ʻUalakaʻa Trail in the Project Site is not formally defined, and the larger connectivity of the trail is part of important cultural significance. As the purpose of the park is to provide maintenance and access to the trail, and the Proposed Action itself will not impact the trail, it is anticipated that there would be no adverse impact to the trail or any historic significance that it holds.

The subsequent cultural impact assessment (CIA), which is discussed further in the next section, notes that evidence of traditional cultural practices in the direct area of the Project Site would be unlikely due to successive land modifications associated with the development of Puʻu ʻUalakaʻa Park and the construction of the existing ETS Round Top radio facility.

Based on the results and recommendations of the LRFI, no adverse impacts to historic or archaeological resources are anticipated from the Proposed Action during or after construction. In the event an archaeological property, artifacts, or remains are encountered during construction activities, construction work shall cease immediately, the contractor shall immediately contact SHPD, and the agency will assess the significance of the find and recommend appropriate mitigation measures.

3.10 CULTURAL RESOURCES

The Cultural Impact Assessment (CIA) was prepared by Nohopapa Hawaiʻi, LLC (“Nohopapa”) and is attached as Appendix D. The CIA is based on ethnographic research on traditional cultural practices and land use (consisting of two individual interviews and email correspondence with three organizations), and relevant cultural literature research (in English and Hawaiian). Additionally, the CIA gives a voice to some of the community’s ʻike (knowledge) and manaʻo (thoughts) as related to the cultural practices within and around the project site. The CIA project spanned from June 2021 through October 2021 and was conducted following the State Environmental Council *Guidelines for Assessing Cultural Impacts*.

Due to COVID-19 restrictions, Nohopapa was unable to physically conduct research at the Hawaiʻi State Archives or the Bernice Pauahi Bishop Museum for the LRFI. They recommend that any future archaeological studies should include research at the Bishop Museum archives and at the Hawaiʻi State Archives to research other scientific studies done in the project area.

The Project Site is located approximately 2.4 miles mauka (inland) of the southern border of the ahupuaʻa of Makiki and sits within the Kona moku on the island of Oʻahu. Makiki is a small land division with the upper limits never reaching the Koʻolau ridgeline and the lower limits never reaching the ocean. The boundary of the Makiki Ahupuaʻa is defined by a line of three cinder cones: Puʻu ʻŌhiʻa (Tantalus); Puʻu Kākea (Sugarloaf); and Puʻu ʻUalakaʻa (Round Top).

The region around Makiki and Round Top was historically one of the most favorable place on Oʻahu to grow sweet potato due to the year-round rainfall and well-drained volcanic cinder mixed with humus. The literal translation of Puʻu ʻUalakaʻa is “rolling sweet potato hill” and it is named for the story of a rat that bit a sweet potato, causing it to roll downhill and sprout. The name may also have originated when King Kamehameha I planted many sweet potatoes in the area, which upon being dug, rolled downhill (Pukui et al., 1974).

The nearest stream to the Project Site, Maunalaha Stream, is approximately 437 yards to the northwest. The Project Site sits at an elevation of approximately 1,060 feet above mean sea level (AMSL).

Community Engagement

Nohopapa conducted community outreach from August 2021 to October 2021, which consisted of identifying appropriate and knowledgeable individuals, conduction consultation through emails, phone calls, and/or Zoom interviews, and summarizing and analyzing the information gathered. Two individuals and seven organizations were contacted to participate in the CIA; a summary of those contacted as well as the results of the consultation are provided in Table 3-5.

Table 3-5 Community Participants

Name	Affiliation	Summary of Consultation
Association of Hawaiian Civic Clubs		Unable to gather their mana‘o during the project timeframe.
Coco Needham	» Maunalaha lineal descendant and resident	Summary of community mana‘o included in CIA.
Hawaiian Civic Club of Honolulu		Responded by email, “We will ask some of our clubs who has a commitment to the cultural impact within the Kona Moku. We will let you know if we find point-of-contact or group that would be able to kōkua your request.”
Hawai‘i Nature Center		Unable to gather their mana‘o during the project timeframe.
‘Īmaikalani Winchester	» Kumu, Hālau Kū Māna Public Charter School	Summary of community mana‘o included in CIA.
Mānoa Cliffs Restoration Group		Unable to gather their mana‘o during the project timeframe.
Native Hawaiian Organizations Association (NHOA)		Unable to gather their mana‘o during the project timeframe.
The Office of Hawaiian Affairs (OHA)	Kai Markell and Kamakana Ferreira, Compliance Specialists	Responded by email, “Some friends with ‘ike papa lua worked on the area and learned that ‘Ualaka‘a was originally Uluka‘a. The name was changed to protect the area, as it is part of Kanehunamoku. Uluka‘a is the huna name. If you think about it, it makes more sense for ulu to tumble and roll down the hill than sweet potato.”
The State of Hawai‘i Department of Land and Natural Resources (DLNR), State Historic Preservation Division (SHPD)	» Susan Lebo, Archaeology Branch Chief » Hinano Rodrigues, History and Culture Branch Chief » Ka‘ahiki Solis, Cultural Historian » Tamara Luthy, Ethnographer	Responded by email, “Sending compiled notes for consideration, mostly based on a previous AIS/FEIS for the park. Please take what is helpful and leave the rest.”

Based on the community consultation, the ongoing cultural practices and resources associated with the project area vicinity include: water (specifically water reserves), sweet potato cultivation, stored cultural landscapes, the cinder of ʻUalakaʻa, the viewscapes from ʻUalakaʻa, the extensive network of Hawaiian trails used for transport, and the cinder cone as a space for ceremonies, generational knowledge sharing, as well as picnics and weddings. In the interview with Coco Needham, she noted that the project area is also within proximity to Maunalaha Homesites, which she describes as one of the last intact Native Hawaiian communities within urban Honolulu.

No evidence of traditional cultural practices was found in the direct area of the Project Site during the assessment. However, the aforementioned cultural practices and resources may occur around the Project Site. Additionally, it is acknowledged that a segment of the ʻUalakaʻa trail system, which is an important resource for the community recreationally, historically, and culturally, is located near the Project Site.

Impacts and Mitigation Measures

Due to successive land modifications of the Project Area from the development of the Puʻu ʻUalakaʻa State Wayside Park and existing ERF, it is unlikely that evidence of traditional cultural practices would be present. However, access needed for areas nearby or outside of the Project where certain cultural practices occur will be considered during construction and operation. Access to the Puʻu ʻUalakaʻa State Park, nearby trails, or the lookout will not change during or following construction. The Proposed Action is not anticipated to impact any of the gathering practices or cultural practices that may be ongoing in the surrounding forest.

3.11 VISUAL RESOURCES

In 1987, the City completed the Coastal View Study, which intended to address issues of preserving, maintaining, and improving shoreline open spaces and resources. To date, this is the only completed City document providing guidance on view planes and visual resources. However, an ongoing Study of Important Public Views in Honolulu provides results from a cultural literature review and community survey online. All these resources can be found on the City's Department of Planning and Permitting (DPP) View Studies website (DPP, 2023).

The Project Site is located within the Puʻu ʻUalakaʻa Park, which is accessed via Round Top Drive, and there is one public lookout located southwest and downhill from the Project Site. The Coastal View Study focused mainly on coastal resources, and therefore makes no mention of Puʻu ʻUalakaʻa Park or Round Top Drive. However, the lookout is identified in both the City's cultural literature review and by community members in the City's survey for its excellent elevated views of the ocean, leeward Oʻahu, Mānoa Valley, Diamond Head, and Downtown Honolulu. The current location of the Project Site is uphill (mauka) of this lookout and does not interfere with any of the aforementioned viewsheds.

From distant viewpoints on the public roads towards Round Top Drive, the tree canopy and brush blend into the surrounding landscape surrounding the Project Site, which obscures the exiting towers' visibility.

Photos of the existing towers and renderings of the proposed tower are shown in Figures 3-8 and 3-9 to show the potential visual impacts of the Proposed Action in comparison to the existing conditions. More photos and renderings comparing the existing towers to the proposed tower are provided in Appendix E.

Impacts and Mitigation Measures

The Proposed Action involves the replacement of the two 100-foot towers with a single 180-foot tower. Renderings of the proposed tower height are included in Appendix E to represent the visual impacts of the Proposed Action. While the new tower will be taller, it will have a narrower overall profile, utilize colors

that blend with the natural forest surroundings, and be located on the same property as the existing towers, avoiding impacts on any of the identified visual resources that the lookout is known for. The Project Site is not visible to residents along Round Top Drive, therefore, the increased height of the tower will not impact the nearest residents to the Project Site. As such, the Proposed Action is not anticipated to significantly impact visual resources.

Figure 3-8 Photo of Existing Tower and Rendering of Proposed Tower, View Looking Makai from Parking Lot

Figure 3-9 Photo of Existing Tower and Rendering of Proposed Tower, View Looking Mauka from Puʻu ʻUalakaʻa Lookout

3.12 TRANSPORTATION FACILITIES

The two-lane, two-way City-maintained Round Top Drive provides vehicular and bicycle access to Puʻu ʻUalakaʻa Park. Vehicle traffic tends to be relatively light as the land in the area is not extensively developed with residential uses. It would be expected that peak makai-bound traffic occurs between 7:15 and 8:15 a.m. on weekday mornings. Peak mauka-bound traffic would be expected to occur on weekday afternoons between 4:30 and 5:30 p.m. City bus service is not provided to Puʻu ʻUalakaʻa Park. Round Top Road is a public road with a 25 mile per hour speed limit.

During the pre-assessment consultation phase of the Project, the Honolulu Police Department (HPD) responded with comments regarding short-term impacts to pedestrian and vehicular traffic and recommended the inclusion of a notice to park and roadway users.

Impacts and Mitigation Measures

The Proposed Action is expected to generate minimal short-term impacts during construction associated with vehicles traveling to and from the Project Site. Before construction activities begin, notice of the upcoming construction activities will be made available to users of Round Top Drive. Any anticipated traffic disruptions or alterations during the construction phase will be coordinated with the HPD. Construction activities would take place during normal business hours on weekdays and would have little overlap with anticipated peak-hour traffic. After construction is complete, traffic along Round Top Drive will return to baseline levels. The Proposed Action would not result in any changes to the operations occurring at the project site, therefore an increase in traffic resulting from the Proposed Action is not anticipated.

3.13 PUBLIC INFRASTRUCTURE AND PRIVATE UTILITIES

The Proposed Action includes the rerouting of water lines to accommodate the new tower, along with relocation and consolidation of the State and City tower equipment to the new 180-foot tower.

3.13.1. Water Facilities

The BWS system supplies potable water to the Puʻu ʻUalakaʻa Park to service the existing comfort station. Potable water is provided by the City Board of Water Supply's Metro High sub-system (BWS, 2016).

Impacts and Mitigation Measures

The Proposed Action would not impact water or septic systems. Water required during construction would be provided by the contractor. The public restroom would need to be closed for a period of time during construction when the water lines are rerouted to accommodate the site of the new tower. DLNR will be coordinated with to ensure continued service is provided to park visitors. After construction is complete, activity at the Project Site will return to baseline activity, which is limited to ETS staff, maintenance staff, and emergency outage trips. As such, the Proposed Action is not anticipated to impact water facilities and would not result in an increase in water demand, and no mitigation measures are necessary.

3.13.2. Wastewater Facilities

The Project Site is not connected to the municipal sewer service. The public restroom adjacent to the ERF site utilizes a septic system.

Impacts and Mitigation Measures

The Proposed Action does not include work on wastewater facilities and is not anticipated to increase traffic to the area, aside from short-term traffic for construction. Therefore, the Proposed Action is not anticipated to significantly impact wastewater facilities.

3.13.3. Drainage Facilities

The ROH provides requirements in Chapters 18 and 43 for drainage, flooding, and pollution and sediment controls for the protection of the health and safety of people and the environment. The existing drainage topography of the site slopes down slightly from west to east at a grade of approximately 3% throughout the site. Therefore, natural drainage exists on the site which flows from the radio tower and facilities east to the existing parking lot.

Impacts and Mitigation Measures

The Proposed Action will not change the on-site drainage pattern or infrastructure and will not result in a significant amount of additional impervious surfaces. Additionally, any necessary erosion and settlement control plans will be reviewed by the City and all necessary building, grading, stockpiling, and trenching permits will be acquired before beginning construction as described in the ROH. Therefore, the Proposed Action is not anticipated to have a significant impact on the current drainage infrastructure.

3.13.4. Solid Waste Disposal

The State Department of Health's Office of Solid Waste Management provides guidelines for construction and demolition waste management (OSWM, 2016). The guidelines include waste reducing and waste recycling practices, including but not limited to:

- Using excavated dirt for topsoil,
- Using excavated rock for decorative walls or road base material,
- Using non-lead based painted concrete for road base, backfill, or sub-base for building construction,
- Using asphalt concrete for aggregate, road base, or new asphalt
- Using untreated wood waste as pallets, mulch, or biofuel
- Using green waste as mulch or compost
- Processing steel for shipment to steel mills
- Processing cardboard for shipment to paper mills

The guidelines also provide locations for construction and demolition waste, which ensure their proper disposal.

For standard waste, Keʻehi Transfer Station is approximately 4.8 miles west of the Project Site. The H-POWER refuse-to-energy plant in the Campbell Industrial Park accommodates solid waste disposal. The Waimanalo Gulch Sanitary Landfill is the primary permitted landfill on Oʻahu, but the City has set policies on what materials may be disposed of there. The solid waste generated on the Round Top site is limited to materials replaced during maintenance/repair activities and personal waste from personnel performing maintenance or emergency repair activities. This waste is disposed of off-site at Keʻehi Transfer Station.

Impacts and Mitigation Measures

To minimize waste, waste reduction and recycling guidelines will be followed to the extent possible. Any waste generated from construction activities that cannot be recycled will be disposed of following State and City requirements. The impact of the Proposed Action on solid waste facilities from construction and

demolition is not anticipated to be significant. After construction is complete, the Proposed Action is not expected to increase traffic to the site or increase long-term solid waste needs, therefore no mitigation measures are necessary.

3.13.5. Electrical and Telecommunication Facilities

The Hawaiian Electric Company (HECO) serves 95% of Hawai'i's residents on the islands of O'ahu, Maui, Hawai'i, Moloka'i, and Lana'i, with approximately 33% of the power generated coming from renewable energy sources in 2023. HECO supplies electrical power via overhead electrical lines at the Project Site. The overhead electrical lines are located at the west end of the nearby parking lot. There is no exterior lighting in the park area and parking area surrounding the Project Site. During the pre-assessment consultation period, HECO responded to the request with no objection to the Proposed project, noting that they will need continued access to the site for maintenance of their facilities. The ERF currently provides emergency telecommunication services for City and State Agencies.

Impacts and Mitigation Measures

The Proposed Action is not anticipated to result in an increase in electrical power needs, and the use of the site will remain the same following the Proposed Action. HECO will continue to have access to the site for maintenance of facilities following completion of the Proposed Action. The Proposed Action is expected to improve the service capabilities of the ERF, both by providing improved radio tower infrastructure and improved ancillary infrastructure that supports its function and resilience to the environment. Therefore, the Proposed Action is not anticipated to result in negative impacts to electrical or telecommunication facilities.

3.13.6. Fuel and Gas Lines

Within the Project Site, there is an existing above-ground diesel fuel storage tank for the backup generator. No other pressurized fuel or gas lines are present within the Project Site and vicinity.

3.14 PUBLIC SERVICES

The locations of police stations, fire stations, educational facilities, medical services, and parks and recreation areas in relation to the Project Site are shown in Figure 3-10.

3.14.1. Educational Facilities

There are three elementary schools within one mile of the Project Site. Hālau Kū Māna Public Charter School is approximately 0.5 miles west of the site in Makiki Valley. Mānoa Elementary School is located approximately 0.75 miles east of the site and Noelani Elementary School approximately 0.85 miles southeast of the site in Mānoa Valley. The University of Hawai'i at Mānoa, Hawai'i's primary State University campus, is located 1 mile south of the Project Site.

Impacts and Mitigation Measures

The Proposed project does not include housing or any aspects that would increase population or impact educational facility demand. Therefore, the Proposed Action is not anticipated to impact educational facilities.

3.14.1. Recreational Facilities

The Puʻu ʻUalakaʻa Park is popular for hiking, picnics, sightseeing, and biking. The facilities to accommodate the recreational activities of choice include paved access roads with landscaped grounds, two parking lots, a comfort station, picnic shelter, lookout pavilion, water tanks, and trailheads for an unnamed connecting trail and the ʻUalakaʻa Trail.

Impacts and Mitigation Measures

The Proposed Action would not significantly increase activity at the Project Site or limit access to the nearby recreational facilities. Additionally, construction for the Proposed Action would occur on weekdays during normal business hours and a notice would be sent out to potential users of the area regarding the construction activity. Therefore, it is not anticipated to have a significant impact on recreational facilities.

3.14.2. Police and Fire Protection

The Project Site is located within the Honolulu Police Department's (HPD) Patrol District No. 1 covering the neighborhoods of Ala Moana, Makiki, Nuʻuanu, Chinatown and Kakaʻako. The main station is on South Beretania Street near downtown and a sub-station is located on North Hotel Street (HPD, N.d.).

Fire service to the Project Area is provided primarily by DOFAW, which is the primary responder for wildfires on its lands. The nearest Honolulu Fire Department station is Makiki Fire Station No. 3 on Wilder Street.

Impacts and Mitigation Measures

The Proposed Action would not significantly increase activity at the Project Site; therefore, it is not expected to generate an increase in demand for police or fire services.

3.14.3. Medical Services

The nearest medical facility to the Project Site is the Kapiʻolani Medical Center, approximately 1.3 miles southwest of the site. While the medical center is somewhat specialized, it includes an emergency room which is accessed from Punahou Street.

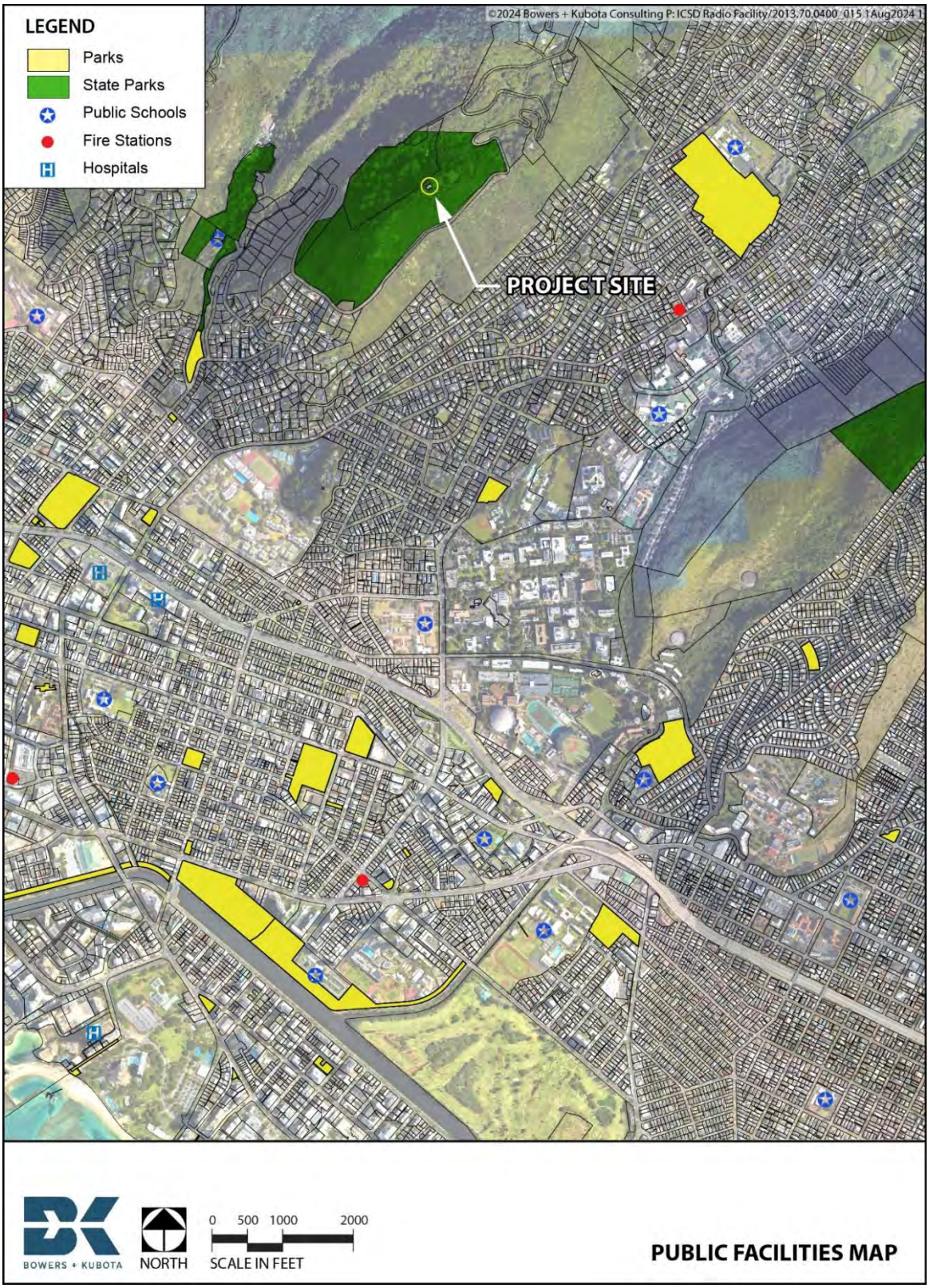
The Honolulu Emergency Services Department provides ambulance services throughout Oʻahu through its Emergency Medical Services (EMS) Division 24 hours a day, 7 days a week (ESD, 2024). The City has a total of 22 EMS ambulances in its fleet which are all equipped with advanced life support units. The fleet services four districts and responded to 95,000 calls and transported 55,000 patients to emergency rooms in 2023.

The Project Site is within the response area of the Makiki Unit in EMS District 2, with the location of this unit approximately 1.6 miles to the southwest. HFD also co-responds with first responder emergency services.

Impacts and Mitigation Measures

Construction of the project would not have any short-term impact on existing medical facilities due to the Project Site's distance from these facilities. The Proposed Action is not anticipated to have an impact on medical facilities as it does not include any actions that would increase the resident population or additional demand on existing medical facilities or staff.

Figure 3-10 Public Services



3.15 SOCIOECONOMIC CHARACTERISTICS

3.15.1. Population and Housing

The Project Site is located in the 96822 ZIP code. According to the 2020 Decennial Census, the population within the ZIP code is 42,231 with a median age of 42.5 years old, slightly higher than the State median of 40.8. The predominant ethnic group in this ZIP code is Asian, comprising 49 of the population. White accounted for 20%, Native Hawaiian and other Pacific Islander represented 6% of the population, Hispanic or Latino represented 6% of the population, and Black or African American accounted for 1%. According to the 2022 American Community Survey (ACS) 5-Year Estimate, approximately 56% of residents in this ZIP code area have a bachelor's degree or higher, as compared to 35% for the State (USCB, 2021).

The neighborhood area of Makiki – Tantalus is included in the Primary Urban Center Development Plan (PUCDP) area and is described in the City's latest effort to update the plan (CCH, N.d.). The total population of this area is 28,636 with 15,449 housing units. The median gross rent for the area is $1,455 per month. The average household size for the area is approximately 1.9 people per household with an approximately 8% vacancy rate of housing. Within the area, approximately 63% of residents are renters while the other 37% are homeowners.

Impacts and Mitigation Measures

The Proposed Action does not propose additional housing and is not expected to impact the regional population or housing conditions. Positive impacts will occur because the communications facility will be upgraded to better serve the community in the event of an emergency.

3.15.2. Character of Makiki, Lower Punchbowl, and Tantalus Community

The neighborhood is comprised mainly of preservation and residential areas, which make up 42% and 33% of the area, respectively. Unit types in this area are predominantly dense, with 41% of housing units being within a building of 50 or more total units. Additionally, 22% of units are within a 20–49-unit structure, and another 22% are within a 5-19-unit structure. Approximately 78% of the buildings in the area were built in 1979 or earlier, while approximately 4% of buildings were built in 2000 or later. Approximately 68% of the residents within this area are located within a quarter mile of a park, however, park space may be limited as there is approximately 0.9 acres of park space per 1,000 residents. Residents in this community primarily commute by driving alone (57%), followed by public transit (14%), then carpooling (12%) (CCH, N.d.).

Impacts and Mitigation Measures

The Proposed Action is not anticipated to have any significant impact on the character of the area. The Project Site is far removed from the communities of Makiki and Punchbowl and is similarly located at a high elevation on preservation zoned land away from any residences in the Tantalus area. The Project does not include any new housing or units that would negatively impact the current community character.

3.15.3. Economic and Fiscal Effects

While the median income for the PUCDP-designated neighborhood of Makiki, Lower Punchbowl, and Tantalus is $68,561 annually, the median income for the 96822 ZIP code per the U.S. Census is $91,312 (CCH, N.d.; USCB, 2021). It should be noted that the PUCDP data source being referenced utilized data from the 2010 decennial census and the 2016 ACS. According to the 2022 ACS, the ZIP code area has an employment rate of about 61.6% and a poverty rate of approximately 10.0%, compared to 57.4% and

10.2%, respectively, for the State. The top industry for residents within this ZIP code is educational services, health care, and social assistance, with 29.1% of residents working in this industry. This is followed by professional, scientific, management, and administrative and waste management services at 12.3% and arts, entertainment, and recreation, and accommodation and food services at 11.7%.

Impacts and Mitigation Measures

During construction, there will be a short-term positive economic impact from the employment of direct construction trades, material and supply vendors, and related consultants, as well as the indirect effects of this employment such as construction workers purchasing food or services in the area. After construction, the Proposed Action is not anticipated to have any adverse impact on the economic setting and no mitigation measures are needed.

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4. RELATIONSHIP TO PLANS AND POLICIES

4.1 STATE OF HAWAIʻI

4.1.1. Hawaiʻi State Plan

The Hawaiʻi State Plan was adopted in 1978 through the Hawaiʻi State Planning Act and was revised in 1986. It is a broad policy document that guides all activities, programs, and decisions made by State and local agencies by establishing a set of themes, goals, objectives and policies meant to guide the State's long-term growth and development. The purpose of the plan is to: (1) improve the planning process; (2) increase the effectiveness of government and private actions; (3) improve coordination among agencies and levels of government; (4) provide for the use of Hawaiʻi's resources; and (5) guide the future development of the state.

Part I of the Plan references the Overall Theme, Goals, Objectives and Policies and Part III references the Priority Guidelines; because Part II pertains primarily to internal government affairs it is not applicable to the Proposed Action and was not addressed. Of the 107 sections that comprise the HRS §226, five are directly applicable to the Proposed Action and discussed below.

For each section, the applicable objectives and policies are listed in italics followed by a discussion of the Proposed Action's consistency. All objectives and policies were reviewed against the Proposed Action, however, objectives and policies that are not applicable are omitted.

Hawaiʻi State Plan Objectives and Policies			
HAWAIʻI STATE PLAN, CHAPTER 226, HRS (Key: C = Consistent, I = Inconsistent, N/A = Not Applicable)	**C**	**I**	**N/A**
PART I. OVERALL THEME, GOALS, OBJECTIVES AND POLICIES			
HRS § 226-1: Findings and Purpose			
HRS § 226-2: Definitions			
HRS § 226-3: Overall Theme.			
HRS § 226-4: State Goals.			
In order to ensure, for present and future generations, those elements of choice and mobility that ensure 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:			
Goals:			
(1) A strong, viable economy, characterized by stability, diversity and growth that enables fulfillment of the needs and expectations of Hawaiʻi'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 Hawaiʻi, that nourishes a sense of community responsibility, of caring and of participation in community life.	**X**		
HRS § 226-5: Objectives and policies for population.			
§226-6 Objectives and policies for the economy--in general.			
§226-7 Objectives and policies for the economy--agriculture.			
§226-8 Objective and policies for the economy--visitor industry.			

§226-9 Objective and policies for the economy--federal expenditures.			
(a) Objective: *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 Hawaii's economy.*			
(b) Policies:			
(1) Encourage the sustained flow of federal expenditures in Hawaii that generates long-term government civilian employment;			**X**
(2) Promote Hawaii's supportive role in national defense, in a manner consistent with Hawaii's social, environmental, and cultural goals by building upon dual-use and defense applications to develop thriving ocean engineering, aerospace research and development, and related dual-use technology sectors in Hawaii's economy;			**X**
(3) Promote the development of federally supported activities in Hawaii that respect statewide economic concerns, are sensitive to community needs, and minimize adverse impacts on Hawaii's environment;	**X**		
(4) Increase opportunities for entry and advancement of Hawaii's people into federal government service;			**X**
(5) Promote federal use of local commodities, services, and facilities available in Hawaii;			**X**
(6) Strengthen federal-state-county communication and coordination in all federal activities that affect Hawaii; and			**X**
(7) Pursue the return of federally controlled lands in Hawaii 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 ERF at Round Top HIWIN is a key component of the HIWIN system, which is essential for providing public safety communication services to Federal, State, and County agencies for mission support, and benefits communities across the State.			
§226-10 Objective and policies for the economy--potential growth and innovative activities.			
§226-10.5 Objectives and policies for the economy--information industry.			
(a) Objective: *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 Hawaii as a leader in broadband and wireless communications and applications in the Pacific Region.*			
(b) Policies:			
(1) Promote efforts to attain the highest speeds of electronic and wireless communication within Hawaii and between Hawaii and the world, and make high speed communication available to all residents and businesses in Hawaii;	**X**		
(2) Encourage the continued development and expansion of the telecommunications infrastructure serving Hawaii to accommodate future growth and innovation in Hawaii'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 Hawaii;			**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 Hawaii, 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 Hawaii's people;			**X**

(7) Provide opportunities for Hawaii'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 Hawaii's economy; and			**X**
(9) Assist in the promotion of Hawaii as a broker, creator, and processor of information in the Pacific.			**X**
Discussion: The Proposed Action would improve the State and City's telecommunication system and would provide for the future needs of both agencies and other public partners.			
§226-11 Objectives and policies for the physical environment--land-based, shoreline, and marine resources.			
(a) Objective: *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 Hawaii's land-based, shoreline, and marine resources.			**X**
(2) Effective protection of Hawaii's unique and fragile environmental resources.			**X**
(b) Policies:			
(1) Exercise an overall conservation ethic in the use of Hawaii'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 Hawaii.	**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 Proposed Action would upgrade existing facilities on the site and will improve the performance of the existing equipment by providing adequate clearance above the surrounding tree line. All construction work for the proposed improvements, will comply with BMPs to minimize runoff and disturbance to the surrounding environment. As part of the EA process, a Tree Assessment and Flora and Fauna Surveys were conducted to identify significant species and habitats in the Project Site and is further detailed in Chapter 3.6.			
§226-12 Objective and policies for the physical environment--scenic, natural beauty, and historic resources.			
(a) Objective: *Planning for the State's physical environment shall be directed towards achievement of the objective of enhancement of Hawaii's scenic assets, natural beauty, and multi-cultural/historical resources.*			
(b) Policies:			
(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 Hawaii's ethnic and cultural heritage.	X		
(5) Encourage the design of developments and activities that complement the natural beauty of the islands.	X		
Discussion: As part of the EA process, a CIA and LRFI were conducted to identify significant cultural and historic resources, as further discussed in Chapters 3.9 and 3.10. The Proposed Action will preserve these resources by using design elements that complement the surrounding environment.			
§226-13 Objectives and policies for the physical environment--land, air, and water quality.			
(a) Objective: *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 Hawaii's land, air, and water resources.			X
(2) Greater public awareness and appreciation of Hawaii's environmental resources.			X
(b) Policies:			
(1) Foster educational activities that promote a better understanding of Hawaii's limited environmental resources.			X
(2) Promote the proper management of Hawaii's land and water resources.			X
(3) Promote effective measures to achieve desired quality in Hawaii'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 Hawaii'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 Hawaii'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 Hawaii's people, their cultures and visitors.			X
Discussion: The ERF at Round Top is part of the State's telecommunication system, which services Federal, State, and County first response and natural disaster efforts. The Proposed Action would increase the reliability of the ERF at Round Top and the State's telecommunication system during hazardous events, which would support first response efforts to reduce the threat to life and property from natural or man-induced hazards and disasters.			
§226-14 Objective and policies for facility systems--in general.			
(a) Objective: *Planning for the State's facility systems in general shall be directed towards achievement of the objective of water, transportation, sustainable development, climate change adaptation, sea level rise adaptation, waste disposal, and energy and telecommunication systems that support statewide social, economic, and physical objectives.*			
(b) Policies:			
(1) Accommodate the needs of Hawaii'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

(5) Identify existing and planned state facilities that are vulnerable to sea level rise, flooding impacts, and natural hazards.			**X**
(6) Assess a range of options to mitigate the impacts of sea level rise to existing and planned state facilities.			**X**
Discussion: The Proposed Action is part of ETS's plans for fulfilling their responsibilities to provide and maintain a statewide public safety communication system for Federal, State, and County agencies responsible for first response, law enforcement, and civil defense.			
§226-15 Objectives and policies for facility systems--solid and liquid wastes.			
(a) Objective: Planning for the State's facility systems with regard to solid and liquid wastes shall be directed towards the achievement of the following objectives:			**X**
(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) Policies:			
(1) Encourage the adequate development of sewerage facilities that complement planned growth.			**X**
(2) Promote reuse 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 Proposed Action would upgrade existing facilities to better meet the communication needs of Federal, State, and County agencies responsible for first response, law enforcement, and civil defense. The increased clearance above the surrounding tree line would increase the functionality and reliability of the ERF at Round Top and the State's public safety communication system.			
§226-16 Objective and policies for facility systems--water.			
§226-17 Objectives and policies for facility systems--transportation.			
§226-18 Objectives and policies for facility systems--energy.			
§226-18.5 Objectives and policies for facility systems--telecommunications.			
§226-19 Objectives and policies for socio-cultural advancement--housing.			
§226-20 Objectives and policies for socio-cultural advancement--health.			
§226-21 Objective and policies for socio-cultural advancement--education.			
§226-22 Objective and policies for socio-cultural advancement--social services.			
§226-23 Objective and policies for socio-cultural advancement--leisure.			
§226-24 Objective and policies for socio-cultural advancement--individual rights and personal well-being.			
§226-25 Objective and policies for socio-cultural advancement--culture.			
§226-26 Objectives and policies for socio-cultural advancement--public safety.			
(a) Objective: *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 Hawaii's people.			**X**
(b) Policies:			
(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**
(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:			**X**
(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 Proposed Action would improve the functionality and reliability of the communication system that serves the Federal, State, and County agencies responsible for first response, law enforcement, and civil defense.			
§226-27 Objectives and policies for socio-cultural advancement--government.			
(a) Objective: 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) Policies:			
(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 Hawaii.			**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 Proposed Action entails consolidating State and City radio systems and equipment to provide more effective communications services with reduced operational costs.			

4.1.2. State Environmental Policy (HRS §344)

HRS § 344 establishes the State environmental policy that (1) encourages productive and enjoyable harmony between people and their environment, (2) promotes efforts that will prevent or eliminate damage to the environment and biosphere, (3) stimulates the health and welfare of humanity, and (4) enriches the understanding of the ecological systems and natural resources important to the people of Hawai‘i.

The Proposed Action is consistent with the following section of the State Environmental Policy as follows:

> *HRS 344-3(1) Conserve the natural resources, so that land, water, mineral, visual, air and other natural resources are protected by controlling pollution, by preserving or augmenting natural resources, and by safeguarding the State's unique natural environmental characteristics in a manner which will foster and promote the general welfare, create and maintain conditions under which humanity and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of the people of Hawaii.*

Discussion: The Proposed Action would not result in adverse impacts to the State's natural resources and environmental characteristics. The Proposed Action calls for improvements to State communication facilities and the HIWIN system that provide statewide public safety communications services. The project would benefit the general welfare through improving critical emergency response, law enforcement, and civic defense services in the State.

4.1.3. State Historic Preservation Program (HRS §6E)

The State Historic Preservation Program, HRS §6E, is intended to conserve and develop the historic and cultural property within the State. Chapter §6E-8 requires that a proposed State project which may affect a historic property or a burial site conduct consultation with the SHPD and that the project shall not commence until the SHPD has given written concurrence.

Chapters 3.9 and 3.10 of this document discuss the archaeological and cultural resources and potential impacts for the Project Site. The technical studies conducted for these resources are included in Appendix C and D.

Discussion: Results of the LRFI conducted by Nohopapa Hawai'i yielded findings of no historic or archaeological resources within or around the Project Site. As such, no adverse impacts to historic or archaeological resources are anticipated and no further archaeological work is recommended. As previously noted, the project shall cease immediately should any potentially significant archaeological property, artifacts, or remains be discovered during construction and SHPD will be contacted.

4.1.4. Land Use Commission, HRS §205

The Hawai'i State Legislature adopted the State Land Use Law, codified as HRS §205, in 1961 to establish an overall framework of land use management. The purpose of this law is to protect Hawai'i's valuable lands from development that resulted in short-term gains at the detriment to the long-term growth potential of the State's economy. HRS §205 classified all lands within the State in one of four land use districts: Urban, Agricultural, Conservation, or Rural. The State Land Use Commission (LUC) was established to administer HRS §205 and is responsible for the designated land use districts and preserving and protecting Hawai'i's lands.

Conservation District lands are administrated by the DLNR Office of Conservation and Coastal Lands (OCCL). HAR§ 13-5 establishes the rules and regulations for Conservation District lands for the "purpose of conserving, protecting, and preserving the important natural and cultural resources through appropriate management and use to promote their long-term sustainability, and the public health safety and welfare". Conservation District lands are further classified into one of five subzones: Protective, Limited, Resource, General, and Special. The subzones form a hierarchy of lands containing the most sensitive resources and having the greatest restrictions on use to the least sensitive and fewest restrictions, with Protective being the most sensitive and General the least sensitive.

As shown in Figure 4-1, the Project Site is located in a State Conservation District and within a Resource subzone, as defined by HRS §205 (LUC, 2018). Conservation districts include areas necessary for

protecting water sources; preserving scenic and historic areas; providing parklands, wilderness, and beach reserves; conserving indigenous or endemic plants, fish, and wildlife; preventing floods and soil erosion; forestry; open space areas; and areas of value for recreational purposes. The objective of the Resource subzone is to ensure the sustainable use of the natural resources of those areas (State of Hawai'i, 2020).

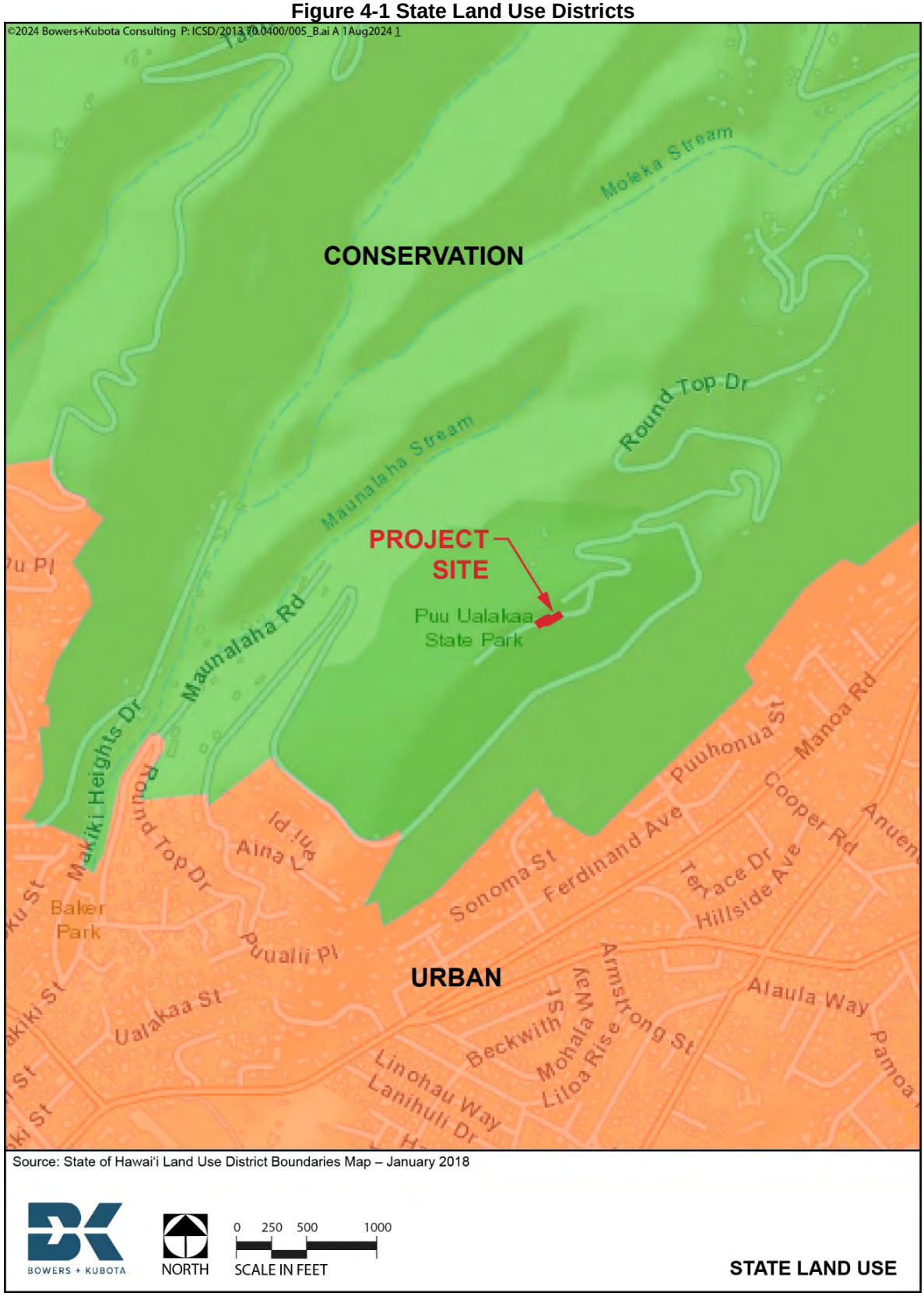
Improvements to the site were first approved by the Board of Land and Natural Resources (BLNR) on October 12, 1973 via CDUP OA-444, which established the current conditions of the site. Subsequent CDUPs have been approved for this site under OA-1724, OA-2628, and OA-3583.

Discussion: The Proposed Action will not change the existing land use of the Project Site. Short-term impacts that are expected to occur during project construction would be a reduction of parking stalls available to park users and possibly intermittent public restroom closures. Planned restroom closure will be coordinated with the DLNR Division of State Parks. Access to the picnic areas is not anticipated to be affected. After construction is complete, the parking lot will return to full availability for park users and only periodic maintenance and emergency outage work would occur within the Project Site.

Based on the proposed scope of work and land uses, the Proposed Action is subject to a CDUP according to HAR §13-5-22 and would fall under the land use listed below. The Proposed Action will follow the appropriate process and permitting procedures prior to construction.

- *P-14 TELECOMMUNICATIONS (D-1) New telecommunications facility. A management plan approved simultaneously with the permit, is also required.*

Figure 4-1 State Land Use Districts



4.1.5. State Coastal Zone Management Program, HRS Chapter §205A

The Hawai'i CZM Program, established by HRS § 205A, was promulgated in 1977 in response to the federal Coastal Zone Management Act (16 U.S.C. §1456). The purpose of the CZM Program is to provide effective management, beneficial use, protection, and development of the lands within the coastal zone. The State Office of Planning administers the CZM Program. HRS §205A establishes the Special Management Area (SMA) and the SMA Permit. All developments within the SMA without an SMA Permit. SMA permitting authority is delegated to the City Department of Planning and Permitting for SMA permits within the City and County of Honolulu.

The overall objectives of the CZM Program are to provide the public with coastal recreational opportunities, protect historic resources, protect scenic and open space resources, protect coastal ecosystems, provide facilities for economic development, reduce coastal hazards and manage development. The coastal zone encompasses the entire state, as there is no point of land more than 30 miles from the ocean, and what happens on land would most likely impact the quality of coastal waters and marine resources.

The Project Site is not subject to the County's SMA regulations because it is located 2.5 miles from the nearest coastline and not located within the SMA boundary. However, a discussion of the project's consistency with the CZM objectives and policies is provided below.

1.) RECREATIONAL RESOURCES

Objectives:

Provide coastal recreational opportunities accessible to the public.

Policies:

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

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

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

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

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

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

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

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

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

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

DISCUSSION: The Proposed Action is not located on the coastline and does not impact shoreline recreational resources; therefore, policies regarding shoreline recreational resources are not applicable. The Proposed Action would disturb less than one acre of total land area and therefore not require an NPDES permit, however, BMPs will be implemented during construction to minimize soil erosion into

nearby waterways and to maintain water quality during operation. As such, the Proposed Action would be consistent with these objectives.

2.) HISTORIC RESOURCES

Objectives:

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

Policies:

(A) Identify and analyze significant archaeological resources;

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

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

DISCUSSION: As discussed in Section 3.9, the Proposed Action is not expected to significantly impact historic resources. A LRFI was conducted and no historic properties were found near the Project Site during the pedestrian survey. Based on prior research, as well as the pedestrian survey, the Project Site has already been impacted by grading and leveling as well as non-native vegetation consistent with the earlier development of the ERF and Pu‘u ‘Ualaka‘a State Park. The Project would thus be consistent with these objectives and policies for historic resources.

3.) SCENIC AND OPEN SPACE RESOURCES

Objectives:

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

Policies:

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

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

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

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

DISCUSSION: As discussed in Section 3.11, while the Proposed Action would construct a new 180-foot tower that is taller than the two existing 100-foot towers, it will have a narrower overall profile, utilize colors that blend with the natural forest surroundings, and be located in place of the existing towers. The current location of the Project Site is uphill (mauka) of the lookout and does not interfere with any views to the shoreline thus avoiding impacts on any of the identified visual resources that the Pu‘u ‘Ualaka‘a Park lookout is known for. The Project Site is not visible to residents along Round Top Drive, therefore, the increased height of the tower will not impact the nearest residents to the Project Site. As such, the Proposed Action would be consistent with the objectives and policies for scenic and open space resources.

4.) COASTAL ECOSYSTEMS

Objectives:

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

Policies:

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

(B) Improve the technical basis for natural resource management;

(C) Preserve valuable coastal ecosystems of significant biological or economic importance, including reefs, beaches, and dunes;

(D) Minimize disruption or degradation of coastal water ecosystems by effective regulation of stream diversions, channelization, and similar land and water uses, recognizing competing water needs; and
(E) Promote water quantity and quality planning and management practices that reflect the tolerance of fresh water and marine ecosystems and maintain and enhance water quality through the development and implementation of point and nonpoint source water pollution control measures;

DISCUSSION: The Project would be consistent with the objective and these policies for coastal ecosystems. The project site is not located near the coastline or in an area connected to significant coastal ecosystems. BMPs discussed in several sections would be utilized during construction to minimize impacts to groundwater, surface waters, and coastal waters.

5.) ECONOMIC USES
Objectives:
Provide public or private facilities and improvements important to the State's economy in suitable locations.
Policies:
(A) Concentrate coastal dependent development in appropriate areas;
(B) Ensure that coastal dependent development and coastal related development are located, designed, and constructed to minimize exposure to coastal hazards and adverse social, visual, and environmental impacts in the coastal zone management area; and
(C) Direct the location and expansion of coastal development to areas designated and used for that development and permit reasonable long-term growth at those areas, and permit coastal development outside of designated areas when:
(i) Use of designated locations is not feasible;
(ii) Adverse environmental effects and risks from coastal hazards are minimized; and
(iii) The development is important to the State's economy.

DISCUSSION: The project does not conflict with this objective and these policies. The Proposed Action does not include any coastal development or activities. Therefore, there are no anticipated impacts to public or private facilities and improvements in coastal areas or near the shoreline.

6.) COASTAL HAZARDS
Objectives:
Reduce hazard to life and property from coastal hazards.
Policies:
(A) Develop and communicate adequate information about the risks of coastal hazards;
(B) Control development, including planning and zoning control, in areas subject to coastal hazards;
(C) Ensure that developments comply with requirements of the National Flood Insurance Program; and
(D) Prevent coastal flooding from inland projects;

DISCUSSION: The Proposed Action is located away from areas exposed to coastal hazards and would provide for the modernization and continued use of the ETS-managed Round Top Radio Facility, a critical facility within the HIWIN, a statewide system supporting our State's first responder, law enforcement, and civil defense agencies, and their interoperability needs.. Backed by the State of Hawaii microwave network of links, the system joins sites that are designed to survive a category 4 hurricane. HIWIN consists of State sites as well as USCG sites, and provides mission support for the USCG. As such, the Proposed Action would support improved communication and exchange of information related to coastal hazards and other emergencies. As explained in Section 3.7, according to FEMA's FIRM, the project site is in Zone X which is an area outside the 500-year flood zone, with minimal risk of flooding.

7.) MANAGING DEVELOPMENT
Objectives:
Improve the development review process, communication, and public participation in the management of coastal resources and hazards.

Policies:
(A) Use, implement, and enforce existing law effectively to the maximum extent possible in managing present and future coastal zone development;
(B) Facilitate timely processing of applications for development permits and resolve overlapping or conflicting permit requirements; and
(C) Communicate the potential short and long-term impacts of proposed significant coastal developments early in their life cycle and in terms understandable to the public to facilitate public participation in the planning and review process;

DISCUSSION: The Project would not include any coastal developments or activities and is not expected to directly impact coastal resources. BMPs as mentioned in Chapter 3 would be utilized to minimize impacts due to stormwater runoff and erosion during construction. The project would also obtain all necessary development permits and approvals listed in Section 1.7. The EA review process requires public notification and allows for public agencies and stakeholders to respond with any comments or concerns about the project.

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

DISCUSSION: The project would not include any coastal developments or activities and is not expected to directly impact coastal resources. The EA review process requires public notification and allows for public agencies and stakeholders to respond with any comments or concerns about the project.

9.) BEACH PROTECTION
Objectives:
(A) Protect beaches and coastal dunes for:
(i) Public use and recreation;
(ii) The benefit of coastal ecosystems; and
(iii) Use as natural buffers against coastal hazards; and
(B) Coordinate and fund beach management and protection.
Policies:
(A) Locate new structures inland from the shoreline setback to conserve open space, minimize interference with natural shoreline processes, and minimize loss of improvements due to erosion;
(B) Prohibit construction of private shoreline hardening structures, including seawalls and revetments, at sites having sand beaches and at sites where shoreline hardening structures interfere with existing recreational and waterline activities;
(C) Minimize the construction of public shoreline hardening structures, including seawalls and revetments, at sites having sand beaches and at sites where shoreline hardening structures interfere with existing recreational and waterline activities;
(D) Minimize grading of and damage to coastal dunes;
(E) Prohibit private property owners from creating a public nuisance by inducing or cultivating the private property owner's vegetation in a beach transit corridor; and
(F) Prohibit private property owners from creating a public nuisance by allowing the private property owner's unmaintained vegetation to interfere or encroach upon a beach transit corridor.

DISCUSSION: The project would not include any coastal developments, any shoreline hardening, or activities and is not expected to directly impact coastal resources and interfere with natural shoreline processes. There are no significant coastal sand dunes known to be within the project site.

10.) MARINE AND COASTAL RESOURCES
Objectives:
(A) Promote the protection, use, and development of marine and coastal resources to assure their sustainability.
Policies:
(A) Ensure that the use and development of marine and coastal resources are ecologically and environmentally sound and economically beneficial;
(B) Coordinate the management of marine and coastal resources and activities to improve effectiveness and efficiency;
(C) Assert and articulate the interests of the State as a partner with federal agencies in the sound management of ocean resources within the United States exclusive economic zone;
(D) Promote research, study, and understanding of ocean and coastal processes, impacts of climate change and sea level rise, marine life, and other ocean resources to acquire and inventory information necessary to understand how coastal development activities relate to and impact ocean and coastal resources; and
(E) Encourage research and development of new, innovative technologies for exploring, using, or protecting marine and coastal resources.

DISCUSSION: The project does not include the use of marine or coastal resources and is not expected to directly impact coastal resources. This EA addressed the affected environment and analyzed the likely environmental impact from the project which would not have significant effects on the environment. BMPs discussed in various sections would be utilized to minimize impacts to marine and coastal resources due to construction-generated stormwater runoff and erosion. Therefore, the project does not conflict with this objective and these policies for marine and coastal resources.

4.2 CITY AND COUNTY OF HONOLULU

At the County level, the General Plan, Development Plans and Sustainable Community Plans and ROH Chapter 21 – Land Use Ordinance (LUO) establish the permitted uses of the land.

The City and County of Honolulu guides and directs land use and growth through a three-tier system of objectives, policies, planning principles, guidelines, and regulations. The General Plan forms the first tier of this system, with all lands in the State designated in one of four classifications (urban, rural, agricultural, and conservation). The Project Site is classified as conservation. The second tier of the system is formed by the Development Plans and Sustainable Community Plans, and relevant to this project site is the Primary Urban Center Development Plan (PUCDP). The third tier of the system is composed of the implementing ordinances and regulations with the LUO.

The Project Site is located within the Primary Urban Center, which includes the coastal plain that extends along O‘ahu’s southern shore from Wai‘alae-Kāhala to Pearl City in the west, and from the shoreline to the westerly slopes of the Ko‘olau mountain range. Consistent with the provisions of the General Plan, the Primary Urban Center is expected to accommodate a significant proportion of Oahu’s projected growth in residential population and jobs during the 20-year horizon of this Plan (ending in 2025).

The Project Site is designated as Preservation (P-1) per the LUO. The purpose of the preservation districts is to preserve and manage major open space and recreation lands and lands of scenic and other natural resource value.

4.2.1. O‘ahu General Plan

The O‘ahu General Plan was first adopted in 1977 and was last amended and adopted by the Honolulu City Council in 2021. It sets forth the City’s objectives and policies for long-range development on the island and contains guiding statements pertaining to social, economic, environmental, and design objectives for the general welfare and prosperity of O‘ahu residents. The O‘ahu General Plan is comprised of 11 sections: Population; Economic Activity; Natural Environment; Housing; Transportation and Utilities; Energy; Physical Development and Urban Design; Public Safety; Health and Education; Culture and Recreation; and Government Operations and Fiscal Management (DPP, 2021). Goals and objectives brought forth in the O‘ahu General Plan are further implemented by the Development Plans and Sustainable Communities Plans, which is discussed further in the next section.

The sections on Natural Environment and Resource Stewardship, Transportation and Utilities, Energy Systems, Public Safety and Community Resilience, Culture and Recreation, and Government Operations and Fiscal Management are relevant to this EA and are presented and discussed below:

III. Natural Environment and Resource Stewardship	
Objective A: To protect and preserve the natural environment	*Policy 1:* Protect Oahu’s natural environment, especially the shoreline, valleys, ridges, watershed areas, and wetlands from incompatible development.
	Policy 4: Require development projects to give due consideration to natural features and hazards such as slope, inland and coastal erosion, flood hazards, water-recharge areas, and existing vegetation, as well as to plan for coastal hazards that threaten life and property.
	Policy 7: Protect the natural environment from damaging levels of air, water, carbon, and noise pollution.
	Policy 8: Protect plants, birds and other animals that are unique to the State of Hawai‘i and O‘ahu and protect their habitats.
Objective B: To preserve and enhance natural landmarks and scenic views of O‘ahu for the benefit of both residents and visitors as well as future generations.	*Policy 1:* Protect the Island's significant natural resources: its mountains and craters; forests and watershed areas; wetlands, rivers, and streams; shorelines, fishponds, and bays; and reefs and offshore islands.
	Policy 2: Protect O‘ahu's scenic views, especially those seen from highly developed and heavily traveled areas.
	Policy 3: Locate and design public facilities, infrastructure and utilities to minimize the obstruction of scenic views.

Discussion: The Proposed Action will adhere to BMPs to prevent or mitigate any potential impact on air and water quality during construction. Short-term impacts such as noise and air pollution may occur during construction activities, however, will end following the completion of the Proposed Action. As part of the EA process, a Flora and Fauna Survey was conducted to identify significant species and habitats within the Project Area and is further discussed in Chapter 3.6. The Proposed Action’s improvements to the ERF will not have significant impacts to the existing scenic views and the aesthetic components of the design will blend in with the existing facilities and surrounding environment at the Project Site.

V. Transportation and Utilities	
Objective C:	*Policy 1:* Maintain and upgrade existing utility systems in order to avoid major breakdowns and service interruptions.

To ensure reliable, cost-effective, and responsive service for all utilities with equitable access for residents.	*Policy 2:* Provide improvements to utilities in existing neighborhoods to reduce substandard conditions, and increase resilience to use fluctuations, natural hazards, extreme weather, and other climate impacts.
	Policy 3: Facilitate timely and orderly upgrades and expansions of utility systems.

Discussion: The Proposed Action aligns with policies of maintaining and upgrading utilities in a timely manner to avoid major disruptions and increase resilience to natural hazards, extreme weather, and other climate impacts. The Proposed Action will improve the HIWIN system and its operations, increasing its resilience to extreme weather or natural hazards and capacity for future communication equipment in a timely manner.

VIII. Public Safety and Community Resilience	
Objective A: To prevent and control crime and maintain public order.	*Policy 3:* Provide adequate training, staffing, and support for City public safety
Objective B: To protect residents and visitors and their property against natural disasters and other emergencies, traffic and fire hazards, and unsafe conditions.	*Policy 4:* Collaborate with State and federal agencies to provide emergency warnings, protection, mitigation, response, and recovery, during and after major emergencies such as tsunamis, hurricanes, and other high-hazard events.
	Policy 7: Provide adequate resources to effectively prepare for and respond to natural and manmade threats to public safety, property, and the environment.

Discussion: The Proposed Action will continue to support the City radio facilities at the ERF. Additionally, the services provided by the ERF are instrumental to the interisland communication that is necessary in times of major emergencies. The ERF is a necessary resource for both City and State agencies, and the Proposed Action will ensure the HIWIN system continues to provide communication services that are necessary for first response, law enforcement, and civil defense operations.

X. Culture and Recreation	
Objective B: To protect, preserve and enhance O‘ahu’s cultural, historic, architectural, and archaeological resources.	*Policy 1:* Maintain and adequately fund City government services at the level necessary to be effective.
	Policy 2: Promote alignment and consolidation of State and City functions whenever more efficient and effective delivery of government programs and services may be achieved.

Discussion: The Proposed Action aligns with maintaining City government services and promoting the alignment and consolidation of State and City functions. The Proposed Action will consolidate the State and City radio systems and equipment to provide more effective and reliable public safety communications services.

4.2.2. Primary Urban Center Development Plan

The *Primary Urban Center Development Plan* (PUCDP) was adopted by the City in June 2004. The PUCDP provides a conceptual, long-range vision and policies on land use and infrastructure development from the core of historic downtown Honolulu to Pearl City in the west and Wai‘alae-Kāhala in the east.

The Census-Designated Place (CDP) for the Primary Urban Center (PUC) is expected to accommodate a major portion of O‘ahu’s projected residential and job opportunities in the 20 years after its adoption. The vision of the PUCDP is “retaining the qualities that attract both residents and visitors while encouraging growth and redevelopment to accommodate the projected increases in jobs and residential population.” The goals of the vision are reinforced by focusing on protecting Honolulu’s natural, cultural, and scenic resources, creating livable and walkable streets, offering in-town housing for people of all ages and incomes, a transportation system with outstanding mobility, and Honolulu continuing to be the premier destination in the Pacific (DPP, 2004). The City and County of Honolulu Department of Planning and Permitting is in the process of updating the PUCDP through 2040. As of the writing of this EA, the PUCDP update is still pending review and final approval from the City Council. As such, the Proposed Action must address its consistency with the currently adopted 2004 version.

The adopted PUCDP provisions related to land use, infrastructure and public utilities are relevant to the Proposed Action and are presented and discussed below.

3.1 PROTECTING AND ENHANCING NATURAL, CULTURAL AND SCENIC RESOURCES

3.1.2 Policies

- *Preserve Historic and Cultural Sites.* Preserve and protect sites that have high preservation value because of their good condition or unique features. Protection includes planning and design of adjacent uses to avoid conflicts or abrupt contrasts that detract from or destroy the physical integrity and historic or cultural value of the site. Retain, whenever possible, significant vistas associated with historic, natural and man-made features. Allow adaptive reuse of historic buildings to serve a new function and/or enhance interpretive value without destroying the historic value of a site.
- *Preserve and Protect Natural Resource and Constraint Areas.* Establish an Urban Community Boundary to define the area for urban development. Place large contiguous areas of natural resource and constraint areas designated for Preservation, including all lands within the State Conservation District, outside of the Urban Community Boundary.
- *Preserve Panoramic Views of Natural Landmarks and the Urban Skyline.* Preserve views of the Koolau and Waianae Mountain Ranges, Punchbowl, Diamond Head, Pearl Harbor and other natural landmarks. Maintain important view corridors within and across urban Honolulu and keep Downtown as the most prominent feature of the urban skyline. Views along the Pearl Harbor shoreline and the Pearl Harbor Historic Trail toward the mountains, shoreline, significant landmarks, and adjacent communities should be created and maximized wherever possible and appropriate.

Discussion: As the Proposed Action is within an area specifically noted within the PUCDP, attention is given to ensure that the project does not disturb the scenic mauka views of Round Top. Consolidation of the two existing towers into the proposed new 180 foot tower will minimize the impact to mauka views. The Proposed Action is located directly behind a designated lookout spot for panoramic coastal views. The Proposed Action will avoid impacts on those panoramic views by the proposed improvements taking place mauka of the lookout, outside of these iconic view planes.

3.2 NEIGHBORHOOD PLANNING AND IMPROVEMENT

3.2.2 Policies

3.2.2.2 Mauka Residential Neighborhoods

- *Appropriate Building Design.* For institutional and other nonresidential uses allowed within lower-density residential areas, provide guidelines for the location and design of buildings, service areas, and pedestrian and vehicular access. In general, street-facing building elements should be attractive, designed for human scale, and have clear points of entry. Service and utility elements should be located out of sight from the street and away from residences.

Discussion: The Proposed Action combines service to both the City as well as the State. These utilities are distant from the nearest residents of the area and ensure the safety of the local community as well as promote the safety of the entire State by supporting the emergency broadcasting system during disasters.

4.4 TELECOMMUNICATIONS FACILITIES

4.4.2 Policies

- Minimize the visual impacts and potential health hazards of new facilities.

Discussion: The Proposed Action will minimize the number of towers by replacing two towers with a single tower. The replacement tower will be used by the City and the State. The Proposed Action is in conformance with this policy as it consolidates the existing towers and reduces the risk of damage to necessary equipment which may become hazardous if damaged by the environment.

4.8 CIVIC AND PUBLIC SAFETY FACILITIES

4.8.2 Policies

- Provide adequate staffing and facilities to ensure effective and efficient delivery of basic governmental service and protection of public safety.

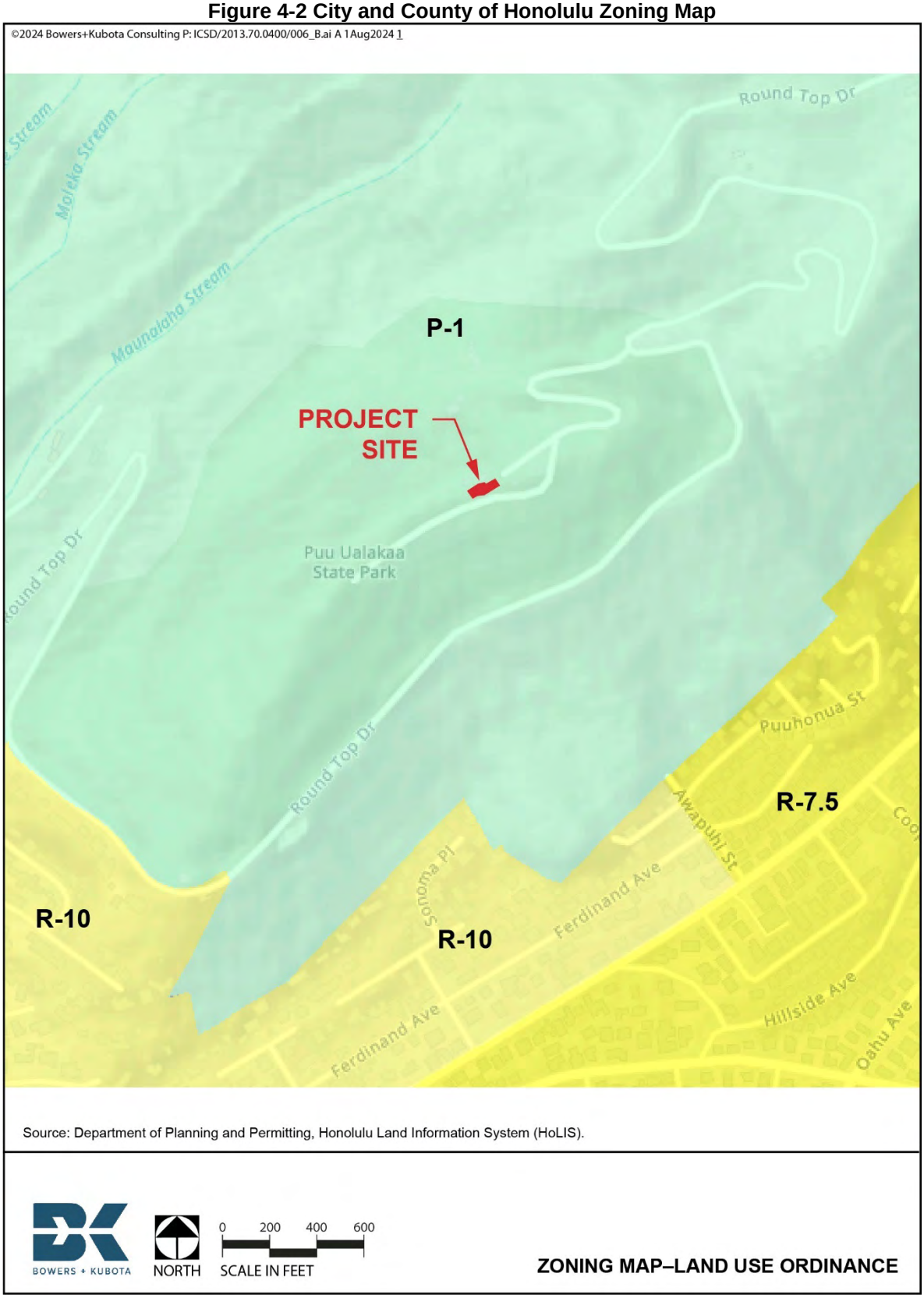
Discussion: The Proposed Action would improve the communication systems that serve Federal, State, and County agencies that provide public safety services.

4.2.3. Land Use Ordinance

Title 6, Chapter 21 of the ROH includes the City Land Use Ordinance (LUO), which describes the City zoning and its purpose of regulating land use to minimize adverse effects from the location and design of uses, conserve the city's natural, historic, and scenic resources, and assist the public in identifying and understanding regulations on development (CCH, 1990). As shown in Figure 4-2, the Project Site is located in a Restricted Preservation District (P-1). The City's Land Use Ordinance map designation of P-1, Restricted Preservation, reflects the City's zoning designation for State Conservation District lands. In a P-1 zone, major open space and recreational lands are preserved for their scenic and natural resources. Uses, structures, and development in a P-1 zone are governed by the appropriate state agencies, which in this case is the Board of Land and Natural Resources (BLNR).

Discussion: The Proposed Action will not change the current use of the ETS Round Top Radio Facility. The use was approved by the DLNR via a CDUP in 2010 and is consistent with land uses identified in the "Resource" subzone of the Conservation District according to Section 13 of the HAR pertaining to unencumbered public lands. While the use was approved in 2010, another CDUP for the Proposed Action will be pursued and all proposed improvement plans will be reviewed by BLNR prior to construction and demolition. Therefore, the Proposed Action will comply with the City LUO.

Figure 4-2 City and County of Honolulu Zoning Map



5. AGENCIES AND ORGANIZATIONS CONSULTED

In November 2024, agencies and stakeholders listed below were sent a consultation letter soliciting comments for the Draft EA. Table 5-1 provides a list of agencies and organizations that were contacted as part of the pre-assessment consultation and during the Draft EA consultation period; those who provided a comment have been marked with an "X". Table 5-2 provides a summary of Draft EA comments and responses. Appendix F contains the copies of the Draft EA comments, letters and emails received, and the response letters provided. Comments and responses received during the pre-assessment consultation period are available in the published Draft EA.

Table 5-1 Agencies and Organizations Consulted for Pre-Assessment and Draft EA

Agency or Organization Solicited	Pre-Assessment Consultation and Draft EA Notification Letter Recipient	Pre-Assessment Consultation Comments Received	Draft EA Comments Received
Federal Agencies			
Environmental Protection Agency, Region IX, Pacific Islands Office	X		
U.S. Army Corps of Engineers, Pacific Ocean Division	X		
U.S. Department of the Interior, U.S. Fish and Wildlife Service	X	X	X
Environmental Protection Agency, Region IX, Pacific Islands Office	X		
State Agencies			
Senator Brian Taniguchi, State Senate District 11	X		
Representative Della Au Belatti, State House District 24	X		
Department of Health	X		
DOH - Office of Environmental Quality Control,	X		
DLNR - Board of Land and Natural Resources	X		
DLNR - Division of Forestry and Wildlife	X	X	X
DLNR - Engineering Division	X	X	X

Agency or Organization Solicited	Pre-Assessment Consultation and Draft EA Notification Letter Recipient	Pre-Assessment Consultation Comments Received	Draft EA Comments Received
DLNR - Historic Preservation Division	X		
DLNR - Office of Conservation and Coastal Lands	X	X	
DLNR - State Parks	X		
DBEDT - Office of Planning	X		
DBEDT - Land Use Commission	X		
Department of Defense	X		
Department of Hawaiian Home Lands	X		
University of Hawai‘i Environmental Center	X		
Office of Hawaiian Affairs	X		
County			
Mayor Rick Blangiardi	X		
Councilmember Carol Fukunaga, Council District 6	X		
Department of Environmental Services	X		
Honolulu Police Department	X	X	X
Honolulu Fire Department	X		
Department of Planning and Permitting	X		X
Department of Emergency Management	X		
Department of Emergency Services	X		
Department of Facility Maintenance	X		
Department of Transportation Services	X		
Department of Design and Construction	X		X
Other Interested Parties			
Hawai‘i State Main Library & Document Center	X		
Makiki/Lower Punchbowl/Tantalus Neighborhood Board No. 10	X		
Hawaiian Electric Company	X	X	

Agency or Organization Solicited	Pre-Assessment Consultation and Draft EA Notification Letter Recipient	Pre-Assessment Consultation Comments Received	Draft EA Comments Received
Hawaiian Telecom	X		X
Spectrum	X		

Table 5-2 Draft EA Comments and Responses

Date of Comment Letter or Email	Agency	Comment	Response	Referenced Section
November 27, 2024	Honolulu Police Department	Based on the information provided, the Honolulu Police Department does not have any concerns at this time.	The ETS acknowledges that the Honolulu Police Department does not have any concerns at this time.	N/A
November 29, 2024	City and County of Honolulu, Department of Design and Construction	When designing and constructing this project, please keep the City and County of Honolulu's (City) Department of Information Technology (DIT) abreast of the project's progress. DIT is intimately involved with operation and maintenance of all City communication equipment and antennas at Round Top. For your information, all the DIT microwave tower projects we are working on are being designed and constructed to withstand Category IV hurricane winds.	The ETS confirms that the City and County of Honolulu, Department of Information Technology (DIT) will be kept informed of the project's progress.	N/A
December 2, 2024	Hawaiian Telcom	Hawaiian Telcom has Aerial facilities in the project area (wood pole near parking stall to wood pole behind bathrooms near existing 3 leg towers).	The ETS acknowledges that Hawaiian Telcom has existing aerial facilities in the project area. These facilities will not be impacted during construction or operation of the Proposed Action.	N/A
December 3, 2024	City and County of Honolulu, Department of Planning & Permitting	The Subject parcels are 120.09 acres in area, and located within the P-1 Restricted Preservation District and State Land Use Conservation District (SLUCD). Please note that the State Office of Conservation and Coastal Lands (OCCL) is responsible for the land use regulations on properties within the SLUCD. As the subject parcels are outside of our jurisdiction, we have no comment. The Applicant should contact the OCCL for their review and comment on the proposed Project.	The ETS acknowledges that the DPP does not have any comments at this time as the Proposed Action is located within the State Land Use Conservation District, which is outside of DPP's jurisdiction. The OCCL has been consulted during the EA process, and a Conservation District Use Application (CDUA) will be applied for for the Proposed Action.	Section 4.2.3
December 4, 2024	State of Hawaii, Department of Land and Natural Resources, Engineering Division	We have no additional comments	The ETS acknowledges that the DLNR Engineering Division does not have any comments at this time.	N/A
December 12, 2024	U.S. Fish and Wildlife Service	To avoid and minimize potential project impacts to Hawaiian seabirds, the following additional conservation measures should be included into your project design.	The ETS acknowledges the U.S. Fish and Wildlife Service's (USFWS) comments and offers the following responses:	Section 3.6.2

Date of Comment Letter or Email	Agency	Comment	Response	Referenced Section
		Hawaiian Seabirds • All outdoor lights will be fully shielded so the bulb can only be seen from below. • Automatic motion sensor switches and controls will be installed on all outdoor lights or lights will be turned off when human activity is not occurring in the lighted area. Listed seabirds have been documented colliding with communication towers, particularly in areas of high seabird passage rate. In general, self-supporting monopoles are the least likely to result in collisions, whereas lattice towers, particularly those that rely on guy-wires, have a greater risk. To avoid and minimize the likelihood that towers will result in collisions by listed seabirds we recommend you incorporate the following measures into your project design: • The profile of the tower should be as small as possible, minimize the extent of the tower that protrudes above the surrounding vegetation layer, and avoid the use of guywires. • If the top of the tower must be lit to comply with Federal Aviation Administration regulations, use a flashing red light verses a steady-beam red or white light. • If possible, co-locate with existing towers or facilities. Seabirds have been known to collide with fences, powerlines, and other structures near nesting colonies. To avoid and minimize the likelihood of collision we recommend you incorporate the following measures into your project design: • Where fences extend above vegetation, integrate three strands of polytape into the fence to increase visibility. • For powerlines, guy-wires and other cables, minimize exposure above vegetation height and	**Hawaiian Seabirds** - The installation of outdoor lighting is not included in the Proposed Action. In addition, nighttime construction is not currently anticipated for the Proposed Action. - The face of the tower will be 23-feet wide at its base and will gradually decrease to a width of 5-feet at the top of the tower. The tower will protrude above the surrounding vegetation layer - a conceptual rendering of the tower's proposed height above the surrounding vegetation is shown in Figure 3-9. The height of the tower is essential to the purpose of the Proposed Action as the new tower will support the current equipment and operations, while also providing space for additional infrastructure and equipment for the HIWIN and Anuenue Microwave Communication Systems. The HIWIN and Anuenue Microwave Communication Systems are essential for the operation of first responder communications across the State. - The top of the tower will not be lit. - As noted in Section 1.4 of the Final EA, the two existing 100-foot towers are fully utilized and do not have any space for expansion or additional equipment. The Proposed Action will consolidate the antenna equipment from both of the existing 100-foot towers onto the proposed 180-foot tower, allowing for the State and City's equipment to be co-located on one radio tower. - The ETS proposes to use a 12 to 14-feet high chain link fence in lieu of the 6-feet high fence with one foot of barbed wire that was originally proposed in the Draft EA. The fence will not extend above the surrounding tree line. - Exposure of powerlines, guy-wires, and other cables above vegetation height will be minimized.	

Date of Comment Letter or Email	Agency	Comment	Response	Referenced Section
		vertical profile. 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. In the Draft EA it is mentioned that the current facility has an existing barbed wire fence, as the site has a history of trespassers and has had issues with trespassers climbing the radio towers. May I ask the height of the current barbed wire fencing? The proposed barbed wire fence on top of the retaining wall will be within the foraging path of the bats as it is mentioned to be less than 15 feet but the barbed wire fence section will be 6 feet. We have concerns that the proposed fencing will impact the Hawaiian hoary bat.	**Hawaiian Hoary Bat** There is existing fencing with barbed wire surrounding the Round Top Radio Facility buildings and radio towers. The heights of the existing chain link fencing range from 6-feet to 8-feet high and have one foot of barbed wire on top. The chain link fencing with barbed wire sits on top of a retaining wall at various areas surrounding the facility buildings and radio towers. Since the existing fencing has been installed, there have been no issues or reports of the fence and barbed wire negatively impacting Hawaiian hoary bats or Hawaiian seabirds traversing the Round Top Radio Facility site. The ETS received a comment letter from the DOFAW that also expressed concern over the use of barbed wire on the proposed 6-feet high chain link fence that was originally included in the Proposed Action of the Draft EA. The DOFAW noted that the use of barbed wire would pose a threat to the Hawaiian hoary bat. To mitigate this potential threat, the ETS is now proposing to increase the height of the chain link fence to be 12 to 14-feet in height in lieu of using barbed wire on the fence. This will ensure that the fence still acts as a deterrent to trespassers trying to access the tower, while not increasing the potential to adversely impact the Hawaiian hoary bat.	
January 7, 2025	State Department of Land and Natural Resources, Division of Forestry and Wildlife	DOFAW concurs with the provided DEA that several State listed species may occur within the project area. These include: 1) ʻōpeʻapeʻa, or Hawaiian Hoary Bat (Lasiurus	*Hawaiian Hoary Bat* 1. ETS acknowledges that DOFAW concurs with the vegetation management measures proposed for the Hawaiian hoary bat.	

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		semotus), and 2) several species of seabirds. We concur with the vegetation management measures proposed (in your letter dated November 7th, 2024) for the ʻōpeʻapeʻa, or Hawaiian Hoary Bat (Lasiurus semotus). We understand past historical issues with trespassing at this site; however, we encourage the removal of all barbed wire and discourage its use in the future. If the use of barbed wire is unavoidable, the applicant will need to enter into consultation with DOFAW to acquire an Incidental Take License (ITL) given the likelihood that take of ʻōpeʻapeʻa will occur. As a point of clarification regarding the following statement in the second paragraph of the November 7th letter, "Since the site has an existing barbed wire fence, and the proposed fence would be less than 15 feet high, it is anticipated that the proposed barbed wire fence would not increase the potential to adversely impact the Hawaiian hoary bat at the project site," the height of 15 feet is in reference to roosting trees. The bats can occupy areas below this height at any time of year, especially during foraging when they are vulnerable to entanglement in barbed wire. Though barbed wire may already exist at the site, its presence will always present a threat to these bats. While nighttime construction is not anticipated at this point during the project, we have included recommendations for seabirds in case this work does occur. We concur with the Best Management Practices outlined to minimize the spread of invasive species. Additional guidance to reduce the spread of invasive species and minimize the threat of fires have been included in this letter as well. Artificial lighting can adversely impact seabirds that may pass through the area at night by causing them to become disoriented. This disorientation	2. The ETS originally proposed to add barbed wire on top of the 6-feet high chain link fence that would surround the new 180-foot tower. However, due to the potential threat it may pose to the Hawaiian hoary bat, ETS has decided to remove the proposed use of barbed wire and will instead increase the height of the proposed fence to be between 12 to 14 feet high. This will ensure that the fence still acts as a deterrent to trespassers trying to access the tower, while not increasing the potential to adversely impact the Hawaiian hoary bat. *Seabirds* 1. Although nighttime construction is not anticipated at this time, the DOFAW's recommendations to use fully shielded lights and to avoid nighttime work during the seabird fledging season from September 15 through December 15 has been included in the Final Environmental Assessment (FEA). 2. The Proposed Action does not include the installation of permanent lighting at the project site. *Invasive Species and the Coconut Rhinoceros Beetle* 1. The FEA includes BMPs that will be adhered to during construction to minimize the unintentional spread of invasive species that may be present on the site. 2. The FEA includes DOFAW's recommendation to inspect the trees proposed for removal and the tree trimmings for the presence of the coconut rhinoceros beetle before being transported off-site. It should be noted that the trees proposed to be removed and or trimmed at the project site do not consist of any of the live palm plant species that are	Sections 3.6.1 and 3.6.2

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		can result in their collision with manmade structures or the grounding of birds. For nighttime work that might be required, DOFAW recommends that all lights used be fully shielded to minimize the attraction of seabirds. Nighttime work that requires outdoor lighting should be avoided during the seabird fledging season, from September 15 through December 15, when young seabirds make their maiden voyage to sea. If nighttime construction is required during the seabird fledgling season (September 15 to December 15), we recommend that a qualified biologist be present at the project site to monitor and assess the risk of seabirds being attracted or grounded due to the lighting. If seabirds are seen circling around the area, lights should then be turned off. If a downed seabird is detected, please follow DOFAW's recommended response protocol by visiting https://dlnr.hawaii.gov/wildlife/seabird-fallout-season/ Permanent lighting also poses a risk of seabird attraction, and as such should be minimized or eliminated to protect seabird flyways and preserve the night sky. For illustrations and guidance related to seabird-friendly light styles that also protect seabirds and the dark starry skies of Hawai'i please visit https://dlnr.hawaii.gov/wildlife/files/2016/03/DOC439.pdf. DOFAW recommends minimizing the movement of plant or soil material between worksites. Soil and plant material may contain detrimental fungal pathogens (e.g., Rapid 'Ōhi'a Death), vertebrate and invertebrate pests (e.g., Little Fire Ants, Coconut Rhinoceros Beetles, etc.), or invasive plant parts (e.g., Miconia, Pampas Grass, etc.)	considered host plants for the coconut rhinoceros beetle. In addition, none of the trees proposed for removal are proposed for inter-island transport. *Risk of Wildfire Ignition* 1. The FEA includes DOFAW's recommendations to minimize the potential of wildfire ignition when engaging in activities that have a high risk of starting a wildfire.	

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		that could harm our native species and ecosystems. We recommend consulting the O'ahu Invasive Species Committee (OISC) at (808) 266-7994 to help plan, design, and construct the project, learn of any high-risk invasive species in the area, and ways to mitigate their spread. All equipment, materials, and personnel should be cleaned of excess soil and debris to minimize the risk of spreading invasive species. The invasive coconut rhinoceros beetle (Oryctes rhinoceros) or CRB is widespread on the island of O'ahu. CRB have been detected on other islands with moderate infestation on Kaua'i, one incipint site on Hawai'i Island, and only one positive site on Maui in 2023. Hawaii Department of Agriculture interim rule 24-1 restricts the movement of CRB-host material from the island of O'ahu, which is defined as the Quarantine Area. Regulated material (host material or host plants) is considered a risk for potential CRB infestation. Host material for the beetle specifically includes: 1) entire dead trees, 2) mulch, compost, trimmings, fruit and vegetative scraps, and 3) decaying stumps. CRB host plants include the live palm plants in the following genera: Washingtonia, Livistona, Pritchardia (all commonly known as fan palms), Cocos (coconut palms), Phoenix (date palms), and Roystonea (royal palms). When such material or these specific plants are moved there is a risk of spreading CRB because they may contain CRB in any life stage. Inspection and/or treatment approved by HDOA is mandatory before inter-island transport. For more information regarding CRB, please visit https://dlnr.hawaii.gov/hisc/info/invasive-species-profiles/coconut-rhinoceros-beetle/. Since this worksite does occur at the urban-wildland interface, and there are fine fuels—		

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		like grasses, present there is a risk of wildfire ignition. We reccomend coordinating with the Hawai'i Wildfire Management Organization at (808)-850-0900 or admin@hawaiiwildfire.org, on how wildfire prevention can be addressed in the project area. When engaging in activities that have a high risk of starting a wildfire (i.e. welding in grass), it is recommended that you: 1) wet down the area before starting your task, 2) continuously wet down the area as needed, 3) have a fire extinguisher on hand, and 4) in the event that your vision is impaired, (i.e. welding goggles) have a spotter to watch for fire ignitions.		

6. FINDINGS AND DETERMINATION

6.1 DETERMINATION

This Final EA demonstrates that the Proposed Action will have no significant adverse impact on the environment and that an Environmental Impact Statement is not warranted. A Finding of No Significant Impact (FONSI) has been determined for this Proposed Action.

6.2 SIGNIFICANCE CRITERIA FINDINGS

The following findings and reasons indicate that the proposed action will have no significant adverse impact on the environment based on the 13 significance criteria provided in the HAR §11-200.1-13, and as a result supports the FONSI determination.

1. *Irrevocably commit a natural, cultural, or historic resource.*

Discussion: The Flora and Fauna Survey, LRFI, and CIA conducted for this Proposed Action indicate that with the implementation of identified mitigation measures, there will be no significant adverse impacts on natural or cultural resources. The Flora and Fauna Survey found no rare, threatened, or endangered flora or fauna resources in the Project Site. To mitigate any possible effects to the Hawaiian hoary bat, a tree survey should be conducted before any tree trimming or removal, and no trees taller than 15 feet will be trimmed or removed between June and September.

The LRFI found no historic properties within the Project Site. While the ʻUalakaʻa Trail connects to the Project Site, the Proposed Action would not impact the trail. The results of the CIA found that there were no cultural resources or practices within the immediate Project Site, however, cultural resources and practices may be found to occur within the vicinity of the site. Access to the ʻUalakaʻa State Park, nearby trails, or the lookout will not change during or following construction. The Proposed Action is not anticipated to impact any of the gathering practices or cultural practices that may be ongoing in the surrounding forest.

2. *Curtails the range of beneficial uses of the environment.*

Discussion: The Proposed Action involves upgrades to existing communication facilities. The Project Site is contained within its existing boundaries for the City and State towers respectively. Following the completion of the Proposed Action, no uses of the surrounding area will be impacted.

3. *Conflicts with the State's environmental policies or long-term environmental goals established by law.*

Discussion: As demonstrated in Section 4.1.2, the Proposed Action is consistent with the State of Hawaiʻi's long-term environmental policies and guidelines as expressed in HRS §344.

4. *Have a substantial adverse effect on the economic welfare, social welfare, or cultural practices of the community and State.*

Discussion: The Proposed Action is expected to improve the reliability and functionality of the State's public safety communication system, which will assist the Federal, State, and County agencies in their delivery of first response, law enforcement, and civil defense services to the community. Moreover, the construction activity associated with the proposed action will create jobs and infuse business and personal income into the local economy. No negative effects on the social welfare of the local community are anticipated.

5. Have a substantial adverse effect on public health.

Discussion: The Proposed Action will not utilize hazardous materials or construction methods that would affect public health. The noise, air, and water quality regulations established by the DOH will be followed. The Proposed Action will be implemented in accordance with State and City standards.

6. Involve adverse secondary impacts, such as population changes or effects on public facilities.

Discussion: The Proposed Action will not change the existing use of the surrounding area or cause an increased demand for public facilities or population change.

7. Involve a substantial degradation of environmental quality.

Discussion: The Proposed Action was designed to minimize the footprint of construction activities. BMPs will be employed during construction to control erosion and runoff. Therefore, no substantial degradation of environmental quality is expected.

8. Be individually limited but cumulatively have substantial adverse effect upon the environment or involves a commitment for larger actions.

Discussion: The Proposed Action involves improvements to existing communication facilities and is needed to meet current State standards, public user demands, and technological changes. The Proposed Action will be designed to provide for the future expansion of communication equipment within the existing buildings.

9. Have a substantial adverse effect on a rare, threatened, or endangered species, or its habitat

Discussion: The Flora and Fauna Survey found no rare, threatened, or endangered flora or fauna resources in the Project Site. To mitigate any possible effects to the Hawaiian hoary bat, a tree survey should be conducted before any tree trimming or removal, and no trees taller than 15 feet will be trimmed or removed between June and September.

10. Have a substantial adverse effect on air or water quality or ambient noise levels

Discussion: During construction, any potential dust and runoff will be mitigated by implementing BMPs. Construction noise will be mitigated by scheduling start and curfew times per DOH requirements and limited to within Pu‘u ‘Ualaka‘a Park hours. The nearest residences are located approximately 0.5 miles from the Project Site. Once construction is completed, no detrimental effects are expected from the Proposed Action.

11. Have a substantial adverse effect on or be likely to suffer damage by being located in an environmentally sensitive area such as a flood plain, tsunami zone, sea level rise exposure area, beach, erosion-prone area, geologically hazardous land, estuary, freshwater, or coastal waters.

Discussion: The Proposed Action is situated outside of the flood plain and is a far distance from the shoreline and tsunami evacuation zone. There are no streams or other water bodies that will be impacted in or near the Project Site.

12. Have a substantial adverse effect on scenic effect on scenic vistas and view planes, during day or night, identified in county or state plans or studies.

Discussion: The Proposed Action includes the replacement of the two 100-foot-tall radio antennas with one 180-foot radio antenna. The Project Site is not within the scenic view plane from the Tantalus Lookout located approximately 800 feet makai. The Proposed Action will not have a significant effect on scenic vistas or view planes identified in City or State plans.

13. Require substantial energy consumption or emit substantial greenhouse gases.

Discussion: The Proposed Action is not anticipated to have any substantial energy consumption or emit substantial greenhouse gases.

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Appendix A: Flora and Fauna Survey Report

ICSD Radio Antenna Flora and Fauna Survey Report

JULY 2021

PREPARED FOR

BCH, a Bowers and Kubota Company

PREPARED BY

SWCA Environmental Consultants

ICSD RADIO ANTENNA FLORA AND FAUNA SURVEY REPORT

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July 2021

EXECUTIVE SUMMARY

BCH, a Bowers and Kubota Company (BCH), invited SWCA Environmental Consultants (SWCA) to conduct a flora and fauna survey for the proposed tower consolidation project located at Pu‘u ‘Ualaka‘a Park at the top of Round Top Drive on the island of O‘ahu (TMK (1) 2-5-019:011 and TMK (1) 2-5-019:003). The proposed project would remove the existing tower antennas and replace them with a new single tower (180 foot) antenna to support both the City and County of Honolulu and State of Hawaii communications equipment.

The naturally occurring vegetation types and plant species identified during the survey are not considered unique. There were no native Hawaiian plant species observed in the survey area.

No federally listed endangered birds were observed in and around the survey area. The Hawaiian hoary bat (*Lasiurus cinereus semotus*), a federally and state-listed endangered mammal species that is still extant within the Hawaiian Islands (U.S. Fish and Wildlife Service 1998), was not observed, although suitable habitat for this species exists near the survey area. The hoary bat was never historically observed on or near the survey area and therefore it is not likely to occur. Other federally or state-listed terrestrial fauna species with potential to occur on the island of Oahu are not likely to occur in the survey area because it is either outside the range of the species or because appropriate habitat is not found in the survey area.

None of the flora and fauna in the survey area are federally or state-listed threatened, endangered, proposed listed, or candidate species. Because no threatened or endangered species were recorded in the area, the proposed project is not expected to have a significant, adverse effect on biological terrestrial resources.

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INTRODUCTION

The proposed project would consolidate the State of Hawaii and City & County of Honolulu Emergency Radio Facility Tower Antennas in one new, larger (180-foot) tower. The State of Hawaii antenna equipment would be transferred to the new tower, and both the City and State antennas would share the new tower. After the equipment is consolidated, the State tower and the small equipment building beneath it will be removed, leaving only the concrete pad and connecting conduits for the State antennas to the State equipment buildings.

This report summarizes the findings of the flora and fauna survey conducted for the project by SWCA Biologist Alex Lau on June 16, 2021. The flora and fauna survey area encompassed a 0.22-acre parcel in the Puʻu Ualakaʻa State Wayside Park.

DESCRIPTION OF THE SURVEY AREA

The survey area is on the island of Oʻahu, in the Kona District, in the Waikīkī ahupuaʻa, in the Puʻu Ualakaʻa State Wayside Park. The flora and fauna survey focused on the 0.22 acre within the site property boundary (Figure 1). The area consists of a fenced-in facility, with much of the land surface covered in concrete but surrounded by landscaped areas and secondary forest in a mesic, lowland setting. Mean annual rainfall for the survey area is approximately 96 inches (2,436 millimeters [mm]). Rainfall is somewhat consistent throughout the year but is typically highest in November to December and lowest in May (Giambelluca et al. 2013).

Figure 1. Location of the survey area.

METHODS

SWCA reviewed available scientific and technical literature regarding natural resources in and near the survey area. This literature review encompassed a thorough search of referenced scientific journals, technical journals and reports, environmental assessments, environmental impact statements, relevant government documents, U.S. Fish and Wildlife Service (USFWS) online data, and unpublished data that provide insight into the area's natural history and ecology. SWCA also reviewed available geospatial data, aerial photographs, and topographic maps of the survey area.

Flora

SWCA conducted a pedestrian flora (botanical) survey to document all vascular plant species and vegetation types present in the survey area. Areas more likely to support native plants (e.g., rocky outcrops and shady areas) were more intensively examined.

Plants recorded during the survey are indicative of the season (rainy versus dry) and the environmental conditions at the time of the survey. It is likely that additional surveys conducted at a different time of the year would result in minor variations in the species and abundances of plants observed.

Fauna

SWCA conducted fauna surveys of the survey area by means of meandering pedestrian (foot) ground surveys. Ground surveys were conducted on June 16, 2021, and consisted of visual observations (aided by 10 × 42–mm binoculars) and auditory vocalization identifications. All birds, mammals, reptiles, amphibians, fish, and invertebrate species seen or heard, and any sign (scat or tracks), were noted. Field surveys for the endangered Hawaiian hoary bat, or ʻopeʻapeʻa (*Lasiurus cinereus semotus*), were conducted by noting areas of suitable foraging and roosting habitat as indicators of potential presence; acoustic surveys were not conducted.

RESULTS

Flora

No federally and state-listed threatened, endangered, or candidate plant species or rare native Hawaiian plant species were observed in the survey area. In all, 61 plant species were recorded in the survey area, none of which are native to the Hawaiian Islands. Appendix A provides a list of all plant species observed by the SWCA botanist during the June 16, 2021, survey.

The vegetation in the survey area consists of three vegetation types: ruderal, mixed non-native forest, and landscaped vegetation.

Vegetation Types

Ruderal

Ruderal vegetation occurs in infrequently maintained or graveled areas and was noted during the survey primarily within the fence line of the property. Weedy, herbaceous species such as Guinea grass

(*Urochloa maxima*) and sourgrass (*Digitaria insularis*) are most common in this vegetation type. Species that are occasional or rare in this type include koa haole (*Leucaena leucocephala*) and prostrate spurge (*Euphorbia prostrata*) (Figure 2).

Figure 2. Ruderal vegetation observed in the survey area.

Mixed Non-Native Forest

Mixed non-native forest occurs just outside the fence line of the property on the northern and western sides and is characterized by a diverse mix of non-native trees. The canopy is made up of a mix of species including ironwood (*Casuarina equisetifolia*), Formosa koa (*Acacia confusa*), macadamia (*Macadamia integrifolia*), and silk oak (*Grevillea robusta*). The understory is also diverse, containing fiddlewood (*Citharexylum caudatum*), koa haole, octopus tree (*Schefflera actinophylla*), and Guinea grass (Figure 3).

Figure 3. Mixed non-native forest observed in the survey area.

Landscaped

Landscaped vegetation occurs just outside the fence line on the southern side of the property, where frequent mowing maintains a mix of weedy herbaceous species including turfgrasses and other species. Commonly seen species in the vegetation type include carpet-grass (*Axonopus compressus)*, creeping

indigo (*Indigofera spicata*), Bermuda grass (*Cynodon dactylon*), and seashore paspalum (*Paspalum vaginatum*) (Figure 4).

Figure 4. Landscaped vegetation observed in the survey area.

Fauna

Avifauna

Most of the bird species observed in the survey area are species commonly found in disturbed, low- to mid-elevation areas on O‘ahu. In all, eight bird species were documented, all of which are not native to the Hawaiian Islands (Table 1). One of the species is listed by the Migratory Bird Treaty Act (MBTA) (USFWS 2017) and is a non native introduction.

Table 1. Birds Observed by SWCA in and near the Survey Area

Common Name	Scientific Name	Status*	MBTA**
Feral chicken	*Gallus gallus*	NN	–
House finch	*Haemorhous mexicanus*	NN	X
House sparrow	*Passer domesticus*	NN	–
Japanese white-eye	*Zosterops japonicus*	NN	–
Red-billed leiothrix	*Leiothrix lutea*	NN	–

Common Name	Scientific Name	Status*	MBTA**
Red-crested cardinal	*Paroaria coronata*	NN	–
Red-vented bulbul	*Pycnonotus cafer*	NN	–
Zebra dove	*Geopelia striata*	NN	–
Total		**8**	**1**

Notes:

* M = migrant; NN = non-native permanent resident.

** Species noted with an X are listed by the Migratory Bird Treaty Act.

Mammals

The endangered Hawaiian hoary bat is the only native terrestrial mammal species that is still extant within the Hawaiian Islands (USFWS 1998). Although the Hawaiian hoary bat was not observed during the survey, Hawaiian hoary bats are known to occur on O‘ahu in native, non-native, agricultural, and developed landscapes (U.S. Department of Agriculture 2009; USFWS 1998). Hawaiian hoary bats forage in open, wooded, and linear habitats with a wide range of vegetation types. Therefore, the habitat and vegetation types in the survey area are considered suitable habitat, and thus Hawaiian hoary bats have potential to occur in the survey area.

No other mammals were observed during the pedestrian survey. Although the small Indian mongoose (*Herpestes javanicus*), house mouse (*Mus musculus*), rats (*Rattus* spp.), and feral pig (*Sus scrofa*) were not detected, they are likely to occur in the survey area because of its proximity to the recreation area and disturbed lowland non-native forest.

Terrestrial Reptiles and Amphibians

No reptiles or amphibians were detected. No terrestrial reptiles and amphibians are native to Hawai‘i.

Insects and Other Invertebrates

No native insects or other invertebrates were observed during the survey. One non-native invertebrate, honeybee (*Apis mellifera*), was observed during the survey.

AVOIDANCE AND MINIMIZATION MEASURES

The following avoidance and minimization measures to reduce or eliminate project-related impacts and to avoid adverse effects to listed species will be implemented as part of the project.

Flora

Overall, the vegetation in the survey area is disturbed from previous and current land use activities. The vegetation types and species identified are not considered unique. None of the species present during the survey are native to the Hawaiian Islands. No threatened or endangered plants were found during the survey, and no designated plant critical habitat occurs in the area. Therefore, the proposed project is not expected to have a significant, adverse effect on flora (botanical) resources.

Fauna

One federally and state endangered species, the Hawaiian hoary bat, may occur in the survey area based on the available suitable habitat. Other threatened and endangered species were considered initially but dismissed from further analysis because of a lack of suitable habitat in the survey area or because the survey area is out of their habitat range.

Hawaiian Hoary Bat

- Barbed wire fencing will not be used.
- No trees taller than 15 feet (4.6 m) will be trimmed or removed as a result of this project between June 1 and September 15, when juvenile bats not yet capable of flying may be roosting in the trees.

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APPENDIX A

Survey Plant List

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Table A-1 provides an inventory checklist of native plant species observed by SWCA on June 16, 2021, in the survey area for the ICSD Radio Antenna flora and fauna survey. The plant names are arranged alphabetically by family and then by species in four groups: dicots, monocots, gymnosperms, and pteridophytes. The taxonomy and nomenclature are in accordance with Wagner et al. (1999), Wagner and Herbst (2003), and Staples and Herbst (2005). Recent name changes are those recorded in Wagner et al. (2012).

Table A-1. Checklist of Native Plants Observed in the ICSD Radio Antenna Survey Area on June 16, 2021

Family	Scientific Name and Authorship	Hawaiian and/or Common Name	Status
DICOTS			
Acanthaceae	*Asystasia gangetica* (L.) T.Anderson	Chinese violet, coromandel	X
Amaranthaceae	*Amaranthus viridis* L.	slender amaranth, pakai, ʻāheahea, pākaikai, pakapakai (Niʻihau)	X
Anacardiaceae	*Schinus terebinthifolius* Raddi	Christmas berry, wilelaiki, nani o Hilo (Molokaʻi)	X
Araliaceae	*Schefflera actinophylla* (Endl.) Harms	octopus tree, umbrella tree	X
Asteraceae	*Ageratum conyzoides* L.	maile hohono, maile honohono, maile kula	X
Asteraceae	*Calyptocarpus vialis* Less.		X
Asteraceae	*Erigeron bellioides* DC.	fleabane	X
Asteraceae	*Lactuca sativa* L.	prickly lettuce	X
Asteraceae	*Montanoa hibiscifolia* (Benth.) Standl.	tree daisy	X
Asteraceae	*Youngia japonica* (L.) DC.	Oriental hawksbeard	X
Basellaceae	*Basella alba* L.		X
Casuarinaceae	*Casuarina equisetifolia* L.	common ironwood, paina	X
Convolvulaceae	*Ipomoea obscura* (L.) Ker Gawl.	morning glory	X
Euphorbiaceae	*Aleurites moluccana* (L.) Willd.	kukui, kuikui, candlenut	P
Euphorbiaceae	*Euphorbia hirta* L.	hairy spurge, garden spurge, koko kahiki	X
Euphorbiaceae	*Euphorbia hyssopifolia* L.	spurge	X
Euphorbiaceae	*Euphorbia prostrata* Aiton	prostrate spurge	X
Euphorbiaceae	*Phyllanthus tenellus* Roxb.		X
Fabaceae	*Acacia confusa* Merr.	Formosa koa	X
Fabaceae	*Chamaecrista nictitans* subsp. *patellaria* var. *glabrata* (Vogel) H.S.Irwin & Barneby	partridge pea, laukï	X
Fabaceae	*Desmodium incanum* DC.	Spanish clover, kaʻimi	X
Fabaceae	*Desmodium tortuosum* (Sw.) DC.	Florida beggarweed	X
Fabaceae	*Indigofera spicata* Forssk.	creeping indigo	X
Fabaceae	*Indigofera suffruticosa* Mill.	indigo, ʻinikō, ʻinikoa, kolū	X
Fabaceae	*Leucaena leucocephala* (Lam.) de Wit	koa haole, ēkoa, lilikoa	X
Fabaceae	*Medicago polymorpha* L.	bur clover	X
Fabaceae	*Mimosa pudica* var. *unijuga* (Duchass. & Walp.) Griseb.	sensitive plant, sleeping grass, pua hilahila	X

Family	Scientific Name and Authorship	Hawaiian and/or Common Name	Status
Malvaceae	*Malvastrum coromandelianum* subsp. *coromandelianum*	false mallow	X
Malvaceae	*Sida rhombifolia* L.		X
Moraceae	*Ficus microcarpa* L.f.	Chinese banyan, Malayan banyan	X
Ochnaceae	*Ochna thomasiana* Engl. & Gilg		X
Oleaceae	*Olea europaea* subsp. *cuspidata* (Wall. ex G.Don) Cif.	olive, ʻoliwa, ʻoliwa haole	X
Oxalidaceae	*Oxalis corniculata* L.	yellow wood sorrel, ʻihi ʻai, ʻihi ʻawa, ʻihi maka ʻula, ʻihi mākole	P?
Oxalidaceae	*Oxalis debilis* var. *corymbosa* (DC.) Lourteig	pink wood sorrel, ʻihi pehu	X
Phytolaccaceae	*Rivina humilis* L.	coral berry, rouge plant	X
Plantaginaceae	*Plantago lanceolata* L.	narrow-leaved plantain, English plantain, buckhorn	X
Plantaginaceae	*Plantago major* L.	broad-leaved plantain, common plantain, laukahi, kūhēkili	X
Proteaceae	*Grevillea robusta* A.Cunn. ex R.Br.	silk oak, silver oak, he oak, ʻoka kilika, haʻikū keʻokeʻo	X
Proteaceae	*Macadamia integrifolia* Maiden & Betche		X
Rutaceae	*Murraya paniculata* (L.) Jack		X
Ulmaceae	*Trema orientalis* (L.) Blume	gunpowder tree, charcoal tree	X
Urticaceae	*Pilea microphylla* (L.) Liebm.	artillery plant, rockweed	X
Verbenaceae	*Citharexylum caudatum* L.	fiddlewood	X
MONOCOTS			
Arecaceae	*Dypsis lutescens* (H.Wendl.) Beentje & J.Dransf.	areca palm	X*
Cyperaceae	*Cyperus gracilis* R.Br.	McCoy grass, mauʻu hunehune	X
Cyperaceae	*Cyperus rotundus* L.	nut grass, kiliʻoʻopu, mauʻu mokae	X
Liliaceae	*Asparagus densiflorus* (Kunth) Jessop		X
Poaceae	*Axonopus compressus* (Sw.) P.Beauv.		X
Poaceae	*Cenchrus echinatus* L.	common sandbur, ʻumeʻalu, mauʻu kukū	X
Poaceae	*Cynodon dactylon* (L.) Pers.	Bermuda grass, mānienie, mānienie haole	X
Poaceae	*Dactyloctenium aegyptium* (L.) Willd.	beach wiregrass	X
Poaceae	*Digitaria insularis* (L.) Mez ex Ekman	sourgrass	X
Poaceae	*Eleusine indica* (L.) Gaertn.	wiregrass, mānienie aliʻi	X
Poaceae	*Eragrostis amabilis* (L.) Wight & Arn.	lovegrass	X
Poaceae	*Oplismenus hirtellus* subsp. *hirtellus*	basketgrass, honohono kukui, honohono, honohono maoli	X
Poaceae	*Paspalum vaginatum* Sw.	seashore paspalum	X
Poaceae	*Stenotaphrum secundatum* (Walter) Kuntze	St. Augustine grass, buffalo grass, ʻakiʻaki haole, mānienie ʻakiʻaki, mānienie ʻakiʻaki haole, mānienie māhikihiki	X
Poaceae	*Urochloa maxima* (Jacq.) R.D.Webster	Guinea grass	X

Family	Scientific Name and Authorship	Hawaiian and/or Common Name	Status
GYMNOSPERMS			
Araucariaceae	*Araucaria columnaris* (G.Forst.) Hook.		X
MONOCOTS			
Polypodiaceae	*Phymatosorus grossus* (Langsd. & Fisch.) Brownlie	laua'e, maile-scented fern	X
Pteridaceae	*Adiantum hispidulum* Sw.	rough maidenhair fern	X

Notes: P = Polynesian introduced; P? = probably Polynesian introduced but possibly introduced in historic times; I = indigenous; I? = probably indigenous but possibly naturalized; E= endemic; E? = probably endemic but possibly naturalized (Wagner et al. 1999:126–127); X = non-native; X* = non-native cultivated.

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Appendix B: Tree Assessment

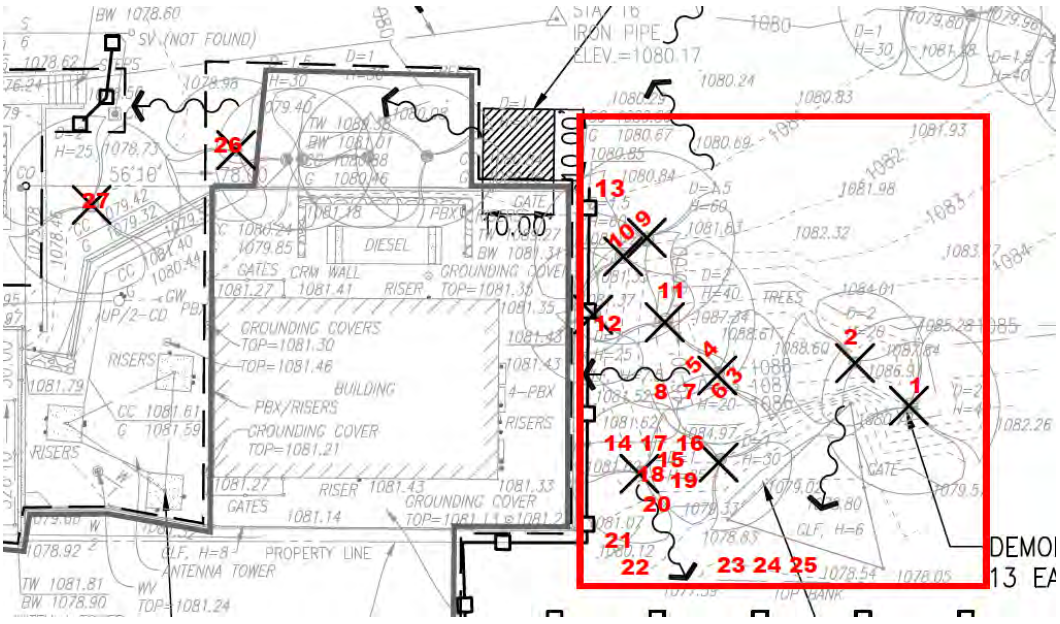
Tree Solutions and Environmental
Consulting Services, Inc.
P.O. Box 10026
Honolulu, Hawaii 96816
808-734-5963

July 8, 2024

Bowers & Kubota
Carah Kadota
Round Top Radio Facility Tree Assessment

The following tree assessment report was requested by Bowers & Kubota regarding trees impacted by the new designed Round Top Radio Facility at Puu Ualakaa Park. The revised design locates the new 180-ft. tower to a new location on the west side of the power station. A site inspection was conducted to assess the trees designated for removal. No native, endangered or exceptional trees were observed in the project boundaries site map.

The tower will be located on an existing mound that will be graded and reconfigured. Trees have been numbered on the site map consisting of Silk Oak, Christmas Berry, Ironwood, Fiddlewood, and Cook pine seedlings.

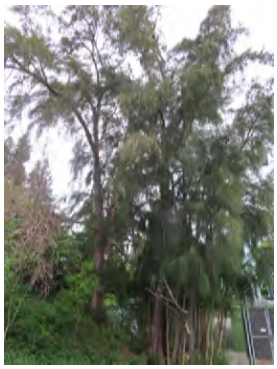


Tree #	Species	Diameter (Inches)	Height (Feet)	Health Condition	Structural Condition	Mitgation Crown Prune CP, Root Prune RP, Remove RE, Transplant TP
1	CHRISTMAS BERRY	12	35	F	F	RE
2	SILK OAK	28	60	F	G	RE
3	CHRISTMAS BERRY	12	20	P	P	RE
4	CHRISTMAS BERRY	18	20	P	P	RE
5	CHRISTMAS BERRY	24	20	P	P	RE
6	CHRISTMAS BERRY	12	20	P	P	RE
7	CHRISTMAS BERRY	16	20	P	P	RE
8	CHRISTMAS BERRY	16	20	P	P	RE
9	IRONWOOD	36	70	G	F	RE
10	IRONWOOD	24	60	G	F	RE
11	IRONWOOD	24	60	G	G	RE
12	IRONWOOD	22	50	G	F	RE
13	IRONWOOD (6)	~2-4	30	G	F	RE
14	COOK PINE	3	20	G	G	RE
15	COOK PINE	4	20	G	G	RE
16	COOK PINE	4	15	G	G	RE
17	COOK PINE	4	20	G	G	RE
18	COOK PINE	3	20	G	G	RE
19	COOK PINE	4	20	G	G	RE
20	COOK PINE	4	20	G	G	RE
21	FIDDLEWOOD	16	40	G	F	RE
22	FIDDLEWOOD	12	40	G	F	RE
23	IRONWOOD	24	60	P	P	RE
24	IRONWOOD	24	60	P	P	RE
25	IRONWOOD	18	50	F	F	RE
26	OLIVE	12	20	G	F	RE
27	OLIVE	30	20	G	F	RE

The numbered site map and spreadsheet correspond to the photos.

#1 & 2 Christmas Berry and Silk Oak

#3-8 Chirstmas Berry Cluster



#9-13 Ironwood

On the backside of the slope.

Cook pine cluster #14-20

Fiddlewood #21-22

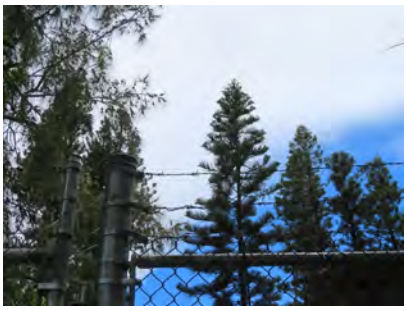
Ironwood #23-25

Fronting the power station are five Olive trees. Three are to remain and two to be removed.

Remain

Remove

Lower down the slope are groupings of large 80-ft. to 100-ft. Cook pines.



They are not noted on the site drawing but may block line of sight for transmissions.

If you have any questions, please contact our office at 808-734-5963.

Respectfully,

Steve Nimz
ASCA Consulting Arborist, #WE-0314AM
ISA Tree Risk Assessment Qualified

Arborist Disclosure Statement:
Arborists are tree specialists who use their education, knowledge, training and experience to examine trees, recommend measures to enhance the beauty and health of trees, and attempt to reduce the risk of living near trees. Clients may choose to accept or disregard the recommendations of the arborist, or to seek additional advice.

Arborists cannot detect every condition that could possibly lead to the structural failure of a tree. Trees are living organisms that fail in ways we do not fully understand. Conditions are often hidden within trees and below ground. Any tree, whether it has visible weaknesses or not, will fail if the forces applied exceed the strength of the tree or its parts. Arborists cannot guarantee that a tree will be healthy or safe under all circumstances, or for a specified period of time. Likewise, remedial treatments, like any medicine, cannot be guaranteed.

Treatment, pruning and removal of trees may involve considerations beyond the scope of the arborist's services, such as property boundaries, property ownership, disputes between neighbors, and other issues. Arborists cannot take such considerations into account unless complete and accurate information is disclosed to the arborists. An arborist should then be expected to reasonably rely upon the completeness and accuracy of the information provided.

Trees can be managed, but they cannot be controlled. In assessing and managing trees, we should strive to strike a balance between the risk that a tree poses and the benefits that individuals and communities derive from trees. It is impossible to maintain trees free of risk; some level of risk must be accepted to experience the benefits that trees provide.

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Appendix C: Archaeological Literature Review and Field Inspection

Literature Review and Field Inspection Study for Round Top Information and Communication Services Division (ICSD) Emergency Radio Facility and Other Improvements at Pu‘u ‘Ualaka‘a Wayside Park

Makiki, Kona Moku, O‘ahu Mokupuni

TMKs: (1) 2-5-019:003 (por.) and (1) 2-5-019:011

Prepared by

NOHO PAPA HAWAI‘I

Prepared for

BOWERS + KUBOTA

This report was prepared by Nohopapa Hawaiʻi, LLC for Department of Accounting and General Services and Bowers + Kubota

AUTHORS

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Date	November 2024
Land Jurisdiction	State of Hawaiʻi, Department of Accounting and General Services (DAGS), ICSD
Project Proponent	State of Hawaiʻi DAGS
Project Location	The Round Top ICSD is situated within the existing Puʻu ʻUalakaʻa State Wayside Park in Makiki, Honolulu, at 2760 Round Top Drive, TMK: (1) 2-5-019:003 (por.). The site is also shared with the City and County of Honolulu (City) radio facility, TMK: (1) 2-5-019:011. The State of Hawaiʻi owns the land, which is within the State Conservation District (Resource subzone). The site is located within a City & County P-1 zone and is not within the Special Management Area. The area is in a FEMA Flood Zone Designation X (beyond 500-year flood plain).
Project Description	The proposed project includes: ● Demolition and removal of the State's 100-foot radio tower and the City's 100-foot radio tower ● Construction of a new 180-foot radio tower. The base of the radio tower will have a width of 23-feet and length of 23-feet from leg to leg. The radio tower will accommodate over 40 appurtenances and equipment, which are being transferred over from the two existing 100-foot radio towers; ● Clearing of approximately 27 trees; ● Site clearing, grading, and grubbing for a new foundation; ● Four drilled shafts to support each tower leg (5 ft diameter by ~60 ft below-finished grade); ● A new retaining wall with a 6-ft high chain link and barb-wired fence around the new tower; ● A new concrete pile cap foundation to accommodate the new tower; ● Trenching to reroute an existing waterline (~350 ft long by ~3 ft deep); ● Tree and vegetation trimming that will be performed to the extent needed to ensure the continued operation of the ERF facilities.

Project Acreage	The proposed project is approximately 0.60 acres within TMKs (1) 2-5-019:003 (por.) and (1) 2-5-019:011.
Document Purpose	The purpose of the literature review and field inspection (LRFI) is to provide a thorough review of relevant cultural, historical, and archaeological literature and present findings (the presence or absence of historic properties) of a field inspection of the proposed project area. The subject LRFI provides a summary of the proposed scope of work, cultural and historic background research, a synthesis of previous archaeological studies conducted near the project area, a summary and predictive model of historic properties in the project area, the field inspection methodology and results, and proposed recommendations. While this document does not meet the minimal standards of an archaeological inventory survey (AIS) report as outlined in Hawai‘i Administration Rules (HAR) §13-13-276, it is designed to facilitate the State Historic Preservation Division's (SHPD) in its historic review process by providing essential information in their decision making. Additionally, the LRFI serves to assist the landowner in project planning to inform project development and federal and state historic preservation compliance.
Methods	Literature Review was conducted for the entire project area TMKs (1) 2-5-019:003 (por.) and (1) 2-5-019:011. A pedestrian survey was conducted of the 0.60 acre project area and existing radio facility area.
Limitations	The bulk of background research performed for this report was conducted in 2021. Due to COVID-19 restrictions and the limited nature of this literature review, as well as online inaccessibility, we were unable to conduct research physically at the Hawai‘i State Archives or at the Bernice Pauahi Bishop Museum. We recommend that future archaeological studies, if any, should include research at the Bishop Museum archives to look into other scientific studies conducted in the area, as well as a physical visit to the State Archives.
Fieldwork Effort	Fieldwork was conducted on the pō mahina (moon phase) ‘Olekūkolu, on February 15, 2021, by Nohopapa Hawai‘i, LLC Principal Investigator, Dominique Cordy, M.A., and consisted of a pedestrian inspection of the project area.
Results Summary	Based on this literature review and field inspection, and in consideration of HAR §13-13-275-8, we do not concur with the previous determination that no historic properties are present in ICSD Round Top Radio Facility area. Background research shows an ala (trail) segment connecting to the larger ancient ala system that spans the ridgelines of the Ko‘olau Mountain Range does pass through or at least alongside the project area. This trail segment is

	the only historic property identified. However, the current proposed project does not affect this trail nor access to the larger system. No other historic properties were identified through background research or field inspection. The presence of a segment of the larger Koʻolau trail system within the project area or adjoining vicinity is a historic property that should be listed on the State Inventory of Historic Places (SIHP). Due to the high level of disturbance and modification within the project area which would likely compromise the integrity of any existing historic property, no significant assessment of eligibility for Hawaiʻi Register of Historic Places listing is recommended. However, no impacts to this historic property (trail segment or larger system) are anticipated by the proposed project. In fact, the presence of the wayside campus lends itself to both the maintenance and continued access to this important cultural resource. It was noted during the pedestrian field inspection performed for this study that the project area has been subject to previous surface disturbances, and evinced surface grading and leveling associated with prior development of the immediate area for Puʻu ʻUalakaʻa State Wayside Park and the existing ICSD Round Top Radio Facility. Consequently, there will likely be no significant impacts on any potential historic properties as a result of the proposed project.
Recommendations	Based on the results of this LRFI, Nohopapa Hawaiʻi recommends a project effect determination of "No historic properties affected" for the subject project. This conclusion is due to the very low likelihood of the project impacting subsurface historic properties within the project area. As a result, we suggest no further archaeological work is required at this time. Additionally, the ʻUalakaʻa Trail is located just outside the project area and falls beyond the scope of the current LRFI. Nohopapa Hawaiʻi recommends that SHPD update the HICRIS GIS database to include the trail system and formally assign it an SIHP number. Due to COVID-19 restrictions, we were unable to conduct research physically at the Hawaiʻi State Archives or at Bernice Pauahi Bishop Museum. Future studies should include physical research at both institutions.

PROJECT SCOPE & METHODS

He Leo Mahalo

Mahalo to all the individuals involved in this project: Matthew Kodama and Allen Kam of Bowers + Kubota for coordinating and providing the needed information to complete the field inspection, and Stacy Naipo from the State Historic Preservation Department (SHPD) for helping us retrieve reports for the project area.

Project Description

The project area consists of in the Round Top Information and Communication Services Division (ICSD), situated within the existing Pu'u 'Ualaka'a State Wayside Park at the top of Tantalus in Makiki, Honolulu, at 2760 Round Top Drive (TMK: (1) 2-5-019:003; por.), and the adjoining City and County of Honolulu (City) radio facility (TMK: (1) 2-5-019:011; Figure 1, Figure 2, and Figure 3). The State of Hawai'i, Department of Accounting and General Services (DAGS), is the project proponent. The State of Hawai'i owns the land, which is within the State Conservation District (Resource Subzone). A Conservation District Use Permit (CDUP) will be filed and a board permit is anticipated. The site is located within a City & County P-1 zone and is not within the Special Management Area. The area is in FEMA Flood Zone Designation X (beyond 500-year flood plain). No federal funds are involved in the proposed project, and no land zoning changes are proposed.

The proposed project includes:

- Demolition and removal of the State's 100-foot radio tower and the City's 100-foot radio tower
- Construction of a new 180-foot radio tower. The base of the radio tower will have a width of 23-feet and length of 23-feet from leg to leg. The radio tower will accommodate over 40 appurtenances and equipment, which are being transferred over from the two existing 100-foot radio towers;
- Clearing of approximately 27 trees;
- Site clearing, grading, and grubbing for a new foundation;
- Four drilled shafts to support each tower leg (5 ft diameter by ~60 ft below-finished grade);
- A new retaining wall with a 6-ft high chain link and barb-wired fence around the new tower;
- A new concrete pile cap foundation to accommodate the new tower;
- Trenching to reroute an existing waterline (~350 ft long by ~3 ft deep);
- Tree and vegetation trimming will be performed to the extent needed to ensure the continued operation of the ERF facilities.

Document Purpose

This LRFI study reports results from the background research literature review and field inspection, and uses them to: 1) Synthesize what is known about the project area, vicinity, and

greater environmental context, natural and cultural landscape, resources, historical trajectory, and previous compliance archaeological studies, 2) Summarize known and newly-noted historic properties in their cultural landscape contexts, 3) Provide a predictive model for the presence of possible additional historic properties in the project area and vicinity, and 4) Generate next steps historic preservation compliance recommendations for the historic properties in order to inform project planning, and satisfy historic preservation compliance requirements. This LRFI study will be used to inform project planning and an Environmental Assessment triggered by Hawai'i Revised Statutes (HRS) §343 and to initiate historic preservation compliance review under HRS §6E-8 and its implementing legislation Hawai‘i Administrative Rules (HAR) §275.

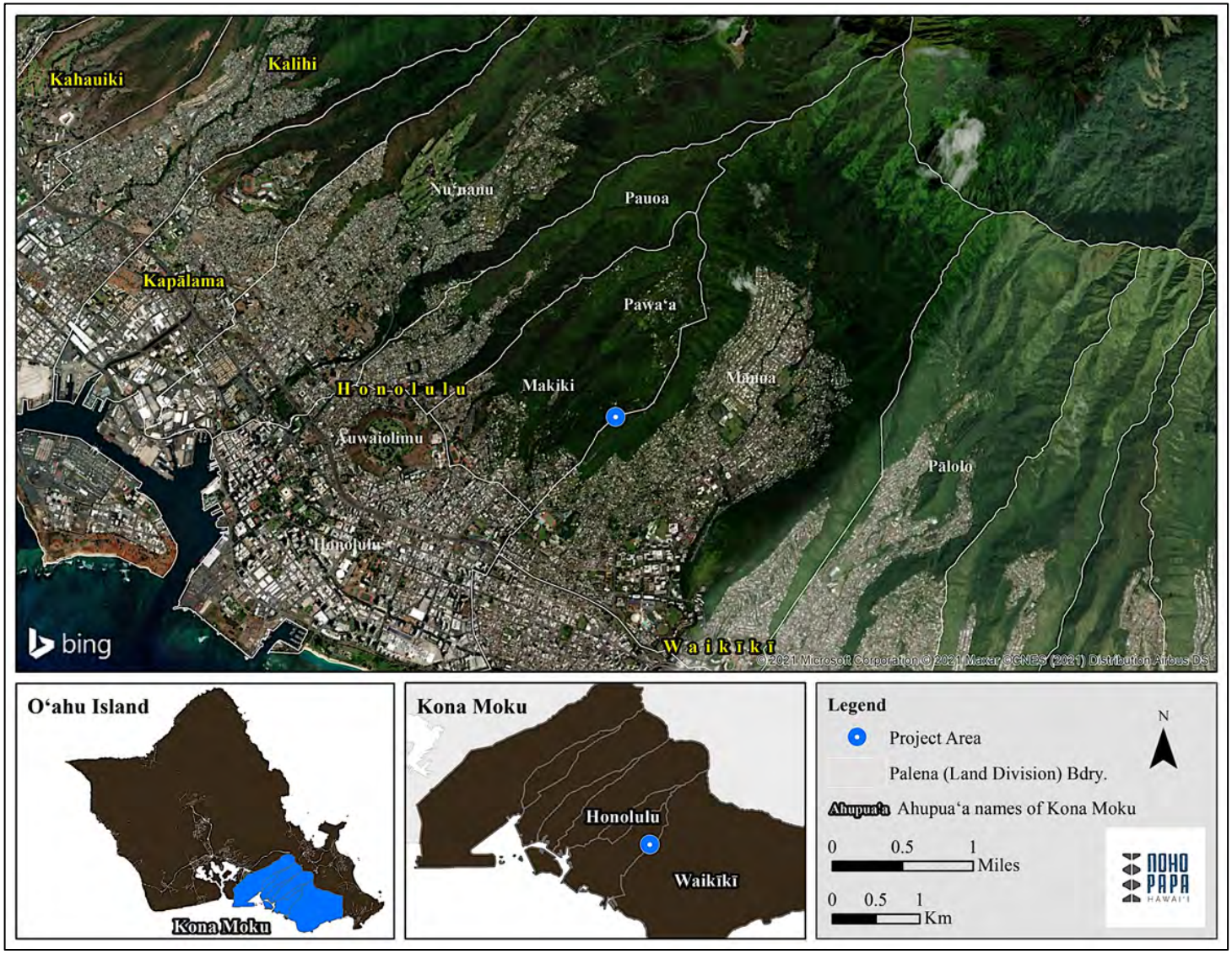

Figure 1. Maps featuring the location of the project area in Makiki Palena, Kona Moku, Oʻahu (TMKs: (1) 2-5-019:003 (por.) and (1) 2-5-019:011).

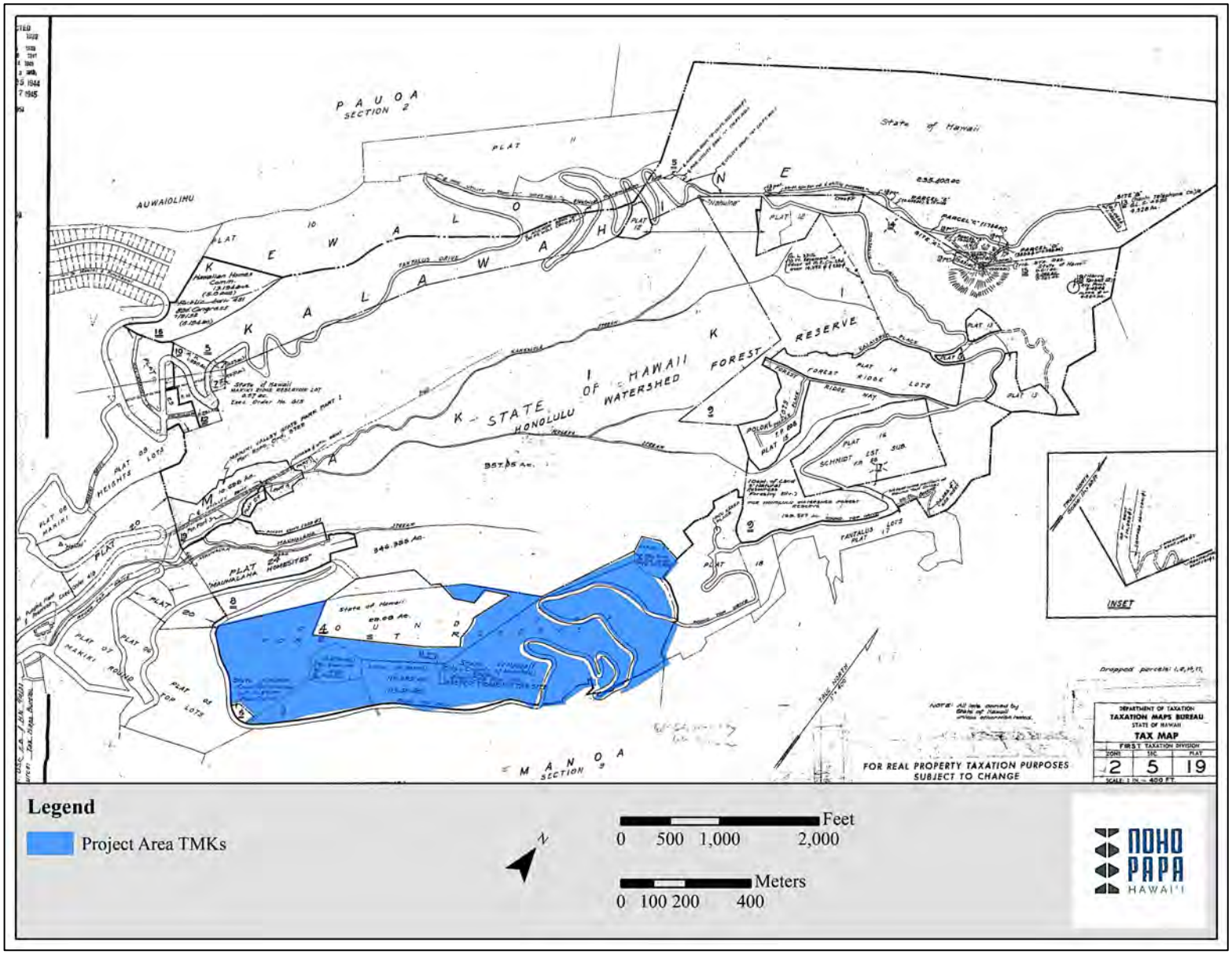

Figure 2. Map featuring the entirety of the project area TMKs (1) 2-5-019:003 (por.) and (1) 2-5-019:011, in blue

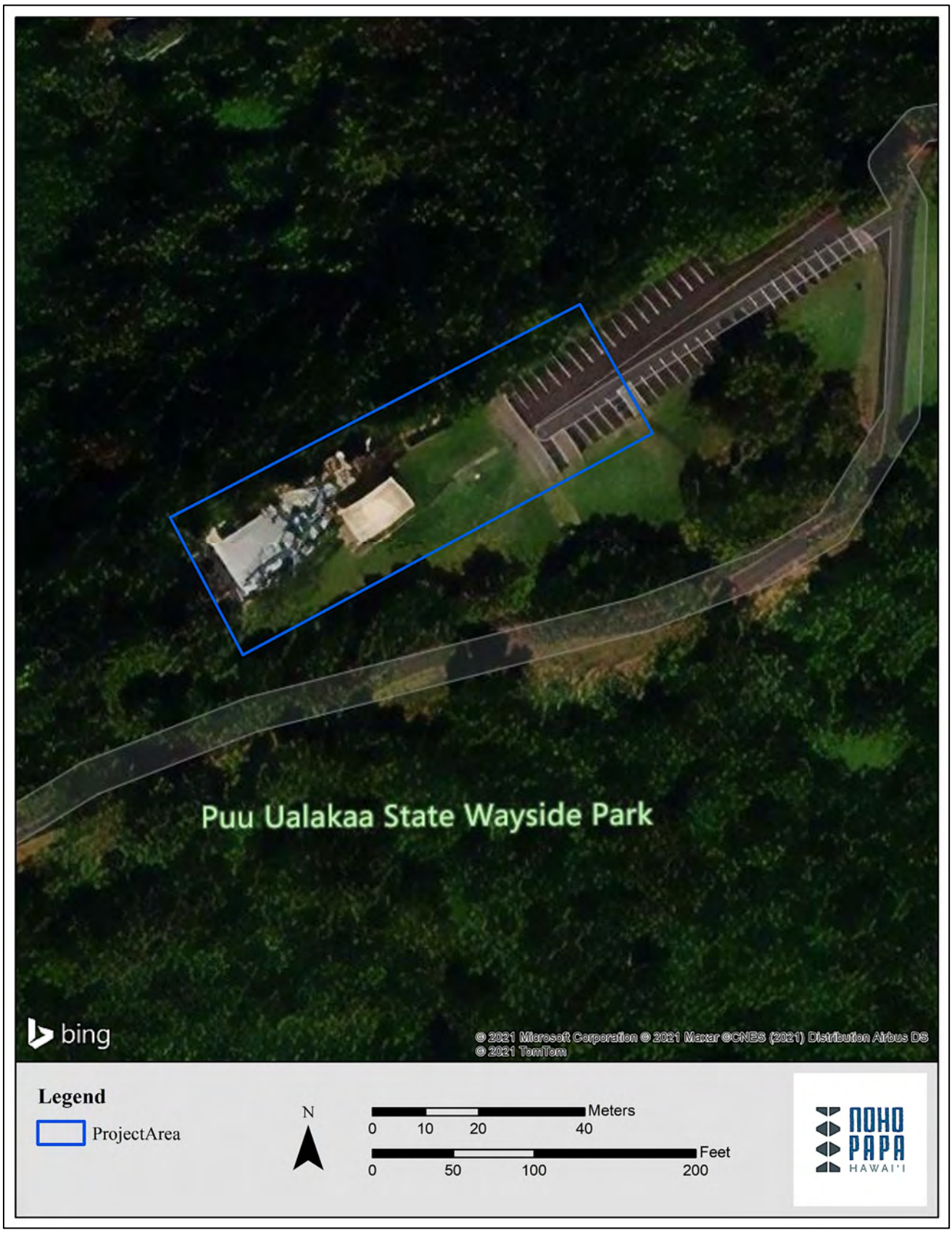

Figure 3. Aerial photograph showing the location of the project area

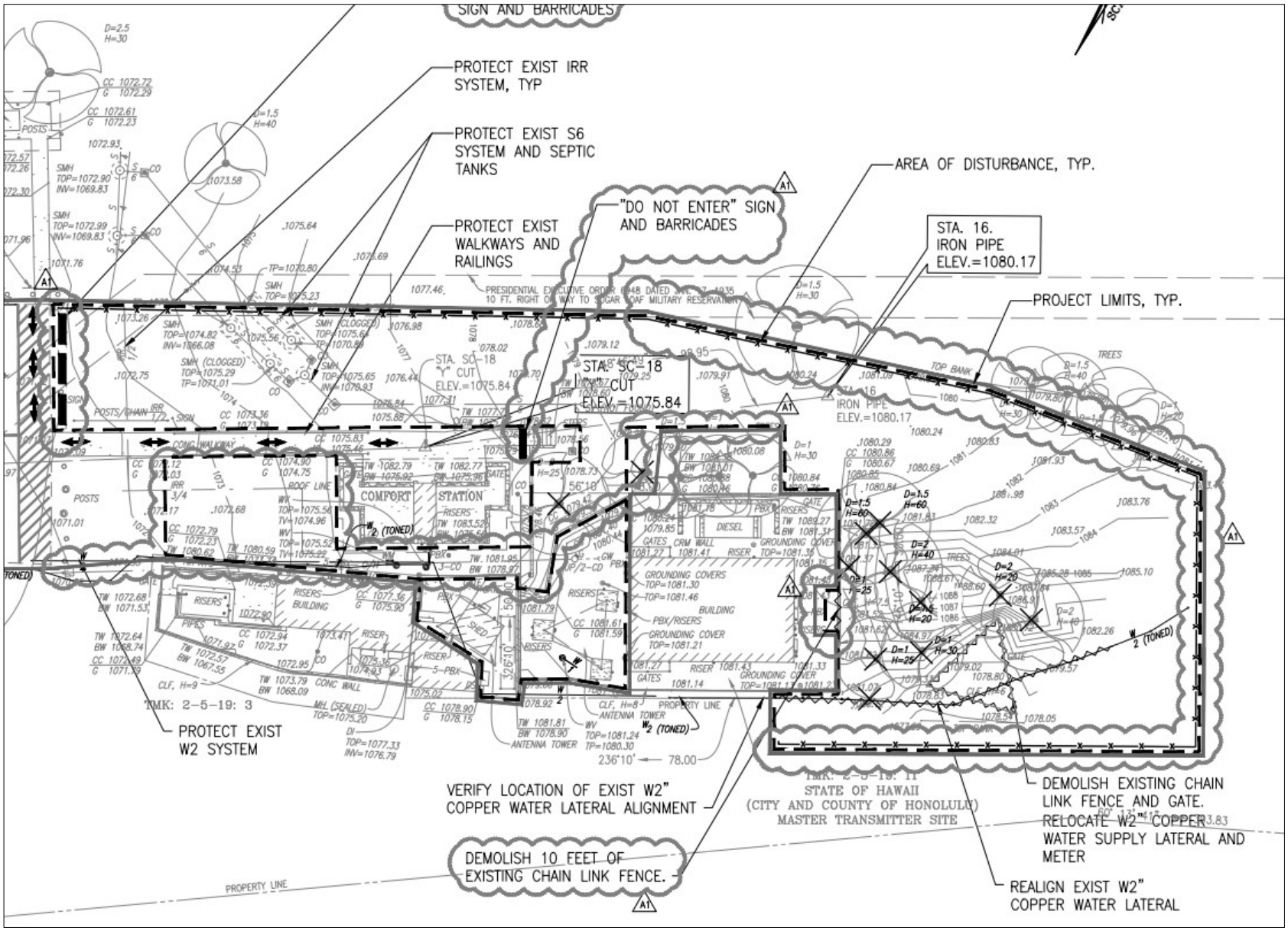

Figure 4. Design plans for the proposed project in Makiki, Kona Moku, Oʻahu (TMKs: (1) 2-5-019:003 (por.) and (1) 2-5-019:011). Note the existing waterline featured in the lower right (Bowers + Kubota Consulting, Inc., 2024)

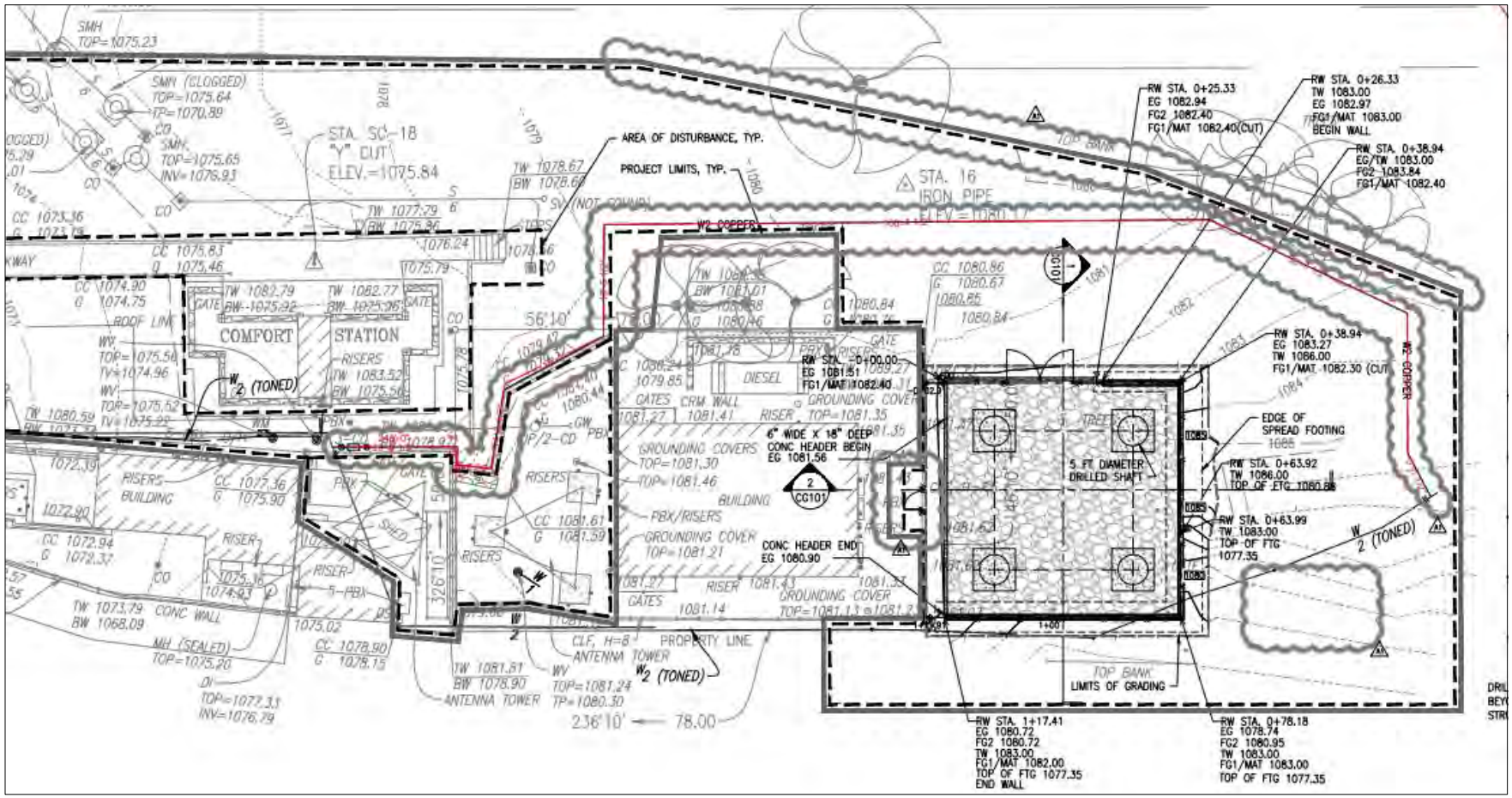

Figure 5. Design plans with the footprint of the proposed new waterline illustrated in red (Bowers + Kubota Consulting, Inc., 2024)

Methods

This project spanned a six-month period from June 2021 through October 2021, with report revisions due to a project description update in August 2024. Project personnel included: Lilia Merrin, M.A., and Nohopapa Hawai‘i principals Dominique Leu Cordy, M.A., and Kelley L. Uyeoka, M.A. Principal Rachel Hoerman, Ph.D., was not involved in the initial project, but completed report updates in August 2024.

Background research and a field inspection were used to gather information that could help determine whether historic properties are present or likely to be present. Background research included a review of previous archaeological studies on file at the SHPD; review of documents at Hamilton Library of the University of Hawai‘i, the Hawai‘i State Archives, the Mission Houses Museum Library, the Hawai‘i Public Library, and the Archives of the Bishop Museum; study of historic photographs at the Hawai‘i State Archives and the Archives of the Bishop Museum and the University of Hawai‘i at Mānoa’s Maps, Aerial, Photograph and GIS (MAGIS) library; and study of historical maps at the Survey Office of the Department of Land and Natural Resources. Reports, historical maps and photographs from the Nohopapa internal database were also examined. Inoa ‘āina (place names), mo‘olelo (stories), and ‘ōlelo no‘eau (proverbs) were compiled from Hawaiian language and English sources in books, newspapers, online databases and archives. The literature review was conducted for the entire project area TMKs (1) 2-5-019:003 (por.) and (1) 2-5-019:011 and its landscape context while the field inspection focused on the direct proposed project area which is approximately 0.60 acres.

NATURAL AND BUILT ENVIRONMENT

This section describes the natural landscape and built environment of the project area, including its topography (general elevations, distance inland, and general terrain patterns), vegetation, geology and soils, climate (including rainfall and winds), and hydrology.

Natural Landscape

The location of the proposed project is Puʻu ʻUalakaʻa (also known as Round Top), in the mauka reaches of Makiki, proximal to the ahupuaʻa boundaries of Honolulu and Waikiki. The project area sits on a ridgeline originating at Puʻu ʻŌhiʻa (Tantalus) that also connects to Puʻu Kākea (Sugarloaf). Pauoa Valley bounds the project area to the west and Mānoa Valley to the east. Maunalaha Stream flows 400 m northwest of the project area, which sits at an elevation of approximately 1060 ft above mean sea level (AMSL). The project area receives 70.99 inches of rain annually (Giambelluca et al. 2024).

The geography described above is a landscape shaped by volcanic activity, hydrology, and erosion. Puʻu ʻUalakaʻa is a cinder cone crater formed with the Koʻolau Mountain Range between 2.5 and 1.5 mya (Gazdar 2024). Sedimentary deposits within the project area and immediate vicinity are restricted to Cinder land (rCI) soils, with sedimentation from nearby Kaena stony clays (KaeD), Tantalus silt loam (TAF), rocky land (rRK), and Tantalus silty clay loams (TCC and TCE) (Figure 6). Cinder land (rCI) soils are a loose, jagged admixture of cinder, pumic, and ash related to the formation of cinder cones on Oʻahu and around Tantalus specifically. Minimal soil development characterizes rCI soils, which are poor for agriculture and grazing and frequently used for recreation (Sato 1972:29). Table 1 features indigenous plant species associated with the project area from the past to the present.

Table 1. Table showing the different indigenous plant species in and around the project area in the past and present day.

Plant Species	Native status	Use	Existing in project area	Existing in surrounding area	Previously existing in project area	Previously existing in surrounding area
Shrubs/ Ground Cover/Ferns/Herbs						
pili grass (*Heteropogon contortus)*	Indigenous	dye, medicinal, stuff mattresses, pad floors, as a tinder.			x	x
honohono (*Haplostachys*	Endemic					x

Plant Species	Native status	Use	Existing in project area	Existing in surrounding area	Previously existing in project area	Previously existing in surrounding area
haplostachya)						
puakeawe (*Leptecophylla tameiameiae)*	Indigenous	medicinal, lei, wood, other.				x
Overstory						
ʻōhiʻa (*Metrosideros polymorpha*)	Endemic	construction, crafts, wood				x
kukui (*Aleurites moluccana*)	Indigenous	Light, ink, medicinal, wood				x

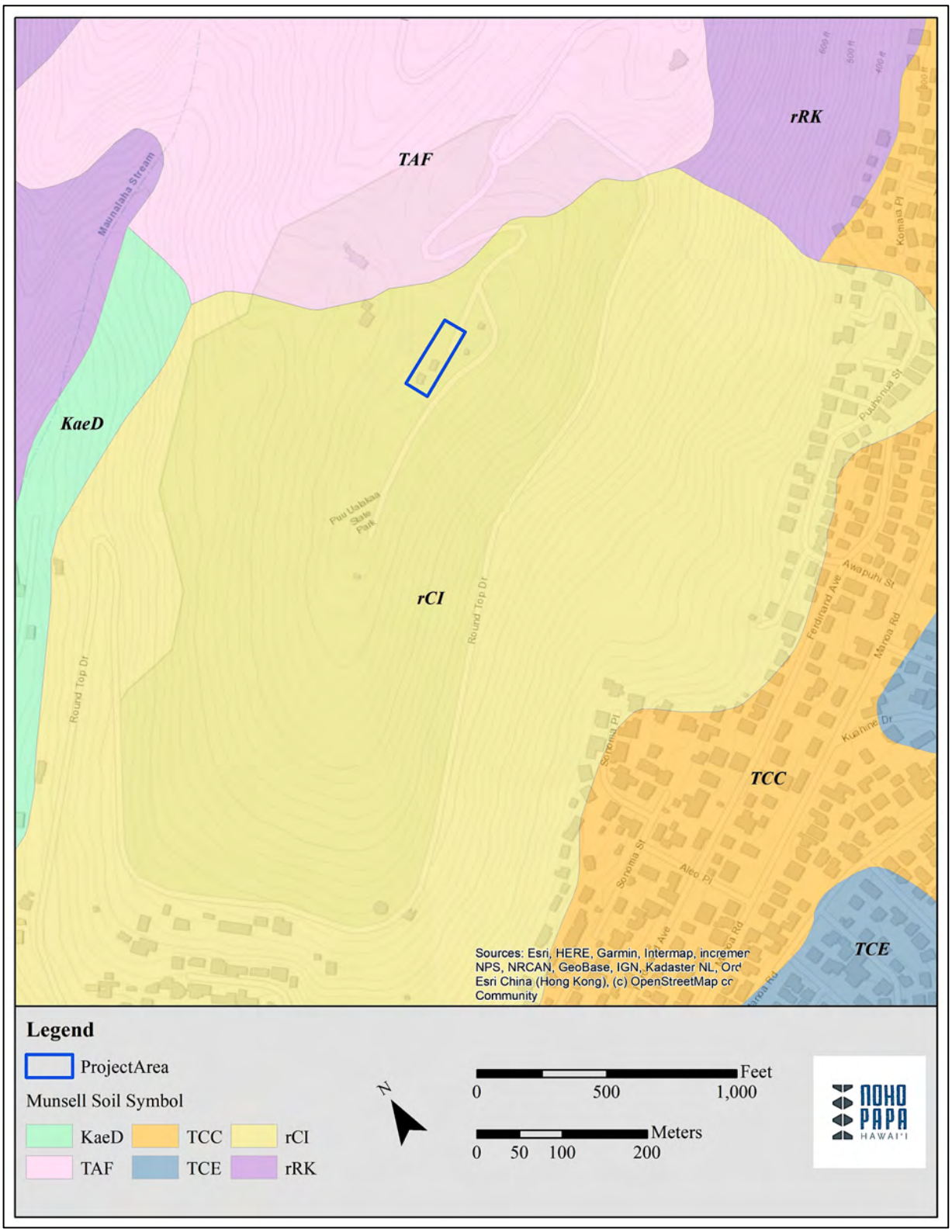

Figure 6. A map with overlain with soil types associated with the project area and vicinity

Built Environment

The project area is located within the existing Puʻu ʻUalakaʻa State Wayside Park at the top of Tantalus in Makiki. It is an altered and developed space that appears to have been leveled and graded for the installation of the ICSD. A lawn of non-native vegetation and trees has also been installed. The existing ICSD tower facility and a restroom facility border the southwestern portion of the project area. A large asphalt parking lot is located immediately to the east. Round Top Forest Reserve surrounds the project area, and is bisected by Round Top Drive, the road leading to the project area The historical Nutridge estate, which bills itself as “Hawaiis first macadamia nut plantation bounds the project area to the southwest, and is also located inside Puʻu ʻUalakaʻa State Wayside Park (Experience Nutridge 2024).

CULTURAL LANDSCAPE

Hawaiian oral traditions have been passed down by word of mouth from one generation to the next and recorded in more contemporary times. Hawaiian oral traditions are important; they convey a general sense of Kanaka ʻŌiwi (Native Hawaiian) history, people's connection to land, how they lived, and their traditional land tenure. Hawaiian oral traditions are relayed in the form of mele (songs), ʻōlelo noʻeau (proverbs), pana noʻeau (sayings), moʻolelo (stories), moʻokūauhau (genealogies), and accounts in nūpepa (historic newspaper articles). These forms of oral traditions can be woven into each other. For instance, a moʻolelo may present a mele about a moʻokūauhau. Hawaiian oral traditions are vehicles for the intergenerational transmission of knowledge. They serve as a timeless bridge to cultural insights and beliefs that have guided Hawaiians across centuries and generations. Today, through written form and English translations, these cultural traditions persist as sources of ancestral wisdom. Hawaiian oral traditions tell of the resources of the land, akua (gods), kupua (supernatural deities), ʻaumākua (familial guardians), aliʻi (chiefs), and ka poʻe kānaka (the Hawaiian people) whose stories weave a unique and treasured history of this ʻāina. This section of the report draws from a variety of oral and documented resources to present an overview of the cultural and historical background of the current study area. The goal of this broad overview is to contextualize the project area in Makiki, as well as the greater landscape in which it exists, through the compilation of place names, wind and rain names, ʻōlelo noʻeau and associated moʻolelo. An intertwined and contiguous array of significant cultural features and resources constitute the Hawaiian cultural landscape of the project area at Puʻu ʻUalakaʻa, Makiki, Oʻahu.

Wahi Kūpuna

Wahi kūpuna are special ancestral spaces and places where Native Hawaiians maintain relationships to the past and foster their identity and well-being in the present (The Kaliʻuokapaʻakai Collective 2021:4). As cultural anchors to place, ancestral knowledge and practices, wahi kūpuna are strikingly similar to Traditional Cultural Properties (Traditional Cultural Places) defined by the National Park Service as places associated with the cultural practices or beliefs of a living community that are both rooted in a community's history and important in maintaining its continued cultural identity (Parker and King 1998:1).

Wahi kūpuna and wahi pana (storied places) comprise component parts and/or entire contiguous Hawaiian cultural land, sea, and skyscapes (Pukui, Elbert, and Mookini 1974: x- xii; Oliveira 2014: 78, 79; The Kaliʻuokapaʻakai Collective 2021). Place names embody and perpetuate Hawaiian cultural history, knowledge, and practice. As explained by Oliveira (2014:78): "To Kānaka and other indigenous peoples who share a close connection to their land and use oral traditions to record their history, place names and landmarks serve as triggers for the memory, mapping the environment and ultimately the tradition and culture of a people." Wahi pana and wahi kūpuna are special places and spaces. As noted by Maly and Maly (2022:14,15): "Names would not have been given to – or remembered if they were – mere worthless pieces of topography". Traditional

nomenclature indicates the variety of functions that named localities served, such as describing a particular feature of the landscape; indicating a site of cultural and ceremonial significance; recording particular events or practices that occurred in that given area; revealing the source of a natural resource or other materials necessary for a cultural practice; marking trails and trailside resting places; signifying triangulation points for cultural practices; giving notice of residences; showing the use of an area; and recording a notable event that occurred in the area (Maly and Maly 2022:14, 15).

The project area in Makiki is embedded in a greater cultural landscape (Figure 7 and Figure 8). Pukui et al. (1974:142) do not provide a translation for Makiki, but suggest it was "probably named for a type of stone used as weights for octopus lures." The project area is located on Puʻu ʻUalakaʻa, literally translated to mean "rolling sweet potato hill," (Pukui et al. 1974:214), and one of three cinder cones in eastern Makiki. The name of Puʻu Ōhiʻa, a neighboring cinder cone, is literally translated to mean "the ʻōhiʻa tree hill" (Pukui et al. 1974:203). On the top of Puʻu ʻŌhiʻa was a heiau called Pepeiaoohikiau or Pepeiao o Hikiea, a luakini (heiau associated with human sacrifices at Pūowaina (Boundary Commissioners' Record Book, Makiki Boundary Certificate, pp. 60–62, cited in Fitzpatrick 1989:22,46). Puʻu Kākea, the last neighboring cinder cone, is named for a stormy wind associated with the neighboring land division of Mānoa (Pukui et al. 1974:197). It features in the saying "He Kākea ka makani kulakulaʻi kauhale o Mānoa," which means "the Kākea wind that pushes over the houses of Mānoa," used in reference to an excessively aggressive person (Pukui and Elbert 1986:119). A hōlua slide may also have once been located on ʻUalakaʻa, on the side of the hill above what is currently Punahou School (Fitzgerald 1989:45).

No ka Ua (Regarding Rain)

The intimacy developed by Kānaka ʻŌiwi in relation to the natural environment is evident in the practice of naming natural features, resources, and environmental elements. Hawaiians honored and celebrated the world around them by the careful, thoughtful, and intentionality of giving a name, and therefore, mana (authority or power) to a person, place or thing. Natural features of the landscape, oceanscape, and skyscape were observed intimately by those who were of, and frequented a place so deeply, that the particularities of the natural elements were understood and named affectionately to honor, describe, and celebrate its connection. Authors of *Hānau Ka Ua: Hawaiian Rain Names*, Leimomi Akana and Kiele Gonzalez, further describes this intimacy specific to rain:

> Our kūpuna had an intimate relationship with the elements. They were keen observers of their environment, with all of its life-giving and life-taking forces. They had a nuanced understanding of the rains of their home. They knew that one place could have several different rains, and that each rain was distinguishable from another. They knew when a particular rain would fall, its color, duration, intensity, the path it would take, the sound it made on trees, the scent it carried, and the effect it had on people. [Akana and Gonzalez 2015:xv]

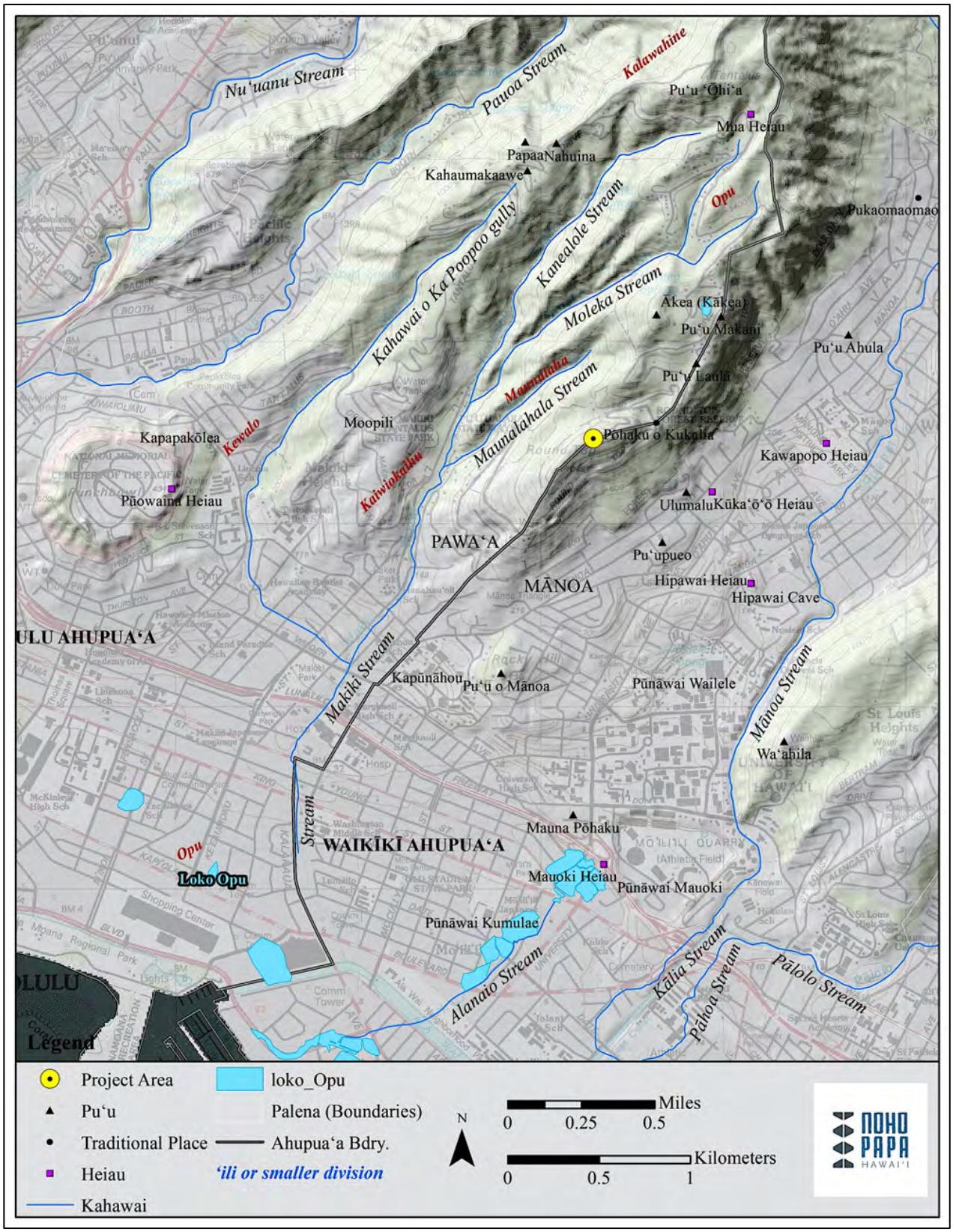

Figure 7. Topographic wahi pana map showing project the area (yellow dot) and ʻili ʻāina (smaller land divisions)

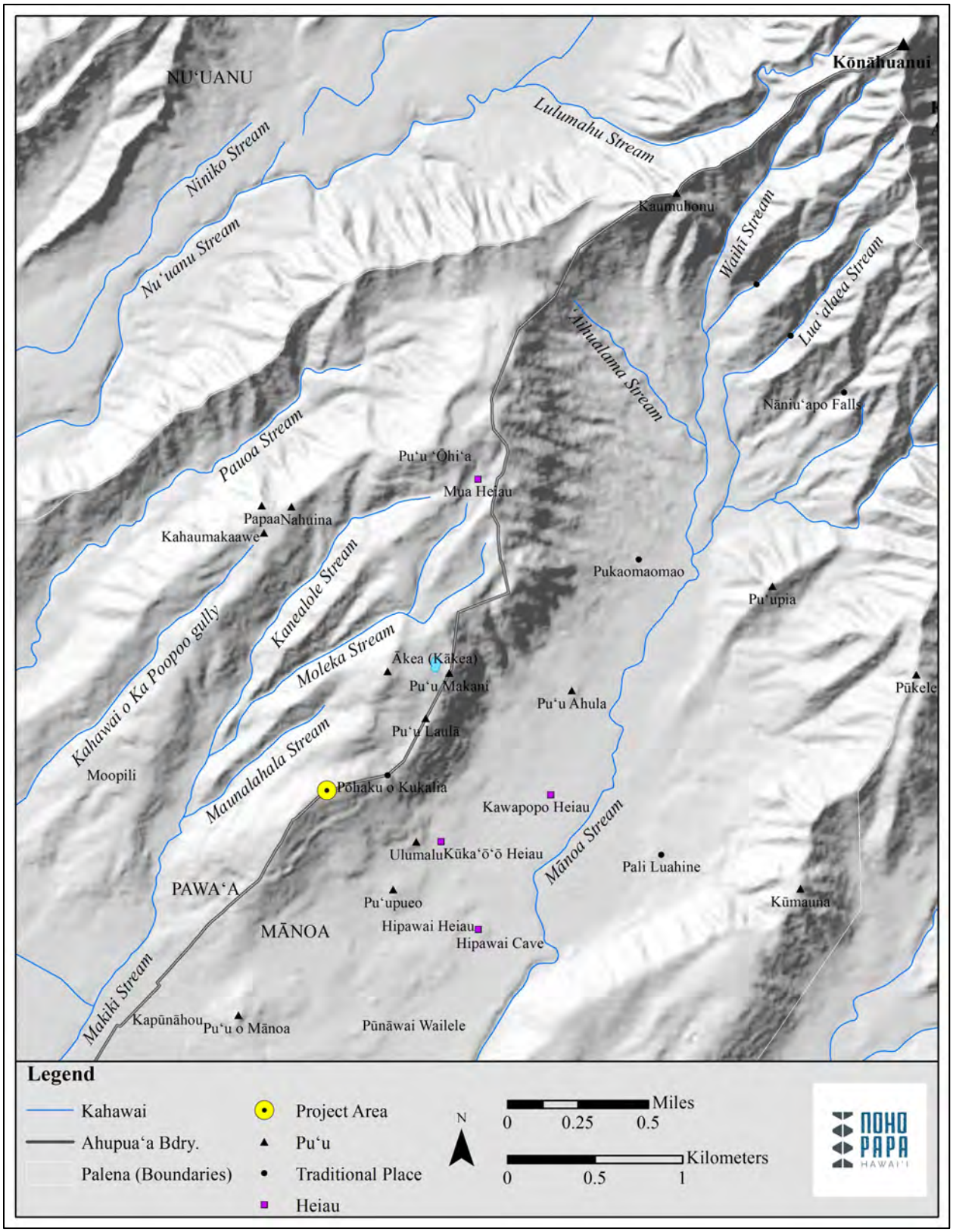

Figure 8.Wahi pana map showing project area (yellow dot) and surrounding traditional place names.

the unique rains of Hawai‘i and the places they are associated with. The collection of rain names included in this publication is often paired with a mele, or song, that references the rain and its association to a featured place. The name of the rain in Makiki is called Kā‘eleoli. Also known as Kā‘ekeoli and Kā‘eke‘ekeloi. Kā‘eleoli, Kā‘ekeoli, and Kā‘eke‘ekeloi sound similar to the words “kā‘eleoi” and “kā‘eke‘eke,” which refer to the rolling or ruffling sound of a drum or kā‘ele‘eke bamboo pipes (Pukui and Elbert 1986:109).

No ka Makani (Regarding Wind)

In the same thoughtful regard kānaka imparted to the naming of the rains, winds were also observed intimately so that their nuances were understood, and they too were warranted the mana of a given name. As noted in the previous section, Kākea is the name of a storm wind associated with Mānoa (Pukui et al. 1974:197) that is also featured in the Hawaiian proverb "He Kākea ka makani kulakula‘i kauhale o Mānoa,” (translated above; Pukui and Elbert 1986:119).

Table 2 features a selection of additional wahi kūpuna and wahi pana associated with the project area and vicinity in Makiki; these place names relay cultural knowledge and relationship to place.

Table 2. Place names associated with the project area and vicinity.

Inoa	Possible Translation	Description
Haumaka‘awe	No translation offered in Pukui, Elbert, and Mookini (1974).	Land division just below Pu‘u Kakea.
Ka‘aipu	Translated by Pukui, Elbert, and Mookini (1974) to mean “the eating together.”	Land division.
Kākea	According to Pukui, Elbert, and Mookini (1974), the name of a strong wind	Cinder cone (pu‘u); west side of Mānoa Valley; also known as Sugarloaf.
Konahuanui	Translated by Pukui, Elbert, and Mookini (1974) as “large fat innards.”	The highest peak in the Ko‘olau Range.
Mānoa	Translated by Pukui, Elbert, and Mookini (1974) as “vast.”	The valley and ahupua‘a neighboring the project area.
Maunalaha	Translated by Pukui, Elbert, and Mookini (1974) as “flat mountain.”	Land division.
Moleka	No translation offered in Pukui, Elbert, and Mookini (1974).	Stream.
Pahao	Pukui and Elbert (1984) translate “pahao” as “mysterious, puzzling.”	Land division.
Pāwa‘a	Translated by Pukui, Elbert, and Mookini (1974) as “canoe enclosure.”	Land division.
Pōhaku o Kukalia	No translation offered in Pukui, Elbert, and Mookini (1974).	A large stone.

Inoa	Possible Translation	Description
Poloke	No translation offered in Pukui, Elbert, and Mookini (1974). Pukui and Elbert (1986) translate the name as “fresh poi.”	Land division.
Ulumalu	Pukui and Elbert (1986) write the name could mean “shade [of] breadfruit trees,” or “peaceful grove.”	Site of a legendary battle between the menehune and chief Kualii: "The Menehune's fort was on the rocky hill, Ulumalu,... just above Kukaoo [heiau]."

Mele (Songs) and ʻŌlelo Noʻeau (Proverbs and Poetical Sayings)

The inoa mele below titled “He Inoa Ahi no Kalākaua” is one of many parts to a fire chant that was composed by Kaluahinenui that names ʻUalakaʻa and other famous wahi pana in Oʻahu’s Kona District:

Lamalama i Makapuʻu	Shining brightly toward Makapuu
Ke ahi o Hilo	Is the fire of Hilo
Hanohano molale	Majestic, clear,
Ke ahi o Kawaihoa	Is the fire of Kawaihoa
Oaka onio ula	Flashing, sparking red
Kaoo ke ahi i Waialae	Are the many fires at Waialae
Hoohuelo iluna	Streaming upward
Ke ahi o Leahi	Is the fire at Leahi
Hoonohonoho i muliwaa	Set at the sterns of the canoes
Ke ahi o Kaimuki	And the fires at Kaimuki
Me he uahi koaie la	Smoking like a fire of Koaie wood
Ke ahi o Waahila	Is the fire of Waahila
Noho hiehie ke ahi	Set in proud array is the fire
I Puu-o-Manoa	On the hill of Manoa
Oni e kele iluna	Moving until arisen, atop
Ke ahi o ʻUalakaʻa	Is the fire of ʻUalakaʻa
A me he ahi la	Like an ahi fish
Ke ahi o Kaluahole	Is the fire of Kaluahole
Me he maihu-waa la	Like a mirage at sea
Ke ahi o Helumoa	Is the fire of Helumoa
Me he moa lawakea la	Like a white cock
Ke ahi o Kalia	Is the fire of Kalia
Me he papahi lei la	Like a heap of lei
Ke ahi o Kawaiahao	Is the fire of Kawaiahao
O mai ke lii nona ia inoa ahi	Answer, O chief, whom this fire chant belongs.

The Hāliʻipili rain at ʻUalakaʻa is mentioned in a kanikau, or lament, for J. Henry by Kahinawe:

Kuʻu hoa o ka iʻa lauahi lima o Kālia	My companion of the fish of Kālua that is caught by the quick hands
Hoa nānā i ka ua Kuahine o Mānoa	Companion who observes the Kuahine rain of Mānoa
Mai ka ua Hāliʻipili o ʻUalakaʻa	From the Hāliʻipili rain of ʻUalakaʻa
Auē kuʻu kāne ē	Pity for my dear husband!

[Akana and Gonzalez 2015: 118,119]

ʻŌlelo noʻeau, or Hawaiian proverbs and poetical sayings, are valuable in perpetuating Hawaiian cultural knowledge, presenting kaona (concealed references), and illustrating creative expressions that incorporate observational knowledge with educational values, history, and humor. They can be reflected upon to inform an individual of the conditions or characteristics of a place, group of people, or event in history. They can be looked towards to glean insight on the peculiarities of a given landscape or behavior of people, and oftentimes provide guidance in understanding the wisdom and warnings left to us by those of the past. Today, ʻōlelo noʻeau serve as a traditional source to learn about kaona, people, places, and the environment of Hawaiʻi. As one of the many celebrated works penned by Pukui during her time, the 1983 publication of *ʻŌlelo Noʻeau: Hawaiian Proverbs and Poetical Sayings*, holds no end in its relevance and richness as it relates to an epistemological worldview that is Hawaiian. Listed below are ʻōlelo noʻeau gathered from Pukui's collection of traditional sayings that are related to the study area and vicinity in Makiki:

Aia i luna o ʻUalakaʻa
He is up on ʻUalakaʻa
A play on ʻUala-kaʻa (Rolling-potato hill). Said of one who, like a rolling potato, has nothing to hold fast to. The hill was said to have been named for a sweet potato that broke loose from its vine on a field above and rolled down to a field below in Mānoa.
[ʻŌlelo Noeʻau #50]

Ka Ua Kuahine o Mānoa
The Kuahine Rain of Mānoa
The rain is famed in the songs of Mānoa. According to an old legend, Kuahine was the chiefess, the wife of Kahaukani. Their daughter Kahalaopuna was so beautiful that rainbows appeared wherever she was. Once, two gossiping men claimed they had made love to her. This so angered her betrothed husband he beat her into unconsciousness. She was revived by an owl god but after hearing more gossip, her betrothed killed her. In grief, her mother became the Kuahine rain. Her father adopted two forms- the wind Kahaukani and a hau tree. It was said that this tree moaned in grief whenever a member of royalty died.
[ʻŌlelo Noeʻau #1574]

In 1919, Theodore Kelsey cites Emerson who mentions the Kuahine rain of ʻUalakaʻa in the legend of Pele and Hiʻiaka:

> *Ma ka hoʻākāka a Mr. Emekona, ma ka moʻolelo o Pele a me Hiʻiaka, ʻo ka ua Waʻahila, he ua kilihune ia mai [Nuʻuanu] mai, a hiki i kahi o Kauka, ma ke alanui Wyle. ʻO ka Līlīlehua, he ua ia mai Kaʻahelemoa mai a hiki i Makaiwi. ʻO ka ua Kuahine, ʻo ka ua ia mai Kailua a hiki i ʻUalakaʻa.*
>
> In the description by Mr. Emerson in the legend of Pele and Hiʻiaka, the ua Waʻahila is a gentle rain from Nuʻuanu to the area of Kauka (Judd) on Wyllie Street. The ua Līlīlehua is a rain from Kaʻauhelemoa to Makaiwi. The ua Kuahine is the rain from Kailua to ʻUalakaʻa. [Akana and Gonzalez 2015:278-279; original translation from the July 4, 1919 of the Hawaiian language newspaper *Ka Nupepa Kuokoa*]

Moʻolelo

Some well-known moʻolelo are associated with lands in places like ʻUalakaʻa, Makiki, and Kewalo. The moʻolelo of ʻUalakaʻa has many different versions. Fornander (1918-1919:532-533) shared two, condensed here into a narrative. According to the legend, two farmers – Kupihe and Kapanaia – were cultivating potatoes in Mānoa, Kupihe on the hillside and Kapanaia in the valley flats. Kapanaia's field yielded a single potato, which he placed within a mound. The next morning, Kapanaia returned to his field to find the mount and the potato gone. He observed a potato and mound in the hillside field of Kupihe. The two farmers quarreled over the potato, which rolled itself down the hill and attached to its parent vine again in the night:

> *Ua olelo ia ma keia moolelo aʻu I lohe ai, ua oki maoli ia no ke anakiu o ua uala nei e ka iole, a hoomaka mai ua uala nei e kaa a paa I ka mala a Kapanaia, a malaila kahi I waiho ai a ulu kaupuupu oia ka mea e ulu haupuupu nei ka uala a kakou e ike nei. Oia ka mea i kapa ia ai kela puu mauka o Makiki o ʻUalakaʻa, no ka kaa ana o ua uala la. A kekahi inoa aʻu i lohe ai o Iolekaa. O kekahi hoi, na Kaauhelemoa I kiko ke anakiu o ua uala la, a haule I ka mala a Kapanaia, no ke alualu ia ana mai e Pupuulima.*
>
> The story which Fornander heard, it is stated that the stem of this potato was bitten by a rat and the potato rolled down until it landed in Kapanaia's field, and it was left there until new sprouts commenced to grow from it. That is why new spouts come from potatoes as we see them now. That is why this potato at Makiki is called ʻUalakaʻa, because it rolled [downhill]. Another name which I heard [applied to it] was Iolekaa (rolling rat). Another has it that Kaauhelemoa pecked at the stem of this potato and it rolled to Kapanaia's field, because Pupuulima chased after it. [Fornander, 1918-1919:532]

Nineteenth century Hawaiian historian and statesman John Papa ʻĪʻī (1959), notes that that Kamehameha the Great farmed and lived part of the time in Mānoa near ʻUalakaʻa. Nineteenth

century Hawaiian scholar Samuel Mānaiakalani Kamakau explains the reason why Kamehameha valued these lands:

> *Ua lako loa ʻo Kamehameha i nā mea kaua haole, a pēlā nō hoʻi i nā aliʻi a pau. ʻAʻohe makemake nui ʻia ʻo ke dālā a me ka lole. A ʻike ʻo Kamehameha, ʻo ka ʻuala ka ʻai i makemake nui ʻia e ka haole, a ʻo ka uhi kahi, no Laila, mahi ihola ʻo Kameahmeha i ka ʻuala a nui, ʻo ia hoʻi ʻo ʻUalakaʻa ma Mānoa a ma Makiki. A mahi ihola i ka uhi ma Kaʻakopua, a ma Honolulu, ʻo ia hoʻi ʻo Kapāuhi, a kūʻai akula me nā haole.* [Kamakau 1996:168]
>
> Kamehameha was well-supplied with foreign weapons and equipment for war, as were all of the chiefs. There was no great desire for money or clothing. Kamehameha knew that sweet potatoes were the crop that the foreigners really liked, and yams too, so Kamehameha cultivated a lot of land with sweet potatoes, that was at ʻUalakaʻa and Mānoa and Makiki. And he farmed yams at Kaʻakopua and Honolulu, indeed at Kapāuhi (which means "the enclosure of yams"), and he bought and sold with the foreigners. [Translation by D. Duhaylonsod]

The story of Peapea relays the courage of the famed warrior and his victory over the forces of Kahahana:

> *A lohe o Peapea, haalelo iho la iai ka wahine a holo mai la ma uka mai o ʻUalakaʻa, Makiki, Pauoa, Kaheiki, e pili la me Maemae. Ilaila loaa iaia ka maka mua o na kanaka o Kahekili. A o ko Kahahana aoao hoi, i Waolani ka poe, i Maemae ka maka mua e iho mai ana. A hiki i Peapea ma waena o ko Kahekili mau koa a me ko Kahahana mau koa, ku iho la ia e pani.* [Fornander 1918-1919 Vol:5: 459-461]
>
> When Peapea heard this he left his wife and ran above Ualakaʻa, Makiki Pauoa, and Kaheiki, which is adjacent to Maemae. There he met the van of the army of Kahekili. As to the forces of Kahahana, the main army was at Waolani, while the front was descending from Maemae. When Peapea arrived between Kahekili and Kahahanas warriors he stood to defy [the advance]. [Fornander 1918-1919 Vol:5 458-460]

HISTORICAL LANDSCAPE

Early Historic Period

Accounts of cultivation in the ʻUalakaʻa area during the time of Kamehameha were recorded by John Papa ʻĪʻi (1959:69; see above), foreigners to Hawaiʻi, as well as research affiliates at the Bishop Museum (Handy 1940; Handy, Handy, and Pukui 1991). Dr. F. J. F. Meyen, a German botanist, visited the Makiki Valley area in 1831 and described habitation and agricultural features in the valleys along streams (Pultz 1981:46).

In 1940, Bishop Museum research affiliate E.S. Craighill Handy published that taro cultivation occurred in Makiki swamplands, while mauka lands such as the project area in ʻUalakaʻa, were known for sweet potato cultivation (1940:78). Handy further noted that:

> ...[b]etween Kalakaua Avenue and Kakaako there were extensive terrace areas in the swampy land. A few terraces are now planted in rice, and others are filled in and used as house sites, right of way for streets, etc.
>
> Punchbowl Crater (Puowaina), on both the inner and outer slopes, was also famous in ancient times as a sweet potato locality. The planting was especially good on the inland side near the present Hawaiian homestead of Papakolea.
>
> The region around Makiki and Round Top, between Makiki and Manoa Valley, is perhaps the most favorable locality on Oahu for sweet potato cultivation; here Hawaiians still have many small plantations, mostly for domestic use, though occasionally they market their products. The volcanic cinder mixed with humus in this locality seems to be ideal for sweet potato cultivation and normally the amount of rainfall is about right. [Handy 1940:156]

Of cultivation in Makiki and cinder cones specifically, Bishop Museum Research affiliated Handy, Elizabeth Handy, and esteemed Hawaiian ethnographer Mary Kawena Pukui write:

> Kamehameha revived the use of this locality for sweet-potato cultivation. The place is ideal, because all the year round there is enough rain for 'uala, and even in rainy winter months the drainage on the cinder slopes is complete. Sweet potatoes flourish in volcanic cinders, with a little infiltration of humus, and in crumbling lava. Kamehameha is said to have had the whole hillside planted ... [Handy, Handy, and Pukui 1972:478]

Puʻu ʻUalakaʻa, location of the project area, was "famous in the annals of Hawaiian agriculture because here Kamehameha I established his own plantation [of sweet potatoes] on the steep slopes above Manoa" (Handy 1940:156).

The Mahele and Kuleana Act

Historical records from the Mahele document Land Commission Awards along stream valleys in Makiki where sweet potato and taro were grown (Table 3; Figure 4).

Table 3. Land Commission Awards, Royal Patents, Grants and Deeds proximal to the project area

Type	Awardee	Helu	RP	Ahupua‘a
Royal Patent	Mokuhanui		3830	Makiki
Royal Patent	Ia		5463	Makiki
Royal Patent	Nahina		3863	Makiki
Grant	Ena, John	3648	N/A	Mānoa
LCA	Ii	8241	N/A	Mānoa
LCA	Ii, Ioane	8241	N/A	Makiki
LCA	Kaaione	24	N/A	Makiki
LCA/ Royal Patent	Kaihiwa	6489	4519	Pawa‘a
LCA/ Royal Patent	Kaihiwa	6489	4519	Makiki
LCA/ Royal Patent	Kaihiwa	6489	4519	Makiki
Grant	Kamehameha V (Lot)	2788	N/A	Makiki
Grant	Kamehameha V (Lot)	2788	N/A	Makiki
LCA/ Royal Patent	Kauliokamoa	MA 24	2057	Makiki
LCA/ Royal Patent	Kauliokamoa	MA 24	2057	Makiki
Grant	Komaia	136	N/A	Mānoa
Deed	Lunalilo, W. C. Estate	N/A	N/A	Pawa‘a
Grant	Montano, Mary J.	3759	N/A	Mānoa
Grant	Neumann, E. S. V.	3726	N/A	Mānoa
Grant	Schmidt, H. W.	3535	N/A	Makiki
Grant	Stevens, John	641	N/A	Mānoa
LCA/ Royal Patent	Castle & Cooke Trustees for ABCFM	389	1931	Mānoa

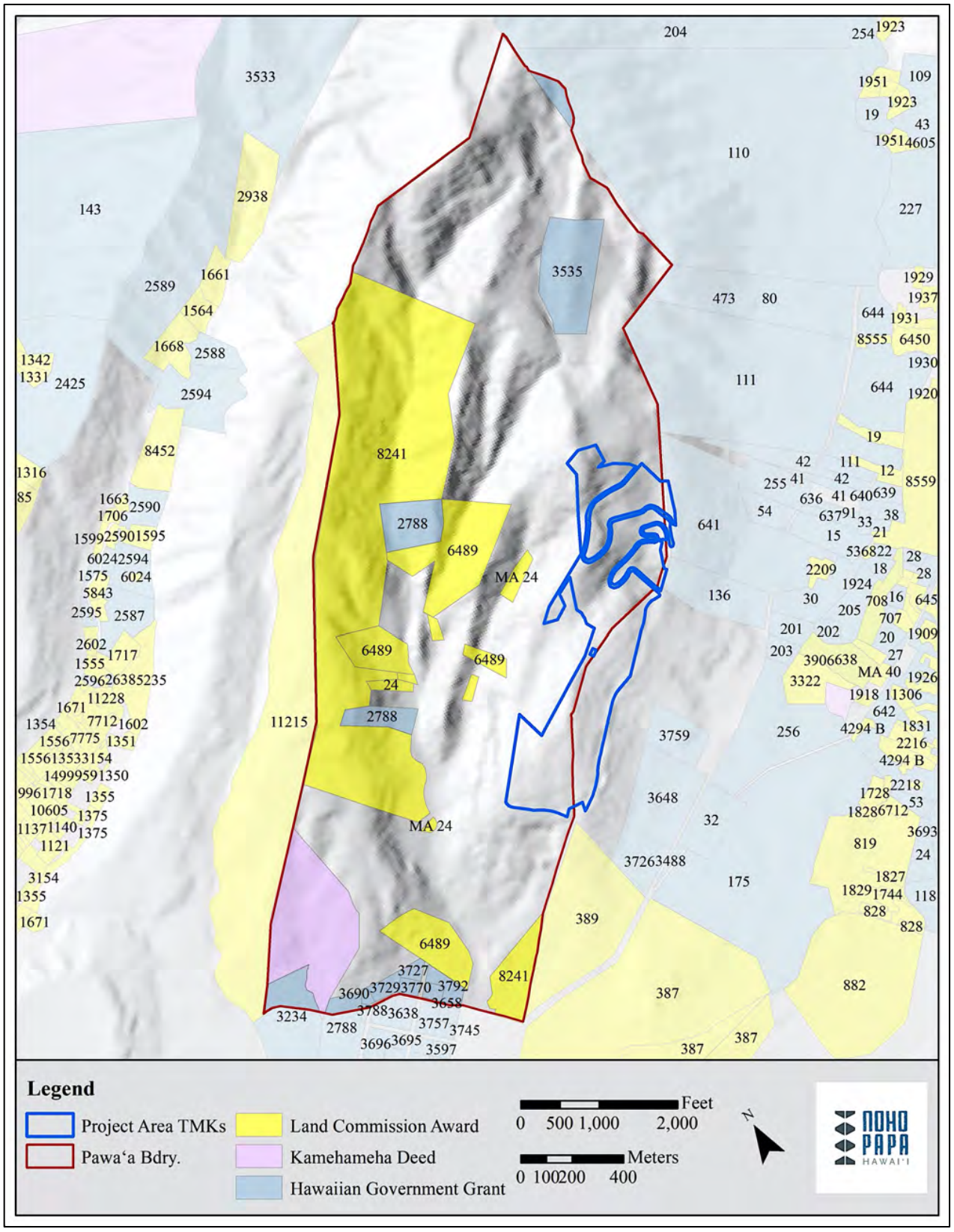

Figure 9. Overlay showing LCA, deed and grants within the surrounding project area.

Mid- to Late 1800s

Writing in the early nineteenth century during the initial years of foreign incursion into Hawai‘i by Europeans and Americans, Meyen described Makiki in his diary:

> As soon as the valley became wider the beautiful vegetation disappeared. The slopes of the mountains were covered only with low grasses, the huts of the Indians became more numerous and here and there large boulders appeared again. The end of a low ridge which runs through the center of this transversal valley had been artificially cleared of vegetation and of the cover of humus. The rock which came to light here is a very attractively colored basalt conglomerate. The Indians were just then busy chipping flat pieces from this rock which they wanted to use to hunt octopus. The rock on the sides of the valley, however, is the usually porous basalt which is found all around Honolulu. Here and there one can find caves in this rock, some of which are inhabited. [Pultz 1981:46]

Meyen also wrote of shifts in land use during the early historical era:

> Everywhere one hears the complaint that in former times a far greater quantity of field-produce was cultivated than now .... Many and very extensive fields through which we have just wandered and which are presently being used as pasture land were formerly covered with sweet potatoes. Today one can still see the remaining traces of their cultivation. They say that in the days of Kamehameha a great part of the Honolulu Valley was used for the cultivation of field-produce. Now there are meadows there and the valley is far less productive that in former times. [Pultz 1981:46-47]

Historical maps record the project area as part of the estate of Kamehameha IV in 1874 (Figure 10), and the city of Honolulu encroaching upon the agricultural lands in the Makiki flats by 1885 (Figure 11). A map from 1913 shows the approximated location of the project area in Makiki bounded by a segment of the extensive Hawaiian trail system that veined O‘ahu (Figure 12; Figure 13).

1900s

In 1904, upper Makiki Valley was designated a forest preserve. In 1957, the Makiki-Tantalus State Park was established, including the wayside. It is indeterminate when‘Ualaka‘a State Park, the location of the project area, was established, but it is part of Makik-Tantalus State Park. Military installations were placed in the project area vicinity during World War II and are still present today (Hawai‘i State Parks 2024).

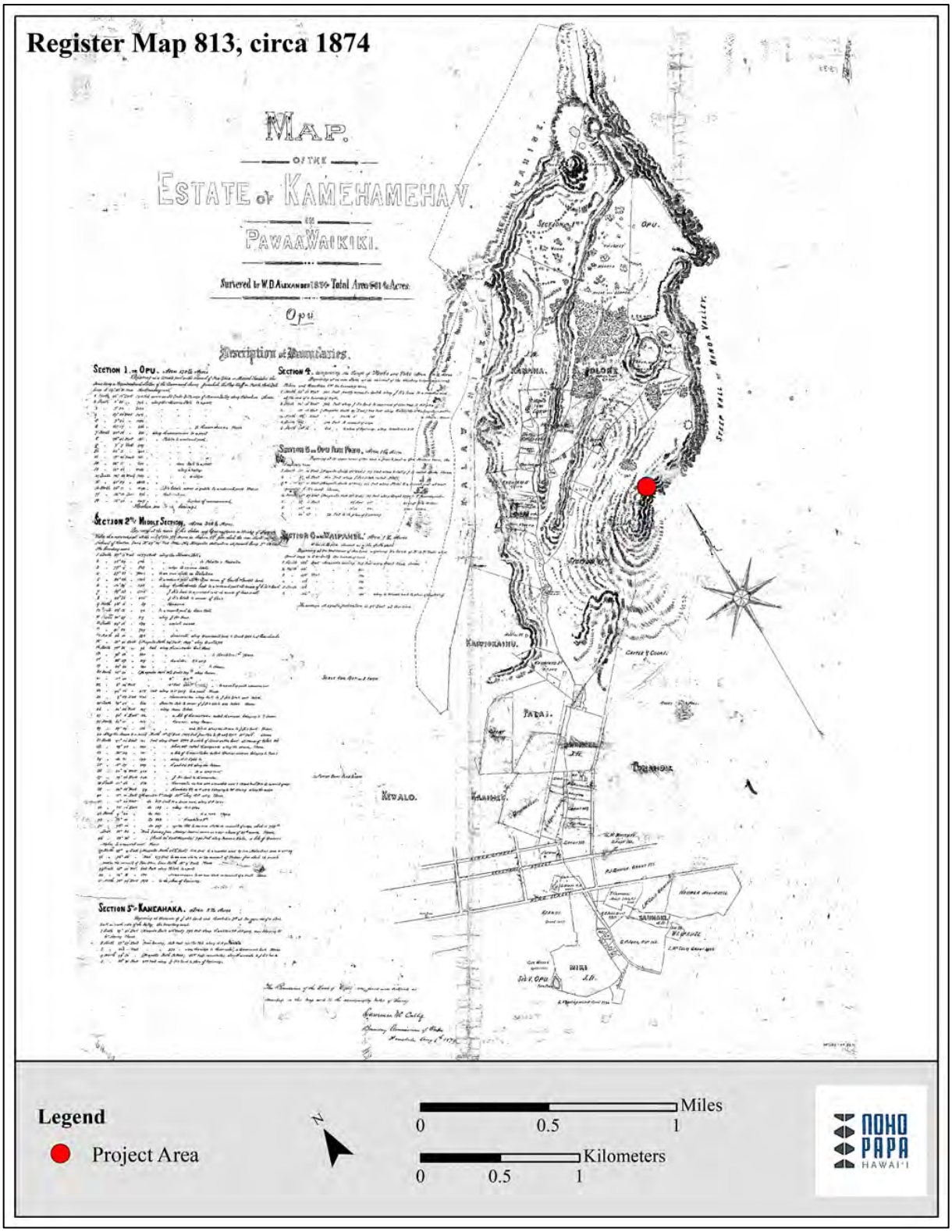

Figure 10. Register Map 813, created c. 1874 by W.D. Alexander, entitled “Map of the Estate of Kamehameha V in Pawaa Waikiki” showing the location of the project area (red dot)

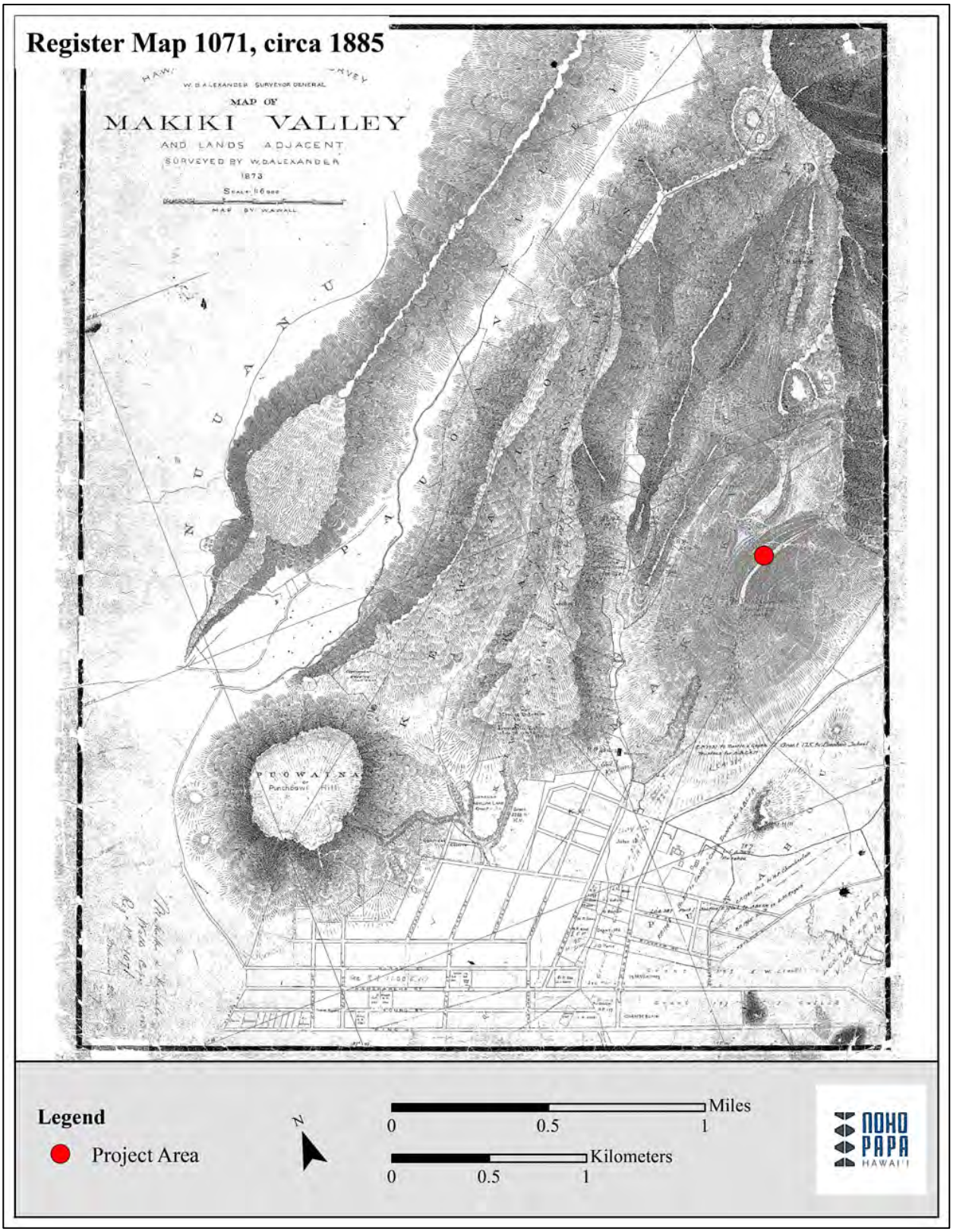

Figure 11. Register Map 1071, created by surveyor W. Alexander in c. 1885, entitled “Map of Makiki Valley and Lands Adjacent” featuring the location of the project area (red dot)

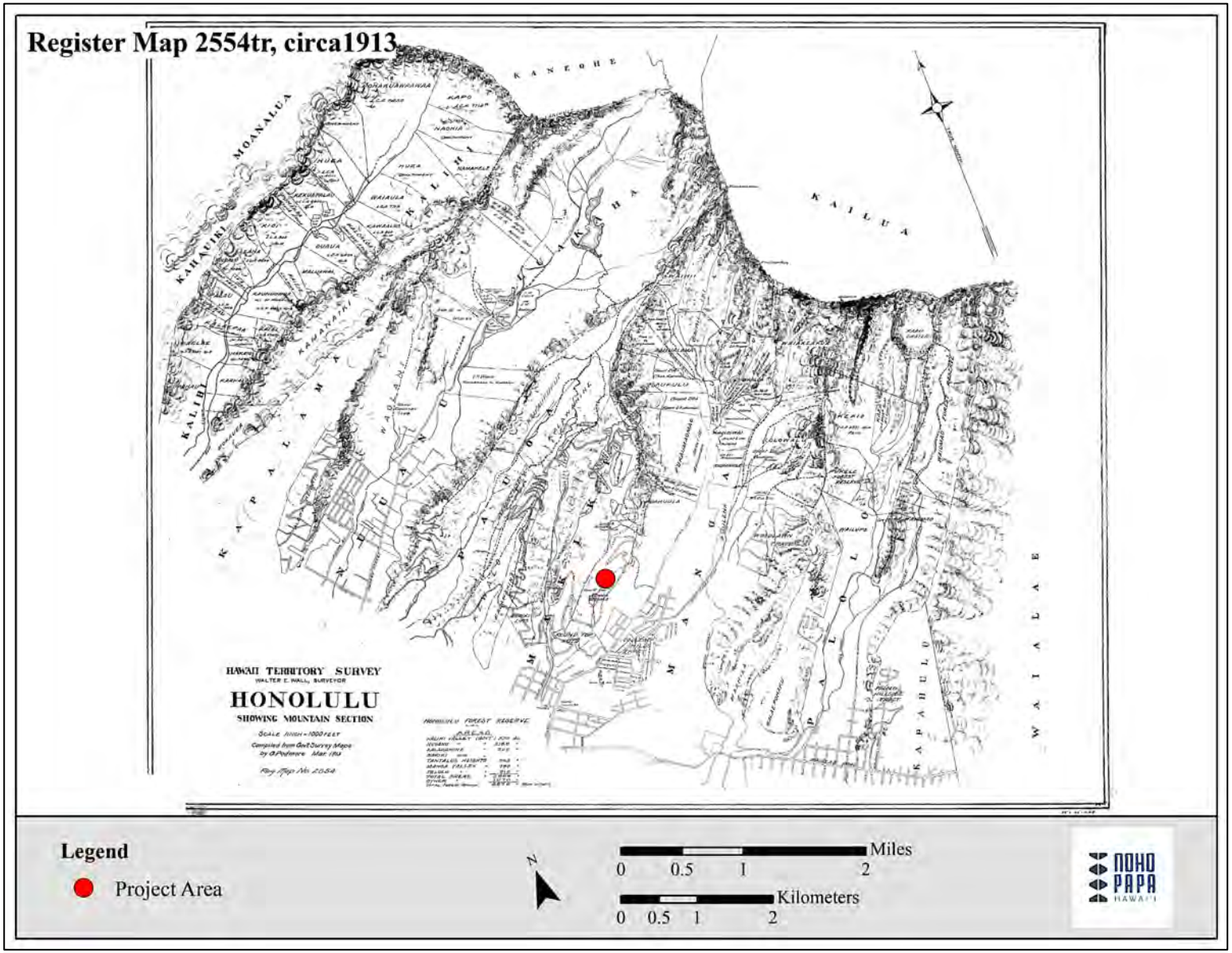

Figure 12. Register Map 2254tr, created c. 1913 by surveyor Walter Wall, during the Hawai‘i Territory Survey

Figure 13. Close-up of Register Map 2254 showing an artery of the extensive Hawaiian network of trails near the approximate location of the project area (red dot)

PREVIOUS ARCHAEOLOGICAL STUDIES

Previous Archaeological Research Within The Project Area and Vicinity

Results of Nohopapa Hawai‘i’s public records search indicates two compliance archaeological studies have occurred in the project area and no historic properties are officially recorded as associated with the project area, although it is important to note there is a segment of an ancient trail network near or within the project area that would qualify as a historical property and should be listed on the State Inventory of Historic Places (see discussion above, and in the last paragraphs of this section).

Contemporary archaeologists and Department of Land and Natural Resources- Division of State Parks employees Alan Carpenter and Martha Yent (1994) conducted a 90-acre archaeological inventory survey of Pu‘u ‘Ualaka‘a State Wayside Park that included the project area. They recorded a rock shelter (SIHP #50-80-14-4668) and series of terraces (SIHP #50-80-14-4866) near a stream and within Makiki Valley. Contrary to expectations, they recorded nothing in the project area itself despite a high likelihood for historic properties. Carpenter and Yent explain this by noting that Pu‘u ‘Ualaka‘a was “altered for agricultural production and recreational use in this century, which appears to have destroyed any archaeological site which may have formerly existed on the slopes or summit of the pu‘u" (Carpenter and Yent 1994:39).

The contract and compliance archaeology firm Cultural Surveys Hawai‘i completed an LRFI for the installation of the Round Top Radio Facility Building Addition, and found no historic properties (Hammatt and Shideler, 2010).

While not given a formal SIHP number, there is an extensive trail system across the Ko‘olau that were established and would have been well used in pre-contact times. A segment of these trails connects to the project area. The ‘Ualaka‘a trails, as recorded in the State Ala Kahakai Trail system, and by DLNR, State Parks; “the trail begins in Pu‘u ‘Ualaka‘a State Wayside. It is a short loop through thick forest canopy. At the uphill end of the trail you come to a 4-way intersection with Makiki Valley, Moleka, and Maunalaha Trails” (www.dlnr.hawaii.gov/dsp/hiking/oahu/ualakaa-trail/).

These ala (trails) are not formal in architecture, as with the ala kahakai in Kona, Hawai‘i Island. Rather, they are defined by use, and many are still used today. This ridgeline trail system spans the Ko‘olau range above Honolulu. Before lower valley roads were formalized, and such terms as “Government Roads” were coined, the trail system along the ridges would have been the shorter routes to get from Honolulu or Waikīkī, across the pali to connect with trails in Ko‘olaupoko and then on to Waimānalo, Kailua or Kāne‘ohe. Even today you could part at the wayside parking lot at the project area and take off on system of interconnected trails that would lead you into Nu‘uanu, over the pali, Konahuanui, the highest peak on the Ko‘olau range, and a wahi pana (storied place) and wai hālau (source of water) for both Kona and Ko‘olaupoko moku. Konahuanui is the summit at the back of two historic royal centers on O‘ahu, Kailua and Waikīkī. The safest

(and perhaps only) route to reach the summit of Konahuanui is by following the spine of ʻUalakaʻa mauka.

Background Research Summary and Predictive Model

In summary, based on historical research and previous archaeology, Makiki Valley was utilized for the cultivation of taro and sweet potatoes by Hawaiians through the historical era, with Puʻu ʻUalakaʻa serving as the sweet potato plantation of Kamehameha I and part of the estate of Kamehameha IV. During the Mahele, large scale crop cultivation land use was transformed into small-scale residential agriculture with associated habitation dwellings. Land Commission Award (LCA) documentation provides evidence of dry and wet agriculture of kalo and ʻuala cultivation in the area with associated house lots. Much of the upper valley later became part of a park and forest preserve, which may have preserved many of the pre- and-post contact agricultural features.

In addition to agriculture there is an extensive trail system that ʻUalakaʻa is a part of; these ala (trails) are not formal in architecture, as with the ala kahakai in Kona, Hawaiʻi Island. Rather, they are defined by use, and many are still used today. This ridgeline trail system spans the Koʻolau range above Honolulu. Before lower valley roads were formalized, and such terms as “Government Roads” were coined, the trail system along the ridges would have been the shorter routes to get from Honolulu or Waikīkī, across the pali to connect with trails in Koʻolaupoko and then on to Waimānalo, Kailua or Kāneʻohe. Even today you could part at the wayside parking lot at the project area and take off on system of interconnected trails that would lead you into Nuʻuanu, over the pali, Konahuanui, the highest peak on the Koʻolau range, and a wahi pana (storied place) and wai hālau (source of water) for both Kona and Koʻolaupoko moku. Konahuanui is the summit at the back of two historic royal centers on Oʻahu, Kailua and Waikīkī. The safest (and perhaps only) route to reach the summit of Konahuanui is by following the spine of ʻUalakaʻa mauka.

A 1994 Archaeological Survey of Puʻu ʻUalakaʻa State Wayside Park area, by DLNR Division of State Parks, identified no historic properties (Carpenter and Yent 1994). Additionally, a Literature Review and Field Inspection by Hammatt and Shideler (2010) noted that the project area had been subjected to significant alterations and modifications.

Based on background research, it was expected that a segment of the larger ʻUalakaʻa trail system would be present within or adjacent to the project area. Previous studies have failed to acknowledge the trail system as a historic property. This system of trails, although not formally recorded, based on our research are eligible historic properties based on relevant law and likely eligible for a SIHP. Based on this same research, successive land modifications conducted within the project area associated with the development of the Puʻu ʻUalakaʻa State Wayside Park campus, and the construction of existing ICSD Round Top Radio facility; it is anticipated that no historic properties, in addition to the trail system, are likely to be present within the project area.

FIELD INSPECTION

Field Inspection Methods

Nohopapa Hawai‘i, LLC completed the fieldwork component of this study under archaeological permit 13-21, issued by the SHPD pursuant to HAR §13-13-282. Fieldwork was conducted on September 15th, 2021, at the setting of the ‘Olekūkolu moon, by Nohopapa Hawai‘i, LLC Principal Investigator, Dominique Cordy, M.A.

Field survey consisted of a surface pedestrian survey to assess if historic properties were located within or in the immediate vicinity of the project area, and if present if they might be impacted by the proposed project.

Figure 14.Looking NNE. Foreground is 1st radio tower, second is behind the stone building which is the restrooms; the parking lot is visible beyond.

Field Inspection Results

The radio towers are in two separate, but adjoining, fenced areas measuring ~0.11 acres The parking lot is a paved area ~0.33 acre. The project area built environment includes the fenced towers, restrooms, parking lot, and mowed areas, totaling ~1.15 acres. The mowed lawn between the restrooms and the parking lot are covered with various utility manholes (see cover photo), it is likely the path of the proposed project utilities, will be in

previously disturbed soils. Beyond the maintained lawn the topography drops off steeply to the north and the south. A trail connecting to the larger Tantalus (ʻUalakaʻa) system extends off the project area to the west, and in the east, where the parking lot ends, the roadway begins. This entire area was transected, visibility was excellent, as the entire proposed project area is open and cleared.

Figure 15. Looking NNE. Foreground is 1st radio tower, second is behind the stone building which is the restrooms; the parking lot is visible beyond.

Figure 16. Southwest corner of Radio facility, looking NNW.

The only inaccessible portions of the project area included the fenced radio towers, which have been graded and are mostly covered at the base by concrete pads. The entire project area has been heavily impacted by infrastructure, likely graded during initial installation of tower(s), restrooms, and parking lot.

In addition, the immediate steep slopes were surveyed in three descending transects from the perimeter of the maintained radio tower area. Vegetation was invasive scrub including pines, koa haole, buffalo grass, lantana; no native vegetation was identified.

Figure 17. Looking WSW down the trail with the Radio Towers and Restrooms at photographer's back..

The only potential historic property present is a trail segment, which connects with the larger ancient trail system, that extends across the ridgelines of the Koʻolau mountains; the ʻUalakaʻa ridge trail is the only route to the summit of Konahuanui, the highest peak in the Koʻolau range.

However, the trail segment in the project area itself is not formally defined, in this area it is merely a grassy path, the larger connectivity of the ala being of important cultural significance. As one of the purposes of the park and parking lot are maintenance and access to the trail, and the proposed project does not impact the trail or access to the trail: Nohopapa Hawaiʻi does not foresee any impacts to this historic property as a result of the proposed project. As no other historic properties were identified, based on the intensive development of this small area, and that the footprint of the proposed project is within the developed area, Nohopapa Hawaiʻi does not recommend further archaeological work for this proposed project. It is our conclusion that the current project, as proposed, will have no impact and no significant effect to any historic properties.

RECOMMENDATIONS

No historic properties were identified during pedestrian survey of the project area. Based on the literature review and pedestrian survey, much of the study area has been highly impacted by grading, leveling, and non-native vegetation. There remains the possibility of subsurface historic properties outside, although it is our opinion based on this limited literature review, pedestrian field inspection, and general understanding of archaeology in Hawai‘i, that the probability of intact subsurface deposits is unlikely 1) in this location and 2) based on the heavily-developed nature of the project area.

Based on this literature review and pedestrian survey, and in consideration of HAR §13-13-275-8, we do not concur with the previous determination that no historic properties are present in ICSD Round Top Radio Facility area. Background research shows an ala (trail) segment connecting to the larger ancient ala system that spans the ridgelines of the Ko‘olau Mountain Range does pass through or at least alongside the project area. This trail segment is the only historic property identified. However, the current proposed project does not affect this trail nor access to the larger system. No other historic properties were identified through background research or field inspection.

The presence of a segment of the larger Ko‘olau trail system within the project area or adjoining vicinity is a historic property that should be listed on the State Inventory of Historic Places (SIHP). Due to the high level of disturbance and modification within the project area which would likely compromise the integrity of any existing historic property, it is unlikely that if any trail segments present in the project area would be eligible for listing on the Hawai‘i Register of Historic Places. However, no impacts to this historic property (trail segment or larger system) are anticipated by the proposed project. In fact, the presence of the wayside campus lends itself to both the maintenance and continued access to this important cultural resource.

It was noted during the pedestrian field inspection performed for this study that the project area has been subject to surface disturbances, and evinced surface grading and leveling associated with prior development of the immediate area for the Pu‘u ‘Ualaka‘a State Wayside and the existing ICSD Round Top Radio Facility. Consequently, there will likely be no significant impacts on any potential historic properties as a result of the proposed project.

Based on the results of this LRFI, Nohopapa Hawai‘i recommends a project effect determination of “No historic properties affected” for the subject project. This conclusion is due to the very low likelihood of the project impacting subsurface historic properties within the project area based on the previous ground disturbances. As a result, no further archaeological work is required at this time.

Additionally, the ‘Ualaka‘a Trail is located just outside the project area and falls beyond the scope of the current LRFI. Nohopapa Hawai‘i recommends that SHPD update the HICRIS GIS database to include the trail system and formally assign it an SIHP number.

Due to COVID-19 restrictions, we were unable to conduct research physically at the Hawai‘i State Archives or at Bernice Pauahi Bishop Museum. Future studies should include physical research at both institutions.

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Appendix D: Cultural Impact Assessment

Cultural Impact Assessment for the Round Top Information and Communication Services Division (ICSD) Emergency Radio Facility and Other Improvements at Pu‘u ‘Ualaka‘a State Wayside Park

Honolulu and Waikīkī Ahupua‘a (East Makiki), Kona Moku, O‘ahu Mokupuni

TMKs: (1) 2-5-019:003 (por.) and (1) 2-5-019:011

Prepared by

NOHO PAPA HAWAI‘I

Prepared for

This report was prepared by Nohopapa Hawaiʻi, LLC for Bowers + Kubota

AUTHORS
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PROJECT SUMMARY

Reference	Cultural Impact Assessment for the Round Top Information and Communication Services Division (ICSD) Emergency Radio Facility and Other Improvements at Makiki, Kona Moku, Oʻahu Mokupuni, TMKs (1) 2-5-019:003 (por.) and (1) 2-5-019:011. (Merrin et al. 2024).
Date	November 2024
Land Jurisdiction	State of Hawai'i, Department of Accounting and General Services (DAGS), Information and Communication Services Division (ICSD)
Project Proponent	Bowers + Kubota
Project Location	The Round Top Information and Communication Services Division (ICSD) is situated within the existing Puʻu ʻUalakaʻa State Wayside Park at the top of Tantalus in Makiki, Honolulu at 2760 Round Top Drive, TMK: 2-5-019:003 (por.). The site is also shared with the City and County of Honolulu (City) radio facility, TMK: 2-5-019:011. The State of Hawai'i owns the land, which is within the State Conservation District (Resource subzone). The site is located within a City & County P-1 zone and is not within the Special Management Area. The area is in FEMA Flood Zone Designation X (beyond 500-year flood plain). This Cultural Impact Assessment was conducted for the entire project area of approximately 0.6 acre for TMKs (1) 2-5-019:003 (por.) and (1) 2-5-019:011.
Project Description	The proposed project includes: • Demolition and removal of the State's 100-foot radio tower and the City's 100-foot radio tower • Construction of a new 180-foot radio tower. The base of the radio tower will have a width of 23-feet and length of 23-feet from leg to leg. The radio tower will accommodate over 40 appurtenances and equipment, which are being transferred over from the two existing 100-foot radio towers; • Clearing of approximately 27 trees; • Site clearing, grading, and grubbing for a new foundation; • Four drilled shafts to support each tower leg (5 ft diameter by ~60 ft below-finished grade); • A new retaining wall with a 6-ft high chain link and barb-wired fence around the new tower; • A new concrete pile cap foundation to accommodate the new tower; • Trenching to reroute an existing waterline (~350 ft long by ~3 ft deep); • Tree and vegetation trimming that will be performed to the extent needed to ensure the continued operation of the ERF facilities.
Project Acreage	The study area is approximately 0.6 acre within TMKs (1) 2-5-019:003 (por.) and (1) 2-5-019:011.
Area of Potential Effect (APE) and Inspection Area Acreage	Evidence of traditional cultural practices in the direct area of the project site per se would be unlikely due to successive land modifications associated with the development of the Puʻu ʻUalakaʻa State Wayside Park and the construction of the existing ICSD Round Top Radio facility.

	Based on background research, it was expected that a segment of the larger ʻUalakaʻa trail system would be present within or adjacent to the project area. Previous studies have failed to acknowledge the trail system as a historic property. This system of trails, although not formally recorded, based on our research are eligible historic properties based on relevant law and likely eligible for a SIHP. Based on this same research, successive land modifications conducted within the project area associated with the development of the Puʻu ʻUalakaʻa State Wayside Park campus, and the construction of existing ICSD Round Top Radio facility; it is anticipated that no historic properties, in addition to the trail system, are likely to be present within the project area.
Document Purpose	The Project requires compliance with the Hawaiʻi environmental review process (Hawaiʻi Revised Statutes [HRS] Chapter 343), which requires consideration of a proposed Project's effect on cultural practices and resources. At the request of Bowers + Kubota, Nohopapa Hawaiʻi, LLC is conducting this CIA. Through ethnohistoric research and community engagement efforts, this CIA provides information pertinent to the assessment of the proposed Project's impacts to cultural practices and resources (per the *Office of Environmental Quality Control's Guidelines for Assessing Cultural Impacts*) which may include Traditional Cultural Properties (TCP) of ongoing cultural significance that may be eligible for inclusion on the State Register of Historic Places, in accordance with Hawai'i State Historic Preservation Statute (Chapter 6E) guidelines for significance criteria (HAR §13-284) under Criterion E. The document is intended to support the Project's environmental review and may also serve to support the Project's historic preservation review under HRS § 6E-42 and Hawai'i Administrative Rules (HAR) §13-275.
Community Engagement	Community Engagement for the CIA was conducted from August 2021 through October 2021. As a multi-phase study, the ethnographic process consisted of identifying appropriate and knowledgeable individuals, conducting consultation through emails, phone calls and/or zoom interviews, summarizing the participants manaʻo, analyzing the information, and preparing the community manaʻo summaries for the report. Two individuals and seven organizations were contacted to participate in this study. An interview was completed with two individuals and three organizations emailed their comments and/or recommendations.
Recommendations	No evidence of traditional cultural practices in the direct project site have been identified. The project will not adversely impact any gathering practices as may be ongoing in the surrounding forest. However, it is important to be cognizant of times of the year when access is needed for areas nearby or outside of the project area (such as the road) where certain cultural practices occur (such as Makahiki). Recommendations provided by community were for the Park and surrounding areas of ʻUalakaʻa which included ideas and themes of a Historical and Cultural Visitors Center, Finding Solutions to Water Management, Stewardship, Education, and Access.

INTRODUCTION AND METHODS

He Leo Mahalo

Mahalo to all the individuals involved in this project, in particular the kupuna, kamaʻāina, and organizations who shared their precious time, memories, and manaʻo for this study. The manaʻo that was shared will help to mālama ʻUalakaʻa for future generations to better understand, appreciate, and cherish the uniqueness of this place. Mahalo to Stacy Naipo from the State Historic Preservation Department (SHPD) for helping us retrieve reports for the project area. Lastly, mahalo to Bowers + Kubota Company for this opportunity to conduct a Cultural Impact Assessment for the Round Top ICSD Emergency Radio Facility and Other Improvements at ʻUalakaʻa.

Project Background

On behalf of Bowers + Kubota and Nohopapa Hawaiʻi, LLC conducted a Literature Review and Field Inspection for Round Top Information and Communication Services Division (ICSD) Emergency Radio Facility and Other Improvements at ʻUalakaʻa. The Round Top Information and Communication Services Division (ICSD) is situated within the existing Puʻu ʻUalakaʻa State Wayside Park at the top of Tantalus in Makiki, Honolulu at 2760 Round Top Drive, TMK: (1) 2-5-019:003 (por.) (Figure 2). The site is also shared with the City and County of Honolulu (City) radio facility, TMK: (1) 2-5-019:011. The State of Hawaiʻi owns the land, which is within the State Conservation District (Resource subzone). The site is located within a City & County P-1 zone and is not within the Special Management Area. The area is in FEMA Flood Zone Designation X (beyond 500-year flood plain).

The proposed project includes:

- Demolition and removal of the State's 100-foot radio tower and the City's 100-foot radio tower
- Construction of a new 180-foot radio tower. The base of the radio tower will have a width of 23-feet and length of 23-feet from leg to leg. The radio tower will accommodate over 40 appurtenances and equipment, which are being transferred over from the two existing 100-foot radio towers;
- Clearing of approximately 27 trees;
- Site clearing, grading, and grubbing for a new foundation;
- Four drilled shafts to support each tower leg (5 ft diameter by ~60 ft below-finished grade);
- A new retaining wall with a 6-ft high chain link and barb-wired fence around the new tower;
- A new concrete pile cap foundation to accommodate the new tower;
- Trenching to reroute an existing waterline (~350 ft long by ~3 ft deep);
- Tree and vegetation trimming that will be performed to the extent needed to ensure the continued operation of the ERF facilities.

This CIA will help fulfill an Environmental Assessment (EA) conducted to find and address adverse impacts and mitigative measures. Specifically, the EA will include the following associated studies:

- » Archeological Literature Review and Field Inspection (LRFI). The LRFI excludes review or evaluation of possible historical architecture.
- » Flora and fauna (biological) resources report.
- » Cultural Impact Assessment.

In addition, a Conservation District Use Permit (CDUP) will also be filed as the project site is located on State designated Conservation Land. It is anticipated that the CDUP will require a board permit due to the height of the new tower, which will be substantially higher than the two existing towers; however, a public hearing may not be required upon approval of the CDUP.

This CIA was conducted for the entire project area TMKs (1) 2-5-019:003 (por.) and (1) 2-5-019:011. The project spanned a five-month period from June 2021 through October 2021. Project personnel included: Lilia Merrin, M.A. and Momi Wheeler, B.S. and principals, Dominique Cordy, M.A. and Kelley L. Uyeoka, M.A. Rachel Hoerman, Ph.D., and Io Kauhane, B.A., worked on updates to this report in 2024.

Document Purpose

The primary purpose of this project is to document cultural features, resources, and practices in the project area, to give voice to some of the community's ʻike (knowledge) and manaʻo (thoughts) on the proposed project; and to summarize community concerns and recommendations as they relate to cultural practices within and around the project area, specifically how the proposed project might impact the community—past, present, and future. This report is intended to be used as a source to develop strategies, make informed decisions, and provide recommendations for project proponents.

This CIA is intended to support the Project's environmental review and may also serve to support the Project's historic preservation review under Hawaiʻi Revised Statutes (HRS) Chapter 6E–42 and Hawaiʻi Administrative Rules Chapter 13–284. HRS Chapter 343, requires consideration of a proposed Project's effect on cultural practices. This CIA addresses the proposed Project's impacts to cultural practices and resources, including Traditional Cultural Properties (TCP) of ongoing cultural significance that may be eligible for inclusion on the State Register of Historic Places, in accordance with Hawaiʻi State Historic Preservation Statute (Chapter 6E) guidelines for significance criteria (HAR §13–284–6) under Criterion E which states to be significant an historic property shall:

> Have an important value to the Native Hawaiian people or to another ethnic group of the state due to associations with cultural practices once carried out, or still carried out, at the property or due to associations with traditional beliefs, events or oral accounts—these associations being important to the group's history and cultural identity.

The CIA includes a review of literature (in English and Hawaiian), historical maps, photographs, and a compilation and summary of various ethnographic interviews related to traditional cultural practices and land use. Contents of the study include:

- » A discussion of the methods utilized for ethnohistorical research and review, and community engagement.
- » A general description of the natural landscapes and resources of ʻUalakaʻa in Makiki ahupuaʻa including geology, soils, climate, water resources, traditional ecological zones, native flora and fauna, and traditional subsistence practices.

- A compilation of cultural traditions such as inoa ʻāina, moʻolelo, ʻōlelo noʻeau, oli, and mele.
- An examination of the traditional land uses of ʻUalakaʻa in Makiki ahupuaʻa and a historical overview of land use changes including historical maps, visitor recollections, and Māhele information.
- A review and summary of the archaeological and cultural resources within ʻUalakaʻa in Makiki ahupuaʻa.
- A compilation of interview summaries from community participants with a discussion concerning the cultural beliefs, practices and resources identified, and if they are affected directly or indirectly by the proposed project.
- A presentation of final recommendations regarding the future management and stewardship of the study areas and a brief conclusion.

Information compiled in this CIA will be used to inform the Environmental Assessment (EA) and should serve as an initial cultural historical background and guide for the development of the Round Top Information and Communication Services Division (ICSD) Emergency Radio Facility and Other Improvements at ʻUalakaʻa. The structure and content of this Cultural Impact Assessment is in compliance with the primary guiding documents including: The Hawaiʻi Environmental Council's Guidelines for Assessing Cultural Impacts (Appendix D), A Bill for Environmental Impact Statement and Act 50 (Appendix E). This Cultural Impact Assessment meets industry standards and is in accordance with Chapter 343, HRS.

METHODS

This Cultural Impact Assessment consisted of three primary tasks: (1) ethnohistorical research and review; (2) community ethnographic interviews, summaries, and recommendations; (3) final report compilation. This project spanned a 5-month period from June 2021 through October 2021. Project personnel included: Lilia Merrin, M.A., Dominique Cordy, M.A., and Momi Wheeler, B.S., and principal; Kelley L. Uyeoka, M.A. While conducting this study, Nohopapa Hawaiʻi's research team incorporated a set of living values and beliefs to help guide our research, analysis, behavior, perspective, and overall frame of reference. The core values directing our hui included:

- *Aloha ʻĀina- to have a deep and cherished love for the land which created and sustains us*
- *Haʻahaʻa- to be humble, modest, unassuming, unobtrusive, and maintain humility*
- *Hoʻomau- to recognize, appreciate, and encourage the preservation, perpetuation, and continuity of our wahi pana and kaiaulu*
- *ʻImi Naʻauao- to seek knowledge or education; be ambitious to learn*
- *Kuleana- to view our work as both a privilege and responsibility*

These values represent the underlying foundation, spirit, and structure for this study. It was our hope that by providing a frame of reference and guiding values, the teams' efforts would be better understood in the context of our being indigenous researchers genuinely believing in and practicing aloha ʻāina and aloha lāhui.

The collection of information was divided into two parts – ethnohistorical and ethnographic.

Ethnohistorical Research Methods

The ethnohistorical information is the foundation for understanding the natural, cultural, and historical background of ʻUalakaʻa. To begin to provide a more comprehensive understanding of ʻUalakaʻa and its surrounding areas, this research looked at the cultural and historical overview of the Kona Moku and Makiki ahupuaʻa landscape, as well as the environmental setting, places names, ancient and historic trails, moʻolelo, land use, ownership, and management history of ʻUalakaʻa and its surrounding areas. This task encompassed a search in various archives, repositories, and online databases.

Background research included a review of previous archaeological studies on file at the State Historic Preservation Division, and a review of cultural history documents online at the University of Hawaiʻi at Mānoa's Hamilton Library, the Hawaiʻi State Archives, the Mission House Museum Library, the Hawaiʻi Public Library, and the Archives of the Bishop Museum.

Information on the environmental setting or natural landscape and resources as they relate to cultural and historical activities was gathered primarily through reviewing previous archaeological studies and various reports and books for the project area.

Historic maps and accompanying information were gathered from the University of Hawaiʻi at Mānoa Historic Map Collection, State Archives, the State Survey Register Map Database and other online databases as well as our internal Nohopapa databases. A list of inoa ʻāina (place names) was compiled from these historic maps. The literal (or provided figurative) meanings of the place names were obtained online from various Hawaiian Language Dictionaries, and online through Nā Puke Wehewehe ʻŌlelo Hawaiʻi and ManoMano.io.

To have a deeper understanding of place names as applicable to ʻUalakaʻa, moʻolelo, oli, and ʻōlelo noʻeau were compiled from Hawaiian language and English sources in books, newspapers, and online databases such as Lloyd Sohrens Hawaiʻi Place Name Database, Hawaiian Legends Index, Institute of Hawaiian Language Research and Translation and Nupepa.org.

Historical accounts which include Kingdom of Hawaiʻi land use and resource management practices, early visitor and plantation era accounts were derived from historical and documents such as Māhele records found on AVA Konohiki, and Waihona databases. Māhele information included looking at Boundary Commission Testimonies, Land Commission Awards, Native & Foreign Testimonies and Registers, Government Land Grants, Crown lands, and Government Surveys. Information about Māhele documents was accessed through Waihona ʻAina, Kipuka, and Papakilo databases. To accompany these historical accounts, this research included a search for historic photographs at the Hawaiʻi State Archives.

Ethnographic Interview Methods

Community engagement efforts were conducted from August 2021 through October 2021. The ethnographic process consisted of identifying appropriate and knowledgeable individuals, encouraging their active participation, gathering community manaʻo via phone calls, zoom interviews, and/or emails, and summarizing the manaʻo to include in the report.

Scoping and Interviewee Selection

Scoping for this project involved identifying and contacting interested, and knowledgeable individuals recognized as having genealogical, cultural, and/or historical connections to the

project area in the ahupua‘a of Honolulu-Waikīkī, Kona Moku. Initial scoping methods included emailing and mailing letters (Appendix A: Community Participation Letter; Appendix B: Interview Themes and Questions) to inform individuals of the project, contacting individuals by telephone, and/or meeting with individual in person to discuss the project. Participants were selected because of their familiarity with or knowledge of the project area. Two individuals and seven organizations were contacted to participate in this study. Interviews were completed with two individuals and three organizations emailed their comments and/or recommendations (Table 5).

Ethnographic Interviews

This ethnographic work utilized semi-structured interviews because they are open ended yet follow a general script covering a pre-determined list of topics. The interviews were conducted in a “talk story” format to allow for a more informal dialogue and free-flowing conversation. This interview style is typically more comfortable for participants as it flows more naturally and does not follow a rigid structure. Most of the interview questions were open-ended allowing for more response freedom while still maintaining the desired interview focus. The interview questions were derived from primary themes identified to obtain an understanding of the project areas historical and contemporary significance and to gather and evaluate potential impacts to the cultural practices and resources of the proposed development in Honolulu-Waikīkī Ahupua‘a. The overarching themes included:

- Cultural knowledge of mo‘olelo, ka‘ao, inoa ‘āina, mele, oli, ‘ōlelo no‘eau, and hula related to the project area
- Knowledge of wahi pana, wahi kapu, and wahi kūpuna and cultural practices assocaited with these wahi
- Knowledge of the ‘āina, natural landscapes and resources, and associated cultural uses
- Concerns regarding how this project might impact any Hawaiian wahi kūpuna (cultural resources) or practices within or around the project area
- Suggestions and recommendations regarding the management and stewardship of wahi kūpuna in and around the project area
- Referrals of kūpuna and kama‘āina who are knowledgeable of the project area and might be willing to participate in this study

Data Integration

All the interviews were recorded by hand-written notes and/or audio, and portions were then transcribed and summarized. The summaries were then sent to the participants for review, an accuracy check, and to confirm they were comfortable with the thoughts, information, and comments being shared. Nohopapa Hawai‘i worked hard to ensure that the voices of the community were honored, respected, correctly heard, and properly conveyed.

Ethics

Throughout the study, and particularly before any meetings or interviews, it was carefully explained to all participants that their involvement in the study was voluntary. An informed consent process was initiated and completed, including providing ample project background information. The informed consent form (Appendix C) included the participant’s rights including notification that participants could choose to remain anonymous. Project background information included explaining the study focus and the purpose and importance of the study.

After proper notification and discussion, the interview participants voluntarily provided verbal consent for Nohopapa Hawai‘i to use their mana‘o for the project and signed the requisite informed consent forms. All the interviews were scheduled and arranged for the participant’s convenience, and none of the interviews was initiated until participants felt comfortable and completely satisfied with the process.

NATURAL LANDSCAPE AND RESOURCES

Project Area

The Round Top Information and Communication Services Division (ICSD) is situated within the existing Puʻu ʻUalakaʻa State Wayside Park at the top of Tantalus in Makiki, Honolulu at 2760 Round Top Drive, TMK: (1) 2-5-019:003 (por) which is owned by the State of Hawaiʻi and managed by DLNR Division of State Parks. The site is also shared with the City and County of Honolulu (City) radio facility, TMK: (1) 2-5-019:011. The State of Hawaiʻi owns the land, which is within the State Conservation District (Resource subzone). The site is located within a City & County P-1 zone and is not within the Special Management Area. The area is in FEMA Flood Zone Designation X (beyond 500-year flood plain).

The project site is generally characterized by a forested setting and outdoor facilities and landscaping on the Round Top ridgeline, a prominent, elongated outcrop close to the center of urban Honolulu. Nearby neighborhoods include lower Round Top, Makiki and Makiki Heights, lower Punchbowl, Mānoa Valley, and Mōʻiliʻili.

The project site is accessible from Round Top Drive, a roadway owned by the City and County of Honolulu, and an existing access driveway and paved parking area. The project site is surrounded by the Round Top Forest Reserve to the north, a paved parking lot to the east, the comfort station and access walkway to the south, and the existing ICSD tower facility to the west. Beyond the boundaries of the Wayside are undeveloped forested State lands to the north, a few private homes makai of Round Top Drive to the south, and a City and County of Honolulu Board of Water Supply (BWS) reservoir located on Round Top Drive at about 700 feet msl.

Environmental Setting

Makiki Valley is bounded by Pauoa Valley to the west, following the borders of the ʻili called Kalawahine, Kewalo, and Kaiwiokaihu. Mānoa Valley is to the east; the two ahupuaʻa are separated by a ridge which extends from the base of Puʻu ʻŌhiʻa (Tantalus) to the top of Puʻu Kākea (Sugarloaf) and then to the top of Puʻu ʻUalakaʻa (Round Top).

The project area is situated atop Puʻu ʻUalakaʻa (Round Top), a cinder cone crater relating to the formation of the Koʻolau Range and are characterized by tholeiitic and olivine basalts. Moreover, the project area is located approximately 3.8 km (2.4 mi.) mauka (inland) of the southern in the ahupuaʻa of Makiki. Maunalaha Stream is located approximately 400 m to the northwest. Elevation within the project area is approximately 1060 ft above mean sea level (AMSL).

Soils in the project area (Sato et al. 1973), are diverse, and the graphic showing soil mapping units (Figure 4) at first appears to be complicated; close inspection of these data, however, according to the U.S. Department of Agriculture (USDA) Soil Survey Geographic database (2001) and soil survey data gathered by Sato et al. (1973), the project area's soil predominantly consists of the Kawaihae Series (KNC), as well as possible sediments of nearby Kamakoa Series (KGC), Very Stony Land (rVS), and Puu Pa Series (Table 1, Figure 4).

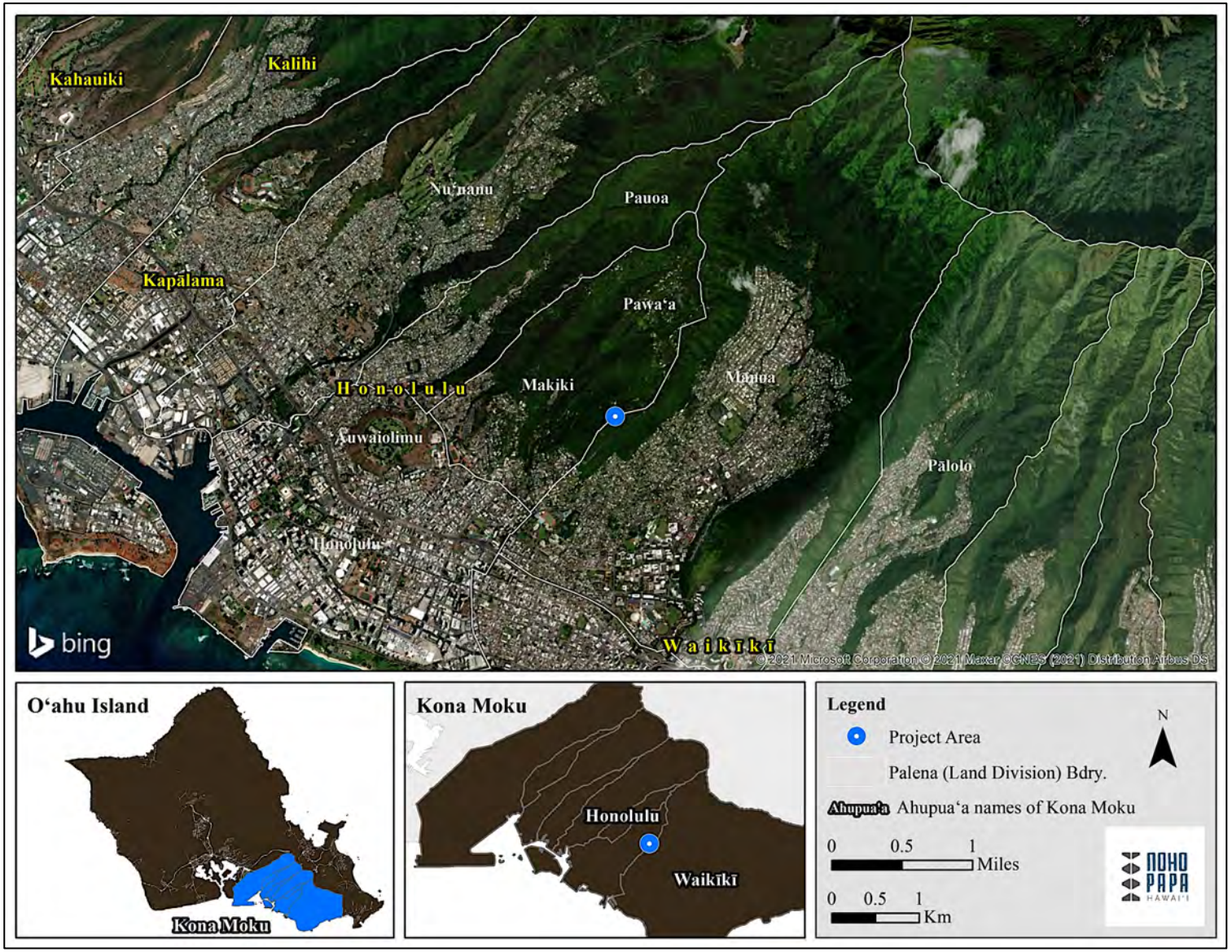

Figure 1. Overview map showing the location of the project area.

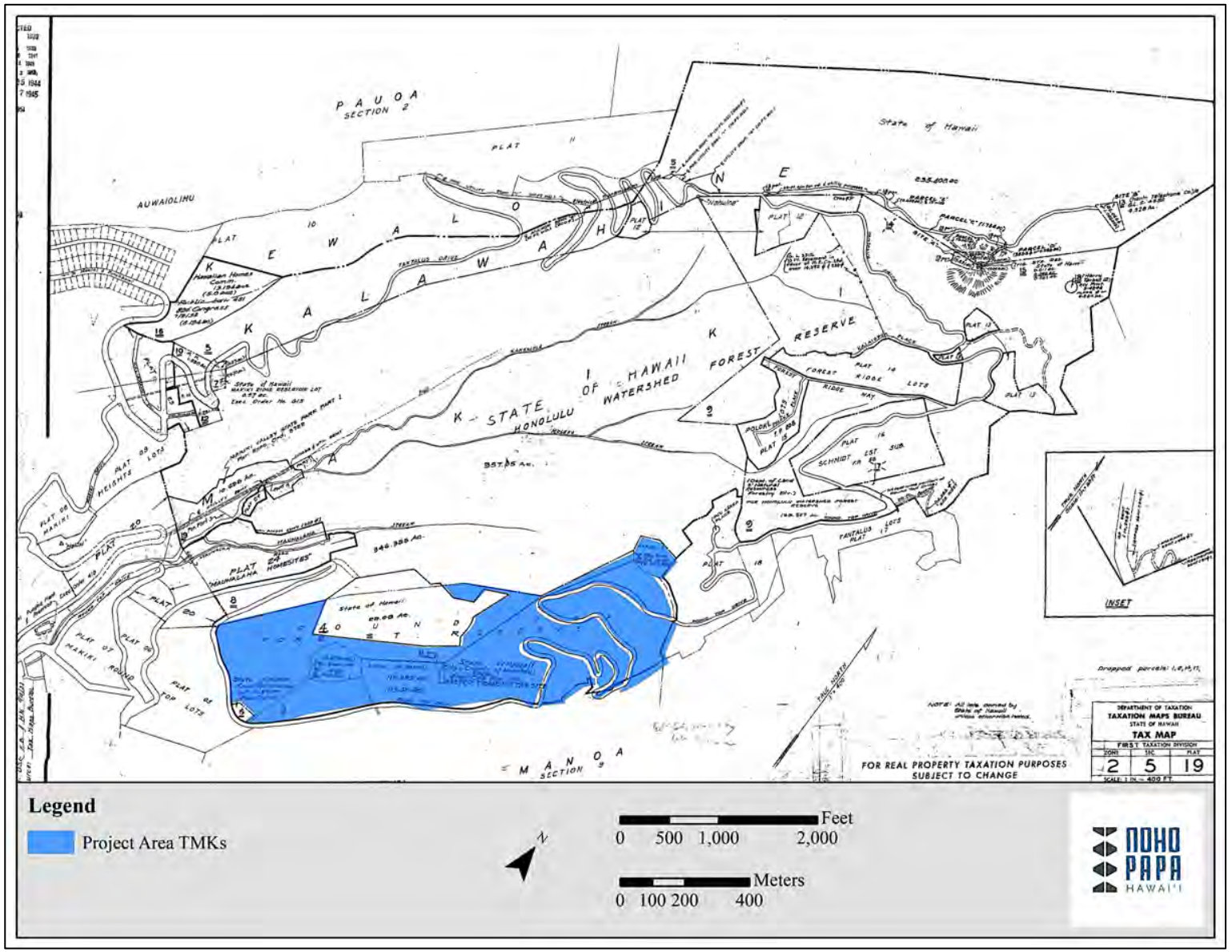

Figure 2. Tax Map Key, TMKs (1) 2-5-019:003 (por.) and (1) 2-5-019:011 showing the project area (Hawai'i TMK 1971).

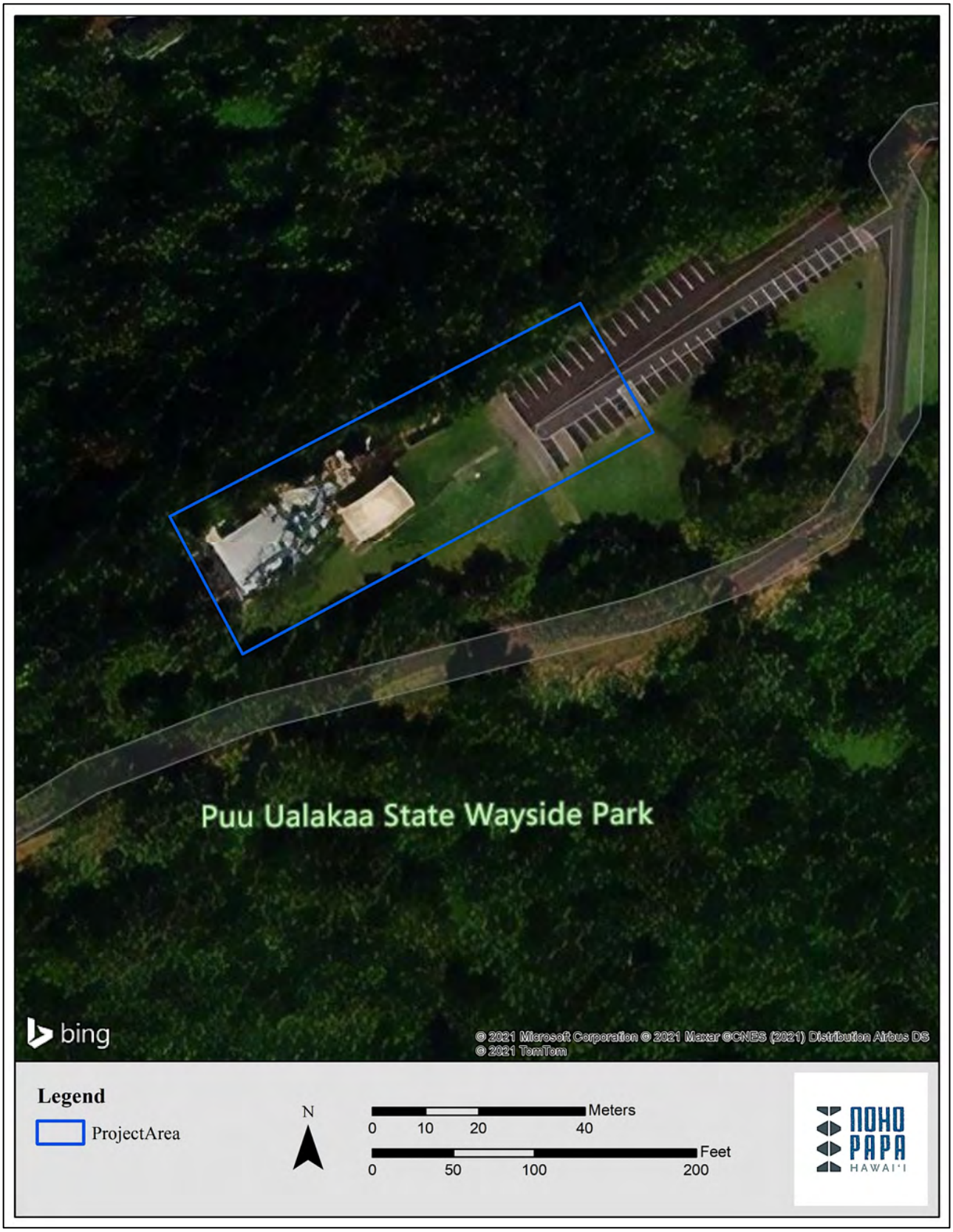

Figure 3. Aerial photograph showing the location of the project area (Google Earth 2021

Table 1. Soil types within and nearby the study area.

Soil Abbreviation	Soil Name
FL	Fill land, Mixed
HnA	Hanalei silty clay, 0 to 2 percent slopes
KaeD	Kaena stony clay, 12 to 20 percent slopes
KlaB	Kawaihapai stony clay loam, 2 to 6 percent slopes
KIB	Kawaihapai clay loam, 2 to 6 percent slopes
MkA	Makiki clay loam, 0 to 2 percent slopes
MIA	Makiki clay loam, 0 to 3 percent slopes
rCI	Cinder land
rRK	Rock land
rRT	Rough mountainous land
TAE	Tantalus silt loam, 15 to 40 percent slopes
TAF	Tantalus silt loam, 40 to 70 percent slopes
TCC	Tantalus silty clay loam, 8 to 15 percent slopes

Fill land, mixed (FL) occurs mostly near Pearl Harbor and in Honolulu, adjacent to the ocean. It consists of areas filled with material dredged from the ocean or hauled from nearby areas, garbage, and general material from other sources. This land type is used for urban development including housing areas and industrial facilities.

The Hanalei series consists of somewhat poorly drained to poorly drained soils on bottom lands on the island of Kauaʻi and Oʻahu. These soils developed in alluvium derived from basic igneous rock. They are level to gently sloping. Elevations range from nearly sea level to 300 feet. The annual rainfall amounts to 20 to 120 inches. The mean annual soil temperature is 74° F. Hanalei s0ils are geographically associated with Haleiwa, Hihimanu, Mokuleia, and Pearl Harbor soils. Specifically, the Hanalei silty clay, 0 to 2 percent slopes (HnA) are small areas on Oʻahu very deep, well-drained alluvial soils and small areas of very poorly drained to poorly drained clay s0ils that are strongly mottled and are underlain by peat, muck, or massive marine clay. These soils are used for taro, pasture, sugarcane, and vegetables. The natural vegetation consists of paragrass, sensitiveplant, honohono, Java plum, and guava. (Sato et al. 1972:38).

The Kaena series consists of very deep, poorly drained soils on alluvial fans and talus slopes on the islands of Oʻahu and Kauaʻi. These soils developed in alluvium and colluvium from basic igneous material. They are gently sloping to steep and are commonly stony. Elevations range from 50 to 150 feet. The annual rainfall amounts to 30 to 45 inches, most of which occurs between November and April. Specifically, for the Kaena stony clay, 12 to 20 percent slopes (KaeD), runoff is medium and the erosion hazard is moderate. These soils are used for sugarcane, truck crops, pasture, and homesites. The natural vegetation consists of kiawe, klu, lantana, koa haole, and fingergrass. (Sato et al. 1972:49-50).

The Kawaihapai series consists of well-drained soils in drainage-ways and on alluvial fans im the coastal plains on the islands of Oʻahu and Molokaʻi. These s0ils formed in alluvium derived from basic igneous rock in humid uplands. They are nearly level to moderately sloping. Elevations range from nearly sea level to 300 feet. The annual rainfall amounts to 30 to 50 inches. The mean annual soil temperature is 73° F. Kawaihapai soils are geographically associated with Haleiwa, Waialua, and Jaucas soils. Specifically, the Kawaihapai stony clay loam, 2 to 6 percent slopes (KlaB) is similar to Kawaihapai clay loam, 0 to 2 percent slopes, except that there are enough stones to hinder, but not prevent, cultivation. For the Kawaihapai clay loam, 2 to 6 percent slopes (KIB), this soil, runoff is slow and the erosion hazard is slight. This soil is used for sugarcane,

truck crops, and pasture. Runoff is slow, and the erosion hazard is slight. These soils are used for sugarcane, truck crops, and pasture. The natural vegetation consists of kiawe, koa haole, lantana, and bermudagrass. (Sato et al. 1972:63-64).

The Makiki series consists of well-drained soils on alluvial fans and terraces in the city of Honolulu on the island of O'ahu. These soils formed in alluvium mixed with volcanic ash and cinders. They are nearly level. Elevations range from 20 to 200 feet. The annual rainfall amounts to 30 to 60 inches. Most of it falls between November and April. The mean annual soil temperature is 73° F. Makiki soils are geographically associated with Kaena and Tantalus soils. Specifically, the Makiki clay loam, 0 to 2 percent slopes (MkA) is on smooth fans and terraces. Permeability is moderately rapid. Runoff is slow, and the erosion hazard is no more than slight. The available water capacity is about 1.7 inches per foot of soil. In places roots penetrate to a depth of 5 feet or more. For the Makiki stony clay loam, 0 to 3 percent slopes (MIA), this soil is similar to Makiki clay loam, 0 to 2 percent slopes, except that there are enough stones to hinder cultivation. The stones are angular and make up about 15 percent of the soil by volume. The depth to basalt or cinders varies from 20 to 60 inches. Basalt outcrops are common. The soil is neutral to slightly acid. These soils are used almost entirely for urban purposes (Sato et al. 1972:91-92).

Cinder land (rCI) consists of areas of bedded magmatic ejecta associated with cinder cones. It is a mixture of cinders, pumice, and ash. These materials are black, red, yellow, brown, or variegated in color. They have jagged edges and a glassy, appearance and show little or no evidence of soil development. Cinder land occurs on the islands of Maui and O'ahu. On O'ahu, it is mainly at elevations between 200 and 2,000 feet, near Mount Tantalus. The annual rainfall amounts 60 to 100 inches on O'ahu. Although Cinder land commonly supports some vegetation, it has no value for grazing, because of its loose nature and poor trafficability. It is used for wildlife habitat and recreational areas (Sato 1972:29).

Rock land (rRK) is made up of areas where exposed rock covers 25 to 90 percent of the surface. It occurs on all five islands. The rock outcrops and very shallow soils are the main characteristics. The rock outcrops are mainly basalt and andesite. This land type is nearly level to very steep. Elevations range from nearly sea level to more than 6,000 feet. The annual rainfall amounts to 15 to 60 inches. Rock land is used for pasture, wildlife habitat, and water supply. The natural vegetation at the lower elevations consists mainly of kiawe, klu, piligrass, Japanese tea, and koa haole. Lantana, guava, Natal redtop, and molassesgrass are dominant at the higher elevations. This land type is also used for urban development. In many areas, especially on the island of O'ahu, the soil material associated with the rock outcrops is very sticky and very plastic. It also has high shrink-swell potential. Buildings on the steep slopes are susceptible to sliding when the soil is saturated. Foundations and retaining walls are susceptible to cracking (Sato 1972:119).

Rough mountainous land (rRT) occurs in mountainous areas on all islands in the survey area. Is consists of very steep land broken by numerous intermittent drainage channels. In most places it is not stony. Elevations range from nearly sea level to more than 6,000 feet. The annual rainfall amounts to 70 to more than 400 inches. Over much of the area, the soil mantle is very thin. It ranges from 1 inch to 10 inches in thickness over saprolite. In most places the saprolite is relatively soft and permeable to roots and water. The land surface is dominated by deep, V-shaped valleys that have extremely steep side slopes and narrow ridges between the valleys. In most places the local relief exceeds 500 feet. Rock land, rock outcrop, soil slips, and eroded spots make up 20 to 40 percent of the acreage. This land type is used for water supply, wildlife habitat, and recreation. The natural vegetation consists of **ʻōhiʻa**, false staghornfern, treefern, yellow foxtail, lantana, kukui, and puakeawe (Sato 1972:119).

The Tantalus series of well-drained soils on uplands on the island of O‘ahu. These soils developed in volcanic ash and material weathered from cinders. They are moderately sloping to very steep. Elevations range from 100 to 2,200 feet. The annual rainfall amounts to 50 to 150 inches. It is well distributed throughout the year. The mean annual soil temperature is 70° F. Tantalus soils are geographically associated with Makiki soils. These soils are used for homesites, water supply, and recreation. Specifically, for the Tantalus silt loam, 15 to 40 percent slopes (TAE), runoff is medium and the erosion hazard is moderate. This soil is used for water supply and recreation. For the Tantalus silt loam, 40 to 70 percent slopes (T AF), this soil is on volcanic spurs and cinder cones in the uplands. Permeability is moderately rapid. Runoff is medium to rapid, and the erosion hazard is severe. In places roots penetrate to a depth of 3 feet. The Tantalus silty clay loam, 8 to 15 percent slopes (TCC) has slow runoff and the erosion hazard is slight. This soil is used for homesites, water supply, and recreation. Lastly, the Tantalus silty clay loam, 15 to 40 percent slopes (TCE) has medium runoff and the erosion hazard is moderate. This soil is used for homesites, water supply, and recreation. The natural vegetation of the tantalus series consists of ferns, Formosa koa, koa haole, kukui, and eucalyptus (Sato 1972:121).

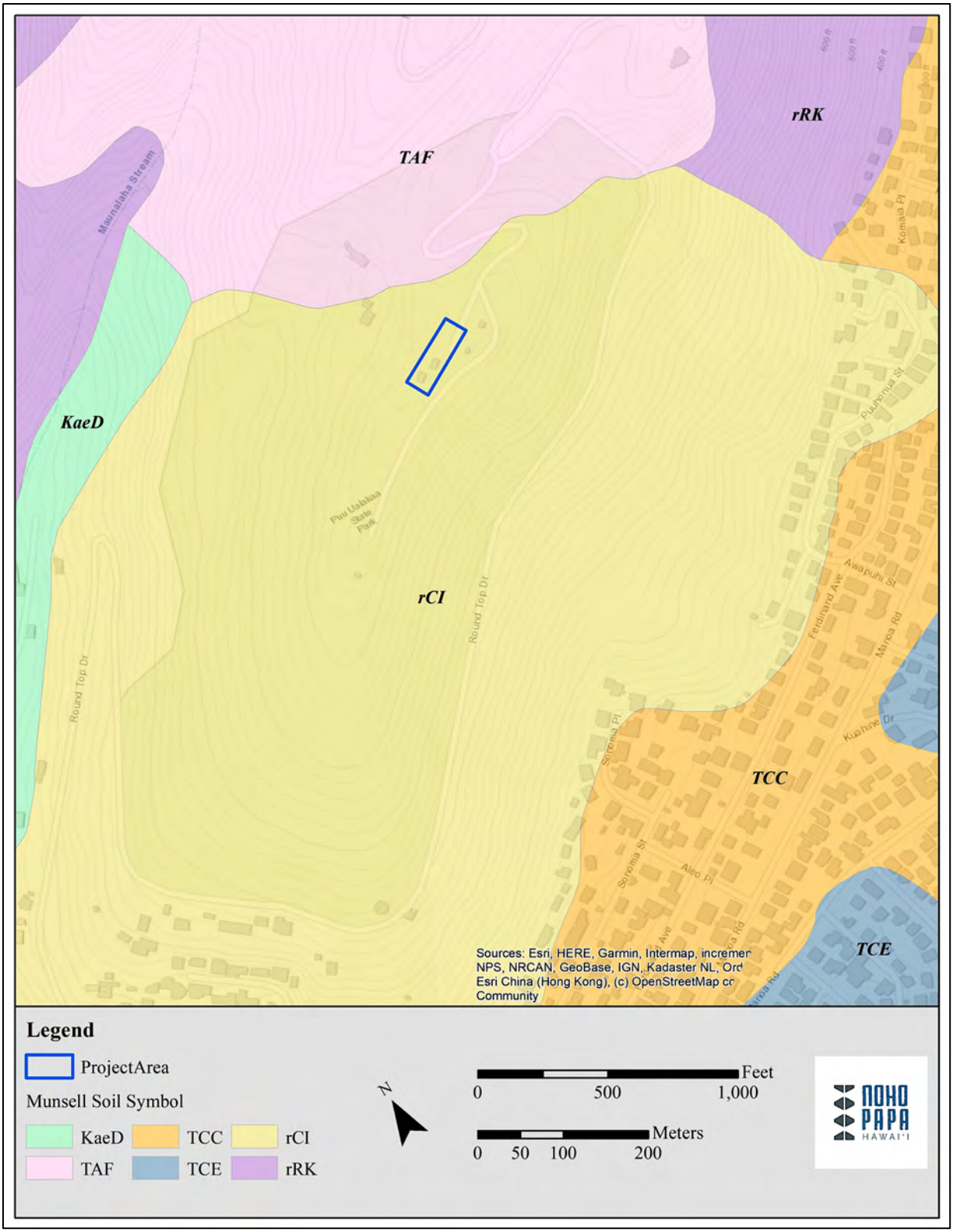

Figure 4. Overlay of Soil Survey of the State of Hawaii (Sato et al. 1973), indicating soil types within and surrounding the project area (U.S. Department of Agriculture Soils Survey Geographic Database [SSURGO] 2001).

Hawaiian Cultural Landscape

Based on historical research and previous archaeology, Makiki Valley was utilized for the cultivation of kalo and ʻuala during both pre-contact and historic times. Puʻu ʻUalakaʻa (Round Top) was famous for having been the sweet potato plantation of Kamehameha I. During the Mahele large scale crop cultivation land use was transformed into small-scale residential agriculture with associated habitation dwellings. Land Commission Award (LCA) documentation provides some evidence of dry and wet agriculture of kalo and ʻuala cultivation in the area with associated house lots. Much of the upper valley later became part of a park and forest preserve, which may have preserved many of the pre-contact and post contact agricultural features.

Several streams in upper Makiki feed into Makiki Stream proper, including Kanealole (or Kānealole) and Moleka (which drain the Puʻu ʻŌhiʻa slopes), and Maunalaha (which drains the flanks of Round Top, traditionally known as ʻUalakaʻa). Only the last of these three stream names, Maunalaha (literally, "flat mountain") are translated by Pukui et al. (1974:149). Another stream named Kanahā (literally, "the shattered [thing]"), drains part of the Puʻu ʻŌhiʻa slopes and the west side of Makiki. Both this stream and Makiki Stream eventually empty down into urban Honolulu below Makiki. Given the relatively steep slopes of Makiki, these streams were not ideal for traditional irrigated agriculture (loʻi kalo), which would have been extensive—along with dense settlement, in the lands below Makiki. Several pūnāwai (fresh-water springs) are located along Kanealole and Moleka streams. The one on Kanealole is named Makiki Springs on some USGS maps; a pair on Moleka Streams is labelled Herring Springs on some USGS maps. The upper reaches of Makiki do not extend to the ridgeline of the Koʻolau—like many other lands in Kona Moku, but rather are overtaken by neighboring Mānoa Ahupuaʻa and Pauoa Palena above Puʻu ʻŌhiʻa. Two small lakes—one just above Puʻu ʻŌhiʻa and one above ʻUalakaʻa (Round Top) are depicted on historic maps (Figures 5-8).

In addition to agriculture there is an extensive trail system that ʻUalakaʻa is a part of; these ala (trails) are not formal in architecture, as with the ala kahakai in Kona, Hawaiʻi Island. Rather, they are defined by use, and many are still used today. This ridgeline trail system spans the Koʻolau range above Honolulu. Before lower valley roads were formalized, and such terms as "Government Roads" were coined, the trail system along the ridges would have been the shorter routes to get from Honolulu or Waikīkī, across the pali to connect with trails in Koʻolaupoko and then on to Waimānalo, Kailua or Kāneʻohe. Even today you could part at the wayside parking lot at the project area and take off on system of interconnected trails that would lead you into Nuʻuanu, over the pali, Konahuanui, the highest peak on the Koʻolau range, and a wahi pana (storied place) and wai hālau (source of water) for both Kona and Koʻolaupoko moku. Konahuanui is the summit at the back of two historic royal centers on Oʻahu, Kailua and Waikīkī. The safest (and perhaps only) route to reach the summit of Konahuanui is by following the spine of ʻUalakaʻa mauka (Figure 5).

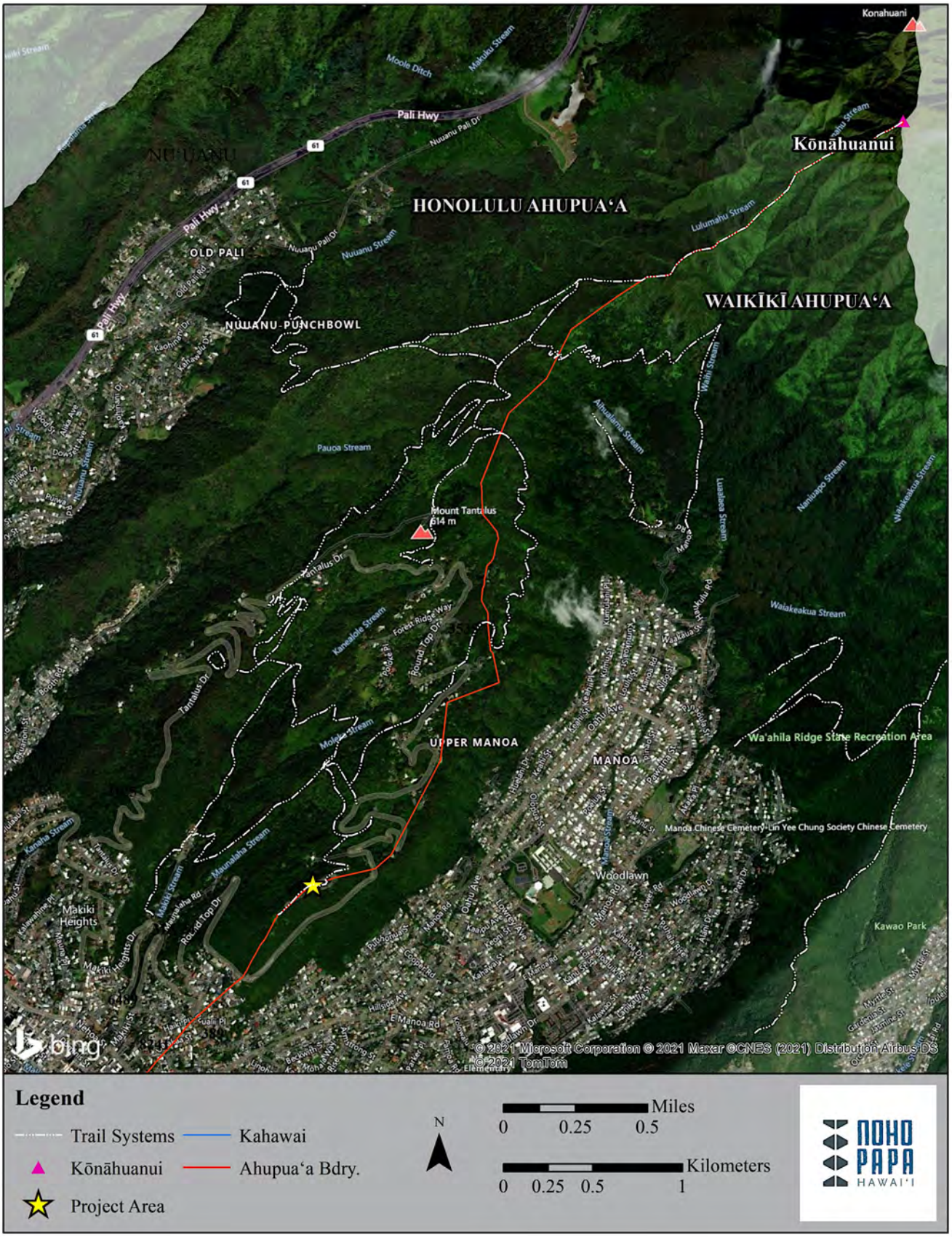

Figure 5. Map of Trails

Rains and Winds

Native Hawaiians respected nature because as kānaka, they are related to all that surrounds them - to plants and creatures, rocks and sea, sky and earth, and to natural phenomena, including rain and wind. With an intimate relationship to their environment, Native Hawaiians have a vast vocabulary for weather and a nuanced understanding of the winds and rains of their home. Olivera illustrates the functionality of rain and wind names in recalling place and give sources that often provide wind and rain names of specific locale, stating, "like place names, winds and rains acted as mnemonic devices facilitating the recollection of the places they occurred" Olivera (2014:89-90).

Rains represent many things, but first and foremost, the rains are a beloved resource as it preserved the land; it was called "kāhiko o ke akua" or "adornment of the deity" (Akana and Gonzalez 2015). It has been and still continues to be an integral part of our survival in Hawai'i (Akana and Gonzalez 2015). There are two seasons in Hawai'i. The wetter season is called Ho'oilo which are the cooler months (November to April) when trade winds dissipate, and this property will typically receive its highest rainfall. The dry season is called Kau which are the warmer months (generally May to October) swept by reliable tradewinds.

The project area itself receives an average of 1803 millimeters (mm) (70.99 inches [in]) of annual rainfall (Giambelluca et al. 1986). The name of the rain in Makiki is called Kā'eleoli. Also known as Kā'ekeoli and Kā'eke'ekeloi. Kā'eleoli, Kā'ekeoli, and Kā'eke'ekeloi sound similar to the words "kā'eleoi" and "kā'eke'eke", which refer to the rolling or ruffling sound of a drum or kā'ele'eke bamboo pipes (Pukui and Elbert 1986:109).

According to Akana and Gonzalez (2015:33-34), the rain of 'Ualaka'a [Mānoa] is Hāli'ipili.

> Hāli'i pili means to "spread over pili grass." It is both the name of a specific rain and a generally descriptive term; its various usages are determined by context"

In 1919, Theodore Kelsey cites Emerson who mentions the Kuahine rain of 'Ualaka'a in the legend of Pele in Hi'iaka.

> *Ma ka ho'ākāka a Mr. Emekona, ma ka mo'olelo o Pele a me Hi'iaka, 'o ka ua Wa'ahila, he ua kilihune ia mai [Nu'uanu] mai, a hiki i kahi o Kauka, ma ke alanui Wyle. 'O ka Līlīlehua, he ua ia mai Ka'ahelemoa mai a hiki i Makaiwi. 'O ka ua Kuahine, 'o ka ua ia mai Kailua a hiki i 'Ualaka'a.*
>
> In the description by Mr. Emerson in the legend of Pele and Hi'iaka, the ua Wa'ahila is a gentle rain from Nu'uanu to the area of Kauka (Judd) on Wyllie Street. The ua Līlīlehua is a rain from Ka'auhelemoa to Makaiwi. The ua Kuahine is the rain from Kailua to 'Ualaka'a. [Nupepa Kuokoa, July 4, 1919; Akaka and Gonzalez 2015:278-279]

Vegetation

The earliest description of Makiki Valley is believed to be the narrative of the German botanist Dr. F.J.F. Meyen, who visited O'ahu in 1831. Meyen was a trained observer and recorded not only botanical observations, but cultural and geological ones as well. Among the excursions he took was a day trip to the summit of Pu'u Kākea (Sugarloaf). His route apparently took him up the ridge behind Punchbowl, over to Kākea, and then down through Makiki Valley, probably along Moleka Stream. He described very different vegetation communities from what exist today.

The lower slopes of the ridges were covered with low grasses to an elevation of 600- 700 feet. The vegetation then gave way to meadows of sedges and Morning Glory, and then abruptly to a diverse fern forest, with abundant kukui and koa trees. Continuing higher, the vegetation became much denser, and in addition to a wide variety of lobelias, Meyen noted a number of useful native species, including makaloa (used to make tapa), olonā, maile, ʻilima, and pāpala. Between Tantalus Ridge and Kākea they came across a spring which had dry kalo planted adjacent to it. This was likely Makiki or Herring Springs. They descended from Kākea through a valley, probably Moleka or Maunalaha, which Meyen described as follows:

> Nowhere again, neither on Oahu nor in Brazil nor in Manila, did we see such a charming picture of nature. We saw here the greatest profusion of the gayest tropical vegetation complemented by the picturesque forms of the mountains Numerous Musaceae [bananas], some casually planted, others wild, covered the slope of the mountain...[Pultz 1981:44]

As Meyen's group descended through the valley, they came across evidence of Hawaiian habitation, which is described in the following excerpts:

> As we descended farther into the charming valley the small stream which flows in it became larger and larger. Some Indians [Hawaiians] had built their huts beside it and had prepared some land. for the cultivation of taro ...
>
> As soon as the valley became wider the beautiful vegetation disappeared. The slopes of the mountain were covered only with low grasses, the huts of the Indians became more numerous and here and there large boulders appeared again. The end of a low ridge which runs through the center of this transversal valley had been artificially cleared of vegetation and of the cover of humus. The rock which came to light here is a very attractively colored basalt conglomerate (of black basalt and white calcite crystals]. The Indians were just then busy chipping flat pieces from this rock which they wanted to use to hunt octopus. The rock on the sides of the valley, however, is the usual porous basalt which is found all around Honolulu. Here and there one can find caves in this rock, some of which are inhabited.
>
> In the course of our excursion, we saw the mountains everywhere covered with grazing horses and homed cattle. One is amazed at the great number of cows which thrive here beautifully with the slightest care... Many and extensive fields through which we have just wandered, and which are presently being used as pasture land were formerly covered with sweet potatoes.
>
> Today one can still see the remaining traces of their cultivation. They say that in the days of Kamehameha a great part of the Honolulu Valley was used for the cultivation of field-produce. Now there are meadows there and the valley is far less productive than in former times. [Pultz 1981:46-47]

The vegetation community of Makiki Valley is dominated by a dense growth of exotic species. Makiki was largely denuded in the nineteenth century as a result of the demands for sandalwood for export and firewood for local consumption, and possibly cattle grazing as well. An 1874 map of Makiki notes thickly wooded areas near the head of the Valley, suggesting that this area was spared from deforestation (Alexander 1874). Makiki was designated a Forest Reserve in 1904 and reforestation was initiated in the lower valley in 1910. This has resulted in a dense growth of exotic species in both the canopy and the understory. Often the various species were planted in specific

zones. This is most readily visible on the ridgetops, which were planted with Norfolk Pines and ironwoods. Other common tree species include Java plum, octopus, eucalyptus, silver oak, mango, avocado, and banyan. The understory is characterized by various exotic grasses including palm, Guinea, and molasses, ginger, ti and various weedy shrubs. Koa haole and vines dominate areas on the upper slopes, including ʻUalakaʻa. The stream courses are often overgrown by dense thickets of hau and cat's claw. Wild taro is prevalent along the streams also. Native and Polynesian-introduced species include kukui, ʻulu (breadfruit), hau, ti, hala, banana and coconut. Finally, two historic attempts at cultivation are still in evidence in 1994. Along Moleka Stream is a dense growth of coffee plants from the failed plantation of J.M. Herring in the late 1800's. Also, in 1994 the western side of ʻUalakaʻa still had planted in rows of macadamia nut trees from the former orchard, planted circa 1925. It should be noted that the present day environment of Makiki is vastly different from that which existed prior to Western contact.

Table 2. Table showing the different endemic and indigenous plant species in and around the project area in the past and present day.

Plant Species	Native status	Use	Existing in project area	Existing in surrounding area	Previously existing in project area	Previously existing in surrounding area
Sedge/Shrubs/ Ground Cover/Ferns/Herbs						
pili grass (*Heteropogon contortus)*	Indigenous	dye, medicinal, stuff mattresses, pad floors, as a tinder.			x	x
honohono (*Haplostachys haplostachya)*	Endemic	other.				x
ʻuala (*Ipomoea batatas*)	Indigenous	food, medicine, bait for ʻōpelu, padding, other.			x	x
kalo *(Colocasia esculenta)*	Indigenous	food, medicine, other				x
makaloa *(Cyperus laevigatus)*	Indigenous	clothing, cordage, mats, medicinal				x
ʻilima (*Sida fallax)*	Indigenous	house construction and furnishings, cooking, lei, medicinal				x
Pāpala *(charpentiera obovata)*	Endemic	wood				x

Plant Species	Native status	Use	Existing in project area	Existing in surrounding area	Previously existing in project area	Previously existing in surrounding area
puakeawe (*Leptecophylla tameiameiae)*	Indigenous	medicinal, lei, wood, other.				x
Overstory and Trees						
ʻōhiʻa (*Metrosideros polymorpha*)	Endemic	construction, crafts, wood				x
olonā *(Touchardia latifolia)*	Endemic	clothing, cordage, games/ sport, medicinal, music, other				x
maiʻa *(Musa acuminata)*	Indigenous	food, medicine,				x
kukui (*Aleurites moluccana*)	Indigenous	light, ink, medicinal, wood				x

Historical Maps (Papapala ʻĀina)

Early maps of Makiki and Mānoa ahupuaʻa and the surrounding area provide information describing the project area landscape prior to modern times. Historic maps physically document changes to the land occurring over a period of years. The following are historic maps of the Kona moku; focusing on the ahupuaʻa of Makiki and nearby Mānoa ahupuaʻa. The earliest map presented is from 1874; dates for the remainder vary but run through the year 1924. Most of these maps illustrate the ahupuaʻa in the district as well as general information on boundaries, land use, land ownership, and cultural and natural resources.

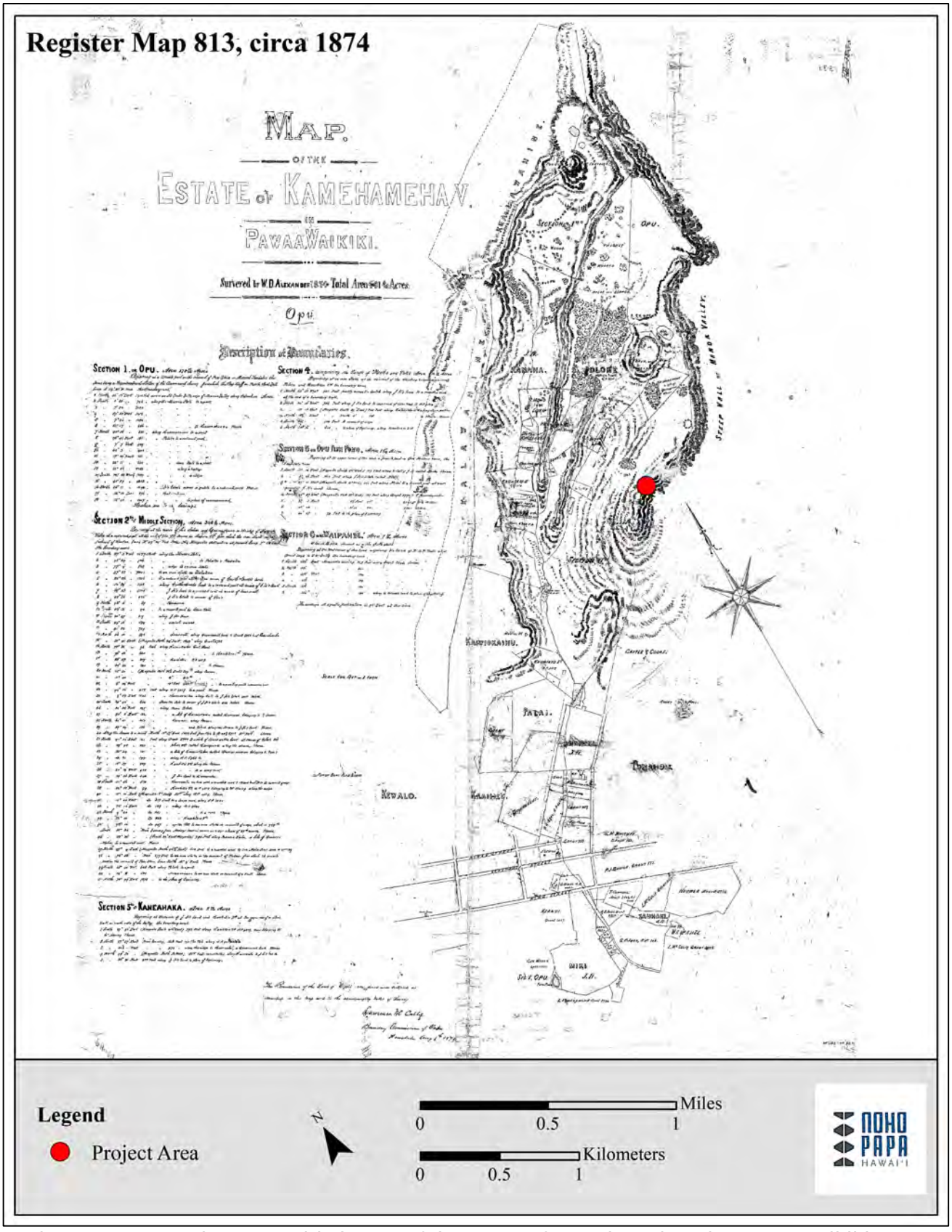

Figure 6. 1874 Register Map titled "Map of the Estate of Kamehameha V in Pawaa Waikiki".

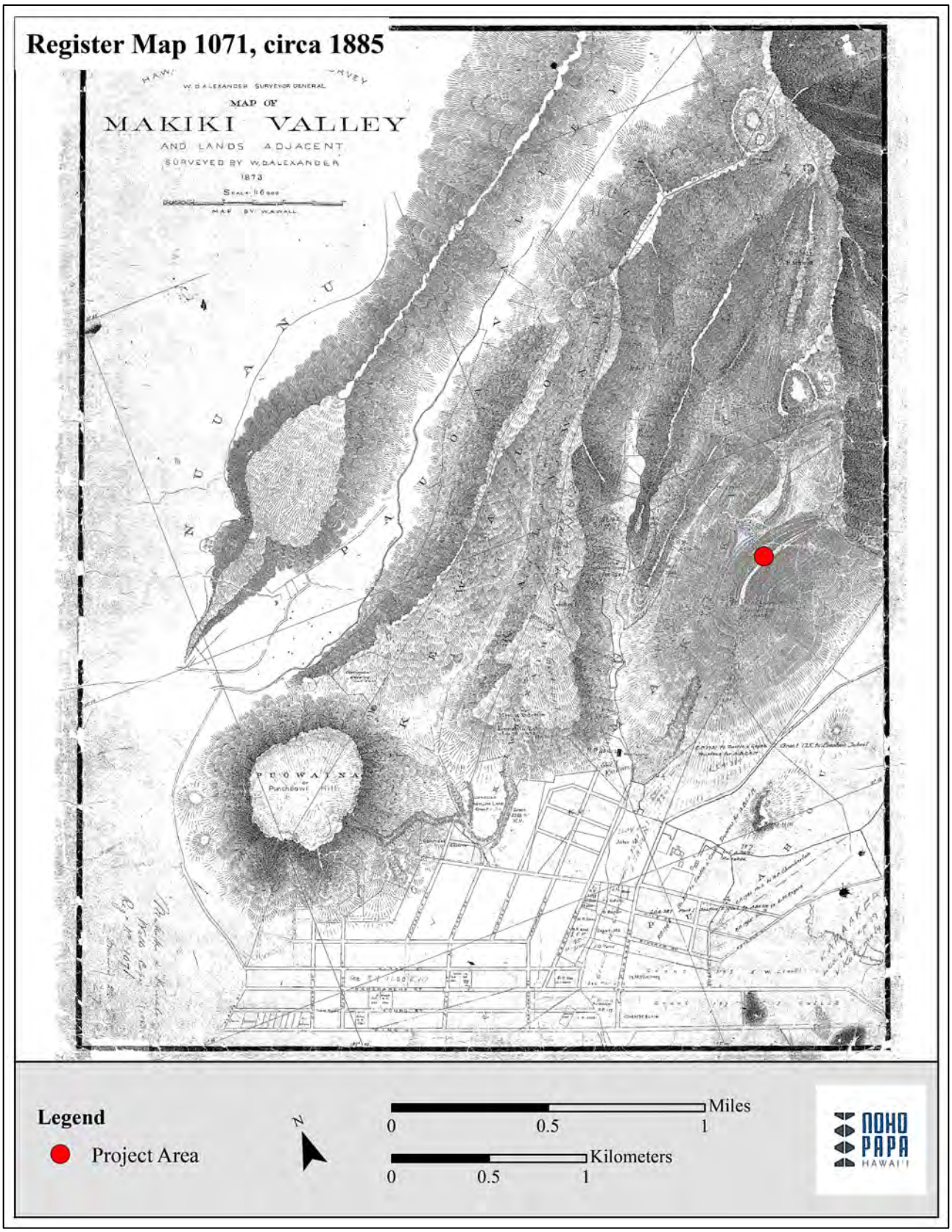

Figure 7. 1885 Register Map titled “Map of Makiki Valley” by surveyor W. Alexander.

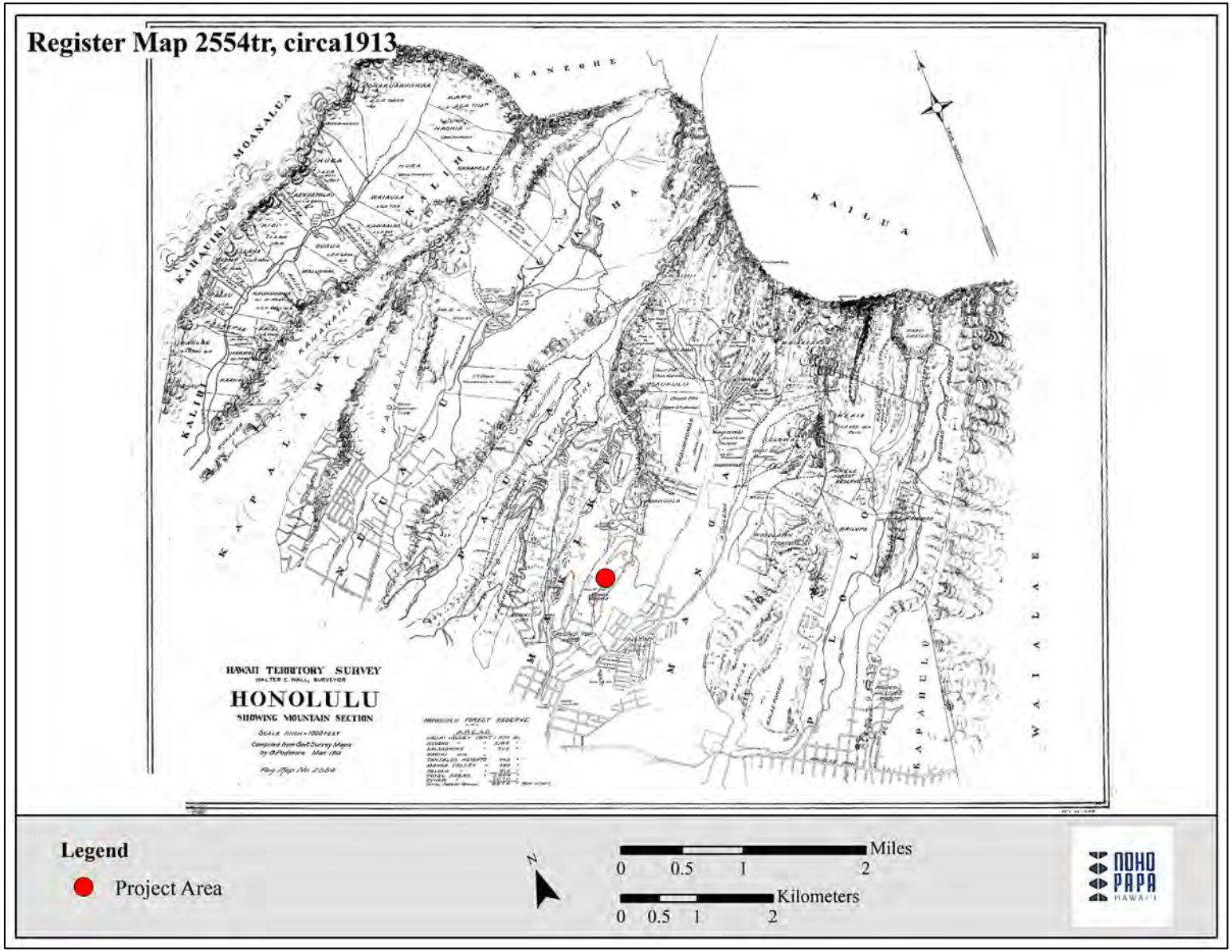

Figure 8. 1913 Register from the Hawai‘i Territory Survey of Honolulu by Walter Wall.

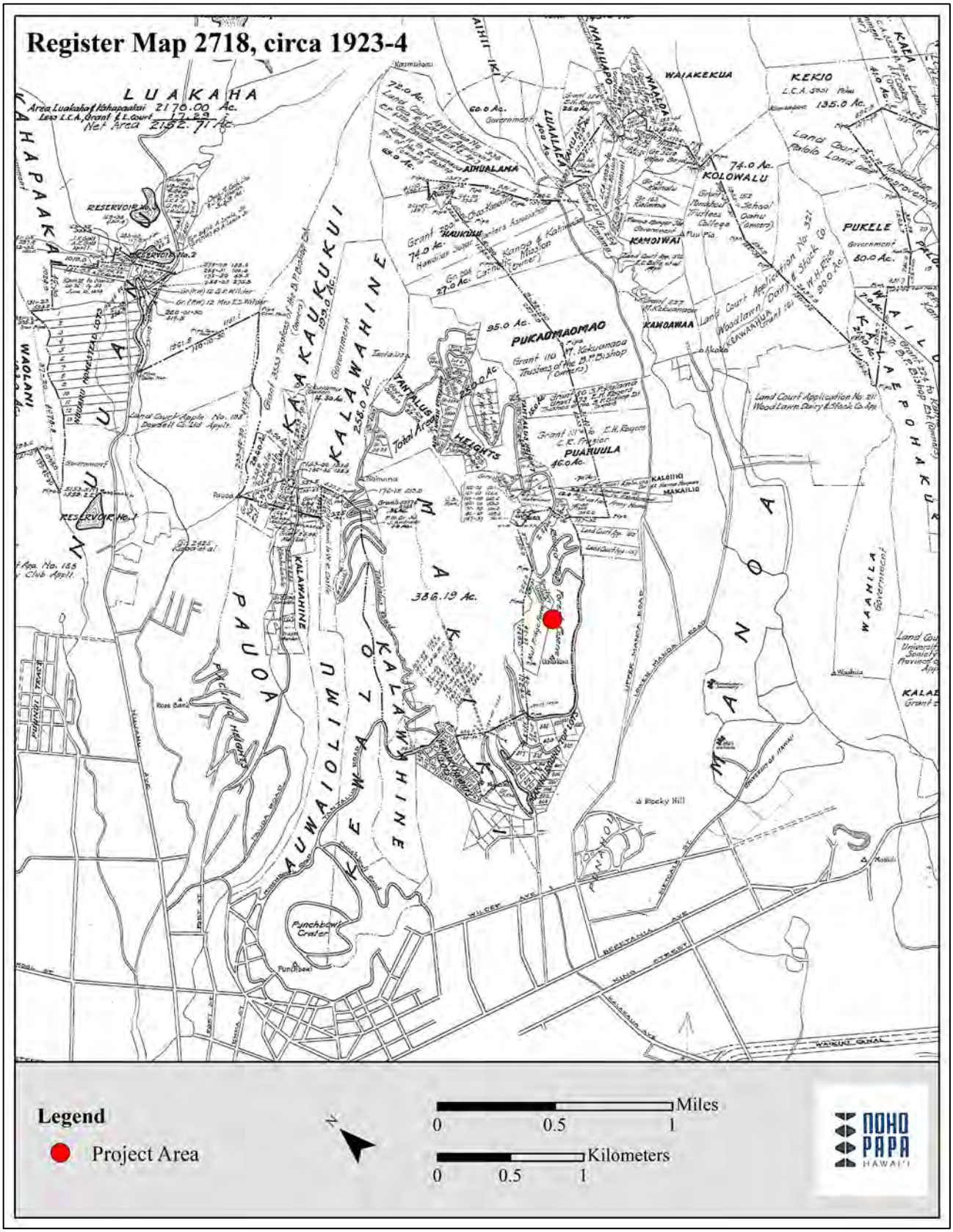

Figure 9. 1923 Hawai‘i Territory Survey map titled, “Honolulu Watershed Forest Reserve” by Walter E. Wall. 2

Built Environment

Makiki is a relatively small land division, and its upper (mauka) limits (at Tantalus) do not reach the Koʻolau ridgeline; likewise, its lower limits do not reach the ocean—but start just east of Pūowaina (Punchbowl), which is considered part of Honolulu Ahupuaʻa in this study. Referring to well-known landmarks such as neighborhoods, roads and other infrastructures, the current (modern) boundaries of Makiki Palena are as follows. Starting from the south (makai) end on the eastern (Diamond Head) side, the boundary starts at the intersection of Punahou and Nehoa streets—right next to Punahou School (which is in Mānoa Ahupuaʻa); the boundary heads northeast (mauka) roughly following Round Top Drive (Round Top, itself, is entirely within Makiki Palena) and tracing around the perimeter of Tantalus Drive, which is entirely within Makiki; the upper (mauka) boundary goes around "Mount Tantalus" and back down (mauka) to the southwest, again tracing the perimeter of Tantalus Drive, eventually passing down through a portion of the Papakōlea residential neighborhood (along Kaululaau Street), and back to Auwaiolimu Street near the entrance to the National Memorial Cemetery of the Pacific (Punchbowl). Roosevelt High School is within Makiki Palena along its lower (makai) boundary, and the Makiki Heights residential neighborhood is entirely within this palena. While the lower portion of Makiki has been heavily modified by residential development, including the Makiki Heights and Papakōlea neighborhoods, most of Makiki is undeveloped forest lands. There is also some scattered residential development in the upper reaches of Tantalus Drive (Uyeoka et al. 2020 and Merrin et al. 2021). The project area itself has been leveled and graded and consists of an area containing a manicured lawn and non-native vegetation and trees. The existing ICSD tower facility and a restroom facility border the southwestern portion of the project area. A large asphalt parking lot is located immediately to the east.

CULTURAL HISTORICAL OVERVIEW

Inoa ʻĀina (Place Names)

The mindset of Kānaka ʻŌiwi (Native Hawaiians) evolved and developed over centuries of being intimately in tuned with the natural environment from the heavens above to the depths below. One piece of evidence that provides a hint of how nā kūpuna (the ancestors) saw the landscape of Hawaiʻi is through the thousands of place names still recorded today. Traditional place names provide an avenue to understand a landscape and tap into the mana (spiritual power) that is part of each area. A place name may tell of a commemorative event, an important person, may describe the physical environment, or reveal the function of the land. When explaining the concept of mana that is instilled in a name, Pūkuʻi (1972) writes, "Once spoken, an inoa took on an existence, invisible, intangible, but real. An inoa could be a causative agent, capable of marshaling mystic elements to help or hurt the bearer of the name. And, so went the belief, the more an inoa was spoken, the stronger became this name-force and its potential to benefit or harm" (Pukui, Haertig, & Lee 1972:94).

Traditional Hawaiian place names often reoccur in oli, mele, moʻolelo, and ʻōlelo noʻeau. Other sources that have documented these names include ethnographic surveys, historic maps, and early historic documents such as Land Commission Award (LCAw) claims, Government Grant sales, and Boundary Commission testimonies. The place names that are presented in the following table were gathered from research done by Pukui and Elbert (1970), Pukui, Elbert, and Moʻokini (1970), and Lloyd Soehren (2002). There are no diacritical marks (ʻokina and kahakō) used in the initial spelling of names because these are rarely used in original sources. However, there is a lexicology section that includes the documented spelling and translation of specific place names. Presented below are the place names associated with the ahupuaʻa of Makiki.

Abbreviations and Symbols in Place Name Table

- BC Boundary Certificate No. (volume: page)
- BCT Boundary Commission Testimony
- IDLL Interior Department, Land, Letters (Incoming). Archives of Hawaii.
- LCAw Land Commission Award
- MB Māhele Book
- NR Land Commission, Native Register
- NT Land Commission, Native Testimony
- PE Pukui & Elbert, Hawaiian Dictionary
- PEM Pukui, Elbert & Moʻokini, Place Names of Hawaiʻi
- TM Tax Map (zone, section, plat)
- USGS United States Geological Survey

*See references for complete citations

Hawaiian Words in Place Name Table

- Ahupuaʻa - Land division usually extending from the uplands to the sea, so called because the boundary was marked by a heap (ahu) of stones.
- ʻIli ʻāina - Land section, next in importance to ahupuaʻa and usually a subdivision of an ahupuaʻa.

- » Puʻu - Hill, peak, cone hump, mound, bulge heap, pile, portion.
- » Wahi Pana- A legendary or storied place
- » Wai Hālau- Wai is water; Hālau literally means long house, large, or numerous. It is the source from which many waters will expand or make numerous.
- » Kahawai- Stream, river, ravine, gulch, whether wet or dry.
- » Loko- Pond, lake pool.

Table 3. Place names surrounding and within the project area.

Inoa	Possible Translation	Description and Location
Haumakaʻawe	Haumakaʻawe. Also seen as Kahaumakaʻawe. PEM: not translated.	An ʻili kū, 1/2 returned by Kanehiwa at the Māhele, retained by Crown; 1/2 retained by Kanehiwa, M.A. 19 (3.25 acres). 1/2 returned by Pahau at the Māhele, retained by Crown; 1/2 retained by Pahau, M.A. 12 (68.35 acres). Claim no. 8234B by Kalaeone for "1 loi nui, 1 loi uuku" was not awarded. Claim no. 9048 by Lono was not awarded. "Haumakaawe, a lele of Waihinalo Govt", is in Makiki just below Puʻu Kākea. (RM 797)
Kaʻaipu	Ka-ʻai-pū. PEM: the eating together.	The ʻili takes its name from this stone, described by Thrum as "about four feet in length, somewhat tapering toward one end, and having a rather smooth bore of about three inches in diameter running through its entire length." (McAllister) "A stone under which lived a supernatural woman." (PEM) "Kaʻaipu was an akua wahine pohaku. A local pohaku god in Mānoa, with an opening on the top of its ʻhead', which was considered as another mouth." (Sterling and Summers)
Kākea	Kākea. PEM: Name of a stormy wind. He Kākea ka makani kulakulaʻi kauhale o Mānoa (saying), the Kākea wind that pushes over the houses of Mānoa [said of one who is excessively aggressive].	Cinder cone on the Koʻolau range on the west side of Mānoa Valley, Honolulu, named for a storm wind associated with Mānoa; also called Sugar Loaf.
Kanealole	Kanealoloe. Parker: husband of Lole. Land section, Oahu.	Stream rises at about 1500 ft. elevation under Puu Ohia (Tantalus), joins Maunalaha Stream at about 240 ft. to form Makiki Stream. Also the name of an ʻili ʻāina for LCAw 4263B to Kaahanahua, 0.61 acre.
Konahuanui	*Lit.,* large fat innards. In one story a giant threw his great testicles *(kona hua*	Large, culminating peak. Koolau range, Oahu. Highest peak in Koolau range. Peaks (3,105 and 3,150 feet high) above Nuʻu-anu Pali,

Inoa	Possible Translation	Description and Location
	nui) at a woman who escaped him. See Kaukona-hua. Today the pronunciation is Konahua-nui. (Place Names of Hawai‘i)	O‘ahu.
Makiki	Makiki. PEM: probably named for a type of stone used as weights for octopus lures.	Not named in the Māhele Book as an ahupua‘a or ‘ili kūpono. Originally, the ahupua‘a of Waikiki included all the valleys "from the west side of Makiki valley away to the east side of Wailupe..." (Lyons 1874). Defined for catalog purposes as comprising Tax Map Keys 2300, 2400 and 2500, bounded makai by the sea, west by Pauoa, east by Mānoa and Waikiki. Within this area are numerous ‘ili and lesser parcels.
M**ā**noa	Mānoa. PEM: vast.	Not named in the Māhele Book as an ahupua‘a or ‘ili kūpono. Originally, the ahupua‘a of Waikiki included all the valleys "from the west side of Makiki valley away to the east side of Wailupe..." (Lyons 1874). Defined for catalog purposes as comprising Tax Map Keys 2800 and 2900, bounded makai by King Street, ‘Ewa by Makiki, Koko Head by Palolo. Within this area are numerous ‘ili and lesser parcels. (See Sterling and Summers for stories).
Maunalaha	Flat mountain (PEM)	‘Ili ‘āina of Makiki. (RM 797)
Moleka	Moleka. PEM: not translated.	Stream rises at about 1500 ft. elevation under Puu Ohia (Tantalus), joins Kanealole Stream at about 325 ft.
Pahao	Perhaps pāha‘o. PE: mysterious, puzzling, etc.	An ‘ili ‘āina of Mānoa. RPG 4166 to Mrs. Mary N. Castle in Pahao, 8.16 acres.
P**ā**wa‘a	Pā-wa‘a. PEM: canoe enclosure. "It is said that canoes were brought here from the sea by canal."	An ‘ili kū of Waikīkī. Retained by Ii at the Māhele, LCAw 8241:2. 1/2 returned by G.L. Kapeau at the Māhele, retained by the Gov. (aoao ma Waikiki); 1/2 retained by G.L. Kapeau, LCAw 8441 (aoao ma Honolulu). 1/2 returned by G. P. Judd, retained by the Gov. (aoao mauka); 1/2 retained by G.P. Judd, LCAw 660 (aoao makai). The lo‘i in Pāwa‘a were retained by the Crown (MB 218).
P**ō**haku o Kukalia	Pōhaku o Kukalia. PEM: not translated.	Named in the Boundary Commission for Opu or Makiki. “Mauka of “Kanaha” is Opu

Inoa	Possible Translation	Description and Location
		including Puu Ohia, going to old heiau, which is the upper point of this land, thence down the ridge, where the stone rolls in Mānoa, till you come [to] the rock, Pohaku o Kukalia; thence to summit of hill Ualakoa (Round Top). Thence down a sliding place."
Poloke	Poloke. PEM: not translated. pōloke. PE: wobbly. polokē. PE: fresh poi.	1/2 returned by Keawehano, retained by Crown at the Māhele; 1/2 retained by Keawehano, M.A. 11. 119.99 acres.
Puʻu ʻŌhiʻa	Puʻu ʻōhiʻa. PEM: ʻōhiʻa tree hill.	"Mount Tantalus behind Honolulu." (PEM) Elevation 2013 ft.
ʻUalakaʻa	ʻUala-kaʻa. PEM: rolling sweet potato.	"Old name for Round Top, Honolulu... a rat bit a sweet potato, causing it to roll down hill and sprout; Kamehameha I planted many sweet potatoes here, which, on being dug, rolled downhill."
Ulumalu	Perhaps ʻulu-malu. PE: shade [of] breadfruit trees, or Ulumalu. PE: peaceful grove.	Site of a legendary battle between the menehune and chief Kualii: "The Menehune's fort was on the rocky hill, Ulumalu,... just above Kukaoo [heiau]."

Pukui et al. (1974:142) do not provide a translation for Makiki, but they do suggest it was "probably named for a type of stone used as weights for octopus lures." The eastern boundary of Makiki Ahupuaʻa is defined by a line of three cinder cones: Puʻu ʻŌhiʻa (Tantalus); Puʻu Kākea (Sugarloaf); and, Puʻu ʻUalakaʻa (Round Top). The Hawaiian name for "Tantalus" was invented by Punahou students in late historic times. The literal meaning of Puʻu Ōhiʻa is "the ʻōhiʻa tree hill" (Pukui et al. 1974:203). On the top of Puʻu ʻŌhiʻa was a heiau called Pepeiaoohikiau or Pepeiao o Hikiea, one of the heiau associated with human sacrifices at Pūowaina (Boundary Commissioners' Record Book, Makiki Boundary Certificate, p. 60-62, cited in Fitzpatrick 1989:22, 46). Puʻu Kākea is named for a storm wind associated with Mānoa (Pukui et al. 1974:197). It is also associated with the saying "He Kākea ka makani kulakulaʻi kauhale o Mānoa," which means "the Kākea wind that pushes over the houses of Mānoa," said of one who is excessively aggressive (Pukui and Elbert 1986:119). The literal meaning of Puʻu ʻUalakaʻa is "rolling sweet potato hill," and it is named for the story of a rat that bit a sweet potato, causing it to roll downhill and sprout. The name may also have originated when Kamehameha I planted many sweet potatoes in this area (Fornander 1919, Vol. V:692), which on being dug, rolled downhill (Pukui et al. 1974:214).

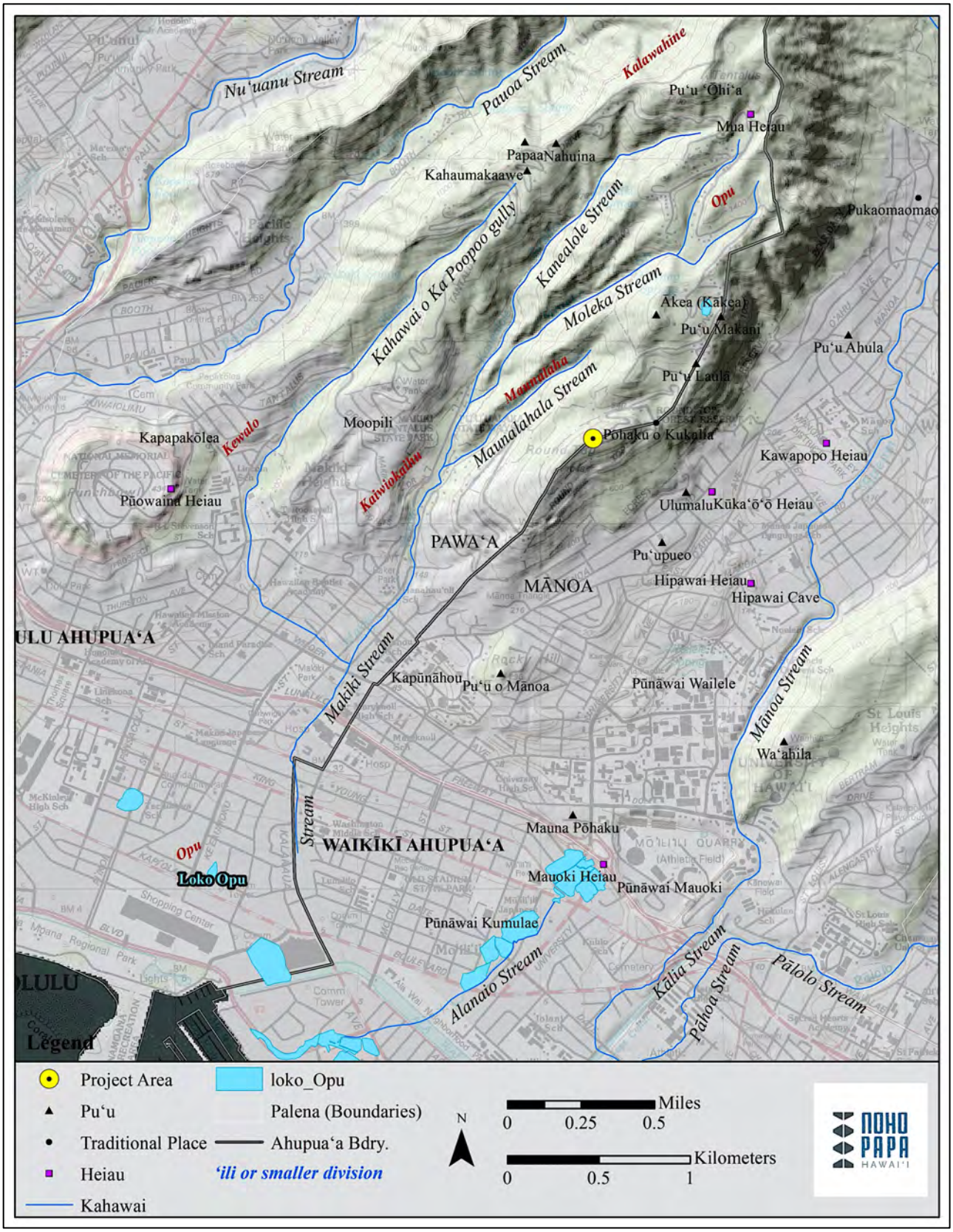

Figure 10. Topographic wahi pana map showing project area and ʻili ʻāina.

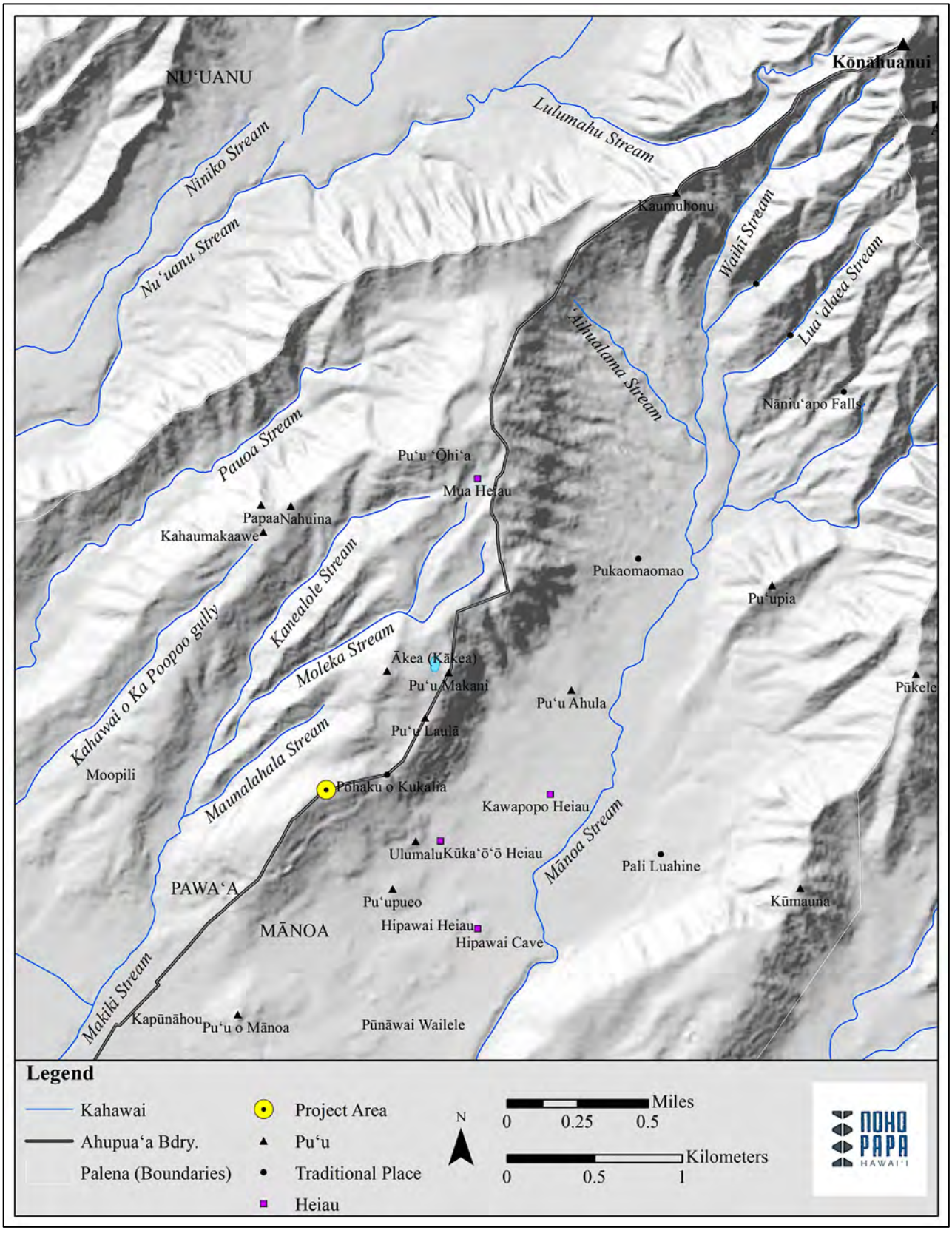

Figure 11. Wahi pana map showing project area and surrounding traditional place names.

Hawaiian Oral Traditions

Hawaiian oral traditions are historical information that has been passed down by word of mouth from one generation to the next and recorded in more contemporary times. Hawaiian oral traditions are important because it gives a general sense of Kanaka ʻŌiwi history, their connection to land, how they lived, and their traditional land tenure. These Hawaiian Oral traditions come in the form of oli (chants), mele (songs), ʻōlelo noʻeau (proverbs), pana noʻeau (sayings), moʻolelo (stories), moʻokūauhau (genealogies), and nūpepa (historic newspaper articles). These forms of oral traditions can be woven into each other. For instance, a moʻolelo may present a mele or oli about a moʻokūʻauhau. Essentially, these forms are the methods to ensure the survival of cultural beliefs and the vehicles for intergenerational transmission of knowledge. They are a direct link to experience Hawaiʻi through a timeless bridge of cultural insights that have guided Hawaiians for many generations.

Today, through written form and English translations, these cultural traditions are a source of wisdom to be better understood and appreciated. Bush (1994) further explains, "The stories provide the younger generation with the reason to uphold our intimate and fond attachment to our revered land, notable sites and prominent heroic deeds of our ancestors." The following Hawaiian oral traditions tell of the resources of the land, akua (gods), kupua (supernatural deities), ʻaumākua (familial guardians), aliʻi (chiefs), and ka poʻe kānaka (the Hawaiian people) whose stories weave a unique and treasured history of this ʻāina.

ʻŌlelo Noʻeau

ʻŌlelo Noʻeau are also valuable in perpetuating Hawaiian cultural knowledge, presenting kaona, and illustrating creative expressions that incorporate observational knowledge with educational values, history, and humor. Today, they serve as a traditional source to learn about kaona, people, places, and the environment of Hawaiʻi. The following ʻōlelo noʻeau were gathered by Mary Kawena Pukui and published in her 1983 book titled, *ʻŌlelo Noʻeau Hawaiian Proverbs and Poetical Sayings*. Although few direct ʻōlelo noʻeau could be found during this study for the immediate area of ʻUalakaʻa and Makiki, the ʻōlelo noʻeau included below bring attention to the surrounding area of Makiki highlighting resources, cultural significance and renowned traditions within the Kona district.

Aia i luna o ʻUalakaʻa
He is up on ʻUalakaʻa
A play on ʻUala-kaʻa (Rolling-potato hill). Said of one who, like a rolling potato, has nothing to hold fast to. The hill was said to have been named for a sweet potato that broke loose from its vine on a field above and rolled down to a field below in Mānoa.
[ʻŌlelo Noeʻau #50]

Ka Ua Kuahine o Mānoa
The Kuahine Rain of Mānoa
The rain is famed in the songs of Mānoa. According to an old legend, Kuahine was the chiefess, the wife of Kahaukani. Their daughter Kahalaopuna was so beautiful that rainbows appeared wherever she was. Once, two gossiping men claimed they had made love to her. This so angered her betrothed husband he beat her into unconsciousness. She was revived by an owl god but after hearing more gossip, her betrothed killed her. In grief, her mother became the Kuahine rain. Her father adopted two forms- the wind Kahaukani and a hau tree. It was said that this tree moaned in grief whenever a member of royalty died.
[ʻŌlelo Noeʻau #1574]

MELE

Mele illustrates the narrators deep understanding of the ʻāina and its huna (hidden) and kaona (layered) meanings. Over the generations, the people of Kona, particularly the makaʻāinana (commoners)—the fishers and farmers and kiaʻi (guardians) of the wahi kūpuna (ancestral places), developed an intimate understanding and pilina (relationship) with their ʻāina, which, for the past two centuries or so, has served as the commercial and political seat of power in the Hawaiian Islands, as well as a favored place for the royal families and other Aliʻi Nui.

The inoa mele below titled "He Inoa Ahi no Kalākaua" is one of many parts to a fire chant that was composed by Kaluahinenui noting ʻUalakaʻa and other famous wahi pana in the Kona District.

Lamalama i Makapuʻu	Shining brightly toward Makapuu
Ke ahi o Hilo	Is the fire of Hilo
Hanohano molale	Majestic, clear,
Ke ahi o Kawaihoa	Is the fire of Kawaihoa
Oaka onio ula	Flashing, sparking red
Kaoo ke ahi i Waialae	Are the many fires at Waialae
Hoohuelo iluna	Streaming upward
Ke ahi o Leahi	Is the fire at Leahi
Hoonohonoho i muliwaa	Set at the sterns of the canoes
Ke ahi o Kaimuki	And the fires at Kaimuki
Me he uahi koaie la	Smoking like a fire of Koaie wood
Ke ahi o Waahila	Is the fire of Waahila
Noho hiehie ke ahi	Set in proud array is the fire
I Puu-o-Mānoa	On the hill of Mānoa
Oni e kele iluna	Moving until arisen, atop
Ke ahi o ʻUalakaʻa	Is the fire of ʻUalakaʻa
A me he ahi la	Like an ahi fish
Ke ahi o Kaluahole	Is the fire of Kaluahole
Me he maihu-waa la	Like a mirage at sea
Ke ahi o Helumoa	Is the fire of Helumoa
Me he moa lawakea la	Like a white cock
Ke ahi o Kalia	Is the fire of Kalia
Me he papahi lei la	Like a heap of lei
Ke ahi o Kawaiahao	Is the fire of Kawaiahao
O mai ke lii nona ia inoa ahi	Answer, O chief, whom this fire chant belongs.

From a kanikau, or lament, for J. Henery by Kahinawe titled "He kanikau" mentions are made of the Hāliʻipili rain at ʻUalakaʻa. According to Andrews (1922), Hāliʻipili meaning "to spread over a region, as a shower, like the spreading of a mat". It is also "a light shower or mist peculiar to regions covered with the pili grass (Parker 1922).

Kuʻu hoa o ka iʻa lauahi lima o Kālia	My companion of the fish of Kālua that is caught by the quick hands
Hoa nānā i ka ua Kuahine o Mānoa	Companion who observes the Kuahine rain of Mānoa
Mai ka ua Hāliʻipili o ʻUalakaʻa	From the Hāliʻipili rain of ʻUalakaʻa
Auē kuʻu kāne ē	Pity for my dear husband!

[Akana et al. 2015: 118-119, translated by Collette L. Akana & Kiele Gonazalez]

Mo‘olelo and Ka‘ao

Situated between Mānoa Valley and Pauoa Valley, Makiki valley nestles on the lower slopes of Kaiwiokaihu (Makiki Heights) and three main pu‘u (hills, peaks): Pu‘u ‘Ōhia (known today as Tantalus), Pu‘u Kākea (known today Sugar Loaf) and Pu‘u ‘Ualaka‘a (known today Round Top). Compared with its neighboring palena, relatively fewer mo‘olelo were found for Makiki. However, the most well-known stories for that include Makiki are for the lands of ‘Ualaka‘a, Makiki Plain, and Kukuluāe‘o of Kewalo.

There are different versions of the Story of ‘Ualaka‘a. Fornander (1918-1919:532-533) shared two versions of this story. According to the legend, a potato was planted on the northwestern slope of Mānoa. There were two potato fields, one for Kupihe and another for Kapanaia. Kupihe planted his potato on the hillside while Kapanaia planted his on the flat. When they were cultivating, only one potato was found in Kapanaia’s field, so he hilled it up. But the potato grew large and became exposed from the hill in which it was planted. The field of the other man, however, did not contain any potato. Afterwards, they went to their homes and on the next day they went up again to cultivate. Kapanaia hastened to see his potato, but when he looked, there was no lump in the hill; he searched and could not find it. So, he went up to Kupihe’s field on the hillside. When he looked, he saw this potato causing a lump in the other potato’s hill, and Kupihe was hilling up the soil. Kapanaia stoked there and asked, “whose potato is this?” Other answered: “It is mine, for it is growing in my potato hill.” After their quarrel over the potato, they returned to their homes. That night the potato rolled down the hill again and made a deep hole where it first struck; from there it bounced and became again attached to its parent vine.

> *Ua olelo ia ma keia moolelo a‘u I lohe ai, ua oki maoli ia no ke anakiu o ua uala nei e ka iole, a hoomaka mai ua uala nei e kaa a paa I ka mala a Kapanaia, a malaila kahi I waiho ai a ulu kaupuupu oia ka mea e ulu haupuupu nei ka uala a kakou e ike nei. Oia ka mea i kapa ia ai kela puu mauka o Makiki o ‘Ualaka‘a, no ka kaa ana o ua uala la. A kekahi inoa a’u i lohe ai o Iolekaa. O kekahi hoi, na Kaauhelemoa I kiko ke anakiu o ua uala la, a haule I ka mala a Kapanaia, no ke alualu ia ana mai e Pupuulima.*
>
> The story which Fornander heard, it is stated that the stem of this potato was bitten by a rat and the potato rolled down until it landed in Kapanaia’s field, and it was left there until new sprouts commenced to grow from it. That is why new spouts come from potatoes as we see them now. That is why this potato at Makiki is called ‘Ualaka‘a, because it rolled [downhill]. Another name which I heard [applied to it] was Iolekaa (rolling rat). Another has it that Kaauhelemoa pecked at the stem of this potato and it rolled to Kapanaia’s field, because Pupuulima chased after it. [Fornander, 1918-1919:532]

John Papa ‘Ī‘ī (1959), he suggests that Kamehameha the Great farmed and lived part of the time in Mānoa near ‘Ualaka‘a, and Kamakau explains the reason why Kamehameha valued these lands:

> *Ua lako loa ‘o Kamehameha i nā mea kaua haole, a pēlā nō ho‘i i nā ali‘i a pau. ‘A‘ohe makemake nui ‘ia ‘o ke dālā a me ka lole. A ‘ike ‘o Kamehameha, ‘o ka ‘uala ka ‘ai i makemake nui ‘ia e ka haole, a ‘o ka uhi kahi, no Laila, mahi ihola ‘o Kameahmeha i ka ‘uala a nui, ‘o ia ho‘i ‘o ‘Ualaka‘a ma Mānoa a ma Makiki. A mahi ihola i ka uhi ma Ka‘akopua, a ma Honolulu, ‘o ia ho‘i ‘o Kapāuhi, a kū‘ai akula me nā haole.* [Kamakau 1996:168]

> Kamehameha was well-supplied with foreign weapons and equipment for war, as were all of the chiefs. There was no great desire for money or clothing. Kamehameha knew that sweet potatoes were the crop that the foreigners really liked, and yams too, so Kamehameha cultivated a lot of land with sweet potatoes, that was at ʻUalakaʻa and Mānoa and Makiki. And he farmed yams at Kaʻakopua and Honolulu, indeed at Kapāuhi (which means "the enclosure of yams"), and he bought and sold with the foreigners. [Translation by D. Duhaylonsod]

In *Kaao no Peapea* (The story of Peapea), Peapea is a famed warrior. This story tells of his victory over Kahahanas forces, Kekuapoi of rare beauty, and Peapea display of courage.

> *A lohe o Peapea, haalelo iho la iai ka wahine a holo mai la ma uka mai o ʻUalakaʻa, Makiki, Pauoa, Kaheiki, e pili la me Maemae. Ilaila loaa iaia ka maka mua o na kanaka o Kahekili. A o ko Kahahana aoao hoi, i Waolani ka poe, i Maemae ka maka mua e iho mai ana. A hiki i Peapea ma waena o ko Kahekili mau koa a me ko Kahahana mau koa, ku iho la ia e pani.* [Fornander 1918-1919 Vol:5:459-461]
>
> When Peapea heard this he left his wife and ran above Ualakaʻa, Makiki Pauoa, and Kaheiki, which is adjacent to Maemae. There he met the van of the army of Kahekili. As to the forces of Kahahana, the main army was at Waolani, while the front was descending from Maemae. When Peapea arrived between Kahekili and Kahahanas warriors he stood to defy [the advance]. [Fornander 1918-1919 Vol:5:458-460]

A hōlua slide may also have once been located on ʻUalakaʻa. According to an 1869 Makiki Boundary Certificate, the Makiki/Mānoa boundary began at King Street, went past Punahou School, then past John Papa ʻĪʻī's land called Anapuni, which was the beginning of the hōlua slide on the slopes of ʻUalakaʻa. Fitzgerald (1989:45) believes that this slide must have been on the side of the hill above Punahou School.

HISTORICAL LANDSCAPE

Early Historic Period

Accounts of cultivation in the ʻUalakaʻa area during the time of Kamehameha were noted by John Papa ʻĪʻi 1959:69; Kameʻeleihiwa 1992:59; Handy and Handy 1991:477. In 1940, E. Craighill Handy noted that taro cultivation was practiced in the swampy lands of Makiki south of King Street (now within the modem boundary of Makiki Ahupuaʻa), but the inland areas were known for the growing of sweet potatoes.

> Makiki. Between Kalakaua Avenue and Kakaako there were extensive terrace areas in the swampy land. A few terraces are now planted in rice, and others are filled in and used as house sites, right of way for streets, etc.
>
> Punchbowl Crater (Puowaina), on both the inner and outer slopes, was also famous in ancient times as a sweet potato locality. The planting was especially good on the inland side near the present Hawaiian homestead of Papakolea. [Handy 1940:156]
>
> The cinder slopes of what are now called Round Top and Makiki Heights did not support taro but have always been famous for sweet potatoes. [Handy 1940:78]
>
> The region around Makiki and Round Top, between Makiki and Mānoa Valley, is perhaps the most favorable locality on Oahu for sweet potato cultivation; here Hawaiians still have many small plantations, mostly for domestic use, though occasionally they market their products. The volcanic cinder mixed with humus in this locality seems to be ideal for sweet potato cultivation and normally the amount of rainfall is about right. [Handy 1940:156]
>
> Kamehameha revived the use of this locality for sweet-potato cultivation. The place is ideal, because all the year round there is enough rain for 'uala, and even in rainy winter months the drainage on the cinder slopes is complete. Sweet potatoes flourish in volcanic cinders, with a little infiltration of humus, and in crumbling lava. Kamehameha is said to have had the whole hillside planted ... [Handy and Handy 1972:478]

The Mahele and Kuleana Act

Land Commission Award documentation for Makiki Valley (north of King Street) indicates a concentration of awards in the lower valley areas primarily along Kanealole and Moleka Streams (Figure 12 and 13; Table 4). In terms of land use, the two dominant dry and wet agriculture crops in Makiki seem to have been taro and sweet potato. Puʻu ʻUalakaʻa (Round Top) was "famous in the annals of Hawaiian agriculture because here Kamehameha I established his own plantation [of sweet potatoes] on the steep slopes above Mānoa" (Handy 1940:156).

Dr. F. J. F. Meyen, a German botanist, visited the Makiki Valley area in 1831 and described habitation and agricultural features in the valleys along streams. The Mahele claims for Makiki reflect the pattern alluded to by Meyen. Most of the awards are for small parcels of land containing a houselot, but only a few had loʻi and kula land. In addition, there are a few claimants received

large land awards. The largest awards in Makiki were for the ʻili ʻāina of Opu in Pawaʻa, which was part of the large ca. 253-acre Pawaʻa award (LCA 8241) to John Papa ʻIʻi, the ca. 120-acre ʻili of Poloke ("fresh poi") to Keawehano (LCA 11), and the ca. 74-acre award to Kaihiwa in the ʻili of Kauhikio (meaning perhaps "the cistern cover"). Other ʻili ʻāina and ʻili kū of Makiki were Anapuni ("boundary"), Kaʻaiʻamaʻama ("the mullet food"), Kaʻaiheʻe ("the octopus food"), Kulaokahuʻa, Kanaha, Kaneahaka, Kanealole, Kumuʻulu ("breadfruit tree"), Kupahu (to brace oneself), Loko ("pond"), Manu ("bird"), Maunalaha, Miki ("active"), Moho, Palai (native fem, Microlepia setosa), and Pohukini.

Table 4. Land Commission Awards , Grants and Deeds surrounding the project area.

Type	Awardee	Helu	RP	Ahupuaʻa
Royal Patent	Mokuhanui		3830	Makiki
Royal Patent	Ia		5463	Makiki
Royal Patent	Nahina		3863	Makiki
Grant	Ena, John	3648	N/A	Mānoa
LCA	Ii	8241	N/A	Mānoa
LCA	Ii, Ioane	8241	N/A	Makiki
LCA	Kaaione	24	N/A	Makiki
LCA/ Royal Patent	Kaihiwa	6489	4519	Pawaʻa
LCA/ Royal Patent	Kaihiwa	6489	4519	Makiki
LCA/ Royal Patent	Kaihiwa	6489	4519	Makiki
Grant	Kamehameha V (Lot)	2788	N/A	Makiki
Grant	Kamehameha V (Lot)	2788	N/A	Makiki
LCA/ Royal Patent	Kauliokamoa	MA 24	2057	Makiki
LCA/ Royal Patent	Kauliokamoa	MA 24	2057	Makiki
Grant	Komaia	136	N/A	Mānoa
Deed	Lunalilo, W. C. Estate	N/A	N/A	Pawaʻa
Grant	Montano, Mary J.	3759	N/A	Mānoa
Grant	Neumann, E. S. V.	3726	N/A	Mānoa
Grant	Schmidt, H. W.	3535	N/A	Makiki
Grant	Stevens, John	641	N/A	Mānoa
LCA/ Royal Patent	Castle & Cooke Trustees for ABCFM	389	1931	Mānoa

By 1874, Lot Kamehameha (Kamehameha V) had inherited the crown lands and added to them through additional land grants, totaling roughly 500 acres in Makiki. Also by this time, large parcels of land were being granted to various people in lower Makiki, mostly foreigners (Gulick, Baldwin, Paris, Lemon, Meek, Gray, and others) as indicated on a map of Kamehameha V's estate (Alexander 1874). One large land grant to H.W. Schmidt of 21 acres (Grant# 3535) was located well back in the valley. Here he built a house and attempted to grow coffee, but the venture proved unprofitable (Young n.d.).

Also at this time, another individual was making an attempt to grow coffee lower in the valley. J.M. Herring purchased several parcels along Kanealole and Moleka Streams between 1864 and 1876 (L.C.A.'s 6489:2,3,4; 3746B; 4283C; 4285B). Here he apparently built a house, constructed a carriage road leading to his residence, and planted coffee, which is still prevalent in the area today. The 1913 historic map indicates the route of the carriage road as connecting with Makiki

Heights Drive on the west, paralleling the west side of Kanealole Stream mauka, then winding eastward along the ridges and through the valleys to connect with Round Top Drive on the east, crossing the streams of Kanealole, Moleka, and Maunalaha (Podmore 1913). Possible bridge foundations associated with this road have been located along Kanealole and Moleka Streams (Yent 1993:7). Herring also apparently altered existing terraces to create his house site, the carriage road, and planting areas, although the extent of this modification is unclear.

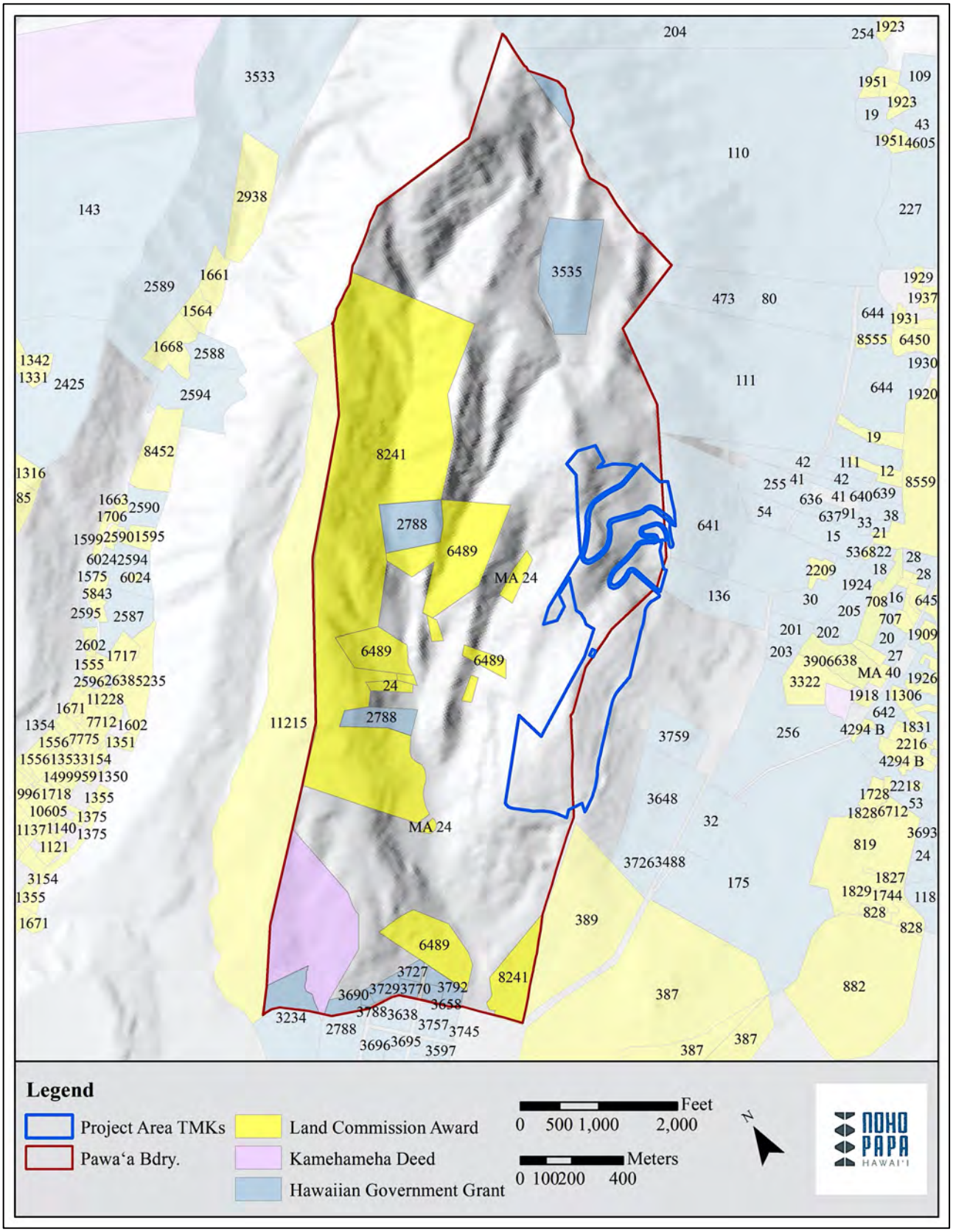

Figure 12. Overlay showing LCA, deed and grants within the surrounding project area.

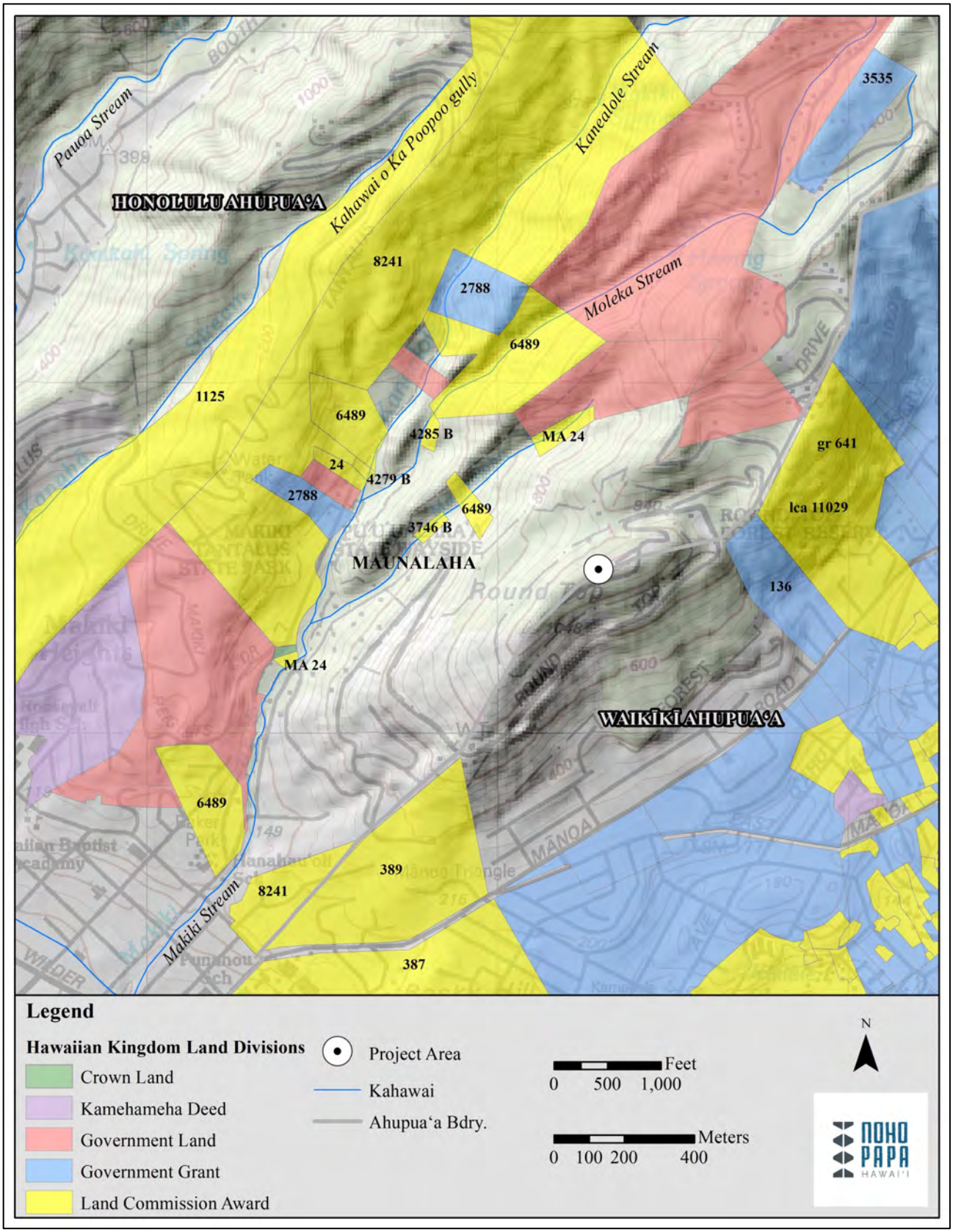

Figure 13. Topographic overlay showing deed and grants and LCAs surrounding project area.

Mid- to Late 1800s

The earliest description of Makiki was made by a visitor to the islands in the early nineteenth century. In 1831, the Prussian explorer vessel, Prinzess Louis, anchored in the harbor of Honolulu. On board was Dr. Franz Julius Ferdinand Meyen, a 27-year-old botanist, who during the next six days toured the southern coast of Oʻahu from Diamond Head to Pearl Harbor, collecting plant and animal species and making notes on the scenes of Hawaiian life that he observed. He observed the natives gathering the stone called makiki, used to make the stone portion of an octopus lure. The name of the ahupuaʻa comes from this special type of stone.

> As soon as the valley became wider the beautiful vegetation disappeared. The slopes of the mountains were covered only with low grasses, the huts of the Indians became more numerous and here and there large boulders appeared again. The end of a low ridge which runs through the center of this transversal valley had been artificially cleared of vegetation and of the cover of humus. The rock which came to light here is a very attractively colored basalt conglomerate. The Indians were just then busy chipping flat pieces from this rock which they wanted to use to hunt octopus. The rock on the sides of the valley, however, is the usually porous basalt which is found all around Honolulu. Here and there one can find caves in this rock, some of which are inhabited. [Pultz 1981:46]

The reference to quarrying stone for octopus lures is especially interesting in relation to a reference from David Malo, in which he gives makiki as one of the names of "the stones used in making lu-hee for squid-fishing [which) are peculiar and were of many distinct varieties." (Malo 1951) Meyen also noted that many formerly forested areas were being turned into pastures, either intentionally cleared by man or eaten away by the roaming cattle. Meyen reported:

> In the course of our excursion we saw the mountains everywhere covered with grazing horses and homed cattle .... The island of Oahu has more than 2000 head of homed cattle of which 1000 head belong to the Spaniard Don Francisco Marin ... There is also a great number of horses on these islands and already every reasonably well-to-do person, man or woman, keeps a riding horse. Yet, as welcome as the increase in this most useful domestic animal is, the joy in it will soon disappear when it is realized that this increase, as well as the expanded cultivation of meadows, is in exact proportion to the decrease in true agriculture.
>
> Everywhere one hears the complaint that in former times a far greater quantity of field-produce was cultivated than now .... Many and very extensive fields through which we have just wandered and which are presently being used as pasture land were formerly covered with sweet potatoes. Today one can still see the remaining traces of their cultivation. They say that in the days of Kamehameha a great part of the Honolulu Valley was used for the cultivation of field-produce. Now there are meadows there and the valley is far less productive that in former times. [Pultz 1981:46-47]

Figure 14. 1952 aerial photo showing project area of (UH Mānoa's Library MAGIS, Reference number 22-2423).

1900s to Present Day

In 1901, the U.S. Congress passed an appropriation to establish an agricultural station on Oʻahu for the study of agricultural produce (excluding sugar cane). A plot in the tract called Kewalo uka was originally chosen, b ut was later instead used for a Marine Hospital. The next tract chosen was 154 acres on the eastern slope of Punchbowl to the southern slopes of Tantalus. Sixty-two acres were reserved for a stone quarry and a public park. This park later became Makiki Cemetery. The Division of . Forestry acquired Makiki Valley in 1904, and initiated a reforestation program aimed at reversing the effects of the sandalwood trade. Sometime soon thereafter, a concrete dam was constructed midway along Kanealole Stream, creating a small reservoir and the carriage road associated with Herring, known at the time as "Tantalus Auto Road". Among the developments implemented by Forestry (then known as the Board of Agriculture) was a large nursery at the mauka end of the present-day DOFAW access road (Chun 1994:18).

Beginning in 1921, the Nutridge estate on the western side of Puʻu ʻUalakaʻa was developed. This 22-acre complex consists of the historic E. S. Van Tassel house (designed by Hart Wood and built in 1925), several outlying buildings, and a carriage road which extended from the hairpin turn in Round Top Drive to the main house at the top of the slope. In the area extending across and down the slope toward the hairpin turn, a macadamia nut orchard was planted. This is significant for being the first commercial macadamia nut plantation in Hawaiʻi. The orchard was cultivated until about 1967 (Chun 1994:18).

Figure 15. 1962 Hawaiʻi State Archive Image of Tantalus titled "OAHU- Round Top (ʻUalakaʻa) view from, of Mānoa" (Reference number #120-823(5)) by Baunick.

Figure 16. 1962 Hawai‘i State Archive Image of Tantalus titled “OAHU- Round Top (‘Ualaka‘a) view from, the big city; ‘Ualaka‘a park” (Reference number #120-823(5)) by Baunick.

Pu‘u ‘Ualaka‘a State Wayside was established before Hawai‘i's statehood, in 1957, as part of the Territorial Parks System. The recreational area was initially 6.4 acres in size (DLNR 1965). By 1992-1993, Pu‘u ‘Ualaka‘a State Wayside had expanded to 50.0 acres in size, of which 12 acres were developed for recreational use (Chun 1994).

The Makiki State Recreation Area part of the Makiki-Tantalus State Park. This recreation area includes a wayside park along Makiki Street and the upper valley area from the wayside park on the makai end to Pu‘u ‘Ōhi‘a (Tantalus) on the mauka border. ‘Ualaka‘a State Park, located on the Maunalaha side of Makiki Valley, is also part of the Makiki-Tantalus State Park. Although encircled by the park boundaries at Pu‘u ‘Ualaka‘a, TMK 2-5-19:11, was set aside by the Executive Order 1215 for the “City microwave transmitters”, and were not included in the State park (Chun 1994). All state owned lands within the park boundaries and DOFAW’s Makiki facility are within “public land trust” as defined in Section 10-2, Hawai‘i revised Statues. Section 10-13.5.

Through ICSD, DAGS carries out the responsibilities for statewide telecommunications for the State of Hawaii. The ICSD owns and operates microwave radio transmission systems, antennas, towers, buildings, and related communications facilities and infrastructure throughout the islands. The ICSD also plans, coordinates, organizes, directs, and administers services to ensure the efficient and effective development of communications systems. Over the years, public safety, emergency response, and law enforcement agencies have benefited from the significant advances in communications technology. To fulfill their public service missions, these government agencies rely on telecommunications systems to communicate and transmit information and data between offices and facilities as well as with personnel in the field.

Figure 17. Looking NNE. Foreground is 1st radio tower, second is behind the stone building which is the restrooms; the parking lot is visible beyond.

Figure 18. Looking WSW down the trail with the Radio Towers and Restrooms at photographer's back.

On April 26, 1985, the Board of Land and Natural Resources approved a Conservation District Use Application (OA-1724A) for the existing communication facility subject to eight conditions. Further, at that time, the Board recommended to the Governor of Hawai‘i issuance of an Executive Order setting aside approximately 200 square foot (SF) of land to be under the management and jurisdiction of the State Department of Accounting and General Services to establish the O‘ahu-Kaua‘i Microwave System, However, the 200 SF area was not subdivided nor withdrawn from the Round Top Forest Reserve. At that time, the existing 100-foot tower held two microwave grid antennas, one used for the State of Hawaii's emergency voice microwave link to Kauai, and one vertical antenna then utilized by the Hawaii Interactive Television System (HITS) Instructional Television Fixed Service (ITFS) system, which broadcasts college credit courses. The second microwave grid antenna relayed signals from the University of Hawai‘i, Mānoa campus. The equipment building that housed the ITFS transmitter is located under the tower.

In July 1988, the Department of Budget and Finance-Telecommunications Division strengthened the existing tower to accommodate the installation of solid reflector microwave antennas. The Land Board approved this use within the area covered by CDUA OA-1724. The strengthening of the tower was required to ensure it could withstand 100 mph wind loads as the tower was not originally designed to carry the solid "dish" antenna required for the UH and ICSD's microwave systems. An adjoining 150 SF equipment building was also constructed by DAGS, as the existing equipment building was considered too small to house the new microwave transmitter/receiver equipment. An outdoor back-up power emergency generator and an LPG fuel tank was also requested.

The July 1988 amendment also requested the land area of the State's Oahu-Kauai Microwave System Tower Site at Tantalus (Round Top), Oahu be increased from 200 SF (as identified in CDUA OA-1724) to 792 SF. An error had occurred in the construction of the existing facility such that an area 792 SF, rather than the Board approved 200 SF, was developed.

In 2010, The State of Hawaii (State) Department of Accounting and General Services (DAGS) proposed to construct a building addition and related improvements at the DAGS Information & Communication Services Division (ICSD) Round Top Radio Facility. The proposed addition provided a power and equipment room and an emergency generator room sited adjacent to the existing ICSD tower and support building and no changes to the existing radio tower or antennas.

PREVIOUS ARCHAEOLOGICAL STUDIES

Previous Archaeological Research Within The Vicinity of Project Area

There were two previous archaeological studies for TMK directly or within the vicinity of the project area.

Carpenter & Yent, 1994

In 1994, the DLNR Division of State Parks carried out an archaeological survey of ca. 90 acres of Puʻu ʻUalakaʻa State Wayside and a discrete 3,000-foot long strip of Makiki Valley State Recreation Area (Carpenter and Yent 1994). A rock shelter (SIHP #50-80-14-4668) above an agricultural field system near Moleka Stream, and a series of at least nine terraces (SIHP #50-80-14-4866) were recorded in Makiki Valley. No archaeological sites were located on Puʻu ʻUalakaʻa. While historic research indicated a high likelihood of encountering archaeological site on the puʻu, Carpenter and Yent noted that the "area [Puʻu ʻUalakaʻa] has been altered for agricultural production and recreational use in this century, which appears to have destroyed any archaeological site which may have formerly existed on the slopes or summit of the puʻu" (Carpenter and Yent 1994:39).

Hammatt, 2010

At the request of the Hawaiʻi State Historic Preservation Division (SHPD) and State of Hawaiʻi Department of Land and Natural Resources (DLNR), Cultural Surveys Hawaiʻi (Hammatt 2010) completed an archaeological literature review and field inspection report for the Round Top Radio Facility Building Addition and Other Improvements in Makiki ahupuaʻa, Kona district, on Oʻahu. Specifically, the project area was located at the DAGS Information and Communication Services Division (ICSD) Round Top Facility, off Round Top Drive at Puʻu ʻUalakaʻa State Wayside in Makiki. The ICSD Round Top Radio Facility is situated on a portion of Tax Map Key (TMK) (1) 2-5-019:003. The purpose of this report was to support an environmental assessment for the Round Top Radio Facility Building Addition and Other Improvements. The purpose of the archaeological study was to determine if there are any major archaeological concerns within the study area and to develop data on the general nature, density and distribution of archaeological resources. This document is intended to facilitate the project's planning.

The Round Top Radio Facility Improvements Project consisted of a total 0.065 acres and involved the construction of a new building adjacent to the existing ICSD Round Top Radio Facility. The building addition, related improvements, and fenced area will include approximately 1,342 square feet immediately adjacent to the eastern perimeter of the existing ICSD building. DAGS is proposing to construct: 1) an approximately 490-square foot by 12-foot high building to support radio equipment and an emergency generator; and 2) other related improvements, including a retaining wall with security fencing, a block wall with simulated masonry veneer, an above ground diesel fuel tank, and drainage improvements. Electrical power was supplied via connection to the commercial power line that services the existing ICSD facility.

The fieldwork component of the archaeological literature review and field inspection was conducted in October 2010 by two CSH archaeologists, Jon Tulchin, B.A., and David Shideler, M.A., under the general supervision of Hallett H. Hammatt, Ph.D. (principal investigator). Fieldwork consisted of a 100% pedestrian inspection of the project area. In addition, the fieldwork

component of the archaeological literature review and field inspection study was carried out under archaeological permit number 10-10, issued by the SHPD/DLNR per Hawai‘i Administrative Rules (HAR) Chapter 13-282. A 100 percent pedestrian inspection of the project area's surface confirmed that there were no surface historic properties present. The pedestrian inspection also noted that the project area had been subjected to surface disturbances, as evidenced by surface grading and leveling associated with prior development of the immediate area for Pu‘u ‘Ualaka‘a State Wayside Park and the existing ICSD Round Top Radio facility. Based on the results of the literature review and field inspection, Cultural Surveys Hawai‘i did not recommend any further archaeological work for the proposed project.

Other Previous Archaeological Studies

Other Previous archaeological research in the Makiki Valley-Tantalus area have been concentrated in the valley areas along Kanealole and Moleka Streams. The only systematic archaeological survey in the Makiki Valley area was conducted by Martha Yent and Jason Ota (1980). Five areas along Kanealole and Moleka Streams were surveyed, identifying a variety of pre-contact and historic sites including agricultural terraces, rock walls, rock shelters, a walled enclosure, a historic house site and carriage road, and retaining walls. Twenty-seven features were identified during this survey, all subsumed under one site number.

Of note are numerous burials that have been found around the base of Pu‘u ‘Ualaka‘a (Round Top) (Bath and Smith 1988; Kawachui 1991; Kawachi 1992; Pietrusewsky 1992b). However an archaeological survey by DLNR Division of State Parks identified no historic properties atop Pu‘u ‘Ualaka‘a, the location of the current project area (Carpenter and Yent 1994).

While not given a formal SIHP number, there is an extensive trail system across the Ko‘olau that were established and would have been well used in pre-contact times. A segment of these trails connects to the project area. The ‘Ualaka‘a trails, as recorded in the State Ala Kahakai Trail system, and by DLNR, State Parks; “the trail begins in Pu‘u ‘Ualaka‘a State Wayside. It is a short loop through thick forest canopy. At the uphill end of the trail you come to a 4-way intersection with Makiki Valley, Moleka, and Maunalaha Trails” (www.dlnr.hawaii.gov/dsp/hiking/oahu/ualakaa-trail/). These alae (trails) are not formal in architecture, as with the ala kahakai in Kona, Hawai‘i Island. Rather, they are defined by use, and many are still used today. This ridgeline trail system spans the the Ko‘olau range above Honolulu. Before lower valley roads were formalized, and such terms as “Government Roads” were coined, the trail system along the ridges would have been the shorter routes to get from Honolulu or Waikīkī, across the pali to connect with trails in Ko‘olaupoko and then on to Waimānalo, Kailua or Kāne‘ohe. Even today you could part at the wayside parking lot at the project area and take off on system of interconnected trails that would lead you into Nu‘uanu, over the pali, Konahuanui, the highest peak on the Ko‘olau range, and a wahi pana (storied place) and wai hālau (source of water) for both Kona and Ko‘olaupoko moku. Konahuanui is the summit at the back of two historic royal centers on O‘ahu, Kailua and Waikīkī. The safest (and perhaps only) route to reach the summit of Konahuanui is by following the spine of ‘Ualaka‘a mauka (Figures 5 and 9).

COMMUNITY ETHNOGRAPHY

Community Engagement for the CIA was conducted from August 2021 to October 2021. As a multi-phase study, the ethnographic process consisted of identifying appropriate and knowledgeable individuals, conducting consultation through emails, phone calls and/or zoom interviews, summarizing the participants manaʻo, analyzing the information, and preparing the community manaʻo summaries for the report. Two individuals and seven organizations were contacted to participate in this study. Interviews were completed with two individuals and three organizations emailed their comments and/or recommendations. The table below lists the names, background information, and notes with community participants responses.

Table 5.Community Participants (in alphabetical order)

Name	Affiliation	Status
Association of Hawaiian Civic Clubs		Unable to gather their manaʻo during the project timeframe.
Coco Needham	»Maunalaha descendant and resident	Summary of community manaʻo included below.
Hawaiian Civic Club of Honolulu		Responded by email, “We will ask some of our clubs who has a commitment to the cultural impact within the Kona Moku. We will let you know if we find point-of-contact or group that would be able to kōkua your request.”
Hawaiʻi Nature Center		Unable to gather their manaʻo during the project timeframe.
ʻĪmaikalani Winchester	»Kumu, Hālau Kū Māna Public Charter School	Summary of community manaʻo included below.
Mānoa Cliffs Restoration Group		Unable to gather their manaʻo during the project timeframe.
Native Hawaiian Organizations Association (NHOA)		Unable to gather their manaʻo during the project timeframe.
The Office of Hawaiian Affairs (OHA)	»Kai Markell and Kamakana Ferreira, Compliance Specialists	Responded by email, “Some friends with ʻike papa lua worked on the area and learned that ʻUalakaʻa was originally Ulukaʻa. The name was changed to protect the area, as it is part of Kanehunamoku. Ulukaʻa is the huna name. If you think about it, it makes more sense for ulu to tumble and roll down the hill than sweet potato.”
The State of Hawaiʻi Department of Land and Natural Resources (DLNR), State Historic Preservation Division (SHPD)	»Susan Lebo, Archaeology Branch Chief »Hinano Rodrigues, History and Culture Branch Chief »Kaʻahiki Solis, Cultural Historian »Tamara Luthy, Ethnographer	Responded by email, “Sending compiled notes for consideration, mostly based on a previous AIS/FEIS for the park. Please take what is helpful and leave the rest.”

Acknowledgements

Nohopapa Hawai‘i would like to mahalo the individuals and organizations who shared their precious time, memories, and mana‘o for this study. Without their willingness to share personal recollections and stories, this important project would not have been possible. The mana‘o that was shared will help to mālama Pu‘u ‘Ualaka‘a for future generations to better understand, appreciate, and cherish the uniqueness of this place.

Summary of Community Mana‘o

Mo‘okū‘auhau (Background Information)

Connections to Pu‘u ‘Ualaka‘a

Coco (Charlotte) Needham grew up in Maunalaha or Makiki Valley. She is a sixth-generation descendant of Kalalakoa in Makiki Valley. Coco shared that the ‘ohana name from that area would be Kalalakoa, “When I grew up at that time, it was called Makiki Valley. It was not called Maunalaha until later years when they created the Maunalaha Homesites in 1983. So, prior to that, it was all Makiki Valley. Everyone knew the place as Makiki Valley. I’ve lived there over 60 years. I was not born there, but I came home when I was two. To my ‘ohana, I was just talking to my mom who is 87. For us, it’s a maternal lineage in that place. So, we’re like one of the last intact native Hawaiian communities within urban Honolulu that still have the descendants of the original people that still resides there.”

She continued, “I make maybe the sixth, seventh generation. My mom’s the fifth, fourth generation. It was just recently, I think, like about a month ago because we’re trying to document everything for us as well for the next generation. She mentioned that her papa, her grandpa was up Pu‘u ‘Ualaka‘a. And I was like, ‘Oh, you never told me that.’ It’s just so funny the coincidence. Her grandpa is Ho‘opi‘i Ka‘ai‘ai. My mom them all grew up there. Maunalaha Homesites encompasses the upper part of Roundtop. Before you reach the last hairpin turn before you go to the lookout, and then it also encompasses another part by the Makiki Stream before you reach the Hawai‘i Nature Center.”

‘Īmaikalani Winchester shared he is from ‘Ewa, O‘ahu and is a teacher at Hālau Kū Māna Public Charter School which is located at the base of Pu‘u ‘Ualaka‘a. He talked about the work they do at Hālau Kū Māna, “Since about 2005/2006, the school is a Hawaiian focused charter school and got a temporary lease at the base of Pu‘u ‘Ualaka‘a which sits on the entrance of what everybody kind of refers to as Round Top. It was completely canopied over. It was in disrepair. We got there and we made a commitment to be there. We cleared and removed quite a lot of invasive trees to clear up this space We’ve been in the community working with some of the Hawaiian families in Maunalaha. We operate as an educational institution, so we teach a little bit about the wahi pana. We teach some of the wind names, the rain names, some oli. Some of the cultural significances of the place. We access, at times, it’s been a while since COVID, but at times we access those foothills, those trails that connects Pu‘u ‘Ualaka‘a to Pu‘u Ohi and Pu‘u Kākea all the way to the back of Mānoa Valley which is where the lo‘i that I have been caretaking for several years connects to. In some cases we’ve had our students start in the back of Mānoa and walk all the way down into Makiki using those trails. We do at least once a year, but it gives us a chance to gain a different perspective. Feel the winds, feel the rains, be up in the mountains and see some of the older plants and native habitats that are still holding ground over there. When we get chances to, we try to contribute to those things, whether it’s trying to help control invasives. If we get a chance to work

with other scientists or researchers that are in the area from between myself and some of the other teachers as well. Hālau Kū Māna have had pretty good relationships with at least some of the restorative work. Lyon Arboretum has a fenced off area in the back that a former worker had been working on for several years."

He continued, "That's always a spot that's really good because the kids can walk and open the gate. And then what you have is basically a nice, pristine, and fenced off native forest back there. It's a real good resource, at least for us on Oʻahu who don't have access to that type of population density of all-in-one area. So, it's an important part, but I kind of consider Puʻu ʻUalakaʻa, that whole ridge, Kākeʻa, up into the side that divides Mānoa from the Pauoa side. Those are important areas that we've formed relationships and we collect materials, collect plantings, we outplant at times throughout the valley of Maunalaha and into that ridge line as well, too."

ʻĪmai shared his perspective, "I'm not from there. I've helped to develop and restore some of those places in our small campus. But we as a Hawaiian place of learning access of the greater area, 'Ke aliʻi ka ʻāina.' So, we try to be on that ʻāina when we can. That's kind of our relationship to the area."

Natural Landscape and Resources

Coco commented, "My mom talked about there was a bus that used to go, not all the way to ʻUalakaʻa, but about halfway. There's like a turnaround area and that's the area they used to call the Black Sand Pit. It wasn't that developed and that's where the HRT bus went. So, there was a bus service there at that time and you could go down a trail and the trail might still be some remnants of it that went to the back of Mānoa. So, people from Mānoa also came up and caught that bus."

She continued to share about the trails, "There used to be, even where I live, when I was small, there was this trail and the house next to me, when we were small, the trail went all the way from what is Maunalaha Road, now. Because at one time we all had one address, that whole homesite before it was divided was 2098 Roundtop Drive and everybody shared the same address. We had a munitions box outside as our mailbox at the beginning of the road. The kupuna that lived next to me, everything was a trail. To get to her house was a straight trail, but you get to her house, then you go a little bit more through the plumeria fields. Because right below Roundtop Drive that bend, it's all plumeria fields. And they all used to be connected from one end to the other. So, this one goes all the way up until that roadway. But even before that, I think it went all the way up the straight to ʻUalakaʻa. No names of trails, no moʻolelo, except for their own story. But the last house on the bend, that was where my mom them was born and where my grandparents also lived. Right there, right below ʻUalakaʻa and that's how come we have all the coffee trees and everything else. There's a lot of talk of night marches. So, the first trail I talked about was one that the night marches would march up to ʻUalakaʻa, from there it went straight up. Up until it crosses Roundtop Drive."

She talked about the plants still there, "From when the Hawaiʻi Sugar Planters Association was the initial part of Nutridge (Estate), when they planted the macadamia nuts and coffee. So, it was more like an experimental station up there. Some of our homesites, I still have the coffee plants, not the macadamia nuts, from that time that they tried that my grandmother brought down. In doing research on the whole ahupuaʻa, everybody calls it Puʻu ʻUalakaʻa as King Kamehameha sweet potato. When doing some research, the name of the sweet potato was called Kalia, which was his favorite ʻuala variety that grew up at Puʻu ʻUalakaʻa and is also the name of Ala Moana, Waikīkī. So, it encompasses that whole ahupuaʻa. I think there's some remnants still yet in the valley more towards the back part. In ʻUalakaʻa, actually in the back part in Maunalaha they still

have ʻuala that was grown there. We have this ancient ʻulu tree in the neighbor's yard. I asked my mom if she remembers that tree and she said, 'No, it was there before me and it was already a big tree.' So, she's 87. If you look around for an old ʻulu tree that's maybe a hundred years old, it's still shooting out shoots. But unfortunately, it's not thriving because of other invasive species all around it. There's kukui, avocado and there's a Banyan tree and stuff. So, it's all fighting for the sun."

Coco talked about the plumeria trees, "Makiki Valley, was known for the plumeria trees, which you will also see alongside ʻUalakaʻa as you are going up. It was all plumeria fields and even where our homesites are. As I explained to you, so that one trail went from the road all the way up to ʻUalakaʻa, at one point. But in between, you had these trails that ran where it took along the top of the plumeria fields and so it took you to everybody's house. You could go through everyone's field through this back. As well as going lateral, we went horizontal to collect the lots and the houses and the people there was like right below Roundtop Drive at the beginning of the plumeria fields was below some homesites. And then in between was this massive, massive length of plumeria fields that they would sell down at the original boat days. And then eventually to lei sellers at the airport. They never opened a stall, but they sold to the lei sellers there, their flowers. So, they'd come by and pick up the lei's from my grandma and the other kūpuna in the valley. And I'm not sure if you got to interview somebody else from the Maunalaha Homesites, but there's also the Aunty Bella's Lei Stand in Waikīkī, it's in the Royal Hawaiian shopping center. The existing lei stand. So that's part of that history from there."

She continued, "They didn't have buildings at that time. So, they could hear the boats, the big ships when it would come around, would blow their horn. They could first hear the boats and then look down to the ocean and see the boats and then they would get all their lei's ready and go down to the harbor or pier at that time for lei selling."

Regarding ʻuala and streams, "This one man, Jacob Koia or old man Kuli, he was the one that made Maunalaha Road. So, there was farming in the back of the valley probably because it went over to Moleka side where you have all the other ʻuala, you think they were loʻi, but they're not because they're above the stream. So, they're all sweet potato, and so he lived in a back of the valley, on our side the Maunalaha side of the stream, because there's Moleka, and there's Maunalaha. Moleka is the side where the Nature Center and everybody else's because that's the Moleka Stream that meets Kānealole Stream. Kānealole meets Moleka Stream and then it turns into Makiki. The Maunalaha side, we have a Maunalaha Stream, but it's a spring-fed stream. So, majority of the it's a dry river bed, like now, but it never used to be because it was fed from Makiki Springs or what is now called Herring Springs, which was capped by the Board of Water Supply and sent over to the Kānealole side, which now goes down to the Makiki pumping station. Going back to the sweet potato, he would drive a sweet potato cart from the back of the road down to Tanabe's Superette on Keʻeaumoku and Beretania, that was like an open market, I guess, at that time or the big market at that time. So, they would bring the sweet potato down to Tanabe's to sell. So that's how they said our roadway was made through the sweet potato cart by old man Kuli. The days of horse and buggies. They used to call him old man Kuli because he was missing one ear and said he was a loyalist to the queen. He had his ear cut off in a battle."

She also shared about her neighbor, "My kupuna next to me Lydia Ulii would sell her ʻinamona. That was her specialty. Her yard would have the tin roof laid out with cracked kukui nuts to roast. Once ready, she would take off the shells and hand chop hundreds of them to make a full mayonnaise jar. It was labor intensive. All night you would hear her chopping. It became kind of a lullaby. Like the rains of Makiki Valley falling."

She continued to talk about Maunalaha Stream being a spring-fed stream that flowed abundantly at one time, "When I was a small girl, I used to go with my tūtū to the stream and catch ʻōpae with the old nets to put under the rock. So used to have the freshwater shrimps in the stream at that time. That was her favorite meal. She would love the ʻōpae. My auntie, my mom's sister said when they got married, they harvested ʻoʻopu from Maunalaha Stream. So there was an abundance of ʻoʻopu for the wedding party so had ʻoʻopu and ʻōpae, which all don't exist anymore in either stream. Maunalaha Stream doesn't run because they cut off the spring and redirected it. On the other side of the stream where Makiki Stream is at the Nature Center, my family used to have to tend to the loʻi there too when they were younger. My mom was born in 1934. So, you're talking about the twenties, thirties, and the forties. It was a different time and place then. Not my grandma, but her grandma used to wash their clothes in the streams there. So right below when the road bends, the first hairpin turn where Maunalaha is, there were certain parts, I guess, that was a little bit flatter and had more water. So, they'd wash cloths in the stream at that time."
Coco shared about the large ʻauwai, "DLNR knows about it because their building is right in the middle of it or on it. It goes around DLNR and this huge ʻauwai that comes down and comes back in to Makiki Stream. If you look at a map, there's huge loʻi there because the size of the ʻauwai is huge. So, you know a lot of water that fed a lot of kalo."

Coco talked about her tūtū and one of her favorite foods being ʻōpae, "When I would go, my grandma, it was the later years, you're looking at about the sixties. We would go over to the Makiki Stream. And at that point we didn't catch ʻoʻopu but we did catch ʻōpae from underneath the rocks. She would come home; she'd wash and clean it and soak it. Some, she would eat just like that, but I think some she would steam. And she would eat it just on the side with everything else with her corn beef, her onions, her watercress, her paʻakai, and poi. Because there was a shortage of poi, most the poi came from outside, they would add flour to stretch the poi. It was all kind of separate. They didn't mix it. They all had they're little things. Fresh ʻōpae. Dried ʻōpae. Even the watercress was separate from the onion, paʻakaʻi, and different things. It was always different, and it wasn't like this big preparation, it was just simple. Simple, daily living kinds of things."

She shared that as a child her mother would take them up to Ualaka'a for picnics, "After school but mainly to watch her dad's ship either coming around the point when he was coming home or passing the point when he was leaving. At that time, you could spread a hāliʻi down and have a picnic, like in Elvis Presley's Blue Hawaiʻi. It is one of her best memories. Her father was a merchant marine. He sailed for about the first 40 years of her life. ʻUalakaʻa was also where several family members got married up at the lookout."

Coco shared about welcoming in the year 2000, "We did a ceremony there, an ʻaha, at that Wayside station and then we'd walk down to the lookout to do the ceremonial part and that was a 24-hour vigil. If you stand there, you can see all the points aligned. You can see east side and all those points all the way out to west side, which kind of makes you wonder, you know, a few things because they're all connected. You don't feel like you're separate. You stand there and lookout, you have the sense of connectivity to all the different points."

Another resource Coco shared about was F. J. F. Meyen, "He was a German Botanist who wrote a book called *A Botanist's Visit to Oʻahu in 1831*. He goes to the next ridge over, Kākea. He's very descriptive, and he describes all the plants. When he comes down at the end of visiting Kākea, he comes into the valley and he describes the people that he meets, which is our ancestors, the people of Makiki valley. Some of them were living in caves. But it could be also below Puʻu ʻUalakaʻa because they're so close. He talks about the native plants, as well as the native people that he comes across. He even gives a good description of his guides."

‘Īmaikalani commented, “Pu‘u ‘Ualaka‘a State Park, our students access those different projects for different reasons. Some guys are collecting hau from the area to make their ko‘i so they can make their kua and kūkū kapa. We’re growing wauke on the bottom of our campus, which sits right below it, so it’s kind of the same thing. That tradition has sort of started to come back in that area, we plant food, taro, nui, ‘ulu. All kinds of different stuff like that. Our commitment was for every invasive that we knocked down on our campus, we plant two natives and we’re way ahead of our quota. And so that’s kind of our relationship as an institution of Hawaiian learning and Hawaiian knowledge and Hawaiian action, hopefully. And investment in that area, it’s a Honolulu school, so we have students from all over the area. We do have at least someone on staff, their family has been in that area and in that region for a while. So, they have a lot more family stories that they can share particular to Pu‘u ‘Ualaka‘a.”

He also mentioned that part of their campus has been named after all of the elements found in the area such as Kāke‘a, ‘Ōhi‘a, ‘Ualaka‘a, “We have chants that name those places and stuff like that as well, too. We really try to embrace that area into as much our campus life as we can. The kids get to learn the names just by going to the classes. And then when we take them up and out, it gives them a good chance to put things together that they can pronounce. Versus throwing a bunch of Hawaiian names at you in the middle of the forest, and then hopefully the thing sticks. If they come in with a base to kind of make a connection, that’s kind of good.”

He talked about community workdays, “We also host community workdays along the stream which involves over 13 schools or something like that. It started in our stream and then it branched out to four other streams. So, it’s like another Nā Wai ‘Ekolu kind of vibe from St. Louis to Mānoa to Punahoua and then to us guys. We’re building on some of these relationships, which are all ‘āina-based and culture based.”

Regarding cinder cones, ‘Īmaikalani shared, “In terms of ‘āina, just in terms of protection, we’ve talked about the geophysical makeup, we’ve talked about them as cinder cones. What’s special about the area is the cinder that sits there. It’s called Tantalus so that soil what we learned in our lo‘i studies is Tantalus the soil is a very rich and amazing soil. And the reason why it’s called Tantalus is because of the space that we’re in, which is that Maunalaha, Kanealole, Pu‘u ‘Ualaka‘a because all that cinder sits right there. Our campus is all cinder. Going down, it’s kind of like this gold mine for black cinder, black gold. That’s good for us, for planting and everything like that, that's gold!”

For Hālau Kū Māna, they reinforce the idea of agriculture, “As a use or what makes this place important. It gives this place mana is there’s that special soil, that element that is critical. For us, we try to teach ‘He ali‘i ka ‘āina, ke kauwā ke kanaka.’ What that means is the land is chief and the people, we are just the servants. The land, the ‘āina is a teacher. The land is the measuring stick and the barometer. For us guys, we’re trying to analyze and try to understand, and depict. So, for us, it’s always a fun, little practice just to look at how our mo‘olelo, our traditional stories when we really unwrapped and uncover them. Really science is catching up to our mo‘olelo and it only proves what we’ve already know. But it’s been locked in a language that is specific to our ways, philosophies, ideologies, and the process of colonization and the loss of language and the restriction of our cultural practices.”

‘Īmaikalani continued, “All of these things helped to contribute to the removal and the silencing of that ‘ike, of that mana of the lessons of the land. We’ve been separated, it’s been overgrown. The challenge for us and we tell our kids, ‘Look into those bushes over there. What do you see?’ The real basic guys will see bushes and green. That’s where we do a baseline and we them eventually, ‘When you graduate from this school, you’re going to see Kāne, Kanaloa, Kū, you’ll see all these different elements, all of these capabilities. Even from the trees that are invasive, you’re

going to see waʻa, you're going to see house rafters. They're going to see all these different potentials because ʻike ʻāina is about seeing the potential. There is no rubbish. There's no such thing as ʻōpala. Everything is a resource. The ultimate challenge for us kānaka is to be akamai enough to work in harmony and balance with that resource. We try to work with what we have and learn from the environment around us, and sometimes we find that those things have a cultural significance."

"Maybe we're the ones who have the bad relationship with it, you know? So, it really gives us a moment to kind of pause and consider our relationship with ʻāina and how we participate in like the villainization, how we participate in like the separation, because we just don't know. So, it gives us opportunities to do that. Our campus is maybe just under an acre, but we consider that the entire ridge line, that entire ahupuaʻa to be part of our campus. Even down to the kai, which is where we have our closing ceremonies for Makahiki. We open mauka and then we close at the kai."

Cultural Practices

ʻĪmaikalani shared, "Since making the commitment for our campus to be in this space, we also had a change to begin new ceremonies. I've been very blessed to have been part of many ceremonies at Kahoʻolawe. It became apparent to me when I couldn't either afford the time or the money to get to island that I had to bring Kahoʻolawe to us or bring Lono to us. And so, we began our first Lonoikamakahiki celebrations in that valley and we celebrate with that valley in the community. It's become quite an event. I think for their neighboring schools who get a chance to witness and participate. We try to involve the families. They come in with some of that cultural expertise and we bring experts from around the community, from uncle ʻUmi Kai to Hina Wong to whomever it maybe to come in and share about Lono, about Makahiki. From people from the ʻOhana (PKO), Kaliko Baker, Ph.D., and others just that can really help to uplift and raise up the cultural vibrancy in that area."

He continued, "We created Lono, our Lonoikamakahiki came from a stone out of the Makiki Stream. The body of Lono comes from the ʻohe gathered from that valley. The lei, all the adornments, all the koa, we use waiawī to make our lele because no more lama and use what get. I think that if Lono was around, he would say that waiawī would be a good kinolau for him. We also make ihe and stuff like that. So, we try to operate out of a balance between the ʻōʻō, the planting, the healing side, as well as the ihe, the building side, the constructing side. Our lele, our ceremonies, our protocols, all those things and the adornments are that ʻāina. That's one thing that we're proud about is our ceremonies are becoming more and more reflective and we get more and more response. The hōʻailona get stronger and heavier and deeper and longer. Communities that we don't know, communities that we haven't seen for a long time, they continue to come back. We have this procession that we go down the main road of Makiki Heights, Makiki Drive, we basically block that road for about a 20-minute march from our campus down to the park where we hold our games after our Makahiki ceremony, opening ceremony. Our kids are complete full dress, we're chanting, we're kani ka pū. We literally shut that whole place down and guys jump in. The families, love it, the families get in their cars, and they block the road for us. They jump in the lines with us, they got their kids in strollers. It's our own little march for just a moment."

He continued to share, "Our school sort of sits as a platform to really help to amplify those things. So, within the last 10 years or so, the last decade going strong, there's been a good and growing Hawaiian presence of practice, ideology, commitment, and relationships. So, I think those things all along with knocking down all the invasives of the physical plane, you know, for us guys as a school, we also are blessed that we get to operate, not just with as a reaction to the State system, which we are trying to work against, but more of a conscious response to who we want to be. At

that place, it certainly grounds us to a lot of those fundamental connections in a place in Honolulu specifically where Hawaiians don't have a lot of connections left. That's why it's more critical, important for us to have that space in Honolulu where Hawaiians have pushed to the margins. It's meaningful in that way for us."

Regarding sacred spaces, ʻĪmaikalani shared, "It's kind of a cool thing just to create sacred space. I think that's why it's important because Puʻu ʻUalakaʻa and all the areas over there allows us to connect, not just to connect to, but to create more sacred spaces. That's one of the values of holding true to places that can produce that inspiration that haven't been developed, that haven't been changed or created or choked out. Access to those places is very important for us as a school, as we operate for us as our growth and a matured into inspiration to be the change that we need to be for ʻāina, for our kaikaina coming behind us as well and to kūpuna who came before. If we can operate within the full holistic realm of that ʻāina, of that place, if we can tap into that, then that's better than a library, that's better than an athletic complex, that's better than an Olympic swimming pool. We don't have none of those things, but we get ʻāina. ʻĀina is more important than kālā. ʻĀina is more important than a big fancy building and stuff that with photovoltaics. I've been to some private schools, they look real pretty, real manicured. But I know that at least for us in our place in our school, everything that is there is everything that we've done. Nothing has been done for us. Everything was done by us for us because of our commitment to ʻāina and trying to learn that type of worldview. We've been given a little bit of a kuleana in terms of our community and leadership roles."

Regarding fundamental principles, ʻĪmaikalani shared, "He aliʻi ka ʻāina, ke kauwā ke kanaka, that's something that's prevalent for us. Aloha ʻāina, Mālama ʻāina, these are all important fundamental principles for us as a school. We take care of the ʻāina if we depend on it to take care of us. We know we have our chores. We know we got to do some small things. We know we got to do some big things. In the element of Kāʻeleloli which is the winds and the rains of this place. We begin to create and manifest, really, the potential of the place. We're not always great at it, for sure. But I think our presence, our practice, our growth, our maturity, and development has been carved out by those winds and those rains and that heat that comes down. And so, we are as much of that place. Every day that we're there, we become that place more and more like that place. That place recognizes us. It recognizes our chanting in the morning. The communities than can hear the echoing going throughout the valleys. The hikers that come down who say Aloha to us and keep an eye out on the weekends. Making sure no one making hanaʻino at our campus. We get guys who are watching our campus for us."

ʻĪmaikalani continued, "Kaleikoa says this all the time, 'You don't ever know what you do does.' Like, you don't know who's paying attention. You don't know who's watching. The ʻāina is watching, the people are watching. And so, if you can continue to use that place as a space of healing, of learning, of growth, inspiration, all that stuff like that and to show people that there is a way that we can be in harmony and balance, then I think people will get attracted to that. I tell the kids, 'If you can go over there, we practice chanting every single day. But just understand that at some point we must do it in a community. And in the community and get plenty of eyes watching.' So now everybody wants to do it super good. I tell them, 'Maikaʻi, you know plenty of people watching. But you know what more important, when no one is watching, except you, your kūpuna, and this ʻāina.' Learning what maybe more of a holistic accountability is. It's not about the performative aspect. Sometimes it needs to be, but really, it's about how we ground and center ourselves to the place."

Moʻolelo (Cultural and Historical References)

Coco shared, "In the last part in Pilahi Paki's *Legends of Hawai'i: O'ahu's Yesterday*, she talks about Kamehameha when he invaded O'ahu. That they came through the backside of Pu'u 'Ōhi'a, Pu'u 'Ualaka'a all the way from the Makapu'u. They came up mauka. I would love to say I know more stories but a lot of the kūpuna have ua hala and actually we're the kūpuna. But they didn't share as much, you know? I'm sure they seen and did, that's why I'm asking my mom all the time."

She mentioned that they consider Pu'u 'Ualaka'a a cultural site, "A lot of battles for Kamehameha took place up there (Pu'u 'Ualaka'a), and down into the valley, I've heard different stories."

Another story she talked about, "The lūhe'e from the Makiki stones. They were prized for making lūhe'e which are octopus lures. And there's two at Bishop Museum that are made from Makiki stones."

In reagards to John Papa 'I'i, Coco shared, "If you look at 'Ualaka'a and you look at his awarded lands. He had lands in Makiki Valley by the Nature Center, which is called Pāwa'a. All the way around, he had a large parcel and including those around 'Ualaka'a or right before Punahou school, I think."

'Īmaikalani shared, "I teach outside, and my classroom looks at Pu'u 'Ualaka'a every day. My actual classroom is called 'Ualaka'a, which is also where the kids meet in the morning. This is like the general hangout spot, at the base of Pu'u 'Ualaka'a. In some cases, I teach a Hawaiian history, so we get to talk about some of the historical meaningfulness of 'Ualaka'a. For example, we're going over Kamehameha 'Ekahi. And we talked about the invasion of O'ahu from Kamehameha forces. And we like to tell the story because the kids can see it. The story is Kamehameha lands with almost a thousand war canoes and like 10,000 warriors. And they land on the beaches of Waikīkī and up they come right through the mouth of Mānoa. They send these warriors to follow these bird catchers and these bird catchers know a lot of the back trails. So, these bird catches go up Pu'u 'Ualaka'a and go up a trail in the back of Mānoa, on that Ridge line, then they crossed over into Pauoa, and that's where they get dropped down into Nu'uanu. And so that whole area is kind of like a critical spot for that whole big battle that ultimately ended at the Pali. Our kids always get kind of in awe when we say, 'You know where they entered? Turn around. It's right there.' Then it's cool because Kamehameha not only does he defeat Kalanikūpule, but he also establishes this huge agricultural system."

He continued, "'Ualaka'a is most famously known by us guys as the rolling sweet potato. One of the stories and there's several versions say that Kamehameha and his army who were on O'ahu for several years, went back into agriculture production. And it was said that he would grow his sweet potatoes so big that you must roll them down the hill. You couldn't walk them down. There are other stories that are interlaid, and they all include 'uala getting big, obviously, 'Ualaka'a."

He talked about Pīkoi the sharpshooter, "One mo'olelo that's kind of interesting that I tell the kids because it involves Pīkoi who is a sharpshooter to pana'iole, a bow and arrow expert, of famed in stories of Hawai'i Island. Kanikawī, Kanikawā are the two guys Pīkoi takes out and 'Umi is trying to get his war canoes going. He's also noted for sitting on Pūowaina, which today is known as Punchbowl. Pūowaina is significant because that's kind of an area where Lili'uokalani and Kalākaua them were all born and the famous garden, Uluhaimalama. But also, from Pūowaina, the sharpshooter Pīkoi was said to have spied a rat, 'iole, all the way across, it's quite a way if you sit over there, and he was able to pinpoint that rat from sitting on top of Pūowaina which is quite a long shot. He's given credence for being an excellent sharpshooter from the rats that were nibbling all the 'uala which caused them to roll down the hill. This is just some of the mo'olelo that we try to do."

‘Īmaikalani continued, “When we have our Makahiki games, lele ihe, we try to play it up a little bit. ‘We’re in the zone where Kamehameha was. Who’s going to win kūpololū prize, the ihe laumeki prize?’ It helps to just kind of set the stage for the students, something significant happened over here. Whether it’s from Kamehameha or mystical archers from back in the day. I tell them the Hawaiian Legolas and all the kids love it! ‘Imagine, a kanaka Legolas!’”

Inoa ʻĀina (Place Names)

Coco shared, “Even like the name of that place is also called Ōpū. And at first you think ‘ōpū, you think piko, but then ōpū is also like the tower, the tower that they resurrect on the Heiau. So maybe like ‘Ualakaʻa, they could have had guard towers up there at one time. It would make sense. The view is awesome. You can see anything coming in.”

SUMMARY AND RECOMMENDATIONS

Community Concerns

Roundtop Reservoir

In regards to the Roundtop Reservoir, Coco shared, "The waterline that feeds our homesites is the one that comes off the Roundtop Reservoir." She asked if this proposed project would be impacting the Roundtop Reservoir. "Where the tower station is, our Maunalaha Homesites are all right below it as well. If there's any impact to the reservoir, we're fed off the four-inch main water line that goes from Roundtop Reservoir all the way down to Makiki Heights. Hopefully it doesn't impact it."

Community Recommendations

Historical and Cultural Visitor Center

In regards to Maunalaha, Coco commented, "We are the descendants. We are the aboriginals prior to any form of government that pre-existed. And unfortunately, in the '70's we lobbied because they were trying to displace us to build the Nature Center. They were going to evict us to build the State Park. They had campsites and picnic areas where our homes are. I think it was a Tongg report. With that said our kūpuna lobbied the legislature. Unfortunately, we only got a 65-year release, which ends in 2048. We'd like to remain, not have to be displaced from our ancestral lands. Some of the things that we've actually fought in the past is they would call us squatters. We're not squatters. We're still there. Modernization is encroaching, but we still manage to be the kīpuka. We are the cultural kīpuka."

She continued, "With State Parks, if they're looking for culture, at one point I wanted to have the Nutridge Estate do a historical and cultural visitors center because so many people go there. Including artifacts and things relating to this place to show the whole changing pattern of Makiki itself. But it's the whole surrounding area from Kalia down to Waikīkī, all those names and all the huge fishponds that existed at one time and Waikīkī that fed the multitudes. Give the whole context."

Finding Solutions to Water Management

'Īmaikalani shared about the Ala Wai Watershed Project, "Detention basins were being proposed right at the foot of our campus, right at the foot of Pu'u 'Ualaka'a which for those streams and some of the kūpuna who have shared the old stories of that area, had lots more water, lots more health and diversity in the streams. Now, it's very much a small percentage of what it used to be. The city has built these dikes and things like that to kind of take off the water through Honolulu because it runs right into Waikīkī. The project itself is trying to protect Waikīkī investments from any type of hundred year or century flood which they would project. But those have been sort of like the contemporary more things that we've kind of been involved with in terms of that general area."

Stewardship, Education, and Access

‘Īmaikalani shared about kuleana to their community and leadership roles, “In terms of how we step out into political engagement, into political arenas either as kumu, ourselves personally, or as educators who are taking students into a new kind of kind of classroom, where ‘āina is the topic of discussion in a very sanitized arena that many Hawaiians don’t really have a connection to. So even for us working ‘āina only means that we have more kuleana to be in the places and to be in the boardrooms and to be in the testimonials and all those things like that, which it takes and requires. I’m putting my kids through like a similar cultural impact statement for ourselves too, because they got to do wahi pana research, interviews, and things of that nature. They got to learn how to protect ‘āina as a part of their skill building at the school. Content comes and goes, but the skills is what is going to help us to is to catch more content. For us, we try to build not just relationships but opportunities for them not just to learn but to listen and to see what other guys do and see what other guys say in big moments. We’ve taken them to the Office of Hawaiian Affairs. We’ve thrown them in front of the Board of Trustees for University of Hawai‘i, where we have our alumni also, there has UH students, giving testimonies and cranking. And then our kids rolling up with our red shirts and signs and ready to rock. Just the presence of them being there it really, really enforces and it really foundation analyzes their time in the lepo, their time of the mountains, their time in the kai, their time in the wa‘a. Their time scrubbing the dye off their fingers because they’d been dying ‘ōlena for the last three weeks. All those things rely on each other.”

‘Īmaikalani continued, “It’s the Kāne and Kanaloa. ‘Āina can be defined very broadly, whether it’s health, mental health, personnel health, physical health, even gender between kāne, wahine, māhū. These are all systems that we're trying to address in a way that is Hawaiian based, that is ‘āina based. We’ve taken kāne on kāne hikes. Wāhine hikes. We find that those separations, that practice allows for a different type of learning, a much more rich, cultural, vibrant type of learning then always putting them together and smashing them up. It’s been good for us to use that space, use the stream, use the rocks for our imu, to build rock walls. We also teach. We have the kids building lele. We have them building ahu. We have local experts like Atwood Makanani. He gets a chance to share with the kids from a kupuna perspective. We’re lucky in that way to have that space. That’s kind of where we speak on behalf of our position for ‘Ualaka‘a.”

Additional Community Mana‘o

For future community engagement, ‘Īmaikalani recommended two Maunalaha community members to consult with, Maluhia Moses and Kaui Onekea.

Coco referred other community members such as Jocelyn Ka‘awa who is the cultural steward for the Makiki Lo‘i’s. Aunty Bella’s Lei Stand at the Royal Hawaiian shopping center who are “One of the original families of the lei sellers. They’re the only original lei stands still in Waikīkī today.”

Cultural Resources, Practices, and Beliefs Identified

Discussions of specific aspects of traditional Hawaiian culture as they relate to the project area are presented below. These discussions are based on information from ethnohistorical resources, archaeological investigations, and ethnographic information gathered for this cultural impact assessment. This information was assessed to identify cultural beliefs, practices, and resources associated with the project area of ‘Ualaka‘a as well as in the broader context of the Makiki Ahupua‘a “to ensure that cultural practices which may not occur within the boundaries of the project area, but which may nonetheless be affected, are included in the assessment” (OEQC 1997).

Cultural landscapes encompass the unity between kānaka and the ʻāina. They are an integration of both natural and cultural resources as well as the cultures that value these resources. The concepts of mālama ʻāina and aloha ʻāina reflect the Hawaiian worldview of preserving and protecting both the natural and cultural resources found on the land. Nā kūpuna (the ancestors) depended on their cultural beliefs, practices, and resources for survival. Many of these cultural beliefs and practices have been passed down through the generations and today are still prevalent in different areas of Makiki ahupuaʻa including Puʻu ʻUalakaʻa.

Wahi Pana

The literal meaning of Puʻu ʻUalakaʻa is "rolling sweet potato hill," and it is named for the story of a rat that bit a sweet potato, causing it to roll downhill and sprout. The name may also have originated when Kamehameha I planted many sweet potatoes in this area, which on being dug, rolled downhill. In order to meet foreigners demands for potatoes and yams Kamehameha himself "...accordingly went into the cultivation of these foods and grew potatoes on the hill of ʻUalakaʻa between Mānoa and Makiki, and yams at Kaʻakopua, and sold them to the foreigners" [Kamakau 1992:190]. This has been traditionally understood as an example of Kamehameha's strong work ethic and willingness to be engaged in humble tasks. Puʻu ʻUalakaʻa (Round Top) was "famous in the annals of Hawaiian agriculture because here Kamehameha I established his own plantation [of sweet potatoes] on the steep slopes above Mānoa" (Handy 1940:156). The account of Kamehameha's industry there and other legendary traditions have made Puʻu ʻUalakaʻa a storied place (wahi pana) for the Hawaiian people.

Traditional Uses

A hōlua slide may have once been located on ʻUalakaʻa. According to an 1869 Makiki Boundary Certificate, the Makiki/Mānoa boundary began at King Street, went past Punahou School, then past John ʻĪʻī's land called Anapuni, which was the beginning of the hōlua slide on the slopes of ʻUalakaʻa. Fitzpatrick (1989:45) believes that this slide must have been on the side of the hill above Punahou School. This hōlua slide appears to have been well below the elevation of the project site.

The traditional Hawaiian pattern of land use may be inferred from the Land Commission Award (LCA) documentation for Makiki Valley (north of King Street). The pattern is of a concentration of awards in the lower valley areas primarily along Kanealole and Moleka Streams where taro and sweet potato were grown. Notably there were no LCAs near the summit of Puʻu ʻUalakaʻa and the project site. The nearest LCAs were along Maunalaha Stream. It seems likely that most forest resources would have been more conveniently available closer to areas of permanent residence and agriculture (typically on the edges of streams). The steepness of the ascent/descent would have discouraged gathering in the vicinity of the project site.

Pukui et al. (1974:142) do not provide a translation for Makiki, but they do suggest it was "probably named for a type of stone used as weights for octopus lures." In 1831, Meyen observed the natives gathering the stone called makiki, used to make the stone portion of an octopus lures. The reference to quarrying stone for octopus lures is especially interesting in relation to a reference from David Malo, in which he gives makiki as one of the names of "the stones used in making lu-hee for squid-fishing [which] are peculiar and were of many distinct varieties" (Malo 1951).

Burials

Previous archaeological research has documented numerous human burials at the lower elevations of Puʻu ʻUalakaʻa (Round Top). A number of burials have also been inadvertently found

within Makiki Valley, including skeletons in burial caves (McCoy 1971), at least seven burials found under roads and houses on the west side of Round Top (Bath and Smith 1988; Kawachi 1991), and two from Makiki Park (Sinoto 1979). However, a 1994 archaeological survey of Puʻu Puʻu ʻUalakaʻa State Wayside Park by DLNR Division of State Parks identified no historic properties, further increasing the likelihood that no archaeological sites are located within the project site.

Cultural Practices

As shared by community participants, there is a resurgence and revival of creating sacred space and cultural practices within Makiki. For instance, it was shared that a stone out of the Makiki Stream was used to create Lono for Lonoikamakahiki. For Makahiki opening ceremonies, previous processions have been conducted down the main road of Makiki Heights, Makiki Drive, that block the road for a 20-minute march. Areas such as Puʻu ʻUalakaʻa allow the community to not just connect to, but to create more sacred spaces. Access to those places is very important for growth and inspiration to be the change for ʻāina, kaikaina, and to kūpuna who came before. It was shared that community's presence, practice, growth, maturity, and development has been carved out by the elements that are present there such as the winds, rains and heat. Every day that kānaka are there, they become (more like) that place, and the place recognizes their presence.

Natural Resources and Gathering

The project site is located approximately 3.8 km (2.4 mi.) mauka (inland) of the southern coast of Oʻahu. Maunalaha Stream is located approximately 400 m to the northwest. Elevation within the project site is approximately 1060 ft above mean sea level (AMSL). The project site is situated atop Puʻu ʻUalakaʻa (Round Top), a cinder cone crater relating to the formation of the Koʻolau Range characterized by tholeiitic and olivine basalts. Soils in the area are reported as Cinder Land (rCI). The project site receives approximately 2000 mm (78 in.) of annual rainfall (Giambelluca et al. 1986). Vegetation within the project site consists of Ironwood trees and a grass. It seems a certainty that there has been gathering of forest resources (including bananas, ti, bamboo) in an unbroken continuum from pre-Contact times. However, it seems likely that these resources were typically found along streams and in areas less exposed to wind than the project site. Moreover, the present day environment of Makiki is vastly different from that which existed prior to Western contact.

Trails

Of note was the presence of a trail head located immediately west of the project site. The trail segment in the project area itself is not formally defined, in this area it is merely a grassy path, the larger connectivity of the ala being of important cultural significance. As one of the purposes of the park and parking lot are maintenance and access to the trail, and the proposed project does not impact the trail or access to the trail. This trail is likely a component of the State of Hawaiʻi Trail and Access Program's (Nā Ala Hele's) ʻUalakaʻa Trail. The trail was most likely developed after 1957 when the Makiki-Tantalus State Park was established. It does seem likely that there were traditional trails to the summit of Puʻu ʻUalakaʻa (particularly from the west, south, and east sides where the population was). Access to the vicinity of the project site is provided by Round Top Drive and the DLNR's ʻUalakaʻa Trail system.

Potential Effects of the Proposed Action

Evidence of traditional cultural practices in the direct area of the project site per se would be unlikely due to successive land modifications associated with the development of the ʻUalakaʻa State Wayside and the construction of the existing ICSD Round Top Radio facility.

A 1994 Archaeological Survey of Puʻu ʻUalakaʻa State Wayside Park area, by DLNR Division of State Parks, identified no historic properties (Carpenter and Yent 1994). Additionally, a Literature Review and Field Inspection by Hammatt (2010) noted that the project area had been subjected to "surface disturbances, as evidenced by surface grading and leveling associated with prior development of the immediate area for ʻUalakaʻa State Wayside and the existing ICSD Round Top Radio facility". These disturbances would likely have destroyed any evidence of pre- and post contact land use that may have been present further increasing the likelihood that no subsurface archaeological sites are located within the project area.

Based on background research, it was expected that a segment of the larger ʻUalakaʻa trail system would be present within or adjacent to the project area. Previous studies have failed to acknowledge the trail system as a historic property. This system of trails, although not formally recorded, based on our research are eligible historic properties based on relevant law and likely eligible for a SIHP. Based on this same research, successive land modifications conducted within the project area associated with the development of the ʻUalakaʻa State Wayside campus, and the construction of existing ICSD Round Top Radio facility; it is anticipated that no historic properties, in addition to the trail system, are likely to be present within the project area.

No evidence of traditional cultural practices in the direct project site have been identified. The project will not adversely impact any gathering practices as may be ongoing in the surrounding forest. However, it is important to be cognizant of times of the year where access is needed for areas nearby or outside of the project area (such as the road) where certain cultural practices occur (such as Makahiki).

Conclusion

This Cultural Impact Assessment identified, captured, and documented the natural, cultural, historical, and contemporary significance of the ʻUalakaʻa area in the Makiki ahupuaʻa as well as the surrounding lands. Ultimately, we hope this study assists Bowers + Kubota and the community to better understand and appreciate the overall importance of ʻUalakaʻa by providing a more holistic compilation of various materials and data. We remain grateful for the valuable information provided by the community regarding the history of ʻUalakaʻa and the Makiki ahupuaʻa in the Kona region. We hope that we respectfully and properly conveyed their manaʻo, concerns, and recommendations and that thoughtful and appropriate actions can be undertaken to implement their manaʻo.

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APPENDIX A: COMMUNITY PARTICIPATION LETTER

NOHOPAPA
HAWAI'I

August 2021

Welina mai me ke aloha,

On behalf of Belt Collins Hawai'i, LLC, Nohopapa Hawai'i, LLC is conducting a Cultural Impact Assessment (CIA) for the proposed improvements of the future emergency radio facility and the Round Top Information and Communications Services Division (ICSD) located within the existing Pu'u 'Ualaka'a State Wayside Park between the Honolulu-Waikīkī Ahupua'a, Kona Moku, O'ahu (see attached aerial map). The CIA focuses on the specific project area as well as the entire ahupua'a of Honolulu-Waikīkī.

The State of Hawai'i owns this land and the site is shared with the City and County of Honolulu radio facility. The proposed project site is approximately 792 square feet. The proposed improvements are to demolish the City and County of Honolulu emergency tower and construct a new 180 feet high antenna in its place. As well as removal of the State's antenna equipment and associated structure located directly under this antenna.

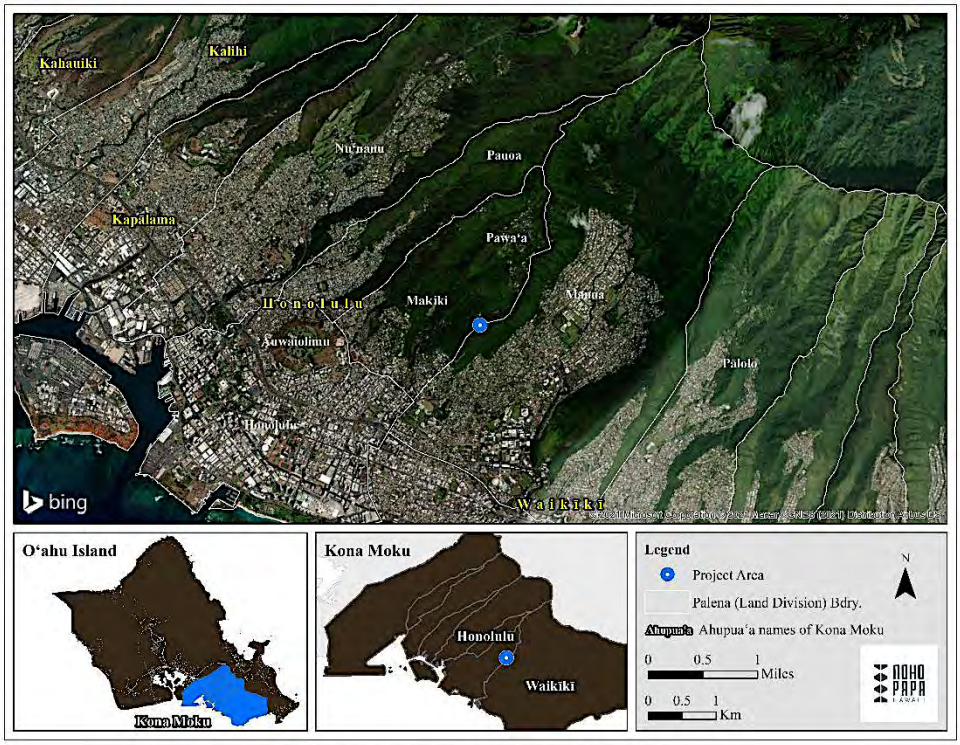
The purpose of this CIA is to gather and evaluate potential impacts to the cultural practices and resources of the proposed development in Honolulu-Waikīkī Ahupua'a. We would like to engage with individuals, 'ohana, and/or organizations that have relationships to this area. In particular, we would like to gather information relating to:

- **Cultural knowledge of mo'olelo, ka'ao, inoa 'āina, mele, oli, 'ōlelo no'eau, and hula related to the project area**
- **Knowledge of wahi pana, wahi kapu, and wahi kūpuna and cultural practices assocaited with these wahi**
- **Knowledge of the 'āina, natural landscapes and resources, and associated cultural uses**
- **Concerns regarding how this project might impact any Hawaiian wahi kūpuna (cultural resources) or practices within or around the project area**
- **Suggestions and recommendations regarding the management and stewardship of wahi kūpuna in and around the project area**
- **Referrals of kūpuna and kama'āina who are knowledgeable of the project area and might be willing to participate in this study**

We will be reaching out to you soon in hopes of arranging an interview. We look forward to collaborating with you to document your mana'o for the cultural significance of Honolulu-Waikīkī ahupua'a for this important study.

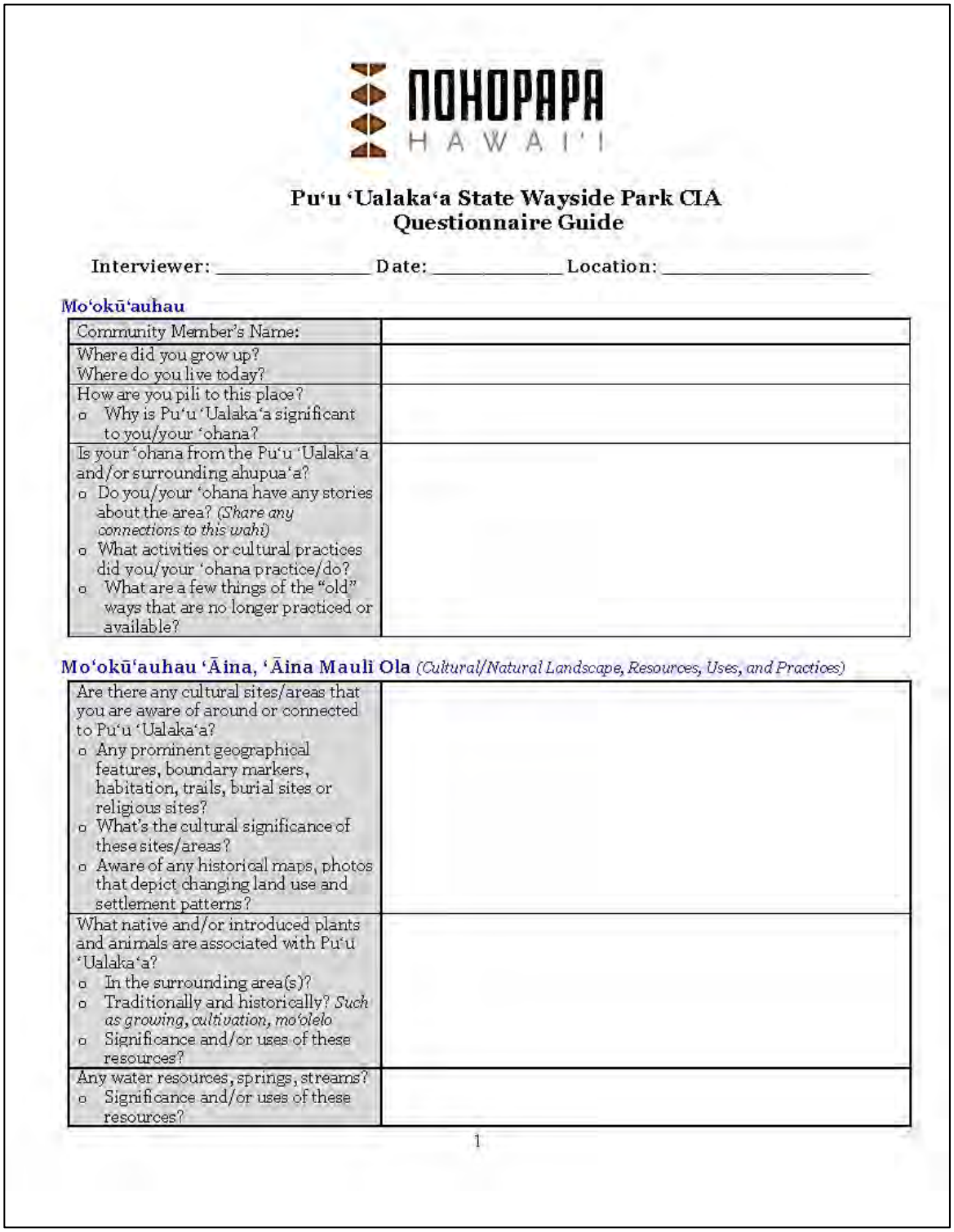
Me ka ha'aha'a,

Momi Wheeler
Email momi@nohopapa.com
Nohopapa Hawai'i, LLC website https://www.nohopapa.com/



Aerial view of the project area (Bing aerial imagery)

APPENDIX B: INTERVIEW THEMES AND QUESTIONS



NOHOPAPA HAWAI'I

Pu'u 'Ualaka'a State Wayside Park CIA
Questionnaire Guide

Interviewer: _____ Date: _____ Location: _____

Mo'okū'auhau

Community Member's Name:	
Where did you grow up? Where do you live today?	
How are you pili to this place? o Why is Pu'u 'Ualaka'a significant to you/your 'ohana?	
Is your 'ohana from the Pu'u 'Ualaka'a and/or surrounding ahupua'a? o Do you/your 'ohana have any stories about the area? *(Share any connections to this wahi)* o What activities or cultural practices did you/your 'ohana practice/do? o What are a few things of the "old" ways that are no longer practiced or available?	

Mo'okū'auhau 'Āina, 'Āina Mauli Ola *(Cultural/Natural Landscape, Resources, Uses, and Practices)*

Are there any cultural sites/areas that you are aware of around or connected to Pu'u 'Ualaka'a? o Any prominent geographical features, boundary markers, habitation, trails, burial sites or religious sites? o What's the cultural significance of these sites/areas? o Aware of any historical maps, photos that depict changing land use and settlement patterns?	
What native and/or introduced plants and animals are associated with Pu'u 'Ualaka'a? o In the surrounding area(s)? o Traditionally and historically? *Such as growing, cultivation, mo'olelo* o Significance and/or uses of these resources?	
Any water resources, springs, streams? o Significance and/or uses of these resources?	

1

Any seasonal changes to the natural landscape?	

Mo'olelo, Inoa 'Āina, Mele, Oli, 'Ōlelo No'eau

What cultural practices are associated with Pu'u 'Ualaka'a and the surrounding area? o Any mele, 'ōlelo no'eau, oli or other traditions that reflect a sense of place and cultural identity for this place and its people? o How can these cultural practices be integrated into resource management and/or restoration today?	
Are there inappropriate practices/protocols/uses for Pu'u 'Ualaka'a?	

Recommendations

How should Belt Collins Hawai'i, the State of Hawai'i, and/or City and County of Honolulu work with Native Hawaiian beneficiaries and other community members to manage/maintain Pu'u 'Ualaka'a? o What individuals/hui should be involved in the management?	
Is there any other mana'o that you want to share? *(i.e. recommendations, concerns, questions)*	

Contact Information & Referrals

The opportunity will be given to review your written transcript/interview summary and make any additions, deletions, or corrections as you wish. What is the best way to send you the transcribed interview? *(Email or Mail)* **What is your mailing address to receive a makana to say Mahalo for sharing your valued mana'o?*	
Can you refer us to any other individuals or organizations we should talk to?	
Are there any parts of this interview you do not want publicly disclosed?	

APPENDIX C: INFORMED CONSENT FORM

NOHOPAPA HAWAI'I

INFORMED CONSENT FORM

Aloha mai, Nohopapa Hawai'i appreciates your generosity and willingness to share your knowledge of the wahi pana of Honolulu and Waikīkī and its surrounding areas. This mana'o will be included in the Cultural Impact Assessment (CIA) for the proposed improvements of the future emergency radio facility and the Round Top Information and Communications Services Division (ICSD) located within the existing Pu'u 'Ualaka'a State Wayside Park between the Honolulu-Waikīkī Ahupua'a, Kona Moku, O'ahu.

Nohopapa Hawai'i understands our responsibility in respecting the wishes and concerns of the interviewees participating in this study. Here are the procedures we promise to follow:

1. The interview will not be recorded without your knowledge and explicit permission.
2. You will have the opportunity to review the written transcript and summary of your interview. At that time, you may make any additions, deletions or corrections you wish.
3. You will be given a copy of the interview transcript and/or summary for your records.
4. You will be given a copy of this release form for your records.
5. You will be given a copy of any photographs taken of you during the interview.

For your protection, we need your written confirmation that (check yes or no):

1. You consent to the use of the complete transcript and/or interview quotes for the purposes of this study. ☐ Yes ☐ No
2. If a photograph is taken during the interview, you consent to the photograph being included in this study. ☐ Yes ☐ No

I, _____, agree to the procedures outlined above and,
(Please print your name here)
by my signature, give my consent and release of this interview and/or photograph to be used as specified.

_____
(Signature)

_____
(Date)

Nohopapa Hawai'i, LLC * nohopapa.hawaii@gmail.com

APPENDIX D: GUIDELINES FOR ASSESSING CULTURAL IMPACTS

INTRODUCTION

It is the policy of the State of Hawai‘i under Chapter 343, HRS, to alert decision makers, through the environmental assessment process, about significant environmental effects which may result from the implementation of certain actions. An environmental assessment of cultural impacts gathers information about cultural practices and cultural features that may be affected by actions subject to Chapter 343, and promotes responsible decision making.

Articles IX and XII of the State Constitution, other state laws, and the courts of the state require government agencies to promote and preserve cultural beliefs, practices, and resources of native Hawaiians and other ethnic groups. Chapter 343 also requires environmental assessment of cultural resources, in determining the significance of a proposed project.

The Environmental Council encourages preparers of environmental assessments and environmental impact statements to analyze the impact of a proposed action on cultural practices and features associated with the project area. The Council provides the following methodology and content protocol as guidance for any assessment of a project that may significantly affect cultural resources.

BACKGROUND

Prior to the arrival of westerners and the ideas of private land ownership, Hawaiians freely accessed and gathered resources of the land and seas to fulfill their community responsibilities. During the Māhele of 1848, large tracts of land were divided and control was given to private individuals. When King Kamehameha the III was forced to set up this new system of land ownership, he reserved the right of access to privately owned lands for Native Hawaiian ahupua‘a tenants. However, with the later emergence of the western concept of land ownership, many Hawaiians were denied access to previously available traditional resources.

In 1978, the Hawaii constitution was amended to protect and preserve traditional and customary rights of Native Hawaiians. Then in 1995 the Hawaii Supreme Court confirmed that Native Hawaiians have rights to access undeveloped and under- developed private lands. Recently, state lawmakers clarified that government agencies and private developers must assess the impacts of their development on the traditional practices of Native Hawaiians as well as the cultural resources of all people of Hawaii. These Hawaii laws, and the National Historic Preservation Act, clearly mandate federal agencies in Hawaii, including the military, to evaluate the impacts of their actions on traditional practices and cultural resources.

If you own or control undeveloped or under-developed lands in Hawaii, here are some hints as to whether traditional practices are occurring or may have occurred on your lands. If there is a trail on your property, that may be an indication of traditional practices or customary usage. Other clues include streams, caves and native plants. Another important point to remember is that, although traditional practices may have been interrupted for many years, these customary practices cannot be denied in the future.

These traditional practices of Native Hawaiians were primarily for subsistence, medicinal, religious, and cultural purposes. Examples of traditional subsistence practices include fishing,

picking opihi and collecting limu or seaweed. The collection of herbs to cure the sick is an example of a traditional medicinal practice. The underlying purpose for conducting these traditional practices is to fulfill one's community responsibilities, such as feeding people or healing the sick.

As it is the responsibility of Native Hawaiians to conduct these traditional practices, government agencies and private developers also have a responsibility to follow the law and assess the impacts of their actions on traditional and cultural resources.

The State Environmental Council has prepared guidelines for assessing cultural resources and has compiled a directory of cultural consultants who can conduct such studies. The State Historic Preservation Division has drafted guidelines on how to conduct ethnographic inventory surveys. And the Office of Planning has recently completed a case study on traditional gathering rights on Kaua'i.

The most important element of preparing Cultural Impact Assessments is consulting with community groups, especially with expert and responsible cultural practitioners within the ahupua'a of the project site. Conducting the appropriate documentary research should then follow the interviews with the experts. Documentary research should include analysis of Māhele and land records and review of transcripts of previous ethnographic interviews. Once all the information has been collected, and verified by the community experts, the assessment can then be used to protect and preserve these valuable traditional practices.

Native Hawaiians performed these traditional and customary practices out of a sense of responsibility: to feed their families, cure the sick, nurture the land, and honor their ancestors. As stewards of this sacred land, we too have a responsibility to preserve, protect and restore these cultural resources for future generations.

CULTURAL IMPACT ASSESSMENT METHODOLOGY

Cultural impacts differ from other types of impacts assessed in environmental assessments or environmental impact statements. A cultural impact assessment includes information relating to the practices and beliefs of a particular cultural or ethnic group or groups.

Such information may be obtained through scoping, community meetings, ethnographic interviews and oral histories. Information provided by knowledgeable informants, including traditional cultural practitioners, can be applied to the analysis of cultural impacts in conjunction with information concerning cultural practices and features obtained through consultation and from documentary research.

In scoping the cultural portion of an environmental assessment, the geographical extent of the inquiry should, in most instances, be greater than the area over which the proposed action will take place. This is to ensure that cultural practices which may not occur within the boundaries of the project area, but which may nonetheless be affected, are included in the assessment. Thus, for example, a proposed action that may not physically alter gathering practices, but may affect access to gathering areas would be included in the assessment. An ahupua'a is usually the appropriate geographical unit to begin an assessment of cultural impacts of a proposed action, particularly if it includes all of the types of cultural practices associated with the project area. In some cases, cultural practices are likely to extend beyond the ahupua'a and the geographical extent of the study area should take into account those cultural practices.

The historical period studied in a cultural impact assessment should commence with the initial presence in the area of the particular group whose cultural practices and features are being

assessed. The types of cultural practices and beliefs subject to assessment may include subsistence, commercial, residential, agricultural, access-related, recreational, and religious and spiritual customs.

The types of cultural resources subject to assessment may include traditional cultural properties or other types of historic sites, both man-made and natural, including submerged cultural resources, which support such cultural practices and beliefs.

The Environmental Council recommends that preparers of assessments analyzing cultural impacts adopt the following protocol:

1. Identify and consult with individuals and organizations with expertise concerning the types of cultural resources, practices and beliefs found within the broad geographical area, e.g., district or ahupuaʻa;
2. Identify and consult with individuals and organizations with knowledge of the area potentially affected by the proposed action;
3. Receive information from or conduct ethnographic interviews and oral histories with persons having knowledge of the potentially affected area;
4. Conduct ethnographic, historical, anthropological, sociological, and other culturally related documentary research;
5. Identify and describe the cultural resources, practices and beliefs located within the potentially affected area; and
6. Assess the impact of the proposed action, alternatives to the proposed action, and mitigation measures, on the cultural resources, practices and beliefs identified.

Interviews and oral histories with knowledgeable individuals may be recorded, if consent is given, and field visits by preparers accompanied by informants are encouraged. Persons interviewed should be afforded an opportunity to review the record of the interview, and consent to publish the record should be obtained whenever possible. For example, the precise location of human burials are likely to be withheld from a cultural impact assessment, but it is important that the document identify the impact a project would have on the burials. At times an informant may provide information only on the condition that it remain in confidence. The wishes of the informant should be respected.

Primary source materials reviewed and analyzed may include, as appropriate: Māhele, land court, census and tax records, including testimonies; vital statistics records; family histories and genealogies; previously published or recorded ethnographic interviews and oral histories; community studies, old maps and photographs; and other archival documents, including correspondence, newspaper or almanac articles, and visitor journals. Secondary source materials such as historical, sociological, and anthropological texts, manuscripts, and similar materials, published and unpublished, should also be consulted. Other materials which should be examined include prior land use proposals, decisions, and rulings which pertain to the study area.

CULTURAL IMPACT ASSESSMENT CONTENTS

In addition to the content requirements for environmental assessments and environmental impact statements, which are set out in HAR §§ 11-200-10 and 16 through 18, the portion of the assessment concerning cultural impacts should address, but not necessarily be limited to, the following matters:

1. A discussion of the methods applied and results of consultation with individuals and organizations identified by the preparer as being familiar with cultural practices and

features associated with the project area, including any constraints or limitations which might have affected the quality of the information obtained.

2. A description of methods adopted by the preparer to identify, locate, and select the persons interviewed, including a discussion of the level of effort undertaken.
3. Ethnographic and oral history interview procedures, including the circumstances, under which the interviews were conducted, and any constraints or limitations which might have affected the quality of the information obtained.
4. Biographical information concerning the individuals and organizations consulted, their particular expertise, and their historical and genealogical relationship to the project area, as well as information concerning the persons submitting information or interviewed, their particular knowledge and cultural expertise, if any, and their historical and genealogical relationship to the project area.
5. A discussion concerning historical and cultural source materials consulted, the institutions and repositories searched, and the level of effort undertaken. This discussion should include, if appropriate, the particular perspective of the authors, any opposing views, and any other relevant constraints, limitations or biases.
6. A discussion concerning the cultural resources, practices and beliefs identified, and, for resources and practices, their location within the broad geographical area in which the proposed action is located, as well as their direct or indirect significance or connection to the project site.
7. A discussion concerning the nature of the cultural practices and beliefs, and the significance of the cultural resources within the project area, affected directly or indirectly by the proposed project.
8. An explanation of confidential information that has been withheld from public disclosure in the assessment.
9. A discussion concerning any conflicting information in regard to identified cultural resources, practices and beliefs.
10. An analysis of the potential effect of any proposed physical alteration on cultural resources, practices or beliefs; the potential of the proposed action to isolate cultural resources, practices or beliefs from their setting; and the potential of the proposed action to introduce elements which may alter the setting in which cultural practices take place.
11. A bibliography of references, and attached records of interviews which were allowed to be disclosed.

The inclusion of this information will help make environmental assessments and environmental impact statements complete and meet the requirements of Chapter 343, HRS. If you have any questions, please call 586-4185.

APPENDIX E: ACT 50 [STATE OF HAWAI'I 2000]

Act 50 [State of Hawai'i 2000]. H.B. NO. 2895 H.D.1 was passed by the 20th Legislature and approved by the Governor on April 26, 2000 as Act 50. The following excerpts illustrate the intent and mandates of this Act:

The legislature also finds that native Hawaiian culture plays a vital role in preserving and advancing the unique quality of life and the "aloha spirit" in Hawai'i. Articles IX and XII of the State constitution, other State laws, and the courts of the State impose on government agencies a duty to promote and protect cultural beliefs, practices, and resources of native Hawaiians as well as other ethnic groups.

Moreover, the past failure to require native Hawaiian cultural impact assessments has resulted in the loss and destruction of many important cultural resources and has interfered with the exercise of native Hawaiian culture. The legislature further finds that due consideration of the effects of human activities on native Hawaiian culture and the exercise thereof is necessary to ensure the continued existence, development, and exercise of native Hawaiian culture.

The purpose of this Act is to: (1) Require that environmental impact statements include the disclosure of the effects of a proposed action on the cultural practices of the community and State; and (2) Amend the definition of "significant effect" to include adverse effects on cultural practices.

SECTION 2. Section 343-2, Hawai'i Revised Statutes, is amended by amending the definitions of "environmental impact statement" or "statement" and "significant effect", to read as follows:

"Environmental impact statement" or "statement" means an informational document prepared in compliance with the rules adopted under section 343-6 and which discloses the environmental effects of a proposed action, effects of a proposed action on the economic [and] welfare, social welfare, and cultural practices of the community and State, effects of the economic activities arising out of the proposed action, measures proposed to minimize adverse effects, and alternatives to the action and their environmental effects....


NOHO
PAPA
HAWAI'I
WWW.NOHOPAPA.COM

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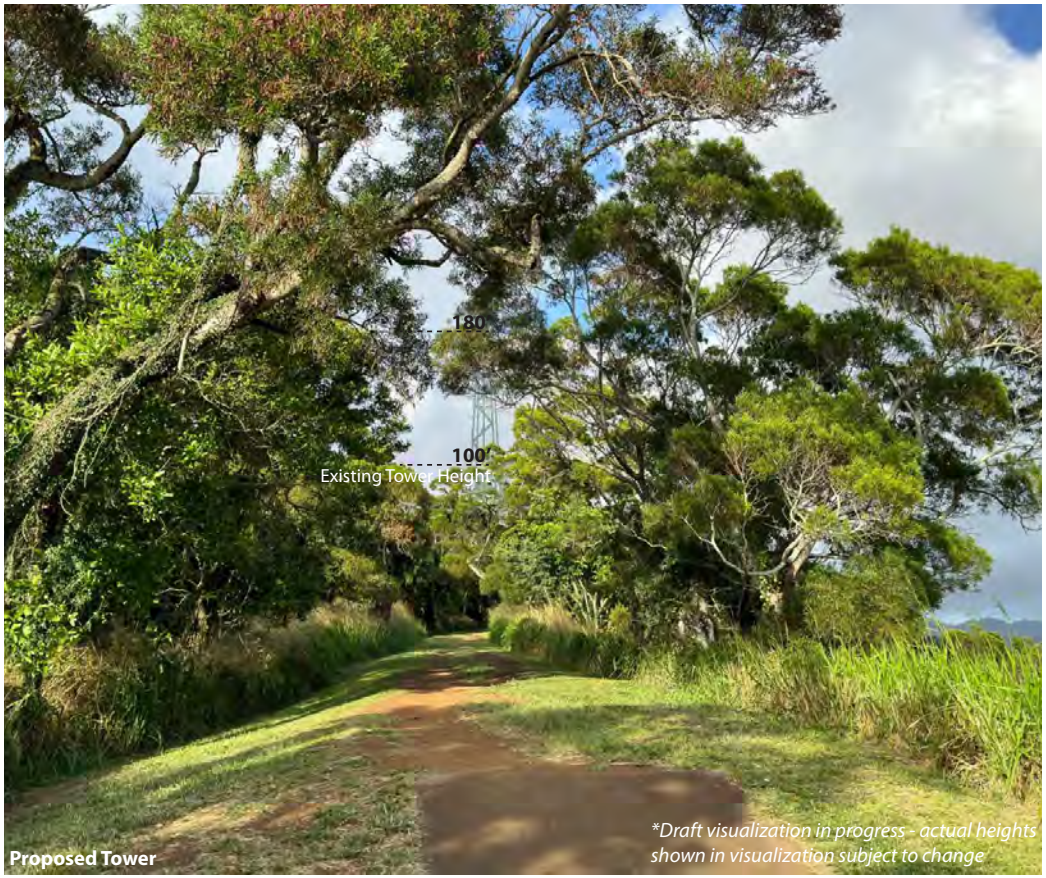
Appendix E: Proposed Tower Viewplane Renderings

View looking makai from tower parking lot

- - - - - - - - - - - - 180’

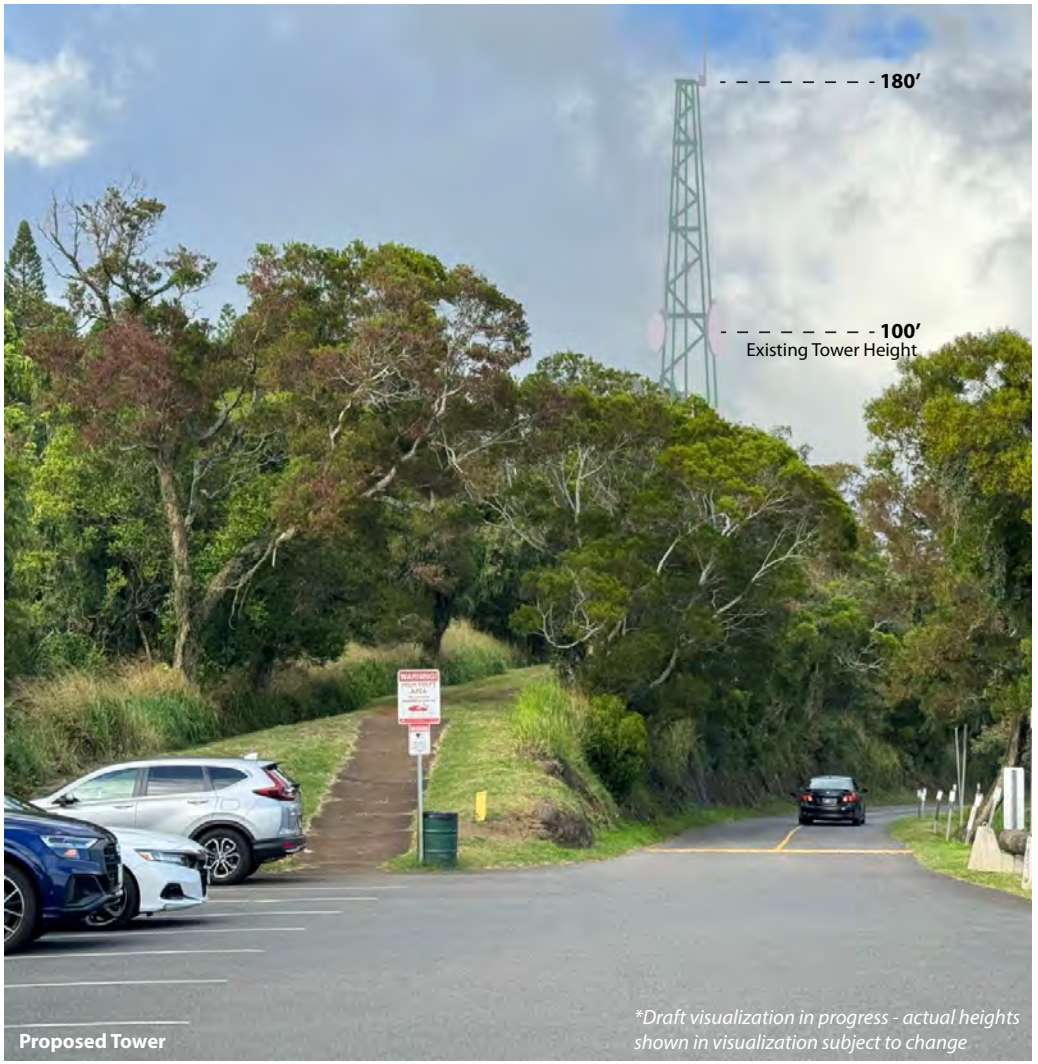
View looking mauka from park trail

View looking mauka from park trail (near lookout parking lot)



View looking mauka from lookout parking lot

Existing Tower



Proposed Tower

*Draft visualization in progress - actual heights shown in visualization subject to change

View looking mauka from lookout walkway

Appendix F: Draft EA Comment and Response Letters

HONOLULU POLICE DEPARTMENT
KA 'OIHANA MĀKA'I O HONOLULU
CITY AND COUNTY OF HONOLULU
801 SOUTH BERETANIA STREET • HONOLULU, HAWAI'I 96813
TELEPHONE: (808) 529-3111 • WEBSITE: www.honolulupd.org

RICK BLANGIARDI
MAYOR
MEIA

ARTHUR J. LOGAN
CHIEF
KAHU MĀKA'I

KEITH K. HORIKAWA
RADE K. VANIC
DEPUTY CHIEFS
HOPE LUNA NUI MĀKA'I

OUR REFERENCE EO-SH

November 27, 2024

SENT VIA EMAIL

Ms. Carah Kadota, AICP
bkplanning_comments@bowersandkubota.com

Dear Ms. Kadota:

This is in response to your letter of November 6, 2024, requesting input on the Draft Environmental Assessment for the proposed Round Top Radio Facility Tower Replacement project in Makiki.

Based on the information provided, the Honolulu Police Department does not have any concerns at this time.

If there are any questions, please call Major Paul Okamoto of District 1 (Central Honolulu) at (808) 723-3327.

Sincerely,

GLENN HAYASHI
Assistant Chief of Police
Support Services Bureau

JOSH GREEN, M.D.
GOVERNOR
KE KIA'ĀINA

KEITH A. REGAN
COMPTROLLER
KA LUNA HO'OMALU HANA LAULĀ

MEOH-LENG SILLIMAN
DEPUTY COMPTROLLER
KA HOPE LUNA HO'OMALU HANA LAULĀ

STATE OF HAWAI'I | KA MOKU'ĀINA O HAWAI'I
DEPARTMENT OF ACCOUNTING AND GENERAL SERVICES | KA 'OIHANA LOIHELU A LAWELAWE LAULĀ
P.O. BOX 119, HONOLULU, HAWAII 96810-0119

(P)25.009

JAN 2 2 2025

Glenn Hayashi, Assistant Chief of Police
Honolulu Police Department
801 South Beretania Street
Honolulu, Hawaii 96813

Dear Glenn Hayashi:

Subject: Round Top Radio Facility Tower Replacement and Consolidation
DAGS Job No. 12-10-0942
Makiki/Lower Punchbowl/Tantalus, Honolulu District, Kona Moku,
Island of Oahu
Tax Map Keys: (1) 2-5-019:003 and 011
Response to Draft Environmental Assessment Comment

Thank you for your letter dated November 27, 2024, commenting on the Draft Environmental Assessment for the Round Top Radio Facility Tower Replacement and Consolidation project. The State of Hawaii, Department of Accounting and General Services acknowledges that the Honolulu Police Department does not have any concerns at this time.

Thank you for participating in the Hawaii Revised Statutes, Chapter 343 environmental review process. Your letter and this response will be included in the Final Environmental Assessment (Final EA). When known, we will notify you of the Final EA publication date.

If you have any questions, please contact David DePonte at (808) 586-0492 or by email at david.c.deponte@hawaii.gov.

Sincerely,

GORDON S. WOOD
Public Works Administrator

DD:mo
c: Carah Kadota, Bowers+Kubota

DEPARTMENT OF DESIGN AND CONSTRUCTION
KA 'OIHANA HAKULAU A ME KE KĀPILI
CITY AND COUNTY OF HONOLULU

650 SOUTH KING STREET, 11TH FLOOR • HONOLULU, HAWAI'I 96813
PHONE: (808) 768-8480 • FAX: (808) 768-4567 • WEBSITE: honolulu.gov

RICK BLANGIARDI
MAYOR
MEIA

HAKU MILLES, P.E.
DIRECTOR
PO'O

MARK YONAMINE, P.E.
DEPUTY DIRECTOR
HOPE PO'O

November 27, 2024

SENT VIA EMAIL

Ms. Carah Kadota, AICP
bkplanning_comments@bowersandkubota.com

Dear Ms. Kadota:

Subject: Round Top Radio Facility Tower Replacement and Consolidation
DAGS Job No. 12-10-0942
Makiki/Lower Punchbowl/Tantalus, Honolulu District, Kona Moku, Island of O'ahu
Tax Map Keys: (1) 2-5-019:003 and 011
Notification of Draft Environmental Assessment Publication

Thank you for the opportunity to review and comment. This is in response to your inquiry dated November 6, 2024.

Our Facilities Division (FD) has comments as follows:

When designing and constructing this project, please keep the City and County of Honolulu's (City) Department of Information Technology (DIT) abreast of the project's progress. DIT is intimately involved with operation and maintenance of all City communication equipment and antennas at Round Top.

For your information, all the DIT microwave tower projects we are working on are being designed and constructed to withstand Category IV hurricane winds.

Should you have any questions, please contact Clifford Lau at (808) 768-8478.

Sincerely,

Haku Milles, P.E., LEED AP
Director

HM:krn (930541)

JOSH GREEN, M.D.
GOVERNOR
KE KIA'ĀINA

KEITH A. REGAN
COMPTROLLER
KA LUNA HO'OMALU HANA LAULĀ

MEOH-LENG SILLIMAN
DEPUTY COMPTROLLER
KA HOPE LUNA HO'OMALU HANA LAULĀ

STATE OF HAWAI'I | KA MOKU'ĀINA O HAWAI'I
DEPARTMENT OF ACCOUNTING AND GENERAL SERVICES | KA 'OIHANA LOIHELU A LAWELAWE LAULĀ
P.O. BOX 119, HONOLULU, HAWAII 96810-0119

(P)25.010

JAN 2 2 2025

Haku Milles, Director
City and County of Honolulu
Department of Design and Construction
650 South King Street, 11th Floor
Honolulu, Hawaii 96813

Dear Haku Milles:

Subject: Round Top Radio Facility Tower Replacement and Consolidation
DAGS Job No. 12-10-0942
Makiki/Lower Punchbowl/Tantalus, Honolulu District, Kona Moku,
Island of Oahu
Tax Map Keys: (1) 2-5-019:003 and 011
Response to Draft Environmental Assessment Comment

Thank you for your letter dated November 27, 2024, commenting on the Draft Environmental Assessment for the Round Top Radio Facility Tower Replacement and Consolidation project. The State of Hawaii, Department of Accounting and General Services confirms that the City and County of Honolulu, Department of Information Technology will be kept informed of the projects' progress.

Thank you for participating in the Hawaii Revised Statutes, Chapter 343 environmental review process. Your letter and this response will be included in the Final Environmental Assessment (Final EA). When known, we will notify you of the Final EA publication date.

If you have any questions, please contact David DePonte at (808) 586-0492 or by email at david.c.deponte@hawaii.gov.

Sincerely,

GORDON S. WOOD
Public Works Administrator

DD:mo
c: Carah Kadota, Bowers+Kubota

Carah Kadota

From: Robert Klamp <Robert.Klamp@hawaiiantel.com>
Sent: Monday, December 2, 2024 3:43 PM
To: Carah Kadota
Cc: Sean Cross; HT-Plan Reviews; Severino Urubio; Cathy Higa
Subject: RE: [External] Round Top Radio Facility Draft EA

[CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe]

Aloha Carah,

Thank you for sending over the plans for the Round-Top-Radio-Tower project.

Hawaiian Telcom has Aerial facili es in the project area (wood pole near parking stall to wood pole behind bathrooms near exis ng 3 leg towers)

Aloha,
Robert Klamp
OSP NETWORK ENGINEER
HAWAIIAN TELCOM
O:808.888.1619 C:808.364.4426
Robert.Klamp@HawaiianTel.com

JOSH GREEN, M.D.
GOVERNOR
KE KIA'ĀINA

KEITH A. REGAN
COMPTROLLER
KA LUNA HO'OMALU HANA LAULĀ

MEOH-LENG SILLIMAN
DEPUTY COMPTROLLER
KA HOPE LUNA HO'OMALU HANA LAULĀ

STATE OF HAWAI'I | KA MOKU'ĀINA O HAWAI'I
DEPARTMENT OF ACCOUNTING AND GENERAL SERVICES | KA 'OIHANA LOIHELU A LAWELAWE LAULĀ
P.O. BOX 119, HONOLULU, HAWAII 96810-0119

(P)25.011

JAN 2 2 2025

Robert Klamp, OSP Network Engineer
Hawaiian Telcom
Via Email: Robert.Klamp@hawaiiantel.com

Dear Robert Klamp:

Subject: Round Top Radio Facility Tower Replacement and Consolidation
DAGS Job No. 12-10-0942
Makiki/Lower Punchbowl/Tantalus, Honolulu District, Kona Moku,
Island of Oahu
Tax Map Keys: (1) 2-5-019:003 and 011
Response to Draft Environmental Assessment Comment

Thank you for your email dated December 2, 2024, commenting on the Draft Environmental Assessment for the Round Top Radio Facility Tower Replacement and Consolidation project. The State of Hawaii, Department of Accounting and General Services acknowledges that Hawaiian Telcom has existing aerial facilities in the project area. These facilities will not be impacted during construction or operation of the Proposed Action.

Thank you for participating in the Hawaii Revised Statutes, Chapter 343 environmental review process. Your letter and this response will be included in the Final Environmental Assessment (Final EA). When known, we will notify you of the Final EA publication date.

If you have any questions, please contact David DePonte at (808) 586-0492 or by email at david.c.deponte@hawaii.gov.

Sincerely,

GORDON S. WOOD
Public Works Administrator

DD:mo
c: Carah Kadota, Bowers+Kubota

DEPARTMENT OF PLANNING AND PERMITTING
KA 'OIHANA HO'OLĀLĀ A ME NĀ PALAPALA 'AE
CITY AND COUNTY OF HONOLULU

650 SOUTH KING STREET, 7TH FLOOR • HONOLULU, HAWAI'I 96813
PHONE: (808) 768-8000 • FAX: (808) 768-6041 • WEBSITE: honolulu.gov/dpp

RICK BLANGIARDI
MAYOR
MEIA

DAWN TAKEUCHI APUNA
DIRECTOR
PO'O

BRYAN GALLAGHER, P.E.
DEPUTY DIRECTOR
HOPE PO'O

REGINA MALEPEAI
2ND DEPUTY DIRECTOR
HOPE PO'O KUALUA

December 3, 2024

2024/ELOG-2213(SF)

Carah Kadota
Bowers + Kubota Consulting, Inc.
2153 North King Street, Suite 200
Honolulu, Hawaii 96819

Dear Ms. Kadota:

SUBJECT: Draft Environmental Assessment (EA)
Round Top Radio Facility Tower
Replacement and Consolidation (Project)
Round Top Drive – Makiki
Tax Map Keys 2-5-019: 003 and 2-5-019: 011

This letter responds to your request, received on November 8, 2024, for comments on the Draft EA for the tower replacement and consolidation at the Round Top Radio Facility on Round Top Drive in Makiki. The proposed Project includes the demolition of the two existing 100-foot-tall towers and construction of a new 180-foot-tall tower, as well as accompanying actions to accommodate the new tower.

The subject parcels are 120.09 acres in area, and located within the P-1 Restricted Preservation District and State Land Use Conservation District (SLUCD). Please note that the State Office of Conservation and Coastal Lands (OCCL) is responsible for the land use regulations on properties within the SLUCD. As the subject parcels are outside of our jurisdiction, we have no comment. The Applicant should contact the OCCL for their review and comment on the proposed Project.

Should you have any questions, please contact Shelby Frangk, of our Land Use Approval Branch, at (808) 768-8019 or via email at shelby.frangk@honolulu.gov.

Very truly yours,

for Dawn Takeuchi Apuna
Director

JOSH GREEN, M.D.
GOVERNOR
KE KIA'ĀINA

KEITH A. REGAN
COMPTROLLER
KA LUNA HO'OMALU HANA LAULĀ

MEOH-LENG SILLIMAN
DEPUTY COMPTROLLER
KA HOPE LUNA HO'OMALU HANA LAULĀ

STATE OF HAWAI'I | KA MOKU'ĀINA O HAWAI'I
DEPARTMENT OF ACCOUNTING AND GENERAL SERVICES | KA 'OIHANA LOIHELU A LAWELAWE LAULĀ
P.O. BOX 119, HONOLULU, HAWAII 96810-0119

(P)25.008

JAN 2 2 2025

Dawn Takeuchi Apuna, Director
City and County of Honolulu
Department of Planning and Permitting
650 South King Street, 7th Floor
Honolulu, Hawaii 96813

Dear Dawn Takeuchi Apuna:

Subject: Round Top Radio Facility Tower Replacement and Consolidation
DAGS Job No. 12-10-0942
Makiki/Lower Punchbowl/Tantalus, Honolulu District, Kona Moku,
Island of Oahu
Tax Map Keys: (1) 2-5-019:003 and 011
Response to Draft Environmental Assessment Comment

Thank you for your letter dated December 3, 2024, commenting on the Draft Environmental Assessment for the Round Top Radio Facility Tower Replacement and Consolidation project. The State of Hawaii, Department of Accounting and General Services acknowledges that the City and County of Honolulu, Department of Planning and Permitting (DPP) does not have any comments at this time as the Proposed Action is located within the State Land Use Conservation District, which is outside of DPP's jurisdiction. The State Department of Land and Natural Resources, Office of Conservation and Coastal Lands has been consulted during the EA process. In addition, a Conservation District Use Application will be applied for the Proposed Action.

Thank you for participating in the Hawaii Revised Statutes, Chapter 343 environmental review process. Your letter and this response will be included in the Final Environmental Assessment (Final EA). When known, we will notify you of the Final EA publication date.

If you have any questions, please contact David DePonte at (808) 586-0492 or by email at david.c.deponte@hawaii.gov.

Sincerely,

GORDON S. WOOD
Public Works Administrator

DD:mo
c: Carah Kadota, Bowers+Kubota

JOSH GREEN, M.D.
GOVERNOR | KE KIA'ĀINA

SYLVIA LUKE
LIEUTENANT GOVERNOR | KA HOPE KIA'ĀINA

DAWN N. S. CHANG
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAI'I | KA MOKU'ĀINA 'O HAWAI'I
DEPARTMENT OF LAND AND NATURAL RESOURCES
KA 'OIHANA KUMUWAIWAI 'ĀINA
LAND DIVISION

P.O. BOX 621
HONOLULU, HAWAII 96809

December 9, 2024

Bowers + Kubota Consulting, Inc.
ATTN: Carah Kadota
2153 N. King St., Suite 200
Honolulu, Hawai'i 96819

via email: bkplanning_comments@bowersandkubota.com

SUBJECT: Draft EA for the Proposed **ETS Round Top Radio Facility Tower Replacement and Consolidation** located at 3286 Round Top Drive, Honolulu, Island of O'ahu; TMK: (1) 2-5-019:003 (por.); (1) 2-5-019:011

Dear Ms. Kadota,

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

At this time, enclosed are comments from the Engineering Division on the subject matter. Should you have any questions, please feel free to contact Dayna Vierra (808) 587-0423 or email: dayna.k.vierra@hawaii.gov. Thank you.

Sincerely,

Russell Tsuji

Russell Y. Tsuji
Land Administrator

Enclosures

JOSH GREEN, M.D.
GOVERNOR | KE KIA'ĀINA

SYLVIA LUKE
LIEUTENANT GOVERNOR | KA HOPE KIA'ĀINA

DAWN N. S. CHANG
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAI'I | KA MOKU'ĀINA 'O HAWAI'I
DEPARTMENT OF LAND AND NATURAL RESOURCES
KA 'OIHANA KUMUWAIWAI 'ĀINA
LAND DIVISION

P.O. BOX 621
HONOLULU, HAWAII 96809

November 14, 2024

MEMORANDUM

FROM: ~~TO:~~ **DLNR Agencies:**

___Div. of Aquatic Resources
___Div. of Boating & Ocean Recreation
_X_ Engineering Division (DLNR.ENGR@hawaii.gov)
_X_ Div. of Forestry & Wildlife (rubyrosa.t.terrago@hawaii.gov)
_X_ Div. of State Parks (curt.a.cottrell@hawaii.gov)
_X_ Commission on Water Resource Management (DLNR.CWRM@hawaii.gov)
___Office of Conservation & Coastal Lands
_X_ Land Division – O'ahu District (barry.w.cheung@hawaii.gov)
_X_ Aha Moku Advisory Committee (leimana.k.damate@hawaii.gov)

TO: ~~FROM:~~ Russell Y. Tsuji, Land Administrator *Russell Tsuji*

SUBJECT: Draft EA for the Proposed **ETS Round Top Radio Facility Tower Replacement and Consolidation**

LOCATION: 3286 Round Top Drive, Honolulu, Island of O'ahu; TMK: (1) 2-5-019:003 (por.); (1) 2-5-019:011

APPLICANT: Bowers + Kubota Consulting, Inc. on behalf of DAGS ETS

Transmitted for your review and comment is information on the above-referenced subject matter. The Draft Environmental Assessment was published on November 8, 2024, by the State Environmental Review Program at the Office of Planning and Sustainable Development in the periodic bulletin, The Environmental Notice, available at the following link:

https://files.hawaii.gov/dbedt/erp/The_Environmental_Notice/2024-11-08-TEN.pdf

Please submit comments by **December 5, 2024.** If no response is received by this date, we will assume your agency has no comments. Should you have any questions, please contact Dayna Vierra at dayna.k.vierra@hawaii.gov. Thank you.

BRIEF COMMENTS:

( ) We have no objections.
( ) We have no comments.
(✓) We have no additional comments.
( ) Comments are included/attached.

Signed: _____
Print Name: Carty S. Chang, Chief Engineer
Division: Engineering Division
Date: Dec 4, 2024

Attachments

JOSH GREEN, M.D.
GOVERNOR
KE KIA'ĀINA

KEITH A. REGAN
COMPTROLLER
KA LUNA HO'OMALU HANA LAULĀ

MEOH-LENG SILLIMAN
DEPUTY COMPTROLLER
KA HOPE LUNA HO'OMALU HANA LAULĀ

STATE OF HAWAI'I | KA MOKU'ĀINA O HAWAI'I
DEPARTMENT OF ACCOUNTING AND GENERAL SERVICES | KA 'OIHANA LOIHELU A LAWELAWE LAULĀ
P.O. BOX 119, HONOLULU, HAWAII 96810-0119

(P)25.006

JAN 2 2 2025

MEMORANDUM

TO: Carty S. Chang, Chief Engineer
Department of Land and Natural Resources, Engineering Division

FROM: Gordon S. Wood
Public Works Administrator

SUBJECT: Round Top Radio Facility Tower Replacement and Consolidation
DAGS Job No. 12-10-0942
Makiki/Lower Punchbowl/Tantalus, Honolulu District, Kona Moku,
Island of Oahu
Tax Map Keys: (1) 2-5-019:003 and 011
Response to Draft Environmental Assessment Comment

Thank you for your letter dated December 4, 2024, commenting on the Draft Environmental Assessment for the Round Top Radio Facility Tower Replacement and Consolidation project. The State of Hawaii, Department of Accounting and General Services acknowledges that the State Department of Land and Natural Resources, Engineering Division does not have any comments at this time.

Thank you for participating in the Hawaii Revised Statutes, Chapter 343 environmental review process. Your letter and this response will be included in the Final Environmental Assessment (Final EA). When known, we will notify you of the Final EA publication date.

If you have any questions, please contact David DePonte at (808) 586-0492 or by email at david.c.deponte@hawaii.gov.

DD:mo
c: Carah Kadota, Bowers+Kubota

Kaitlyn Nokosi

From: Dang, Charmian I <charmian_dang@fws.gov>
Sent: Thursday, December 12, 2024 10:32 AM
To: BKplanning_comments
Subject: [External] Round Top Radio Facility Tower Replacement and Consolidation DAGS Job No. 12-10-0942

Dear Ms. Kadota,

Thank you for giving the U.S. Fish and Wildlife Service an opportunity to comment on the above mentioned project.

To avoid and minimize potential project impacts to Hawaiian seabirds, the following additional conservation measures should be included into your project design.

Hawaiian Seabirds

- All outdoor lights will be fully shielded so the bulb can only be seen from below.
- Automatic motion sensor switches and controls will be installed on all outdoor lights or lights will be turned off when human activity is not occurring in the lighted area.

Listed seabirds have been documented colliding with communication towers, particularly in areas of high seabird passage rate. In general, self-supporting monopoles are the least likely to result in collisions, whereas lattice towers, particularly those that rely on guy-wires, have a greater risk.

To avoid and minimize the likelihood that towers will result in collisions by listed seabirds we recommend you incorporate the following measures into your project design:
• The profile of the tower should be as small as possible, minimize the extent of the tower that protrudes above the surrounding vegetation layer, and avoid the use of guywires.
• If the top of the tower must be lit to comply with Federal Aviation Administration regulations, use a flashing red light verses a steady-beam red or white light.
• If possible, co-locate with existing towers or facilities.

Seabirds have been known to collide with fences, powerlines, and other structures near nesting colonies. To avoid and minimize the likelihood of collision we recommend you incorporate the following measures into your project design:

• Where fences extend above vegetation, integrate three strands of polytape into the fence to increase visibility.
• For powerlines, guy-wires and other cables, minimize exposure above vegetation height and vertical profile.

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.

In the Draft EA it is mentioned that the current facility has an existing barbed wire fence, as the site has a history of trespassers and has had issues with trespassers climbing the radio towers. May I ask the height of the current barbed wire fencing? The proposed barbed wire fence on top of the retaining wall will be within the

foraging path of the bats as it is mentioned to be less than 15 feet but the barbed wire fence section will be 6 feet. We have concerns that the proposed fencing will impact the Hawaiian hoary bat.

If you have any questions please feel free in contacting me at the above email address.

Aloha,
Charmian

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Charmian Dang
U. S. Fish and Wildlife Biologist
Pacific Islands Fish and Wildlife Office
300 Ala Moana Boulevard, Room 3-122
Honolulu, Hawaii 96850
808-792-9400

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JOSH GREEN, M.D.
GOVERNOR
KE KIA'ĀINA

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STATE OF HAWAI'I | KA MOKU'ĀINA O HAWAI'I
DEPARTMENT OF ACCOUNTING AND GENERAL SERVICES | KA 'OIHANA LOIHELU A LAWELAWE LAULĀ
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JAN 2 2 2025

(P)25.007

Charmian Dang, Biologist
U.S. Fish and Wildlife Service
Pacific Islands Fish and Wildlife Office
300 Ala Moana Boulevard, Room 3-122
Honolulu, Hawaii 96850

Dear Charmian Dang:

Subject: Round Top Radio Facility Tower Replacement and Consolidation
DAGS Job No. 12-10-0942
Makiki/Lower Punchbowl/Tantalus, Honolulu District, Kona Moku,
Island of Oahu
Tax Map Keys: (1) 2-5-019:003 and 011
Response to Draft Environmental Assessment Comment

Thank you for your email dated December 12, 2024, commenting on the Draft Environmental Assessment for the Round Top Radio Facility Tower Replacement and Consolidation project. The State of Hawaii, Department of Accounting and General Services acknowledges the U.S. Fish and Wildlife Service's (USFWS) comments and offers the following responses:

Hawaiian Seabirds

1. The installation of outdoor lighting is not included in the Proposed Action. In addition, nighttime construction is not currently anticipated for the Proposed Action.

2. The face of the tower will be 23-feet wide at its base and will gradually decrease to a width of 5-feet at the top of the tower. The tower will protrude above the surrounding vegetation layer - a conceptual rendering of the tower's proposed height above the surrounding vegetation is shown in Figure 3-9 in the Final Environmental Assessment (Final EA). The height of the tower is essential to the purpose of the Proposed Action as the new tower will support the current equipment and operations, while also providing space for additional infrastructure and equipment for the Hawaii Interoperability Network (HIWIN) and the Anuenue Microwave Communication Systems. The HIWIN

and Anuenue Microwave Communication Systems are essential for the operation of first responder communications across the State.

3. The top of the tower will not be lit.

4. As noted in Section 1.4 of the Final EA, the two existing 100-foot towers are fully utilized and do not have any space for expansion or additional equipment. The Proposed Action will consolidate the antenna equipment from both of the existing 100-foot towers onto the proposed 180-foot tower, allowing for the State and City's equipment to be co-located on one radio tower.

5. The proposed fence will be 6-feet high and will have one foot of barbed wire at the top. The fence will not extend above the surrounding tree line.

6. Exposure of powerlines, guy-wires, and other cables above vegetation height will be minimized.

Hawaiian Hoary Bat

There is existing fencing with barbed wire surrounding the Round Top Radio Facility buildings and radio towers. The heights of the existing chain link fencing range from 6-feet to 8-feet high and have one foot of barbed wire on top. At various areas surrounding the facility buildings and radio towers, the chain link fencing with barbed wire sits on top of a retaining wall.

The proposed chain link fence will be 6-feet in height and will have one foot of barbed wire on top and will sit on top of a retaining wall, which is similar to the existing chain link fence with barbed wire that currently surrounds the facility. Since the existing fencing has been installed, there have been no issues or reports of the fence and barbed wire negatively impacting Hawaiian hoary bats or Hawaiian seabirds that may have traversed the Round Top Radio Facility site.

As noted in Section 3.6.2 of the Final EA, the barbed wire fencing is critical for the security of the Round Top Radio Facility site and for public safety. The current facility has an existing barbed wire fence, as the site has a history of trespassers and has had issues with trespassers climbing the radio towers. The barbed wire fence would ensure the safety of the public and that first responder telecommunications remain online by deterring trespassers from accessing the radio tower and equipment.

Thank you for participating in the Hawaii Revised Statutes, Chapter 343 environmental review process. Your letter and this response will be included in the Final EA. When known, we will notify you of the Final EA publication date.

If you have any questions, please contact David DePonte at (808) 586-0492 or by email at david.c.deponte@hawaii.gov.

Sincerely,

GORDON S. WOOD
Public Works Administrator

DD:mo
c: Carah Kadota, Bowers+Kubota

JOSH GREEN, M.D.
GOVERNOR
KE KIA'ĀINA

KEITH A. REGAN
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(P)25.041

MAR 25 2025

Charmian Dang, Biologist
U.S. Fish and Wildlife Service
Pacific Islands Fish and Wildlife Office
300 Ala Moana Boulevard, Room 3-122
Honolulu, Hawaii 96850

Dear Charmian Dang:

Subject: Round Top Radio Facility Tower Replacement and Consolidation
DAGS Job No. 12-10-0942
Makiki/Lower Punchbowl/Tantalus, Honolulu District, Kona Moku,
Island of Oahu
TMK: (1) 2-5-019:003 and 011
Follow Up Response to Draft Environmental Assessment Comment

The Department of Accounting and General Services (DAGS) provided a letter dated January 22, 2025, to respond to comments received on the Draft Environmental Assessment (DEA) for the subject project from the U.S. Fish and Wildlife Service's (USFWS). Following the response letter, the DAGS' Office of Enterprise Technology Services (ETS) proposed a change to the chain link fence that was included in the Proposed Action for the project. This letter is to inform you of the change, as the chain link fence was brought up as a concern in the USFWS's DEA comment letter.

The DAGS received a comment letter from the Department of Land and Natural Resources, Division of Forestry and Wildlife (DOFAW) that also expressed concern over the use of barbed wire on the proposed 6-feet high chain link fence that was originally included in the Proposed Action of the DEA. The DOFAW noted that the use of barbed wire would pose a threat to the Hawaiian hoary bat. To mitigate this potential threat, the ETS is now proposing to increase the height of the chain link fence to be 12 to 14-feet in height in lieu of using barbed wire on the

fence. This will ensure that the fence still acts as a deterrent to trespassers trying to access the tower, while not increasing the potential to adversely impact the Hawaiian hoary bat.

Thank you for participating in the Hawaii Revised Statutes, Chapter 343 environmental review process. When known, we will notify you of the Final EA publication date.

If you have any questions, please call David DePonte of the Planning Branch at (808) 586-0492 or by email at david.c.deponte@hawaii.gov, or our consultant, Bowers + Kubota Consulting, Inc., Attention: Carah Kadota at (808) 833-1841 or by email at ckadota@bowersandkubota.com.

Sincerely,

GORDON S. WOOD
Public Works Administrator

DD:mo
c: Carah Kadota, Bowers+Kubota

JOSH GREEN, M.D.
GOVERNOR | KE KIA'ĀINA

SYLVIA LUKE
LIEUTENANT GOVERNOR | KA HOPE KIA'ĀINA

DAWN N.S. CHANG
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

RYAN K.P. KANAKA'OLE
FIRST DEPUTY

CIARA W.K. KAHAHANE
DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

STATE OF HAWAI'I | KA MOKU'ĀINA 'O HAWAI'I
DEPARTMENT OF LAND AND NATURAL RESOURCES
KA 'OIHANA KUMUWAIWAI 'ĀINA

DIVISION OF FORESTRY AND WILDLIFE
1151 PUNCHBOWL STREET, ROOM 325
HONOLULU, HAWAII 96813

January 7,2025

Log no. 4806/4807
Ref. No. 1207004.00/24P-099 and 24P-091

Bowers + Kubota Consulting
Attn: Carah Kadota
2153 N. King Street, Suite 200
Honolulu, HI 96819

Dear Carah Kadota,

The Department of Land and Natural Resources—Division of Forestry and Wildlife (DOFAW) has received Bowers + Kubota Consulting's communication regarding the Division's comments on the pre-assessment consultation letter for the Draft Environmental Assessment (DEA) and request for comment on a Draft Environmental Assessment for the same project. The Round Top Radio Facility Tower Replacement and Consolidation Project located near 3198 Round Top Drive; within Pu'u 'Ualaka'a State Wayside Park; TMKs (1) 2-5-019:003, and (1) 2-5-019:011. The proposed project consists of: **1)** site preparation and clearing to include the removal of 27 trees to accommodate a new tower; **2)** rerouting of waterlines serving the comfort station away from the site of the new tower foundation; **3)** creation of a new concrete foundation for the new tower; **4)** installation of two 60-foot-deep drilled shafts to support the new tower; **5)** construction of the new 180-foot tower**; 6)** movement and attachment of State and City antenna equipment from the old towers to the new tower; and **7)** construction of a new retaining wall with a 6-foot-high chain link fence with barbed wire.

DOFAW concurs with the provided DEA that several State listed species may occur within the project area. These include: **1)** 'ōpe'ape'a, or Hawaiian Hoary Bat (*Lasiurus semotus*), and **2)** several species of seabirds. We concur with the vegetation management measures proposed (in your letter dated November 7th, 2024) for the 'ōpe'ape'a, or Hawaiian Hoary Bat (*Lasiurus semotus*). We understand past historical issues with trespassing at this site; however, we encourage the removal of all barbed wire and discourage its use in the future. If the use of barbed wire is unavoidable, the applicant will need to enter into consultation with DOFAW to acquire an Incidental Take License (ITL) given the likelihood that take of 'ōpe'ape'a will occur.

As a point of clarification regarding the following statement in the second paragraph of the November 7th letter, "Since the site has an existing barbed wire fence, and the proposed fence would be less than 15 feet high, it is anticipated that the proposed barbed wire fence would not increase the potential to adversely impact the Hawaiian hoary bat at the project site," the height of 15 feet is in reference to roosting trees. The bats can occupy areas below this height at any time of year, especially during foraging when they are vulnerable to entanglement in barbed wire. Though barbed wire may already exist at the site, its presence will always present a threat to these bats.

While nighttime construction is not anticipated at this point during the project, we have included recommendations for seabirds in case this work does occur. We concur with the Best Management Practices outlined to minimize the spread of invasive species. Additional guidance to reduce the spread of invasive species and minimize the threat of fires have been included in this letter as well.

Artificial lighting can adversely impact seabirds that may pass through the area at night by causing them to become disoriented. This disorientation can result in their collision with manmade structures or the grounding of birds. For nighttime work that might be required, DOFAW recommends that all lights used be fully shielded to minimize the attraction of seabirds. Nighttime work that requires outdoor lighting should be avoided during the seabird fledging season, from September 15 through December 15, when young seabirds make their maiden voyage to sea.

If nighttime construction is required during the seabird fledgling season (September 15 to December 15), we recommend that a qualified biologist be present at the project site to monitor and assess the risk of seabirds being attracted or grounded due to the lighting. If seabirds are seen circling around the area, lights should then be turned off. If a downed seabird is detected, please follow DOFAW's recommended response protocol by visiting https://dlnr.hawaii.gov/wildlife/seabird-fallout-season/

Permanent lighting also poses a risk of seabird attraction, and as such should be minimized or eliminated to protect seabird flyways and preserve the night sky. For illustrations and guidance related to seabird-friendly light styles that also protect seabirds and the dark starry skies of Hawai'i please visit https://dlnr.hawaii.gov/wildlife/files/2016/03/DOC439.pdf.

DOFAW recommends minimizing the movement of plant or soil material between worksites. Soil and plant material may contain detrimental fungal pathogens (e.g., Rapid 'Ōhi'a Death), vertebrate and invertebrate pests (e.g., Little Fire Ants, Coconut Rhinoceros Beetles, etc.), or invasive plant parts (e.g., Miconia, Pampas Grass, etc.) that could harm our native species and ecosystems. We recommend consulting the **O'ahu Invasive Species Committee (OISC) at (808) 266-7994** to help plan, design, and construct the project, learn of any high-risk invasive species in the area, and ways to mitigate their spread. All equipment, materials, and personnel should be cleaned of excess soil and debris to minimize the risk of spreading invasive species.

The invasive coconut rhinoceros beetle (*Oryctes rhinoceros)* or CRB is widespread on the island of O'ahu. CRB have been detected on other islands with moderate infestation on Kaua'i, one incipint site on Hawai'i Island, and only one positive site on Maui in 2023. Hawaii Department of Agriculture interim rule 24-1 restricts the movement of CRB-host material from the island of O'ahu, which is defined as the Quarantine Area. Regulated material (host material or host plants) is considered a risk for potential CRB infestation. Host material for the beetle specifically includes: **1)** entire dead trees, **2)** mulch, compost, trimmings, fruit and vegetative scraps, and **3)** decaying stumps. CRB host plants include the live palm plants in the following genera: *Washingtonia*, *Livistona*, *Pritchardia* (all commonly known as fan palms), *Cocos* (coconut palms), *Phoenix* (date palms), and *Roystonea* (royal palms). When such material or these specific plants are moved there is a risk of spreading CRB because they may contain CRB in any life stage. Inspection and/or treatment approved by HDOA is mandatory before inter-island transport. For more information regarding CRB, please visit https://dlnr.hawaii.gov/hisc/info/invasive-species-profiles/coconut-rhinoceros-beetle/.

Since this worksite does occur at the urban-wildland interface, and there are fine fuels—like grasses, present there is a risk of wildfire ignition. We reccomend coordinating with the **Hawai'i Wildfire Management Organization at (808)-850-0900 or admin@hawaiiwildfire.org**, on how wildfire prevention can be addressed in the project area. When engaging in activities that have a high risk of starting a wildfire (i.e. welding in grass), it is recommended that you: **1)** wet down the area before starting your task, **2)** continuously wet down the area as needed, **3)** have a fire extinguisher on hand, and **4)** in the event that your vision is impaired, (i.e. welding goggles) have a spotter to watch for fire ignitions.

Mahalo for contacting our office to receive guidance regarding the conservation of our native species. These comments are general guidelines and should not be considered comprehensive for this site or project. It is the responsibility of the applicant to do their own due diligence to avoid any negative environmental impacts. Should the scope of the project change significantly, or should it become apparent that threatened or endangered species may be impacted, please contact our staff as soon as possible. If you have any questions, please contact Jesse W. Adams, Protected Species Habitat Conservation Planning Associate, at jesse.w.adams.researcher@hawaii.gov or call (808) 265-3276.

Sincerely,

JASON D. OMICK
Wildlife Program Manager

JOSH GREEN, M.D.
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KE KIA'ĀINA

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(P)25.042

MAR 25 2025

MEMORANDUM

TO: Jason D. Omick, Wildlife Program Manager
Department of Land and Natural Resources
Division of Forestry and Wildlife

FROM: Gordon S. Wood
Public Works Administrator

SUBJECT: Round Top Radio Facility Tower Replacement and Consolidation
DAGS Job No. 12-10-0942
Makiki/Lower Punchbowl/Tantalus, Honolulu District, Kona Moku,
Island of Oahu
TMK: (1) 2-5-019:003 and 011
Response to Draft Environmental Assessment Comment

Thank you for your letter dated January 7, 2025, commenting on the Draft Environmental Assessment for the Round Top Radio Facility Tower Replacement and Consolidation project. The Department of Accounting and General Services (DAGS) acknowledges Department of Land and Natural Resources, Division of Forestry and Wildlife's (DOFAW) comments and offers the following responses:

Hawaiian Hoary Bat

1. DAGS acknowledges that DOFAW concurs with the vegetation management measures proposed for the Hawaiian hoary bat.
2. DAGS originally proposed adding barbed wire on top of the 6-feet high chain link fence that would surround the new 180-foot tower. However, due to the potential threat it may pose to the Hawaiian hoary bat, DAGS has decided to remove the proposed use of barbed wire and will instead increase the height of the proposed fence to be between 12 to 14

feet high. This will ensure that the fence still acts as a deterrent to trespassers trying to access the tower, while not increasing the potential to adversely impact the Hawaiian hoary bat.

Seabirds

1. Although nighttime construction is not anticipated at this time, the DOFAW's recommendations to use fully shielded lights and to avoid nighttime work during the seabird fledging season from September 15 through December 15 has been included in the Final Environmental Assessment (FEA).
2. The Proposed Action does not include the installation of permanent lighting at the project site.

Invasive Species and the Coconut Rhinoceros Beetle

1. The FEA includes BMPs that will be adhered to during construction to minimize the unintentional spread of invasive species that may be present on the site.
2. The FEA includes DOFAW's recommendation to inspect the trees proposed for removal and the tree trimmings for the presence of the coconut rhinoceros beetle before being transported off-site. It should be noted that the trees proposed to be removed and or trimmed at the project site do not consist of any of the live palm plant species that are considered host plants for the coconut rhinoceros' beetle. In addition, none of the trees proposed for removal are proposed for inter-island transport.

Risk of Wildfire Ignition

1. The FEA includes DOFAW's recommendations to minimize the potential of wildfire ignition when engaging in activities that have a high risk of starting a wildfire.

Thank you for participating in the Hawaii Revised Statutes, Chapter 343 environmental review process. Your letter and this response will be included in the FEA. When known, we will notify you of the FEA publication date.

If you have any questions, please call David DePonte of the Planning Branch at (808) 586-0492 or by email at david.c.deponte@hawaii.gov, or our consultant, Bowers + Kubota Consulting, Inc., Attention: Carah Kadota at (808) 833-1841 or by email at ckadota@bowersandkubota.com.

DD:mo
c: Carah Kadota, Bowers+Kubota