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LAND
STATE PARKS

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

REF:OCCL:DH

CDUA OA-3585

Acceptance Date: February 18, 2011
180-Day Exp. Date: August 17, 2011

John L. Sakaguchi, AICP Senior Planner
Wilson Okamoto Corporation
1907 South Beratania Street
Honolulu, Hawaii 96826

FEB 18 2011

Dear Mr. Sakaguchi,

NOTICE OF ACCEPTANCE AND PRELIMINARY ENVIRONMENTAL DETERMINATION
Conservation District Use Application (CDUA) File No. OA-3585
(DEPARTMENTAL Permit)

This acknowledges the receipt and acceptance for the processing of your CDUA OA-3585 for Hawaiian Electric Company Inc.'s (HECO) proposed Kalaheo Repeater project, located at (1) 4-5-033:001, Oneawa Ridge, Kaneohe, Island of Oahu.

According to your information, the subject parcel is a 164.423-acre subject parcel owned by Hawaiian Memorial Life Plan, Ltd. HECO proposes to relocate the current Kalaheo Repeater to the above subject parcel. A 30-foot tall communication lattice and 15 x 15 foot concrete foundation pad will be constructed. Two 8 foot and one 6 foot diameter solid dish antenna's will be installed on the new tower at a height of 30 feet above the ground. The self supporting tower will be 3 sided with a 9 foot base. An area of 425 square feet will be utilized. It will be painted green. The existing monopole will be removed.

Access to the site is via helicopter. Vegetation at the project site is described as varying between open forest and scrub (i.e. Christmas berry, strawberry guava, fiddlewood, octopus tree). Common native herbs (uhaloa, ilima, huehue) are present. There are no endangered animals in the project area. No listed threatened or endangered species were encountered and no plant critical habitat has been designated for the project area.

The OCCL notes the subject parcel is located within the State Land Use Conservation District, Limited subzone.

After reviewing the application, we find that:

1. The proposed use is an identified land use in the Conservation District, according to Chapter 13-5, Hawaii Administrative Rules (HAR), Section 13-5-22, identified land uses in the Protective subzone, P-6, PUBLIC PURPOSE USES, "transportation system, transmission facilities for public utilities, water systems, energy generation facilities utilizing the renewable resources of the area (e.g. hydroelectric or wind farms) and communications systems and other such land uses which are undertaken by non-governmental entities which benefit the public and are consistent with the purpose of the conservation district;" please be advised however, that this finding does not constitute approval of the proposal;

2. Pursuant to Section 13-5-40(4), HAR, HEARINGS, a hearing will not be required; and

3. In conformance with Chapter 343, Hawaii Revised Statutes (HRS), as amended, and Chapter 11-200, HAR, a finding of no significant impact (FONSI) to the environment is anticipated for the proposed project. The draft environmental assessment for the project has been submitted to the Office of Environmental Quality Control (OEQC), and will be published in the February 23, 2011, edition of OEQC's Environmental Notice.

Please be informed that, as the applicant, your responsibility includes complying with the provisions of Hawaii's Coastal Zone Management law (Chapter 205A, HRS) that pertain to the Special Management Area (SMA) requirements administered by the various counties. Negative action by the Board of Land and Natural Resources (BLNR) on this application can be expected should you fail to obtain and provide us, at least thirty (30) days prior to the 180-day expiration date as noted on the first page of this notice, one of the following from the appropriate county:

1. An official determination that the proposal is exempt from the provisions of the county rules relating to the SMA;

2. An official determination that the proposed development is outside the SMA; or

3. An SMA Use Permit for the proposed development.

Your cooperation and early response to these matters will be appreciated, and will help facilitate the processing of your application. Your CDUA will be placed on the agenda of the BLNR for their consideration after all reviews and evaluations of the proposal have been made. Should you have any questions, please contact Dawn Hegger, Senior Planner, of our Office of Conservation and Coastal Lands staff at 587-0380.

Sincerely,

William J. Aila Jr., Chairperson
Board of Land and Natural Resources

c: Chairperson
ODLO/Engineering/DOFAW/DOCARE/HPD
City and County of Honolulu
Planning and Permitting Department
OHA/DOH/OEQC/Kaneohe Neighborhood Board

Draft Environmental Assessment

Kalaheo Repeater Replacement Project

Kaneohe, Oahu, Hawaii

Prepared For:
Hawaiian Electric Company, Inc.

Prepared By:
Wilson Okamoto Corporation

January 2011

Draft Environmental Assessment

Kalaheo Repeater Replacement Project

Kaneohe, Oahu, Hawaii

Prepared For:

Hawaiian Electric Company, Inc.
820 Ward Avenue
Honolulu, HI 96814

Prepared By:

Wilson Okamoto Corporation
Engineers and Planners
1907 South Beretania Street, Suite 400
Honolulu, Hawaii 96826

January 2011

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PREFACE

This Draft Environmental Assessment (EA) / Anticipated Finding of No Significant Impact (FONSI) has been prepared pursuant to Chapter 343, Hawaii Revised Statutes (HRS), and Title 11, Chapter 200, Hawaii Administration Rules (HAR), Department of Health, State of Hawaii. Proposed is an applicant action by Hawaiian Electric Company, Inc.

HECO proposes to relocate the existing Kalaheo Repeater (communication monopole tower) to construct a new 30-foot tall communication lattice tower at the top of Oneawa Ridge in Kaneohe, Oahu, Hawaii. An 8-foot and 6-foot diameter solid dish antennae will be installed on the new tower. The preparation of this EA arises from the location of the proposed project within the State Conservation District. The EA will be processed in conjunction with a Conservation District Use Application (CDUA). It is anticipated that a Finding of No Significant Impact (FONSI) will be issued and filed with the State Office of Environmental Quality Control (OEQC) by the approving agency following public review of the Draft EA.

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PROJECT SUMMARY

Applicant:	Hawaiian Electric Company, Inc. (HECO) 820 Ward Avenue Honolulu, HI 96814 Contact: Mr. Robert Thompson, Project Manager Telephone: (808) 543-7598
Approving Agency:	State of Hawaii Department of Land and Natural Resources Office of Conservation and Coastal Lands
Location:	Kaneohe, Oahu, Hawaii
Tax Map Key(s):	4-5-033: por. 001
Area of Parcel:	164.423 acres
Area of Project Site:	Approximately 452 square feet
Recorded Fee Owner:	Hawaiian Memorial Life Plan, Ltd. 1330 Maunakea Street Honolulu, HI 96813
Existing Use:	The proposed project site is vacant/undeveloped.
State Land Use Classification:	Conservation District
Conservation District Subzone:	Limited Subzone
County Zoning Designation:	Preservation (P-1)
Proposed Action:	Construction of one 30-foot tall communication lattice tower mounted with 8-foot and 6-foot diameter solid dish antennae. In the future, an additional 8-foot diameter solid dish antennae will be mounted.
Impacts:	No significant impacts are anticipated from the construction and use of the proposed project. With respect to community aesthetics, the proposed communication tower will be visible from surrounding areas, but it will not affect any significant public views.

Anticipated Determination: Finding of No Significant Impact (FONSI)

Parties Consulted During Pre-Assessment:

Federal
U.S. Fish & Wildlife Service
Kaneohe Marine Corps Base Hawaii

State
Department of Land & Natural Resources (DLNR)
DLNR, State Historic Preservation Division
DLNR, Office of Conservation and Coastal Lands
Office of Hawaiian Affairs
Department of Transportation

Representative Ken Ito, District 48
Senator Jill Tokuda, District 24

City & County of Honolulu
Department of Information Technology
Department of Planning & Permitting

Kaneohe Neighborhood Board
Kailua Neighborhood Board
Councilmember Ikaika Anderson

Other
Hawaiian Memorial Life Plan, Ltd.
Ameron Hawaii

1. SETTING AND PROJECT DESCRIPTION

1.1 Project Background and Need

Hawaiian Electric Company Inc.'s (HECO) Kalaheo Repeater (communication monopole tower) is located at the top of Oneawa Ridge in Kaneohe, on the island of Oahu (see Figure 1-1). The Kalaheo Repeater is part of HECO's Malae-Koolau Microwave (MW) radio system (see Figure 1-2). This system is one link that provides communication from the Windward side of the island to HECO's dispatch center located at Ward Avenue. The system provides for various telecommunication services, including mobile radio communication, Supervisory Control and Data Acquisition (SCADA) and teleprotection circuits.

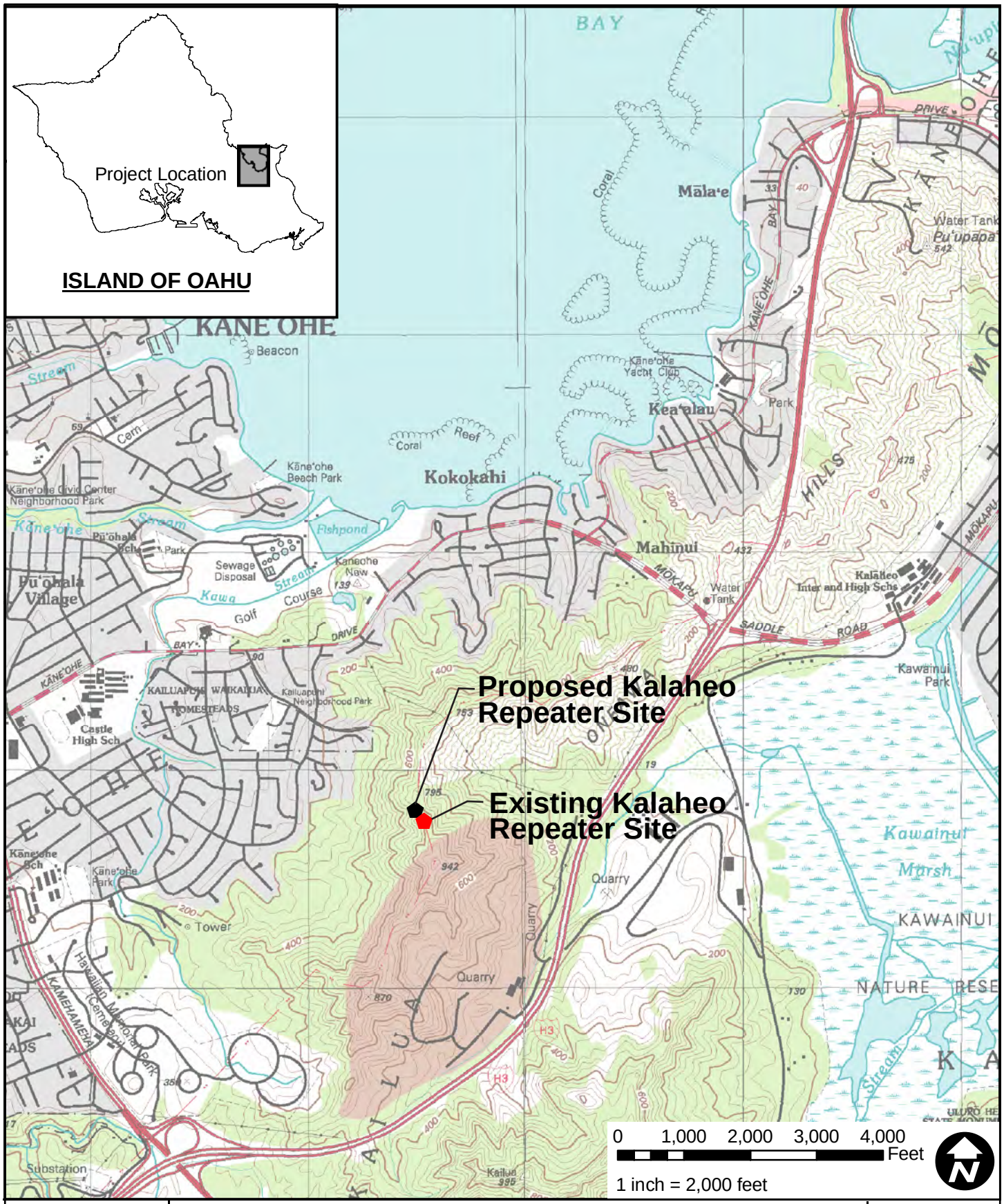
The existing microwave radios at Malae Communication Site and Koolau Substation are obsolete and are becoming difficult to maintain. In addition, the Federal Communications Commission (FCC) has reassigned the 2 Gigahertz (GHz) frequencies from the incumbent fixed service microwave operators, like HECO, to Advance Wireless and Mobile Satellite Service providers. This change requires HECO to relocate to the 6 GHz band. The higher frequencies will require a change from grid type antennas to solid antennas. In turn, the antenna change out requires sturdier support structures. The Kalaheo Repeater will need to change out to a self supporting tower. The antennas at the Koolau Substation and Malae Communication Site will also be replaced to meet new FCC rules.

1.2 Project Location

The existing Kalaheo Repeater is located in Windward Oahu in Kaneohe in the Koolaupoko District, on the top of Oneawa Ridge, as shown in Figure 1-1. The existing Kalaheo Repeater is located on Tax Map Key (TMK) 4-2-015: 009, on land owned by the City and County of Honolulu (see Figure 1-3). The existing Kalaheo Repeater is situated at an elevation of about 830 feet above mean sea level (msl).

The new communication tower will be located on TMK: 4-5-033: 001, on land owned by Hawaiian Memorial Park Life, Ltd. (see Figure 1-3). The proposed site will encompass an area of approximately 452 square feet near the eastern boundary of the parcel (see Figure 1-3). The new communication tower is approximately 30 feet northwest from the existing Kalaheo Repeater. The project site is situated at an elevation of about 830 feet above msl.

The project site is accessible by foot or helicopter. The area surrounding the existing Kalaheo Repeater and proposed site is vacant/undeveloped (see Figure 1-4).

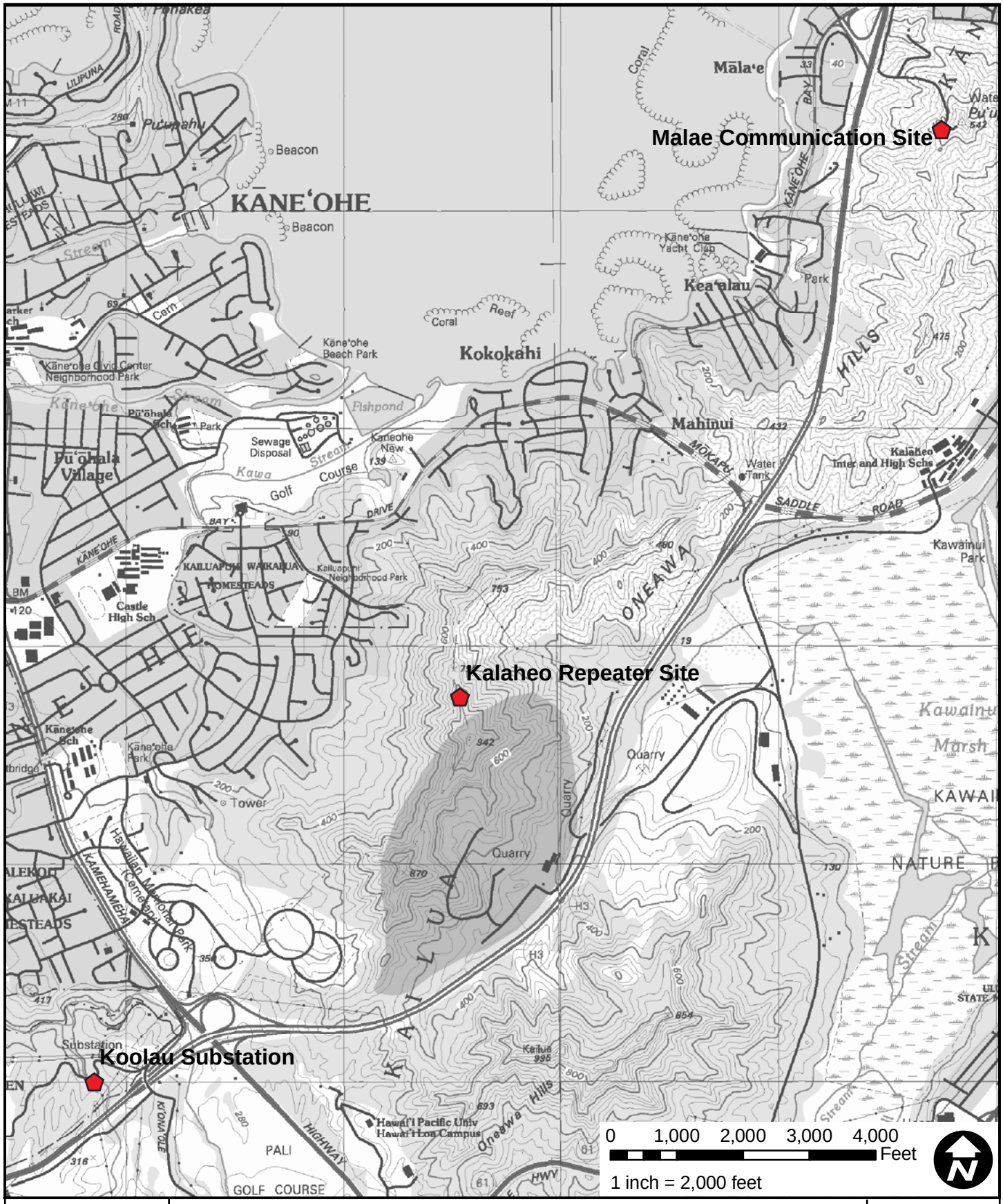


WILSON OKAMOTO CORPORATION
ENGINEERS • PLANNERS

HECO KALAHEO REPEATER REPLACEMENT PROJECT

LOCATION MAP

FIGURE 1-1



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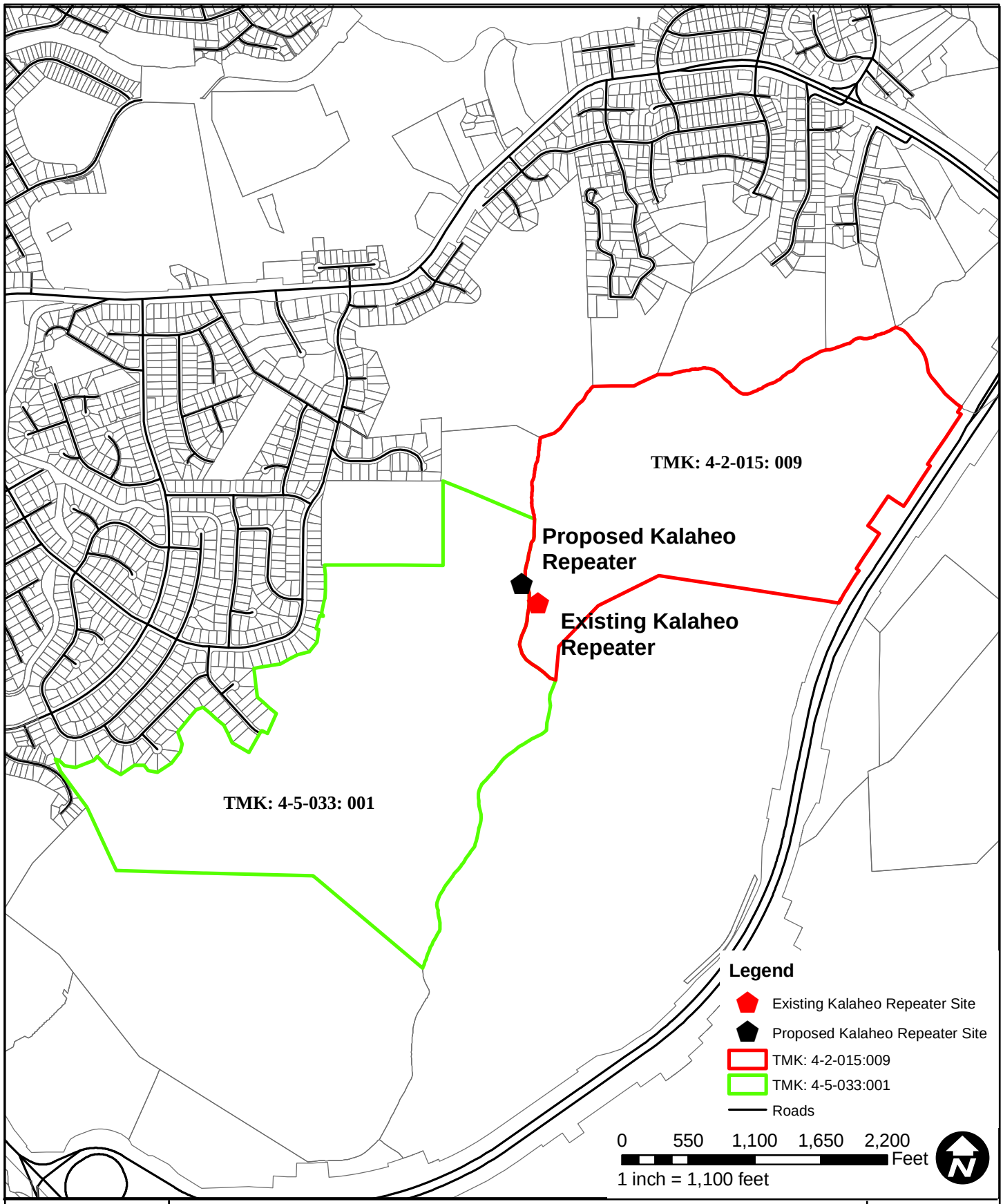
HECO KALAHEO REPEATER REPLACEMENT PROJECT

HECO'S MALAE - KOOLAU MICROWAVE RADIO SYSTEM

FIGURE

1-2



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HECO KALAHEO REPEATER REPLACEMENT PROJECT

TAX MAP KEY

FIGURE 1-3

Existing 30-foot monopole, which supports two 8-foot diameter grid antennas, located at the top of Oneawa Ridge in Kaneohe.

Existing 30-foot monopole and its surrounding area looking southeast.

Proposed project site looking northwest.

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HECO KALAHEO REPEATER REPLACEMENT PROJECT

PROJECT SITE PHOTOS

FIGURE
1-4

Kapaa Quarry and the H-3 Highway are located to the east of the project site and Hawaiian Memorial Park Cemetery and residential neighborhoods are located to the southwest and west.

1.3 Project Description

The existing Kalaheo Repeater (communication monopole tower) is 30-feet tall and supports two, 8-foot diameter grid antennae (see Figure 1-4). HECO proposes to relocate the existing Kalaheo Repeater from TMK 4-2-015: 009 to TMK 4-5-033: 001, to construct a new 30-foot tall communication lattice tower on a 15-foot by 15-foot concrete foundation pad (see Figure 1-5). An 8-foot and 6-foot diameter solid dish antennae will be installed on the new tower at approximately 30 feet above the ground (see Figure 1-6). The self supporting tower will be three sided with a nine foot base. The lattice tower will be painted green to match the color of the existing monopole.

After the replacement tower is placed in service, the existing monopole will be removed.

In the future, the new communication tower will also have an additional 8-foot diameter solid dish antenna that would provide a communications connection to a future communication site towards Waimanalo.

Access to the site will be via helicopter. The area immediately to the east of the existing Kalaheo Repeater will be used for the helicopter landing zone. The vegetation in this area will be kept low.

1.4 Project Operation

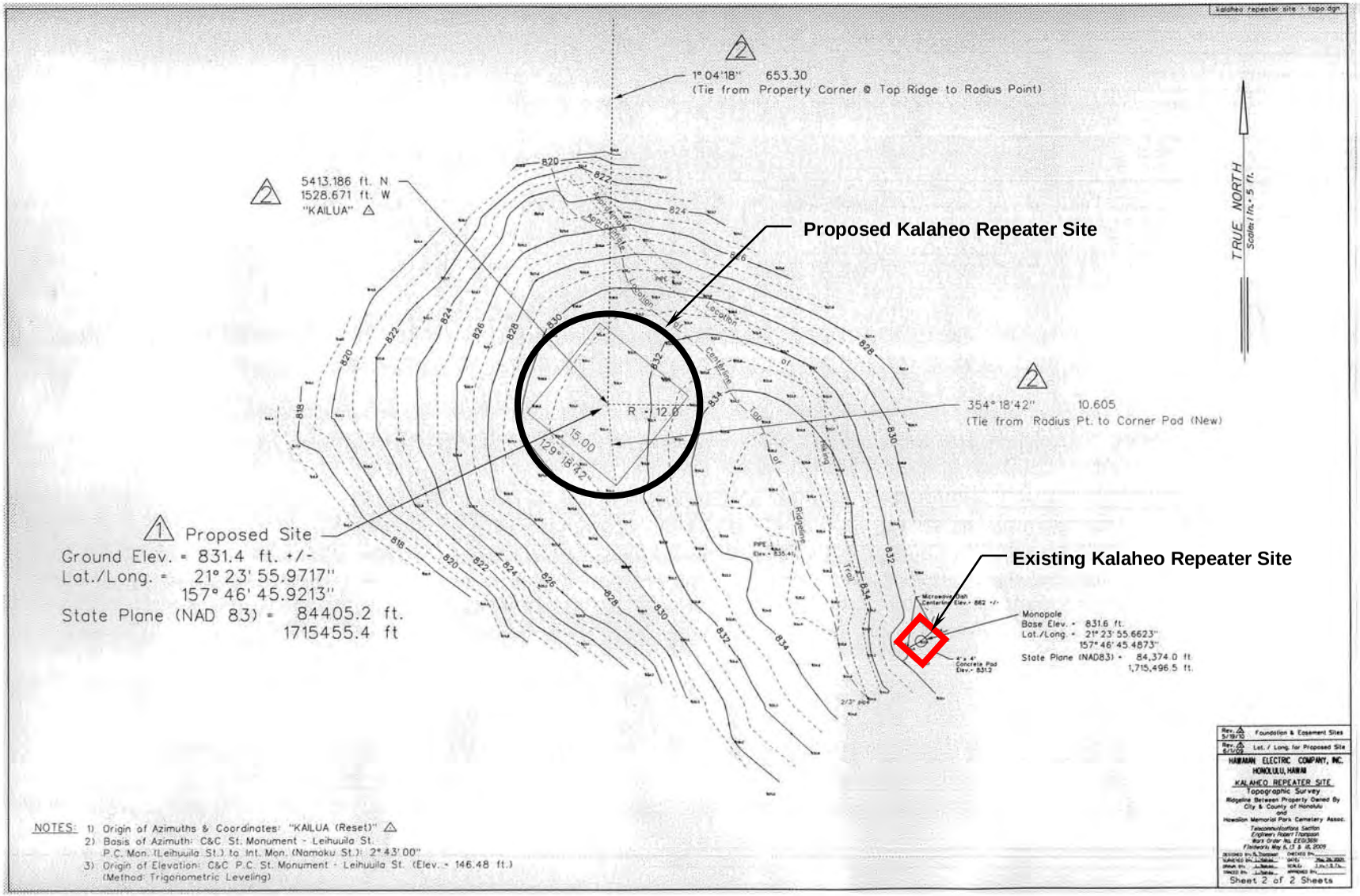
No HECO or contractor personnel will be assigned to daily duty at the Kalaheo site. However, HECO personnel will visit the project site to conduct periodic inspections and tests; to perform maintenance service; and to clear the vegetation in the helicopter landing zone.

The communication tower will operate continuously on a 24 hours per day, 7 days per week basis.

1.5 Project Schedule and Cost

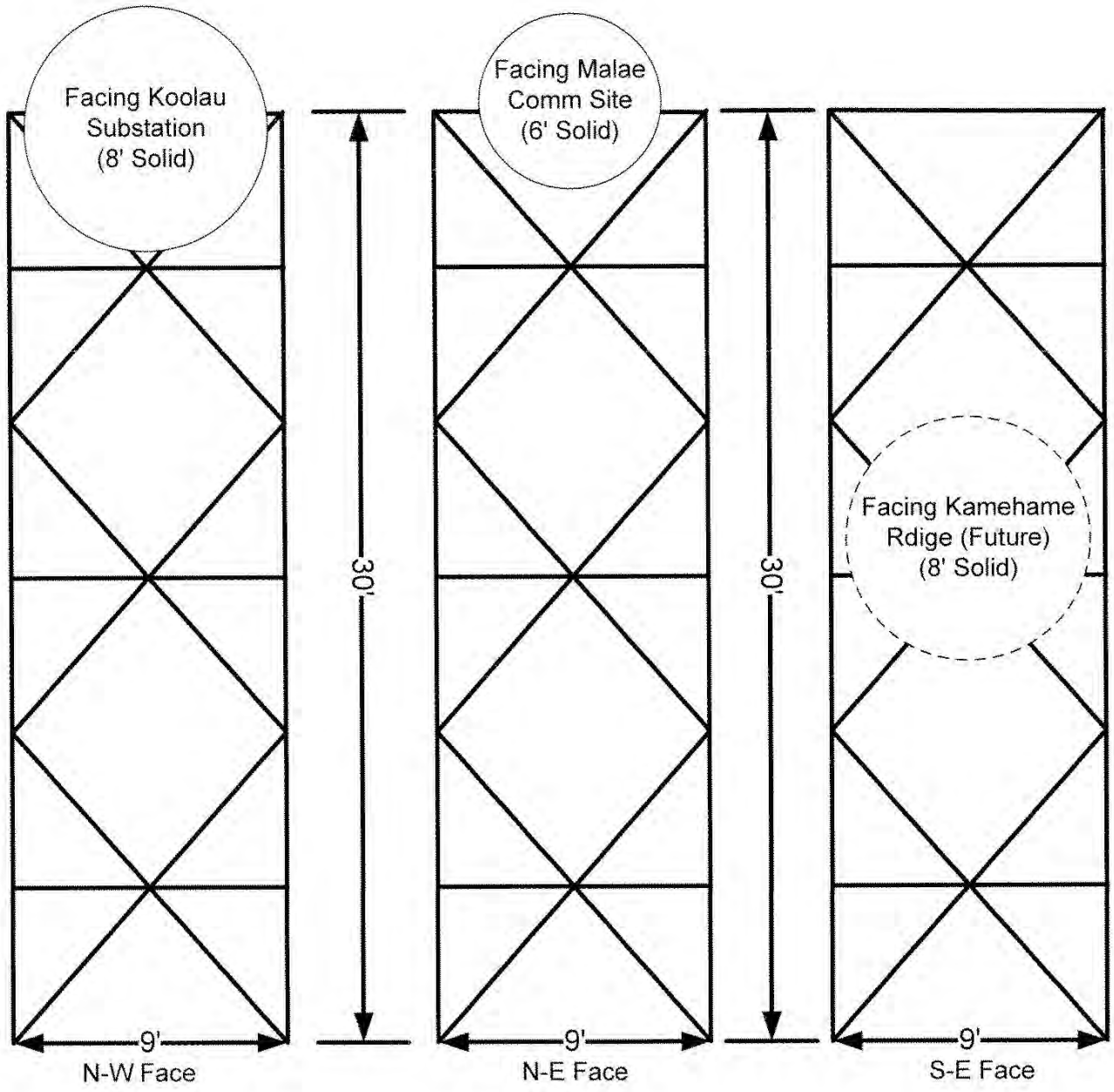
Construction of the proposed 30-foot tall communication lattice tower is anticipated to commence once this environmental document is completed, other environmental clearances are obtained, and ministerial permits obtained. The communication lattice tower would be constructed first and the proposed 8-foot and 6-foot diameter solid dish antennae would be mounted. Upon completion of installation of the tower and antennae, the existing Kalaheo Repeater will be removed.

The estimated construction cost for the proposed communication tower with antennae is approximately $260,000.



NOT TO SCALE

WILSON OKAMOTO CORPORATION ENGINEERS • PLANNERS	HECO KALAHEO REPEATER REPLACEMENT PROJECT	FIGURE
	SITE PLAN	1-5



WILSON OKAMOTO CORPORATION ENGINEERS • PLANNERS	**HECO KALAHEO REPEATER REPLACEMENT PROJECT**	FIGURE
	TOWER PLAN – KALAHEO REPEATER	**1-6**

2. DESCRIPTION OF THE EXISTING ENVIRONMENT, PROJECT IMPACTS AND MITIGATION MEASURES

2.1 Climate

The Koolaupoko district is situated on the wet windward side of the island of Oahu. The climate in Koolaupoko is characterized as mild subtropical. Temperatures in the area are relatively uniform throughout the year, ranging from 71° Fahrenheit (F) to 78°F. Relative humidity ranges between 70 and 80 percent. Northeast tradewinds prevail throughout most of the year, with average wind speeds from 10 to 15 miles per hour (mph). In general, tradewinds are more persistent during summer months. Windward Oahu receives high average annual rainfall, with the most intense rainfall occurring along the ridgeline of the Koolau Range. Due to its proximity to the ridgeline, the area experiences annual rainfall averages of approximately 50 inches along coastal areas and 150 inches along the crest of the Koolau Range.

Impacts and Mitigation Measures

No significant impacts on climate in the project area are anticipated. The proposed project is not anticipated to affect temperatures, wind, or rainfall levels in the project area.

2.2 Geology and Topography

The physiography of Windward Oahu is dominated by the Koolau Range, the eroded remnants of a volcanic dome. The Koolau Range runs generally northwest to southeast and forms the western-southwestern boundary of the project area. Precipitous fluted cliffs (pali) extend for 20 miles on the windward side of the Koolau Range, transitioning to a fringing coastal plain.

The project site is situated on Oneawa Ridge. The highest peak is approximately 905 feet above msl. This ridgeline separates Kailua and Kaneohe. The project site is relatively flat and at an elevation of about 830 feet above msl.

Impacts

No significant impacts on the geology or topography of the project site are anticipated during the construction and operation of the proposed project. The proposed communication tower will be installed at an elevation of approximately 830 feet above msl and encompass an area of 452 square feet. Installation of the communication tower will likely require limited grading activities and excavation or drilling for its footings.

2.3 Soils

According to the U.S. Natural Resources Conservation Service (1972), the soils in the project site belong to the Lolekaa-Waikane Association, "*Deep, nearly level to*

very steep, well-drained soils that have a dominantly fine-textured subsoil; on fans, terraces and uplands. "

The soil type found in the project site is Helemano silty clay, 30 – 90 percent slopes (HLMG), as shown in Figure 2-1. This soil is on the sides of V-shaped gulches.

Impacts

No significant erosion or sedimentation impacts at the project site are anticipated, due to the limited area of soil disturbance associated with construction. No long-term operational impacts on soils are anticipated due to the relatively small increase in impervious surface that would result from the proposed project.

Excavating and grading activities associated with the construction will be regulated by the City and County of Honolulu's grading ordinance. Following construction, exposed soils will have been paved over or allowed to re-vegetate to control erosion.

2.4 Surface Water

The Kaneohe quad of the U.S. Geological Survey topographic map shows no surface water resources within the vicinity of the project site. The closest stream is Kawa Stream, approximately ¾ miles to the southwest. There will be no discharges from the project site directed to waters of the U.S. or waters of the State of Hawaii.

The 452 square foot project site would be cleared and graded to construct the 15-foot by 15-foot concrete foundation pad.

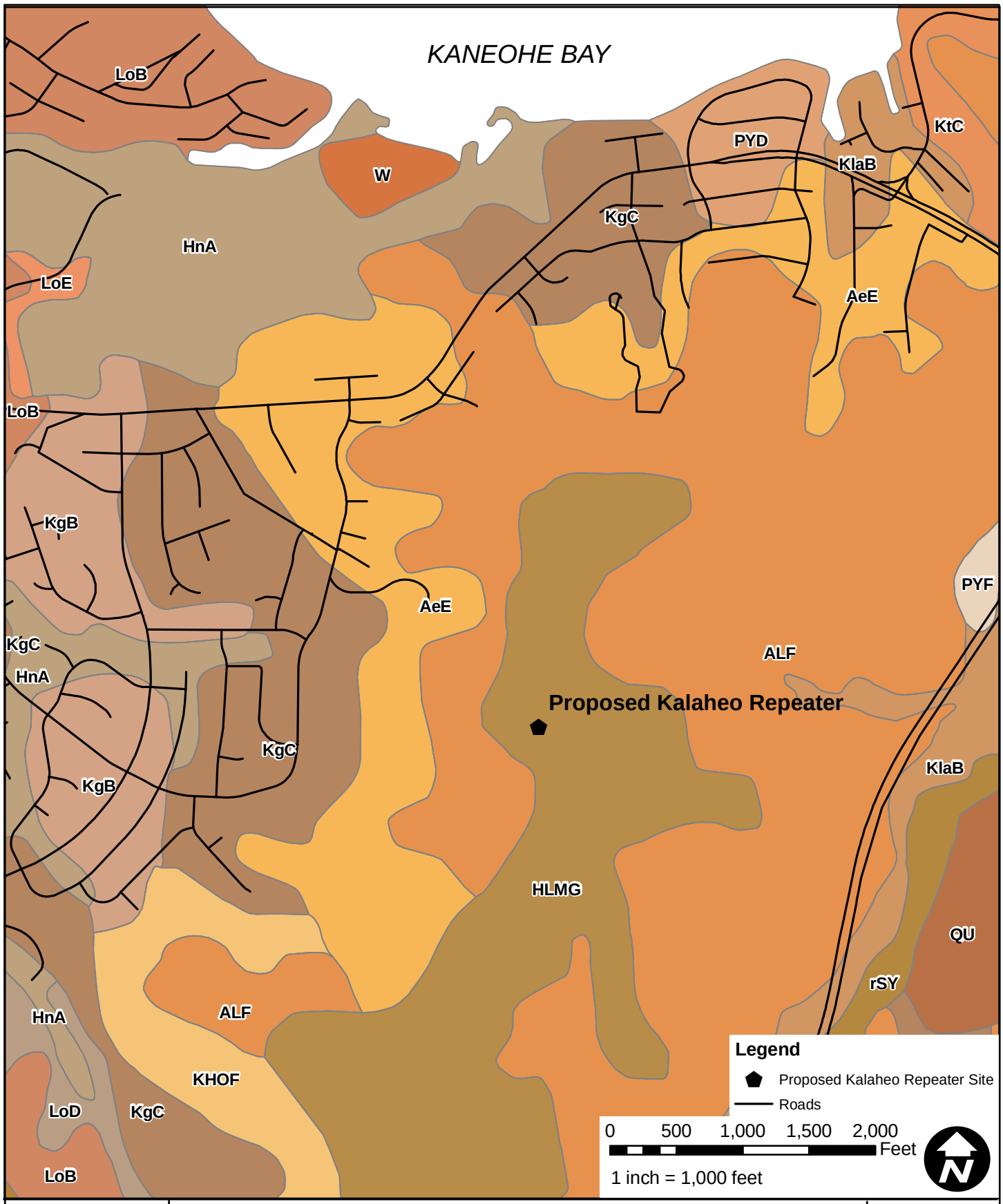
Impacts and Mitigation Measures

No significant impacts on surface waters are anticipated as a result of the construction and operation of the proposed project due to the limited area of soil disturbance and significant distance from the streams to the project site.

Temporary erosion control measures will be used during construction to prevent runoff to nearby areas. These mitigation measures may include placement of straw or hay bales and erection of a silt fence to prevent surface runoff into adjacent areas. These measures will contain surface flows within the project site during construction period.

2.5 Flood Hazard

On Flood Insurance Rate Map (FIRM) Number 15003C0270G, revised in June 2, 2005, the project site is designated as Zone D, areas in which flood hazards are undetermined, but possible. The high elevation and generally steep topography in the vicinity of the project site, however, suggest that flooding is unlikely.



WILSON OKAMOTO CORPORATION
ENGINEERS • PLANNERS

HECO KALAHEO REPEATER REPLACEMENT PROJECT

SOILS

FIGURE

2-1

Impacts and Mitigation Measures

Construction and operation of the proposed project is not anticipated to cause flooding of the project site or impact lower elevation properties.

2.6 Flora

AECOS Consultants conducted a botanical survey of the project site in September 2010. The report is included in Appendix A and is summarized below.

The vegetation in the area can be described as varying between a somewhat open forest and scrub. A total of 39 plant species were identified from the site and immediate area. The dominant plants in the area are Christmas berry (*Schinus teretinthefolius*), strawberry guava (*Psidium cattleianum*), fiddlewood (*Citharexylum caudatum*), and octopus tree (*Schefflera actinophyla*). These are all non-native plants, as are all of the other species recorded. The only exceptions are the common native herbs: *uhaloa* (*Waltheria indica*) and *ilima* (*Sida fallax*), and the generally much less common vine, *huehue* (*Cocculus trilobus*). No plant species currently listed, or proposed for listing, under either federal or state statutes was detected during the course of the survey.

Impacts and Mitigation Measures

The area immediately to the east of the existing Kalaheo Repeater will be used for the helicopter landing zone. The vegetation in this area will be kept low. No significant impacts on botanical resources are anticipated within and in the immediate vicinity area of the project site. No listed threatened or endangered species were encountered and no plant critical habitat has been designated for the project area; therefore, no significant adverse effects on such species or their habitats are anticipated as a result of the proposed project.

2.7 Fauna

Rana Biological Consultants, Inc. conducted a faunal survey of the project site in September 2010. The report is included in Appendix A and is summarized below.

No mammalian species were detected on or immediately adjacent to the site during the course of the survey. Dogs were heard barking from the housing areas in Kaneohe located to the northwest of the site. No mammalian species listed, or proposed for listing under either the federal or state endangered species statutes was detected during the course of the survey.

A total of 39 individual birds of seven different species were recorded in the project area. All of the avian species detected are considered to be alien and no avian species currently listed, or proposed for listing under either the federal or state endangered species statutes was detected during the course of the survey.

Although no rodents were detected during the course of this survey, it is probable that at least a few of the four established alien *muridae* known from the Island of Oahu, roof rat (*Rattus r. rattus*), Norway rat (*Rattus norvegicus*), Polynesian rat (*Rattus exulans hawaiiensis*), and European house mice (*Mus musculus domesticus*), use resources within the general project area on occasion.

Impacts and Mitigation Measures

No significant impact on avifaua and mammals are anticipated within and in the immediate vicinity area of the project site. No listed, candidate or proposed endangered animal species are likely to be found on the project site; therefore, no significant adverse effects on such species or their habitats are anticipated as a result of the proposed project.

2.8 Air Quality

The State Department of Health (DOH) has six (6) monitoring stations throughout the island of Oahu. Each monitoring station typically does not monitor the full complement of air quality parameters. For selected criteria pollutants, the State of Hawaii has established its State ambient air quality standards (AAQS) which are somewhat more stringent than the federal standards under Hawaii Administrative Rules, Title 11, Chapter 59. Hawaii AAQS are more restrictive than federal standards for carbon monoxide (CO), nitrogen dioxide (NO_2), and ozone (O_3). In addition, Hawaii regulates emissions of hydrogen sulfide (H_2S), for which there are no federal standards. Hawaii has adopted the National Ambient Air Quality Standards (NAAQS) for particulate matter (PM_{10}), sulfur dioxide (SO_2), and lead (Pb).

There is no air monitoring station on the windward side of Oahu. The air quality in this area is considered good with the primary non-point source of emissions from vehicles travelling along the H-3 Highway and from Kapaa Quarry. According to the DOH's *2009 Annual Summary Hawai'i Air Quality Data*, the criteria pollutant levels remain below sate and federal ambient quality standards at all state and local air monitoring stations in the State.

Impacts and Mitigation Measures

No significant impact on air quality is anticipated in the vicinity of the project site. The project site encompasses approximately 452 square feet which will mean a relatively small area of disturbance.

During construction, activities such as clearing, grading, and excavating at the project site will generate dust. These impacts will be short term-term during the period of construction.

In the long-term, operation of the proposed project will not generate any significant emissions affecting the air quality in the vicinity.

2.9 Noise

The project site is located at an elevation of about 830 feet above msl and approximately ¾ mile from H-3 Freeway. The closest residential neighborhood is located about ½ mile to the west at elevations of about 200 above msl.

Vehicular traffic on the H-3 Freeway and noise from Kapaa Quarry would be the primary sources of noise near the project site.

The existing Kalaheo Repeater site does not generate any significant noises other than occasional helicopter visit to the site for maintenance and inspections.

Impacts and Mitigation Measures

No significant noise impacts are anticipated in the vicinity of the project site. During construction, noise levels may increase as a result of flying in materials via helicopter. Construction activities such as grading, excavating for footings and foundations, and erecting the tower will create noise. These impacts will be short-term during the period of construction.

Once construction has been completed, noise will be generated by the occasional helicopter visit to the site for maintenance and inspections.

In the long-term, no significant increase in noise impacts due to the operation of the proposed 30-foot tall tower and solid antenna are anticipated.

2.10 Historic and Archaeological Resources

An archaeological assessment of the project site was conducted by Cultural Surveys Hawaii (CSH) in November 2010. The report is included in Appendix B and summarized below.

The project site is located within the *‘ili* (land sections within an *ahupua‘a*) of Kalaheo. During the Mahele, Kamehameha III awarded the *‘ili* of Kalaheo, designated as Grant 1106, to Kokahe. The Grant states that 301 acres were used as *kula* and two acres were under *kalo* cultivation.

One hundred seventeen kuleana land claims were awarded in Kaneohe Ahupuaa. The primary land uses for the claimed lands were loi, irrigated fields used for cultivating taro. Testimonies also indicated land uses such as growing breadfruit, coconut, hala, gourds, melons, ape, pia, pineapple, and banana, salt ponds, and kula for raising animals. No kuleana land claims were awarded near the project area, and most of land in the vicinity is designated as Government land.

According to population density estimates for 1853, approximately 600 people lived along the coast of Kaneohe Ahupuaa, north of the proposed project site. This is due to the presence of fishponds constructed along the Kaneohe Bay shoreline.

Archaeological studies have been previously conducted for projects in the vicinity of the proposed project site. Between 2006 and 2007 CSH conducted an archaeological inventory survey for the proposed Hawaiian Memorial Park expansion, located 985 feet west of the proposed project site. A total of 11 historic properties were observed within or near the proposed expansion area. Six of the historic properties had been previously recorded (SIHP #50-80-10-354, pre-contact Kawaewae Heiau; -4680, pre-contact complex of enclosures and terracing; -4683, historic pit feature; -4686, historic boundary marker). The remaining five historic properties were new discoveries (SIHP #-6929, pre-contact quarry; -6930, pre-contact stone enclosure; -6931, pre-contact stone alignment; -6932, historic stone storage feature; and -6933, historic pit feature). SIHP #-6929, pre-contact quarry is approximately 870 feet west of the proposed project site and -6931 is 1,345 feet southwest of the proposed project site. All of the other historic properties are more than 1,640 feet from the proposed project site.

CSH conducted a field inspection on September 27, 2010. No historic properties were observed within or in the immediate vicinity of the project area.

Impacts and Mitigation Measures

No significant impacts on historic or archaeological resources are anticipated from the construction and operation of the proposed project. As documented, the project area is located on a peak of the Oneawa Hills ridgeline and the likelihood of encountering subsurface cultural material within the project area seems low. Therefore, the proposed construction of the new HECO tower and removal of the existing monopole will likely have “no effect” on significant historic properties. However, if in the unlikely event that intact cultural resources, including human remains or other significant cultural deposits, are encountered during the construction, all work in the immediate area should stop and the State Historic Preservation District should be promptly notified.

2.11 Visual Assessment

The existing Kalaheo Repeater is located at the top of Oneawa Ridge. Public views of the ridge are visible from H-3, Likelike Highway, Kaneohe Bay Drive, and Kamehameha Highway.

The location of the Kalaheo Repeater site is ideal for microwave and radio communication because it is largely unobstructed by landforms. The existing Kalaheo Repeater is a 30-foot monopole with two 8-foot diameter grid antennae painted green (see Figure 1-4). The Kalaheo Repeater can be seen from various locations, including Hawaiian Memorial Park, H-3 Freeway near Kapaa Quarry, and Likelike Highway (eastbound) (see Figures 2-2 to 2-5).

Impacts and Mitigation Measures

The new communication lattice tower will be placed approximately 30 feet northwest of the existing site. The new 30-foot tall communication lattice tower

will be located at an elevation approximately 830 feet above msl. An 8-foot and 6-foot diameter solid dish antennae will be installed on the new tower at a height of approximately 30 feet. The self supporting tower will be three sided with a 9 foot base. The lattice tower will be painted green to match the color of the existing monopole.

Unlike the visually solid monopole, the structural members of a lattice tower would present a more "translucent" visual effect, although it would be wider than the monopole.

After the replacement communication tower is placed in service, the existing monopole will be removed.

In the future, the new tower will also have an additional 8-foot solid antenna that would provide a communications connection to a future communications site towards Waimanalo.

In general, the new communication tower may be visible from various locations, although it would not be obtrusive and should not draw a casual viewer's attention to it. No significant impacts on visual resources are anticipated.

2.12 Infrastructure and Utilities

2.12.1 Roadway System

There are no roadways or driveways within the project site or leading to the project site. The project site is accessible by foot or helicopter.

Impacts and Mitigation Measures

No significant traffic impacts are anticipated during construction and operation of the proposed communication facility at the project site.

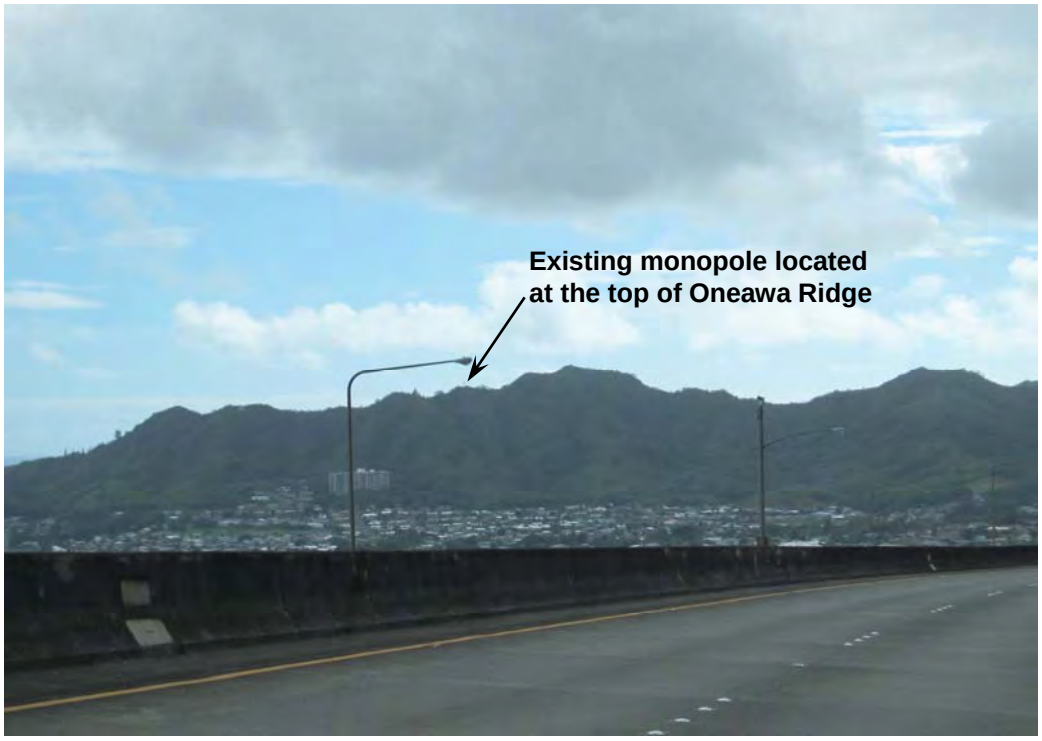
A permit is required from State Department of Transportation, Highways Division to transport oversized and overweight equipment/loads within the State highway facilities.

2.12.2 Water System

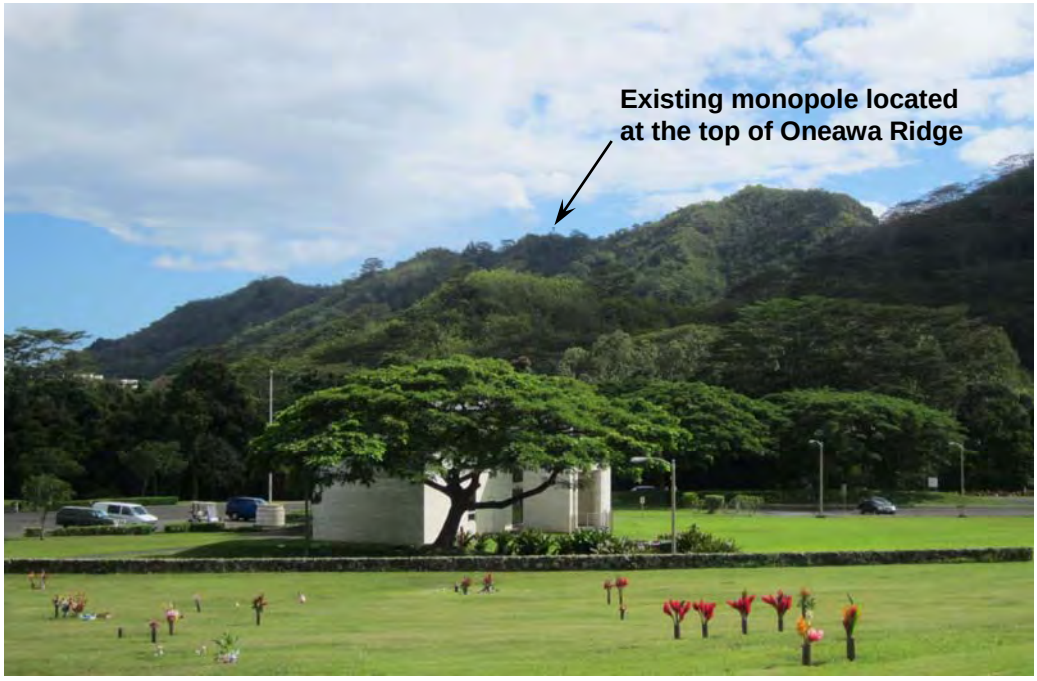
The project site is not served by the City and County of Honolulu Board of Water Supply (BWS) potable water system.

Impacts and Mitigation Measures

The proposed project will not require water service. The proposed project will not create the need for potable water on the project site. The proposed project will not have a significant impact on the BWS's water system, including sources of water.

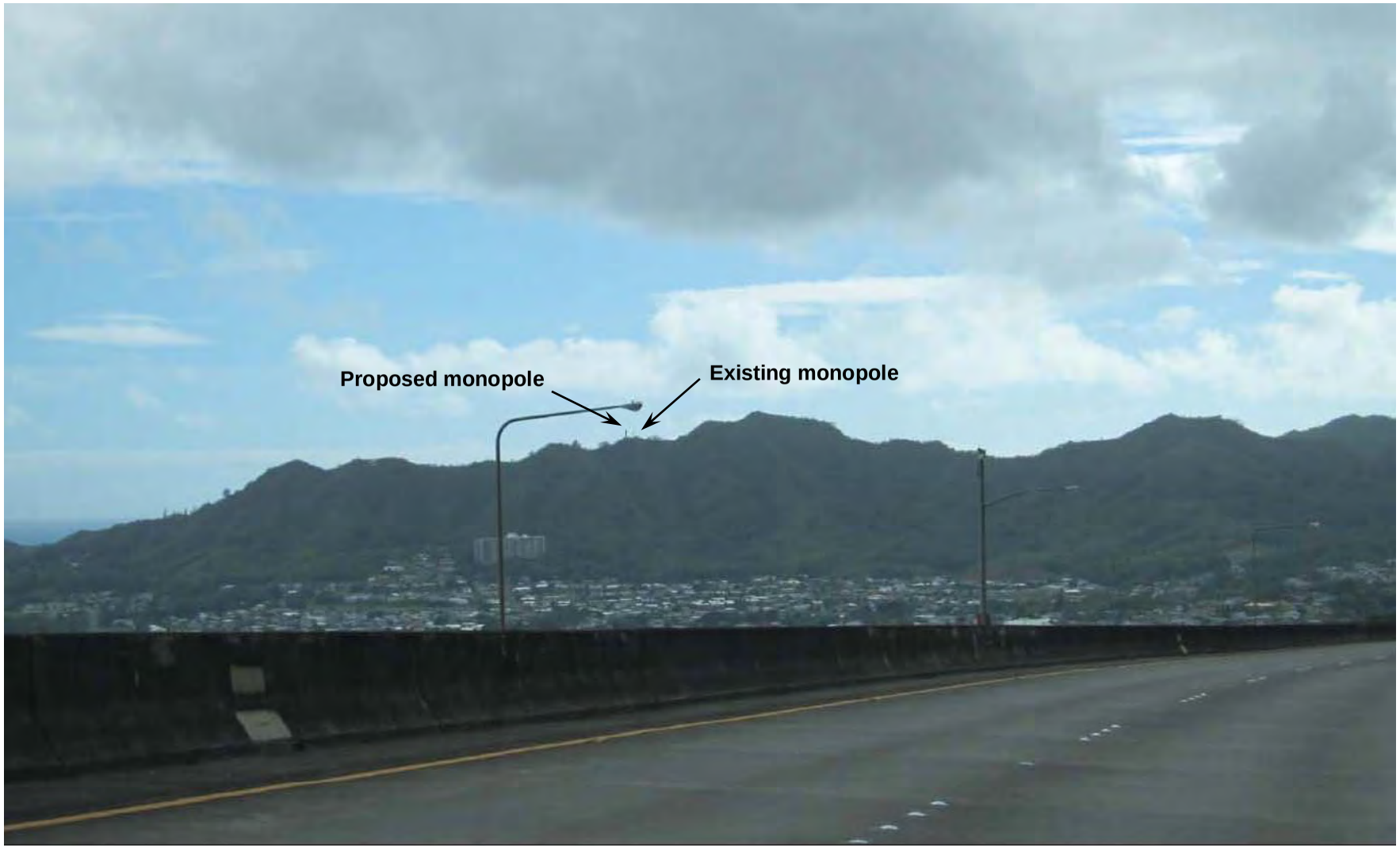


View of existing monopole from H-3, Kaneohe bound.



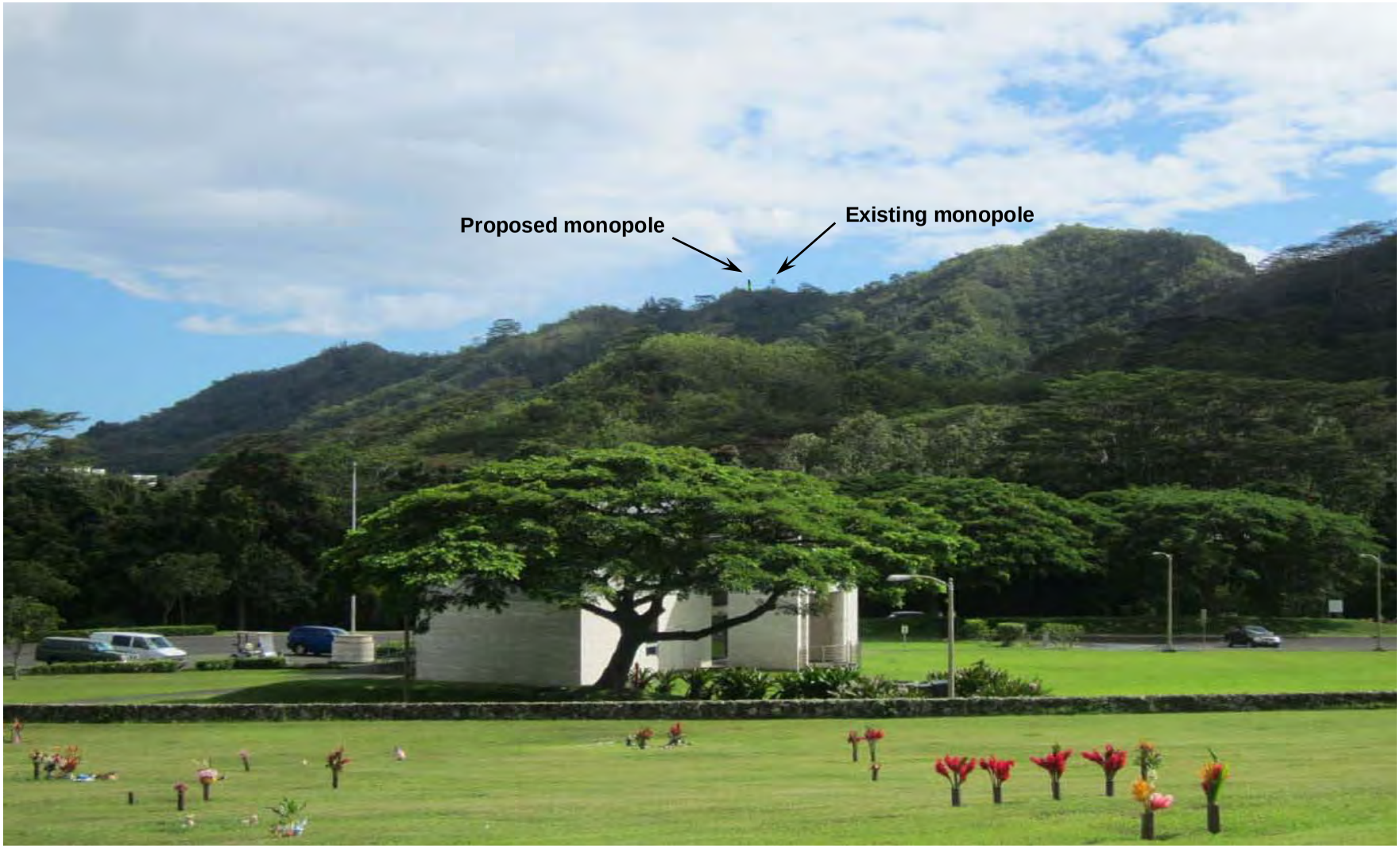
View of the existing 30-foot monopole from Hawaiian Memorial Park in Kaneohe looking northeast.

WILSON OKAMOTO CORPORATION ENGINEERS • PLANNERS	**HECO KALAHEO REPEATER REPLACEMENT PROJECT**	FIGURE
	PROJECT SITE PHOTOS – VISUAL ASSESSMENT	**2-2**



View of existing and proposed monopole from H-3, Kaneohe bound.

WILSON OKAMOTO CORPORATION ENGINEERS • PLANNERS	**HECO KALAHEO REPEATER REPLACEMENT PROJECT**	FIGURE 2-2
	VISUAL ASSESSMENT: VIEW FROM H-3 KANEOHE BOUND	

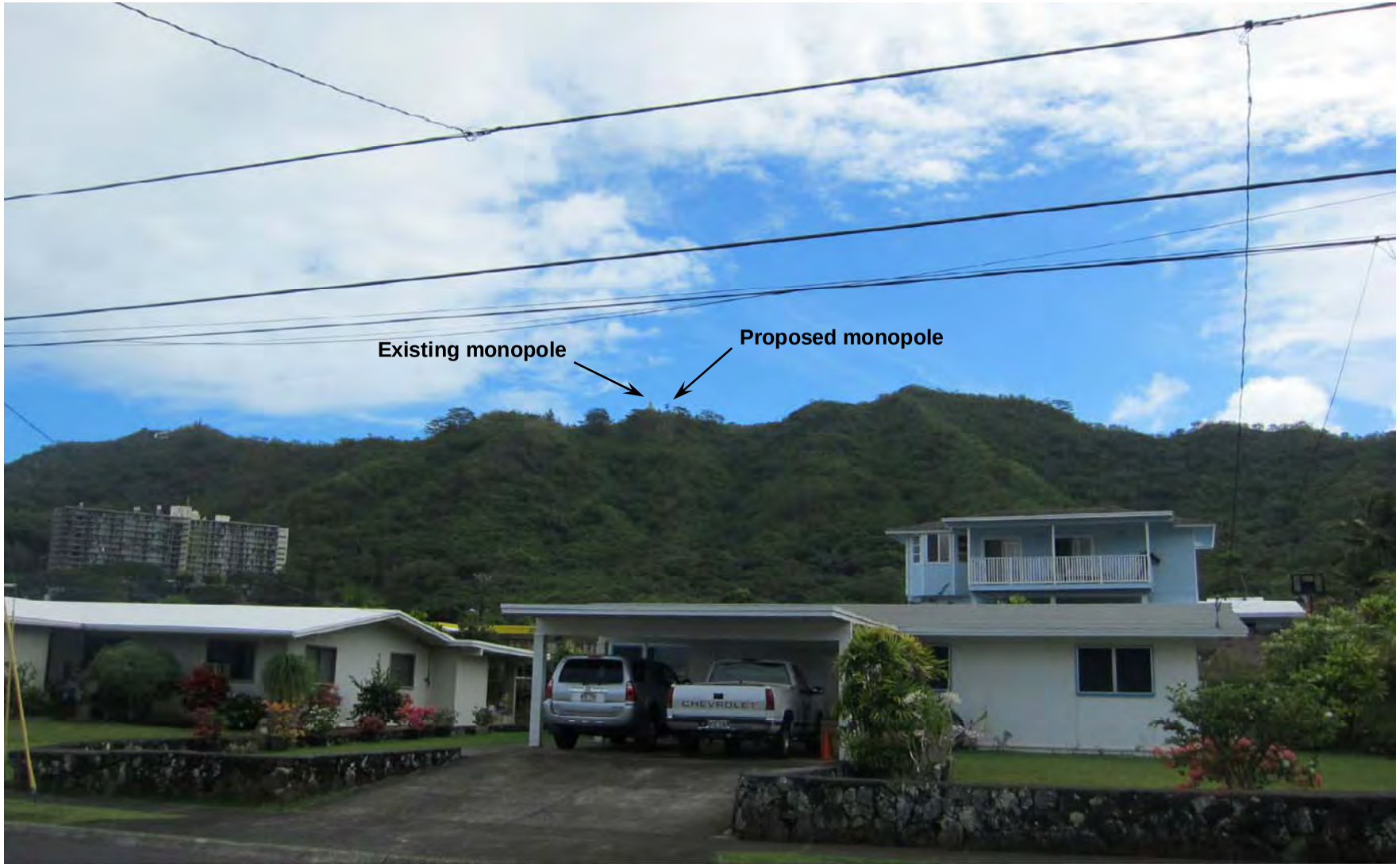


View of the existing and proposed monopole from Hawaiian Memorial Park in Kaneohe looking northeast.

WILSON OKAMOTO CORPORATION ENGINEERS • PLANNERS	**HECO KALAHEO REPEATER REPLACEMENT PROJECT**	FIGURE 2-3
	VISUAL ASSESSMENT: VIEW FROM HAWAIIAN MEMORIAL PARK	

View of existing and proposed monopole from H-3 (Kailua side), Kaneohe bound

WILSON OKAMOTO CORPORATION ENGINEERS • PLANNERS	**HECO KALAHEO REPEATER REPLACEMENT PROJECT**	FIGURE 2-4
	VISUAL ASSESSMENT: VIEW FROM H-3 (KAILUA SIDE)	



View of existing and proposed monopole from Mokulele Drive.

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HECO KALAHEO REPEATER REPLACEMENT PROJECT

VISUAL ASSESSMENT: VIEW FROM MOKULELE DRIVE

FIGURE
2-5

2.12.3 Wastewater System

There is no wastewater system serving the project site.

Impacts and Mitigation Measures

The proposed project will not generate wastewater nor will it require wastewater service. The proposed project will not have a significant impact on the City's wastewater system. The proposed project will not require wastewater service.

2.12.4 Electrical and Communication Systems

The Kalaheo Repeater is part of HECO's Malae-Koolau Microwave (MW) radio system, as shown in Figure 1-2. This system is one link that provides communication from the Windward side of the island to HECO's dispatch center located at Ward Avenue. The system provides for various telecommunication services, including mobile radio communication, Supervisory Control and Data Acquisition (SCADA) and teleprotection circuits.

The existing microwave radios at Malae Communication Site and Koolau Substation are obsolete and are becoming difficult to maintain. In addition, the Federal Communications Commission (FCC) has reassigned the 2 Gigahertz (GHz) frequencies from the incumbent fixed service microwave operators, like HECO, to Advance Wireless and Mobile Satellite Service providers. This change requires HECO to relocate to the 6 GHz band. The higher frequencies will require a change from grid type antennas to solid antennas. In turn, the antenna change out requires sturdier support structures. The Kalaheo Repeater will need to change out to a self supporting tower. The antennas at the Koolau Substation and Malae Communication Site will also be replaced to meet new FCC rules.

There is no electrical service to the project site. The Kalaheo Repeater is a passive system that does not require electricity to operate. The proposed project will also not require electrical service.

Impacts and Mitigation Measures

The proposed project will not require electrical service. The proposed project will not have a significant impact on the City's electrical service or system.

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3. RELATIONSHIP TO PLANS, POLICIES, AND CONTROLS

3.1 State Land Use District

The Hawaii Land Use Law of Chapter 205, Hawaii Revised Statutes (HRS) is intended to preserve, protect, and encourage the development of lands for uses that are best suited to the public health and welfare of Hawaii's people. The State Land Use Commission classifies all land in the State into four land use districts: Urban, Rural, Agriculture, and Conservation. The project site is designated within the Conservation District (See Figure 3-1). Pursuant to Chapter 343, HRS, and Chapter 200 of Title 11 Department of Health Administrative Rules, this Environmental Assessment is prepared due to the involvement of State Conservation District lands.

3.1.1 Conservation District

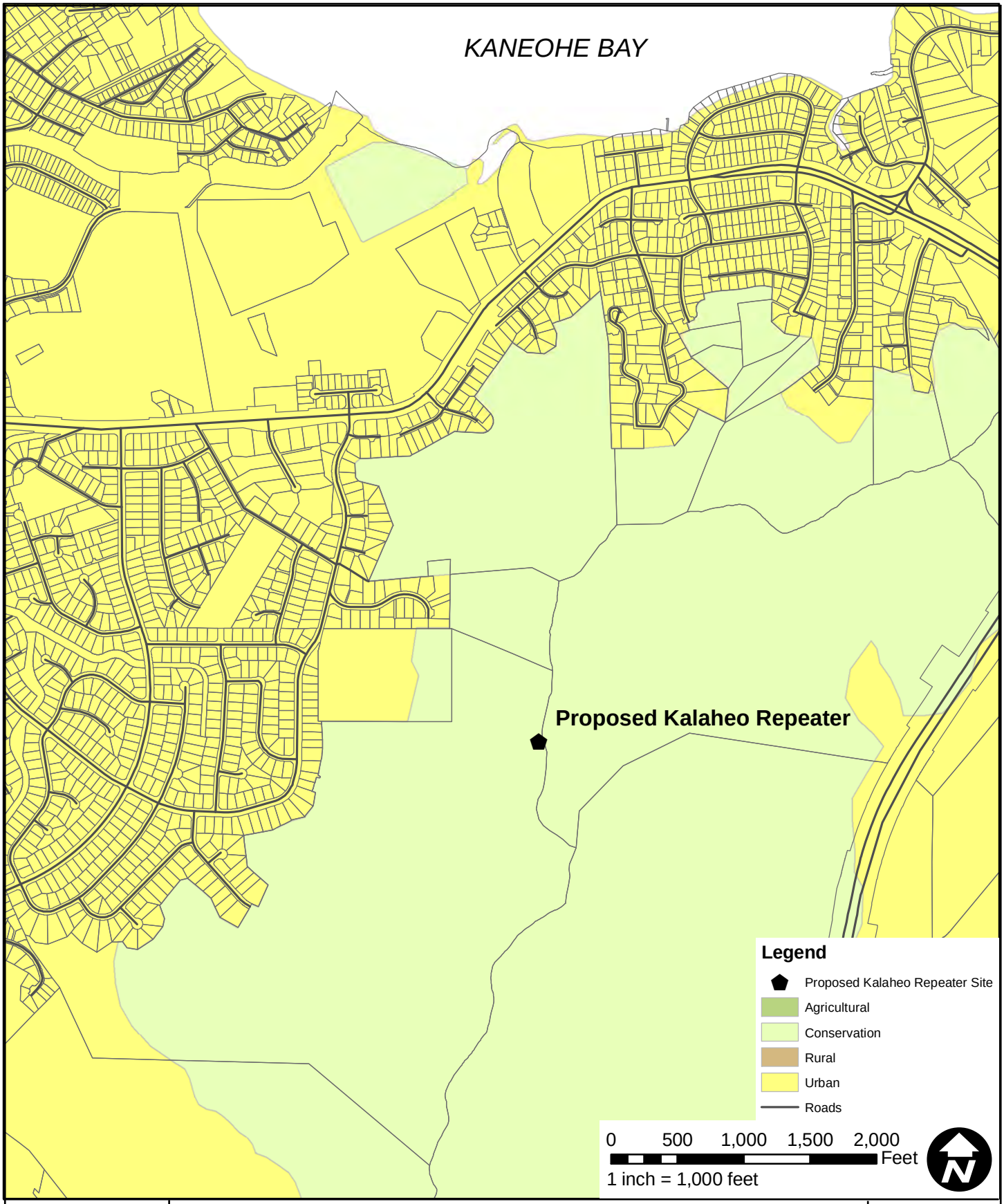
Within the Conservation District, there are five subzones: General (G), Limited (L), Protective (P), Resource (R), and Special Subzone (SS). Omitting the special subzone, the four subzones are arranged in a hierarchy of environmental sensitivity, ranging from the most environmentally sensitive (protective) to the least sensitive (general). The proposed project is located within the Limited Subzone (see Figure 3-2). The objective of this subzone is to limit the uses where natural conditions suggest constraints on human activities.

According to Hawaii Administrative Rules Title 13, Department of Land and Natural Resources Subtitle 1, Administration, Chapter 5, Conservation District, Subchapter 3, Identified Land Use and Required Permits (Section 13-5-23) sets forth identified lands uses in the Limited subzone and their required permits. In addition, all identified land uses and their required permits listed for the protective subzone (Section 13-5-22) also apply to the limited subzone, unless otherwise noted.

HECO's proposed communication/transmission tower is an identified land use under Section 13-5-22:

> *P-6 Public Purpose Uses:*
> *(D-2) Transportation systems, transmission facilities for public utilities, water systems, energy generation facilities utilizing the renewable resources of the area (e.g. hydroelectric or wind farms) and communication systems and other such land uses which are undertaken by non-governmental entities which benefit the public and are consistent with the purpose of the conservation district.*

Thus, the proposed land use for a communication tower is consistent with the purpose of the Conservation District.



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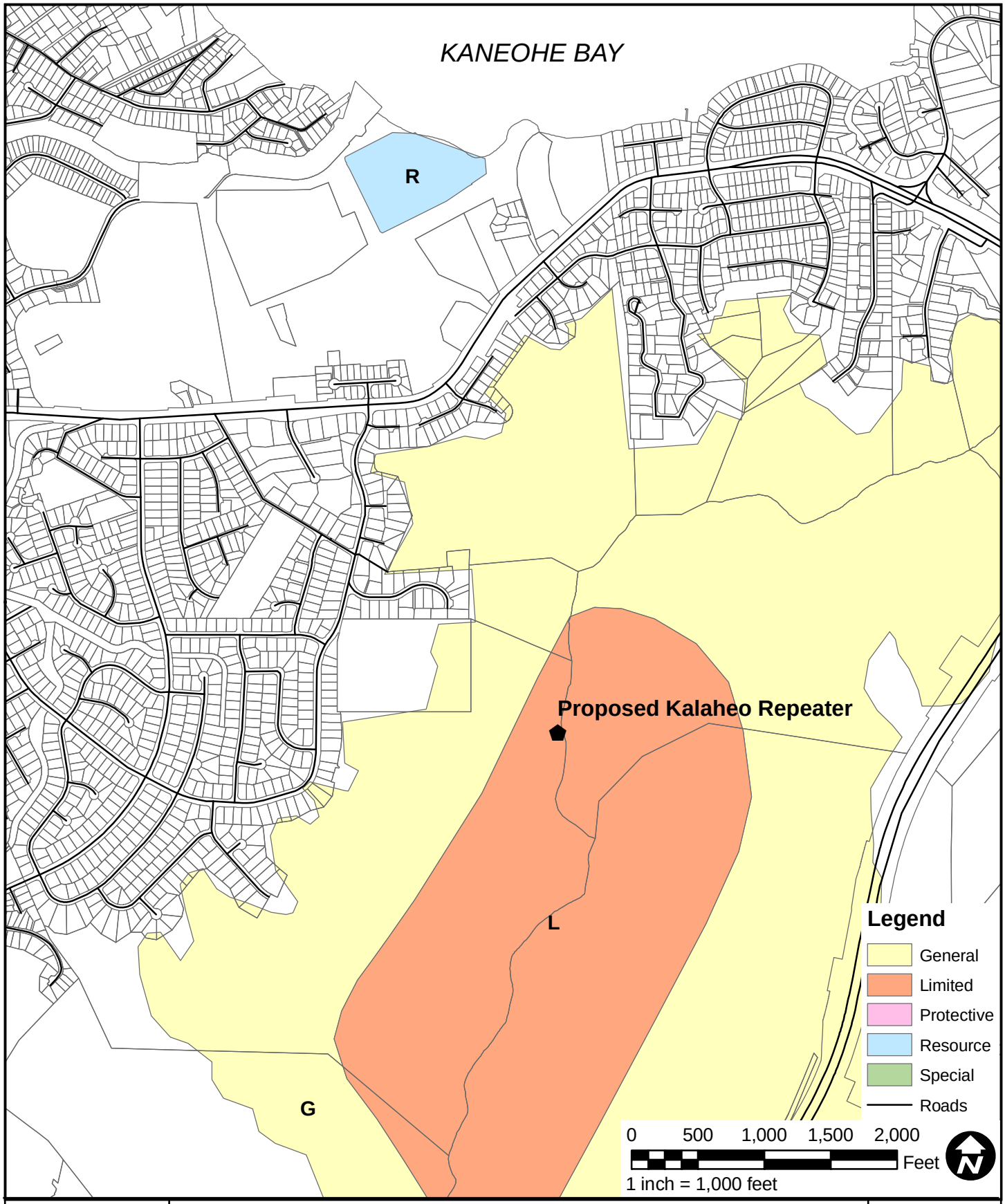
HECO KALAHEO REPEATER REPLACEMENT PROJECT

STATE LAND USE MAP

FIGURE

3-1



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HECO KALAHEO REPEATER REPLACEMENT PROJECT

CONSERVATION SUBZONE MAP

FIGURE 3-2

3.2 City and County of Honolulu

3.2.1 Development and Sustainable Communities Plan

The City and County of Honolulu's Development and Sustainable Communities Plan program provides a relatively detailed framework for implementing the objectives and policies of the General Plan on an area wide basis. Eight community-oriented plans have been adopted covering the entire island. Each of the plans is intended to help guide public policy, investment, and decision making within their representative region.

3.2.1.1 Koolaupoko Sustainable Communities Plan

The project site is located within the Koolaupoko Sustainable Communities Plan (SCP) Area, which extends from Makapuu Point to Kaoio Point. The following section of policy and guidelines pertains to the proposed project:

4.4 Electrical and Communication Systems

4.4.2 General Policies

- *Design system elements and incrementally replace facilities such as sub-stations, transmission lines and towers to avoid or mitigate any potential adverse impacts on scenic and natural resource values and to enhance system reliability.*
- *New utility distribution lines should be placed underground and a long-range program for systematically relocating existing overhead lines underground should be developed and implemented.*

4.4.3 Planning Principles and Guidelines

- *Facility Routing and Siting Analysis – If any new or relocated substations, transmission lines or towers are necessary, the selection of the route or site of such facilities should avoid or mitigate any potential adverse impacts on scenic and natural resources.*
- *Collocation of Facilities – Communication and power equipment and devices should be allocated with similar facilities in order to minimize the number of supporting structures and dispersal of sites.*

The Kalaheo Repeater is part of HECO's Malae-Koolau Microwave (MW) radio system, as shown in Figure 1-2. This system is one link that provides communication from the Windward side of the island to HECO's dispatch center located at Ward Avenue. The system provides for various telecommunication services, including mobile radio communication, Supervisory Control and Data Acquisition (SCADA) and teleprotection circuits.

The existing microwave radios at Malae Communication Site and Koolau Substation are obsolete and are becoming difficult to maintain. In addition, the Federal Communications Commission (FCC) has reassigned the 2 Gigahertz (GHz)

frequencies from the incumbent fixed service microwave operators, like HECO, to Advance Wireless and Mobile Satellite Service providers. This change requires HECO to relocate to the 6 GHz band. The higher frequencies will require a change from grid type antennas to solid antennas. In turn, the antenna change out requires sturdier support structures. The Kalaheo Repeater will need to change out to a self supporting tower. The antennas at the Koolau Substation and Malae Communication Site will also be replaced to meet new FCC rules.

HECO proposes to construct a new 30-foot tall communication lattice tower approximately 30 feet away from the existing monopole. An 8-foot and 6-foot diameter solid dish antennae will be installed on the new tower at a height of approximately 30 feet above ground. The self supporting tower will be three sided with a 9 foot base. The lattice tower will be painted green to match the color of the existing monopole.

After the replacement tower is placed in service, the existing monopole will be removed.

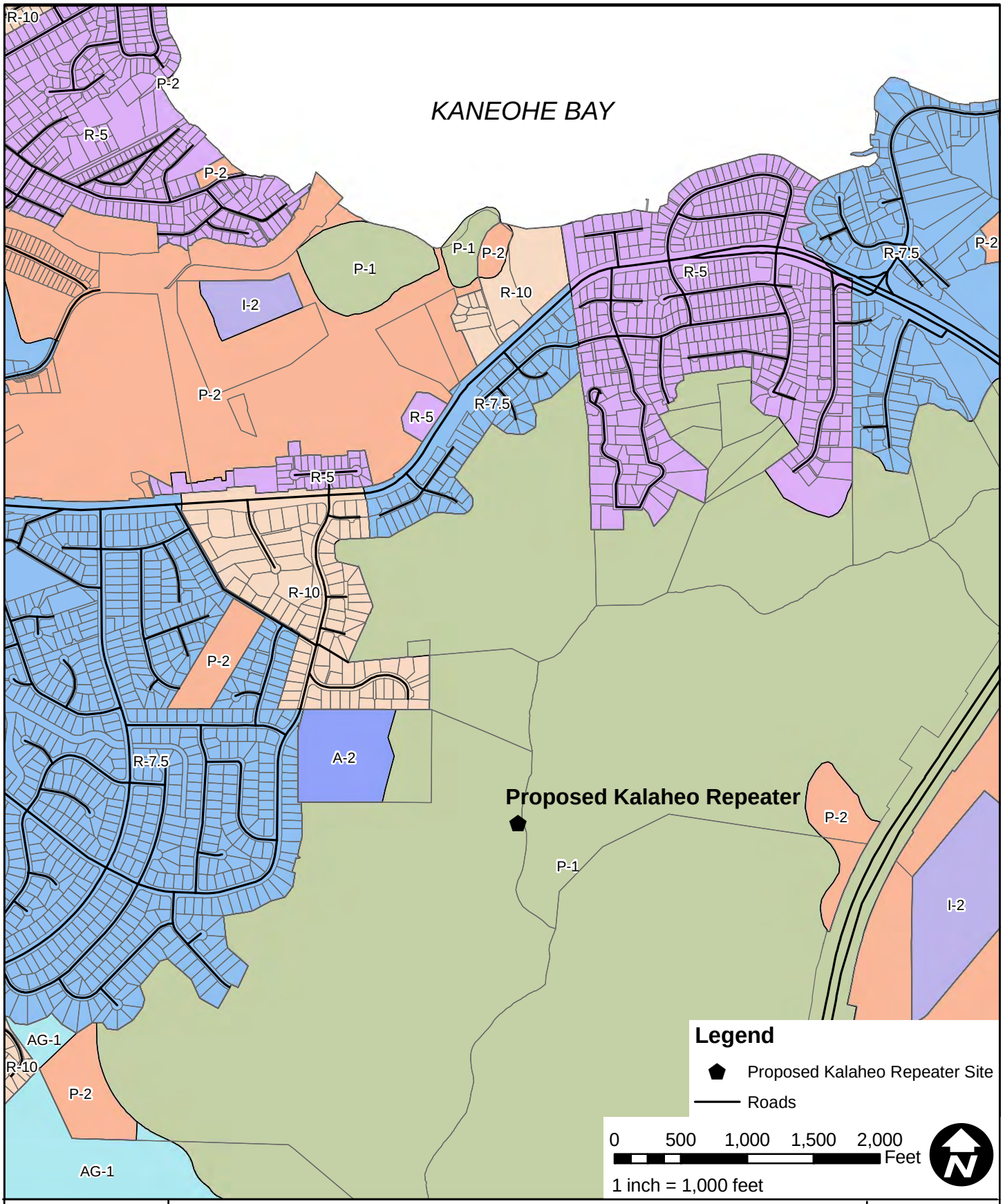
In the future, the new tower will also have an additional 8-foot diameter solid dish antenna that would provide a communications connection to a future communications site towards Waimanalo.

No significant impacts on biological resources, archaeological and cultural resources, and visual resources are anticipated (see Sections 2.6, 2.7, 2.10, 2.11 and 2.12).

3.2.2 Zoning

The City and County of Honolulu Land Use Ordinance (LUO) regulates land use in accordance with adopted land use policies, including the Oahu General Plan and the Development Plans. The provisions are also referred as the zoning ordinance. Zoning designations are shown on the zoning maps for the City.

The project site is zoned P-1 restricted Preservation District (See Figure 3-3). Under the City and County of Honolulu's LUO, all uses, structures and development standards within lands zoned P-1 Restricted Preservation District shall be governed by the appropriate State agencies. The governing agency in this case is the State Department of Land and Natural Resources Office of Conservation and Coastal Lands.



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HECO KALAHEO REPEATER REPLACEMENT PROJECT

CITY AND COUNTY OF HONOLULU ZONING MAP

FIGURE 3-3

4. ALTERNATIVES TO THE PROPOSED ACTION

4.1 Alternative Site

The Kalaheo Repeater must be located at a site that provides microwave line-of-sight to provide an unobstructed path for signals between the Koolau Substation and Malae Communication site. For any alternative site to be considered, it would have to support a microwave path that meets the line of sight and minimum path length criteria for a viable communications link. In addition, a transition site would be required to reduce the outage duration during the replacement of the existing monopole and the site would need to be flat to install the foundation for the proposed lattice tower.

Areas along the ridge do not offer a flat area to install the foundation for the proposed lattice tower. As a result, other sites were not considered.

The proposed site is nearby and provided a flat area to install the foundation for the proposed communication lattice tower.

There is a cellular service provider site on an adjacent ridge. However, their tower will not support larger microwave antennas.

4.2 Alternative Tower Structure

Due to new Federal Communications Commission (FCC) rules, the microwave radio needs to be replaced from a system that operates at 2 gigahertz (GHz) to a system that operates at 6 GHz. This requirement forces a change in antenna size and type as well as an upgrade to the support structures, i.e. monopole to tower. A monopole would not be able to support the larger antennas.

4.3 Alternative Commercial Communication System

Existing commercial cellular phone systems could conceivably be used to communicate between HECO's dispatch center and mobile crews. However, in emergency situations such as a hurricane, HECO would be dependant on the cellular phone company to restore service. This alternative would not be acceptable during blackout conditions. Also, it is not feasible to use third party service for teleprotection circuits.

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5. PERMITS AND APPROVALS

The following is a list of permits and approvals, which may be required prior to construction of the proposed project:

Federal

- Federal Aviation Administration (FAA)
- Federal Communications Commission (FCC)

State of Hawaii

- Department of Land and Natural Resources, Office of Conservation and Coastal Lands
  - Conservation District Use Permit (CDUP)
- State Department of Transportation, Highways Division

City and County

- Grubbing, Grading and Stockpiling Permit
- Excavation Permit
- Building Permit

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6. ANTICIPATED DETERMINATION OF FONSI

This draft environmental assessment was prepared for review in accordance with the consultation process of Chapter 343, Hawaii Revised Statutes. Based on the significance criteria set forth in Section 11-200-12 of the Department of Health's Administrative Rules, it is anticipated that the proposed project will not have a significant effect on the environment, and that a Finding of No Significant Impact (FONSI) will be filed with State Office of Environmental Quality Control (OEQC) following the public consultation period.

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

The proposed project will not involve the loss or destruction of any natural or cultural resources. The site does not provide habitat for Federal or State of Hawaii listed or candidate threatened or endangered species of flora or fauna.

CSH conducted a field inspection on September 27, 2010. No historic properties were observed within or in the immediate vicinity of the project area. No significant impacts on historic or archaeological resources are anticipated from the construction and operation of the proposed project. As documented, the project area is located on a peak of the Oneawa Hills ridgeline and the likelihood of encountering subsurface cultural material within the project area seems low. Therefore, the proposed construction of the new HECO tower and removal of the existing monopole will likely have "no effect" on significant historic properties. However, if in the unlikely event that intact cultural resources, including human remains or other significant cultural deposits, are encountered during the construction, all work in the immediate area should stop and the State Historic Preservation District should be promptly notified.

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

The proposed project will encompass approximately 452 square feet which is not a significant portion along Oneawa Ridge. The proposed project will not curtail the beneficial uses of the environment.

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

The proposed project will not a have a significant environmental impact and, therefore, will not conflict with the State's long –term environmental policies or goals and guidelines as expressed in Chapter 344, HRS.

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

The Kalaheo Repeater is part of HECO's Malae-Koolau Microwave (MW) radio system. This system is one link that provides communication from the Windward side of the island to HECO's dispatch center located at Ward Avenue. The system provides for various telecommunication services, including mobile radio communication, Supervisory Control and Data Acquisition (SCADA) and teleprotection circuits.

The existing microwave radios at Malae Communication Site and Koolau Substation are obsolete and are becoming difficult to maintain. In addition, the Federal Communications Commission (FCC) has reassigned the 2 Gigahertz (GHz) frequencies from the incumbent fixed service microwave operators, like HECO, to Advance Wireless and Mobile Satellite Service providers. This change requires HECO to relocate to the 6 GHz band. The higher frequencies will require a change from grid type antennas to solid antennas. In turn, the antenna change out requires sturdier support structures. The Kalaheo Repeater will need to change out to a self supporting tower. The antennas at the Koolau Substation and Malae Communication Site will also be replaced to meet new FCC rules.

The proposed project will have a positive effect on the economic and social welfare of the community by continuing to provide critical mobile radio communication system links among field crews and HECO's Ward Avenue Dispatch Center. These links are especially important to the community during power outages and other emergencies that may affect the electrical grid.

The proposed project will not have a significant impact on the economic or social welfare of the community.

(5) Substantially affects public health;

The proposed project is not anticipated to adversely affect public health. Short-term impacts will be associated with construction of the foundation and installation of the lattice tower. In the long-term, no significant air quality or noise impacts are anticipated from the proposed project. Thus, the proposed project will not have a significant impact on public health.

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

The proposed project is not anticipated to cause an increase in population or diminish the quality of public facilities.

(7) Involves a substantial degradation of environmental quality;

Construction activities associated with the proposed project are anticipated to result in relatively insignificant short-term impacts to noise and air quality in the immediate project vicinity. In the long-term, no significant impacts on environmental quality are anticipated from the proposed project.

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

The Kalaheo Repeater is part of HECO's Malae-Koolau Microwave (MW) radio system. This system is one link that provides communication from the Windward side of the island to HECO's dispatch center located at Ward Avenue. The system provides for various telecommunication services including mobile radio communication, Supervisory Control and Data Acquisition (SCADA) and teleprotection circuits.

The existing microwave radios at Malae Communication Site and Koolau Substation are obsolete and are becoming difficult to maintain. In addition, the Federal Communications Commission (FCC) has reassigned the 2 Gigahertz (GHz) frequencies from the incumbent fixed service microwave operators, like HECO, to Advance Wireless and Mobile Satellite Service provides. This change requires HECO to relocate to the 6 GHz band. The higher frequencies will require a change from grid type antennas to solid antennas. In turn, the antenna change out requires sturdier support structures. The Kalaheo Repeater will need to change out to a self supporting tower. The antennas at the Koolau Substation and Malae Communication Site will also be replaced to meet new FCC rules.

In the future, the new tower will also have an additional 8-foot diameter solid dish antenna that would provide a communications connection to a future communications site towards Waimanalo.

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

The proposed project will not involve the loss or destruction of any natural resources. The project site does not provide habitat for Federal or State of Hawaii listed or candidate threatened or endangered species of flora or fauna.

There are no known rare, threatened, or endangered species of fauna or flora, or its habitat on the project site that could be adversely affected, as discussed in Sections 2.6 and 2.7.

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

No significant short- or long-term detrimental impacts on air quality, ambient noise levels or water quality are anticipated, as discussed in Sections 2.4, 2.8 and 2.9.

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

On Flood Insurance Rate Map (FIRM) Number 15003C0270G, revised in June 2, 2005, the project site is designated as Zone D, areas in which flood hazards are undetermined, but possible. The high elevation and generally steep topography in the vicinity of the project site, however, suggest that flooding is unlikely.

No significant short or long-term impacts on environmentally sensitive areas are anticipated, as discussed in Sections 2.4 and 2.5.

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

The new communication tower will be placed approximately 30 feet northwest of the existing site. The new 30-foot tower will be located at an elevation approximately 830 feet above msl. An 8-foot and 6-foot diameter solid dish antennae will be installed on the new tower at a height of approximately 30 feet above ground. The self supporting tower will be three sided with a nine foot base (see Figure 1-6). The lattice tower will be painted green to match the color of the existing monopole.

Unlike the visually solid monopole, the structural members of a lattice tower would present a more “translucent” visual effect, although it would have a wider diameter than the monopole.

After the replacement equipment is placed in service, the existing monopole will be removed.

In the future, the new tower will also have an additional 8-foot solid antenna that would provide a communications connection to a future communications site towards Waimanalo.

In general, the new communication tower may be visible from various locations, although it would not be obtrusive and should not draw a casual viewer’s attention to it. No significant impacts on visual resources identified in County or State plans are anticipated.

(13) Requires substantial energy consumption.

This site is passive and does not require energy to redirect the microwave signal. No significant increase in energy consumption by the proposed project is anticipated.

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7. CONSULTATION

7.1 Pre-Assessment Consultation

The following agencies and organizations were contacted during the preparation of the Draft EA. Of those who formally replied during the pre-assessment period, some had no comments while others provided substantive comments as indicated by the ✓ and ✓✓, respectively. All written comments are reproduced herein (Appendix D).

Federal
U.S. Fish & Wildlife Service
Kaneohe Marine Corps Base Hawaii ✓✓

State
Department of Land & Natural Resources (DLNR)
- DLNR, State Historic Preservation Division
- DLNR, Office of Conservation and Coastal Lands ✓✓
- DLNR, Land Division
- DLNR, Engineering Division

Office of Hawaiian Affairs ✓
Department of Transportation ✓

Representative Ken Ito, District 48
Senator Jill Tokuda, District 24

City & County of Honolulu
Department of Information Technology ✓
Department of Planning & Permitting

Kaneohe Neighborhood Board
Kailua Neighborhood Board
Councilmember Ikaika Anderson

Other
Hawaii Memorial Park
Ameron Hawaii

7.2 Parties to be Consulted During the Draft EA Review Period

The following agencies and interested parties will be consulted during the Draft EA review period.

Federal
U.S. Fish & Wildlife Service

Kaneohe Marine Corps Base Hawaii
Federal Aviation Administration, Honolulu Airport District Office

State
Department of Land & Natural Resources (DLNR)
DLNR, State Historic Preservation Division
DLNR, Office of Conservation and Coastal Lands
Department of Health
Office of Hawaiian Affairs
Department of Transportation

City & County of Honolulu
Department of Information Technology
Department of Planning & Permitting

Other
Hawaiian Memorial Life Plan, Ltd.
Ameron Hawaii

8. REFERENCES

1. City and County of Honolulu, Department of Planning and Permitting. *Koolaupoko Sustainable Communities Plan*. August 2000.

2. Federal Emergency Management Agency Flood Insurance Rate Map Number 15003C270G. Map revised June 2, 2005.

3. *Hawaii State Department of Health. Annual* Summary of Hawaii Air Quality Data. 2009.

4. Hawaiian Memorial Life Plan Ltd. Prepared by Helbert Hastert & Fee Planners. *Final Environmental Impact Statement for Hawaiian Memorial Park Cemetery Expansion, Volume 1*. September 2008.

5. Macdonald, Gordon A., A.T. Abbott and Frank L. Peterson. *Volcanoes in the Sea, The Geology of Hawaii*. Second Edition 1986.

6. U.S. Department of Agriculture, Natural Resources Conservation Service. Web Soil Survey: http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx. Visited on February 2, 2009.

7. Stearns, Harold T. *Geology of the State of Hawaii: Second Edition*. Pacific Books: Palo Alto, CA 1985.

8. University of Hawaii, Department of Geography. *Atlas of Hawaii.* The University Press of Hawaii, Honolulu, Third Edition 1998.

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Appendix A

HECO Kalaheo Replacement Project
Flora & Fauna Report
AECOS Consultants, October 28, 2010

HECO Kalaheo Repeater Replacement Project, Kalaheo, Kāneʻohe, Island of Oahu (TMK: 4-5-033: 001)

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Introduction

Hawaiian Electric Company (HECO) is proposing to replace an existing communications monopole located along the ridgeline of Oneawa Hills in Kāneʻohe, Island of Oʻahu (see Fig. 1). The monopole is located on a parcel (Tax Map Key [TMK] 4-2-015: 009) owned by the City and County of Honolulu. The Kalāheo Repeater is part of HECO's Mālaʻe-Koʻolau Microwave (MW) radio system, providing a communication link from the windward side of the island to HECO's dispatch center on Ward Avenue (WOC, 2010).

This report describes the methods and results of natural resource reconnaissance surveys undertaken by biologists covering botanical, avian, and mammalian resources. These surveys were conducted for Wilson Okamoto Corporation (WOC)[2] on the subject property as part of the environmental disclosure process. The primary purpose of the surveys was to determine if there are any sensitive biological resources, including but not limited to species listed or proposed for listing under either federal or state endangered species statutes within or adjacent to the project site. The federal and state listed species are those species identified in the following referenced documents: Department of Land and Natural Resources (DLNR), 1998 and U. S. Fish & Wildlife Service (USFWS), 2005a, 2005b, and 2010.

[1] Rana Biological Consultants, Inc., Kailua-Kona, Hawaiʻi
[2] Prepared for Wilson Okamoto Corp., Honolulu, Hawai`i for use in permitting for the HECO Kalaheo Repeater Replacement Project. This document will become part of the public record.

Figure 1. HECO Kalaheo Repeater Replacement Project site along the ridgeline of the Oneawa Hills, Kāneʻohe. Map provided by WOC.

General Site Description

The project site lies along the ridgeline of Oneawa Hills, separating Kāneʻohe from Kailua on windward Oʻahu. The vegetation at the site is mostly low-growing scrub, with trees present just below the ridgeline (Fig. 2). A foot trail passes through the site, and some clearing of vegetation is on-going to permit access by helicopter.

Figure 2. View through trees (mostly small *Shefflera*) from Repeater Site towards Kāneʻohe Bay.

An existing, 30-ft (9-m) tall monopole supports two, 8-ft (2.4-m) diameter grid antennae. HECO proposes to relocate the monopole approximately 30 ft (9 m) northeast of the existing position, using a new tower on a 12-ft by 12-ft (3.6 x 3.6-m) concrete foundation pad. The new pad and tower will be located on TMK 4-5-033: 001, owned by Hawaii Memorial Park. The new tower will initially support one 8-ft (2.4-m) and one 6-ft (1.8-m), solid dish antennae. Once the replacement is operational, the existing monopole will be removed. In the future, the new tower will also support a second 8-ft (2.4-m) solid antenna, providing a link to a future communications site near Waimanalo (WOC, 2010).

Methods

Botanical Survey

A helicopter delivered biologists to the site on the ridgeline on September 27, 2010 and the small site was thoroughly explored for flowering plants, confers,

and ferns; all species of vascular plants observed were recorded. Plant species that could not be immediately identified in the field were photographed and/or collected for later identification at the laboratory. Plant names used here follow *Manual of the Flowering Plants of Hawaiʻi* (Wagner *et al.*, 1990, 1999) for native and naturalized flowering plants. Place names follow *Place Names of Hawaii* (Pukui et al., 1974).

Avian Survey

Two avian count stations were located on either side of the site on September 27, 2010. Eight-minute point counts were made at each of the two count stations. Each station was counted once. Field observations were made with the aid of Leica 10 X 42 binoculars and by listening for vocalizations. Counts were concentrated during early morning hours, the peak of daily bird activity. Additionally, the zoologist searched the ridgeline on either side of the site to ensure that no additional species or habitats not encountered during the time dependant avian counts were present on the site. Avian phylogenetic order and nomenclature presented in this report follows *The American Ornithologists' Union Check-list of North American Birds 7th Edition* (American Ornithologists' Union 1998), and the 42nd through the 51st supplements to *Check-list of North American Birds* (American Ornithologists' Union 2000; Banks et al., 2002, 2003, 2004, 2005, 2006, 2007, 2008; Chesser et al., 2009, 2010).

Mammalian Survey

With the exception of the endangered Hawaiian hoary bat (*Lazarus cinereus semotus*), or *ʻōpeʻapeʻa* as it is known locally, all terrestrial mammals currently found on the Island of Oʻahu are alien species. Most are ubiquitous. The survey of mammals was limited to visual and auditory detection, coupled with visual observation of scat, tracks, and other animal sign. A running tally was kept of all vertebrate species observed and heard within the project area. Mammal scientific names follow *Mammals in Hawaii* (Tomich, 1986).

Results

Given the relatively small area anticipated to be impacted by the project, it is not surprising that the flora in the project area is limited in number of species. The vegetation in the area can be described as varying between a somewhat open forest and scrub. Cleared areas support various weedy herbs (including grasses). Table 1 represents a checklist of the plants observed and their relative abundances in the place and on the date of the survey.

Table 1. Checklist of plants found at the HECO Kalaheo Repeater site.

Family Species	Common name	STATUS	ABUND.	NOTES
PTERIDOPHYTES ~ FERNS & FERN ALLIES				
NEPHROLEPIDACEAE				
Nephrolepis multiflora (Roxb.) F.M. Jarrett ex C. Morton	swordfern	Nat	C3	
POLYPODIACEAE				
Phymatosorus grossus (Langsd. & Fisch.) Brownlie	*laua'e*	Nat	AA	
FLOWERING PLANTS				
DICOTYLEDONS				
ANACARDIACEAE				
Schinus terebinthifolius Raddi	Christmas berry	Nat	AA	
ARALIACEAE				
Schefflera actinophyla (Endl.) Harms	octopus tree	Nat	AA	
ASTERACEAE (COMPOSITAE)				
Ageratina ripara (Regel) R. King & H. Robinson	*Hāmākua pāmakani*	Nat	R	<1>
Ageratum conyzoides L.	*maile hohono*	Nat	U1	
Bidens alba (L.) DC	beggartick	Nat	R	
Conyza canadensis (L.) Cronq.	horseweed	Nat	R	
Desmodium incanum DC	Spanish clover	Nat	A	
Emilia fosbergii Nicolson	Flora's paintbrush	Nat	R	<1>
Pluchea carolinensis	sourbush	Nat	R	<1>
Pseudogynoxys chenopodioides (Kunth) Cabrera	Mexican flame vine	Nat	R	
CASUARINACEAE				
Casuarina equisetifolia L.	common ironwood	Nat	X	
FABACEAE				
Acacia confusa Merr.	Formosan *koa*	Nat	U	
Chamaecrista nictitans (L.) Moench	partridge pea	Nat	O	
Falcataria moluccana (Miq.) Barneby & Grimes	albizia	Nat	X	
Senna surattensis (Burm. f.) H. S. Irwin & Barneby	scrambled egg plant	Nat	R	<1>
MALVACEAE				
Sida fallax Walp.	*'ilima*	**Ind**	R	
MELASTOMATACEAE				
Clidemia hirta (L.) D. Don	Koster's curse	Nat	U2	
MENISPERMACEAE				
Cocculus trilobus (Thunb.) DC.	*huehue*	**Ind**	R	

Table 1 (continued)

Family Species	Common name	STATUS	ABUND.	NOTES
MYRTACEAE				
Psidium cattleianum Sabine	strawberry guava	Nat	AA	
Psidium guajava L.	common guava	Nat	O	
PASSIFLORACEAE				
Passiflora suberosa L.	*huehue haole*	Nat	A	
PROTEACEAE				
Grevillea robusta A. Cunn. ex R. Br.	silk oak	Nat	R	
RUBIACEAE				
Morinda citrifolia L.	*noni*	Pol	R	
STERCULIACEAE				
Waltheria indica L.	*'uhaloa*	**Ind**	R	
VERBENACEAE				
Citharexylum caudatum L.	fiddlewood	Nat	AA	
Lantana camara L.	lantana	Nat	U	
Stachytarpheta australis Moldenke	---	Nat	C	
Stachtarpheta cayennensis (Rich.) Vahl	---	Nat	C	
MONOCOTYLEDONES				
POACEAE (GRAMINEAE)				
Andropogon virginicus L.	broomsedge	Nat	U	
Axonopus cf. *fissifolius* (Raddi) Kuhlm.	nrw-lvd carpetgrass	Nat	C	<1>
Bothriochloa pertusa (L.) Camus	pitted beardgrass	Nat	R	
Digitaria ciliaris (Retz.) Koeler	Henry's crabgrass	Nat	R	
Digitaria insularis (L.) Mez ex Ekman	sourgrass	Nat	O1	
Melinus repens (Willd). Zizka	Natal redtop	Nat	R	
Paspalum conjugatum Bergius	Hilo grass	Nat	O	
Paspalum dilatatum Poir.	Dallis grass	Nat	R	
Setaria gracilis Kunth	yellow foxtail	Nat	U1	

Legend to Table 1

Status = distributional status

- **end.** = endemic; native to Hawaii and found naturally nowhere else.
- **ind.** = indigenous; native to Hawaii, but not unique to the Hawaiian Islands.
- nat. = naturalized, exotic, plant introduced to the Hawaiian Islands since the arrival of Cook Expedition in 1778, and well-established outside of cultivation.
- orn. = exotic, ornamental or cultivated; plant not naturalized (not well-established outside of cultivation).
- **pol.** = Polynesian introduction before 1778.

Abundance = occurrence ratings for plants in survey area.

- R – Rare - only one, two, or three plants seen.
- U - Uncommon - several to a dozen plants observed.
- O - Occasional - found regularly around the site.
- C - Common - considered an important part of the vegetation and observed numerous times.
- A - Abundant - found in large numbers; may be locally dominant.
- AA - Abundant - abundant and dominant in some areas surveyed, defining vegetation in those areas.

Table 1 (continued)

Notes:
<1> plant lacking flowers or fruit; identification uncertain.

The dominant plants along this ridgeline are Christmas berry (*Schinus terebinthefolius*), strawberry guava (*Psidium cattleianum*), fiddlewood (*Citharexylum caudatum*), and octopus tree (*Schefflera actinophyla*). The fern known as *lauae* (*Phymatosorus grossus*) is very abundant in some areas beneath the tree/scrub canopy, as is sword fern (*Nephrolepis multiflora*) in other areas. These are all non-native (naturalized) plants, as are nearly all of the other species recorded. The only exceptions are the common native subshrubs: *'uhaloa* (*Waltheria indica*) and *'ilima* (*Sida fallax*), and the generally much less common vine, *huehue* (*Cocculus trilobus*). Total number of species identified from the site and immediate area is 39, of which 7.7% are indigenous plant species—a typical ratio for lowland O'ahu. No plant species currently listed, or proposed for listing, under either federal or state statutes (DLNR, 1998; USFWS, 2010) was detected during the course of this survey.

Avian Survey Results

A total of 39 individual birds of seven different species, representing six separate families, were recorded during station counts (Table 2). All of the avian species detected are considered to be alien to the Hawaiian Islands. No avian species currently listed, or proposed for listing under either the federal or State of Hawaii endangered species statutes (DLNR, 1998; USFWS. 2010) was detected during the course of this survey.

Avian diversity and densities were in keeping with the habitats present within the project site, and its location. Two species—Red-vented Bulbul (*Pycnonotus cafer*) and House Finch (*Carpodacus mexicanus*)—accounted for slightly less than 60 percent of the total number of birds detected. Red-vented bulbul was the most frequently recorded species, accounting for slightly more than 33 percent of the total number of birds recorded during station counts. An average of 20 individual birds was recorded per station count.

Mammalian Survey Results

No mammalian species were detected on or immediately adjacent to the site during the course of this survey. Numerous dogs (*Canis familiaris*) were heard barking from within the housing areas in Kāne'ohe located to the northwest of

the site. No mammalian species currently listed, or proposed for listing under either the federal or state endangered species statutes was detected during the course of this survey.

Table 2 – Avian species detected at the Kalaheo Repeater Station site

Common Name	***Scientific Name***	***ST***	***RA***
	PASSERIFORMES		
	PYCNONOTIDAE - Bulbuls		
Red-vented Bulbul	*Pycnonotus cafer*	A	6.5
Red-whiskered Bulbul	*Pycnonotus jocosus*	A	1.00
	ZOSTEROPIDAE - White-eyes		
Japanese White-eye	*Zosterops japonicus*	A	3.00
	STURNIDAE - Starlings		
Common Myna	*Acridotheres tristis*	A	0.50
	CARDINALIDAE - Cardinals Saltators & Allies		
Northern Cardinal	*Cardinalis cardinalis*	A	2.00
	FRINGILLIDAE - Fringilline and Carduleline Finches & Allies		
	Carduelinae - Carduline Finches		
House Finch	*Carpodacus mexicanus*	A	5.50
	ESTRILDIDAE - Estrildid Finches		
	Estrildinae - Estrildine Finches		
Common Waxbill	*Estrilda astrild*	A	1.00

Key To Table 2
ST Status
A Alien – Introduced to the Hawaiian Islands by humans
RA Relative Abundance - Number of birds detected divided by the number of count stations (2)

Discussion

Botanical Resources

Although the upper slopes of the Oneawa Hills and nearby Ulumawao are known to harbor remnants of the native flora that covered these hills before the 19th Century (David and Guinther, 2009), these areas now overwhelmingly support non-native plants. None of the natives that characterize the remnant populations is particularly rare and the Repeater Site supports only a few of these species. No plants currently listed, or proposed for listing under either the federal or the state endangered species programs (DLNR 1998, USFWS 2010) were noted during the course of this botanical survey.

Avian Resources

The findings of this survey are consistent with the location and habitat currently present on the site. All seven of the avian species detected during the course of this survey are considered to be alien to the Hawaiian Islands. No species currently listed, or proposed for listing under either the federal or the State of Hawai'i endangered species programs (DLNR 1998, USFWS 2010) were detected during the course of this survey.

Mammalian Resources

The findings of the mammalian survey are in keeping with the nature and the location of the site surveyed. Although no rodents were detected during the course of this survey it is probable that at least a few of the four established alien *muridae* known from the Island of O'ahu, roof rat (*Rattus r. rattus*), Norway rat (*Rattus norvegicus*), Polynesian rat (*Rattus exulans hawaiiensis*), and European house mice (*Mus musculus domesticus*), use resources within the general project area on occasion.

Conclusions

It is not expected that construction or operation of the new repeater station will result in any deleterious impacts to valuable, protected, or sensitive botanical, avian, or mammalian species or habitats.

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Appendix B

Cultural Surveys Hawaii Report

Archaeological Literature Review and Field Inspection for The HECO Kalaheo Repeater Replacement Project, Oneawa Hills, Kāneʻohe Ahupuaʻa, Koʻolaupoko District, Oʻahu Island

TMK: [1] 4-5-033:001 por.

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Management Summary

Reference	Archaeological Literature Review and Field Inspection for the HECO Antenna Replacement Project, Oneawa Hills, Kāneʻohe Ahupuaʻa, Koʻolaupoko District, Oʻahu Island, TMK: [1] 4-5-033:001 por. (Groza and Hammatt 2010)
Date	December 2010
Project Number	Cultural Surveys Hawaiʻi, Inc. (CSH) Job Code: KANEOHE 22
Investigation Permit Number	The fieldwork component of the archaeological literature review and field inspection study was carried out under CSH's annual archaeological permit # 10-10 issued by the Hawaiʻi State Historic Preservation Division/Department of Land and Natural Resources (SHPD/DLNR), per Hawaiʻi Administrative Rules (HAR) Chapter 13-282.
Project Location	The 15-foot by 15-foot (approximately 4.57 meters by 4.57 meters) concrete foundation pad, located in the *mauka* (uplands) of the Oneawa Hills at the southeastern portion of Kāneʻohe Bay, will be situated within a portion of TMK: [1] 4-5-033:001. The project area is depicted on the U.S. Geological Survey 7.5-Minute Series Topographic Map, Kāneʻohe (1998) quadrangle.
Land Jurisdiction	The proposed HECO antenna replacement location is owned by Hawaiian Memorial Park
Agencies	State of Hawaiʻi Department of Land and Natural Resources/State Historic Preservation Division (DLNR/SHPD) State of Hawaiʻi Department of Land and Natural Resources/Office of Conservation and Coastal Lands Federal Communications Commission
Project Description	The proposed HECO Antenna Replacement Project involves clearing the project area for the construction of a 15-foot by 15-foot (approximately 4.57 meters by 4.57 meters) concrete foundation pad. The area to be disturbed is about 452 square feet (42 square meters).

Document Purpose	This archaeological literature review and field inspection study was completed for use as a planning document. The proposed project is subject to Hawai‘i State environmental and historic preservation review legislation [Hawai‘i Revised Statutes (HRS) Chapter 343 and HRS 6E-8/Hawai‘i Administrative Rules (HAR) Chapter 13-275, respectively]. While this investigation does not fulfill the requirements of an archaeological inventory survey investigation (per HAR Chapter 13-276), it serves as a document to facilitate the proposed project's planning and supports historic preservation review compliance by assessing if there are any archaeological concerns within the study area and to develop data on the general nature, density and distribution of archaeological resources.
Fieldwork Effort	The fieldwork component of the archaeological literature review and field inspection was conducted on September 27, 2010 by CSH archaeologist Todd Tulchin, B.S., under the general supervision of Hallett H. Hammatt, Ph.D. (principal investigator). The fieldwork required one person-day to complete.
Results Summary	A complete pedestrian inspection of the project area and the immediate vicinity was conducted. No historic properties were observed within or in the immediate vicinity of the project area. As the project area is located on a peak of the Oneawa Hills ridgeline, the likelihood of encountering subsurface cultural material within the project area seems exceedingly low. Therefore, the proposed construction of the new HECO antenna and removal of the existing HECO monopole will likely have "no effect" on significant historic properties.
Recommendations	No further work is recommended for the proposed HECO Antenna Replacement Project. As always, if in the unlikely event that any human remains or other significant subsurface deposits are encountered during the course of development activities, all work in the immediate area should stop and the State Historic Preservation Division should be promptly notified.

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Section 1 Introduction

1.1 Project Background

At the request of Wilson Okamoto Corporation, Cultural Surveys Hawai‘i, Inc. (CSH) prepared this archaeological literature review and field inspection study for the proposed HECO Kalaheo Repeater Project, Oneawa Hills, Kāne‘ohe Ahupua‘a, Ko‘olaupoko District, O‘ahu Island, TMK: [1] 4-5-033:001 por. The project area is depicted on the U.S. Geological Survey 7.5-Minute Series Topographic Map, Kāne‘ohe (1998) quadrangle (Figure 1), an aerial photograph (Figure 2), and a TMK map (Figure 3).

Hawaiian Electric Company (HECO) proposes to replace an existing monopole that is located at the top of Oneawa Hills that separate Kāne‘ohe from Kailua. New Federal Communications Commission (FCC) rules require the replacement of the existing 2 gigahertz (GHz) system with one that operates at 6 GHz. Compliance with the FCC ruling requires construction of a new antenna size and type, as well as an upgrade to the support structures.

The existing monopole is 30-feet (9.144 m [meters]) tall and supports two, 8-foot (2.44 m) diameter grid antenna. HECO proposes to relocate the monopole and replace it with a new tower, approximately 30 feet (9.144 m) northwest of the existing site (Figure 4). The new tower will be located on TMK: [1] 4-5-033:001 por., owned by Hawaiian Memorial Life Plan, Ltd.. The new tower will be placed on a 15-foot by 15-foot (approximately 4.57 meters by 4.57 meters) concrete foundation pad that will initially have an 8-foot (2.44 m) and a 6-foot (1.83 m) solid antenna. After the replacement tower is in service, the existing monopole will be removed. In the future, the new tower will also have an additional 8-foot (2.44 m) solid antenna that would provide a communications connection to a future communications site towards Waimānalo.

The existing monopole is within City and County of Honolulu lands. Although the proposed project is located within the State’s Conservation District and Limited Subzone, the proposed land use for a communication tower is consistent with the purpose of the Conservation District.

Construction activities would primarily be related to construction of the concrete tower foundation pad. The project area has not been previously cleared, thus the area surrounding the foundation pad would be cleared. Following the completion of the new tower, HECO staff and contract service personnel will perform periodic monitoring and maintenance functions.

1.2 Scope of Work

The scope of work for this archaeological literature review and field inspection study was as follows:

1. Historical research to include study of archival sources, historic maps, Land Commission Awards and previous archaeological reports to construct a history of land use and to determine if historic properties have been recorded in or near this property.

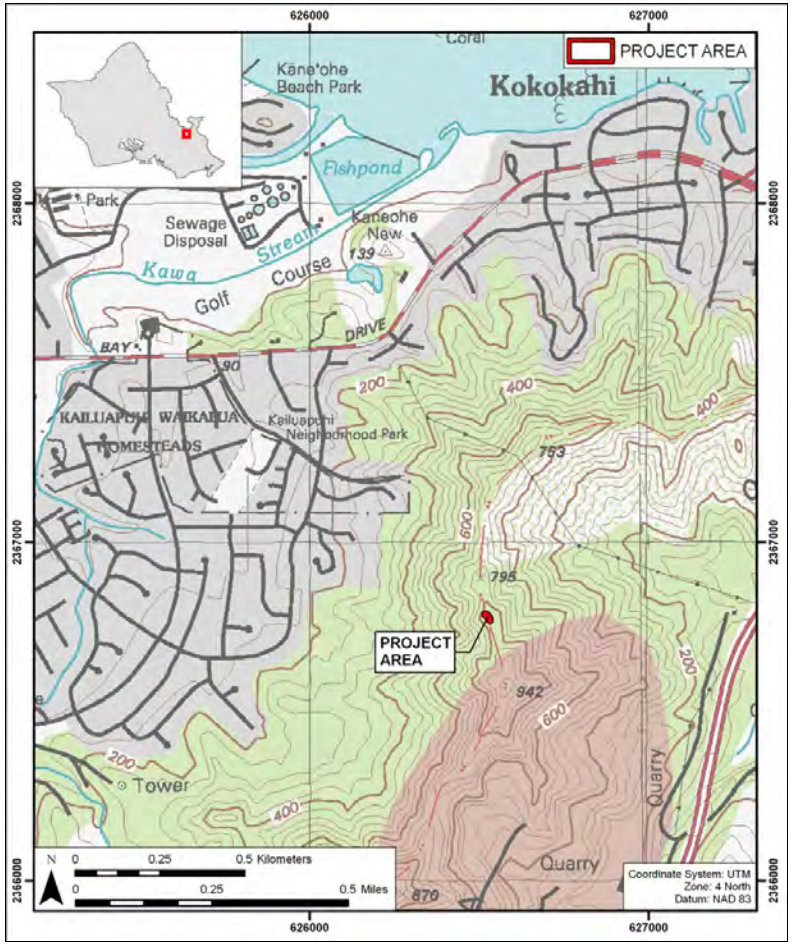

Figure 1. Portion of U.S. Geological Survey 7.5-Minute Series Topographic Map, Kāne‘ohe (1998) quadrangle, showing the location of the project area

Figure 2. Aerial photograph (source: U.S. Geological Survey Orthoimagery 2005), showing the location of the project area

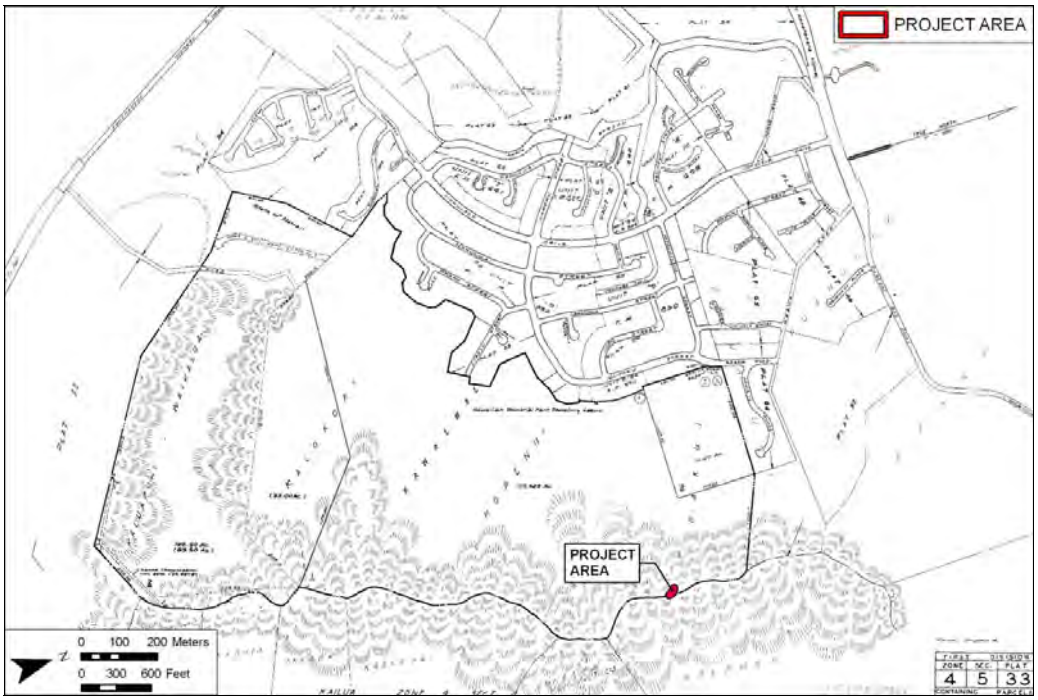

Figure 3. Tax Map Key plat 4-5-33, showing the location of the project area

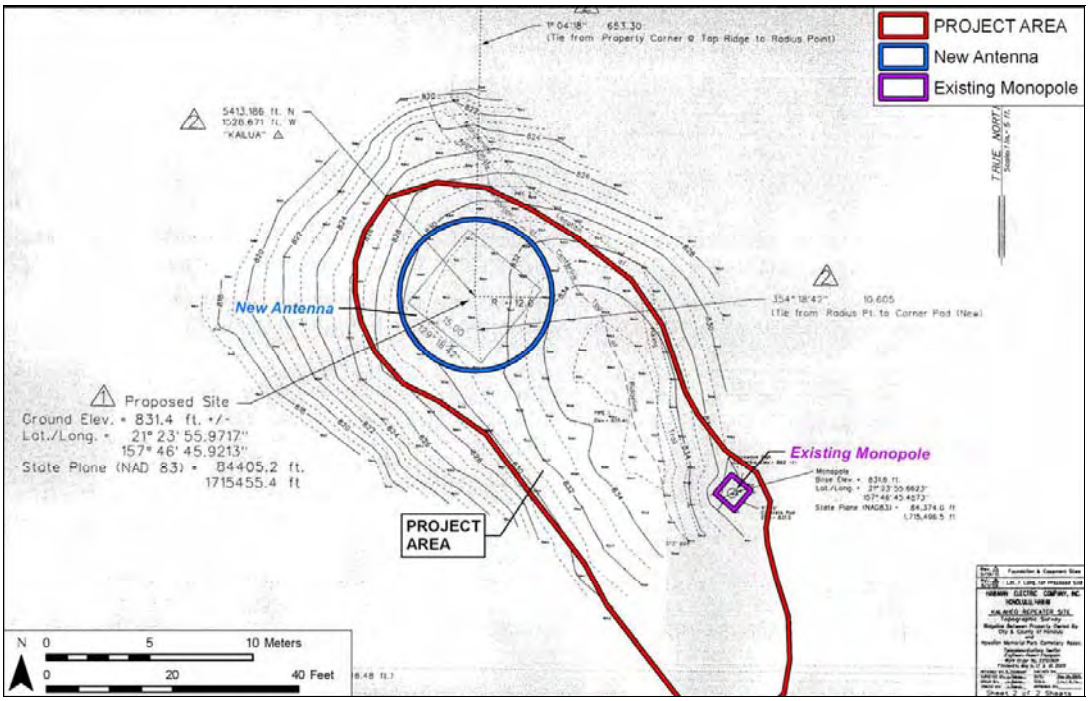

Figure 4. Project plans (adapted from plan provided by HECO)

2. Limited field inspection of the project area to identify any surface archaeological features and to investigate and assess the potential for impact to such sites. This assessment will identify sensitive areas that may require further investigation or mitigation before the project proceeds.
3. Preparation of a report to include the results of the historical research and the limited fieldwork with an assessment of archaeological potential based on that research, with recommendations for further archaeological work. It will also provide mitigation recommendations if there are archaeologically sensitive areas that need to be taken into consideration.

1.3 Environmental Setting

1.3.1 Natural Environment

The project area is located on an unnamed peak of the Oneawa Hills, which separate Kailua and Kāne‘ohe Ahupua‘a. The project area consists of the relatively level summit area of the ridge, with steep sloping lands to the north, east, and west. A higher elevation peak along the ridgeline is located approximately 200 m southeast of the project area. The project area is situated at approximately 250 m (830 ft.) above mean sea level.

Soils within the project area consist of Helemano Silty Clay (HLMG), 30-90% slopes (Foote et al. 1972) (Figure 5). The Helemano series consists of:

> ….. well-drained soils on alluvial fans and colluvial slopes on the sides of gulches. These soils are on the island of Oahu. They developed in alluvium and colluvium derived from basic igneous rock. They are steep to extremely steep. Elevations range from 500 to 1,200 feet….These soils are used for pasture, woodland, and wildlife habitat. The natural vegetation consists of Bermuda-grass, Christmas berry, eucalyptus, Formosa koa, guava, Japanese tea, Java plum and koa haole. [Foote et al. 1972:40]

The project area receives an average of approximately 1,500 mm (60 in.) of annual rainfall (Giambelluca et al. 1986). Vegetation within the project area and vicinity includes: Christmas berry (*Schinus terebinthifolius*), octopus tree (*Brassaia actinophylla*), guava (*Psidium guajava*), strawberry guava (*Psidium cattleianum*), silk oak (*Grevillea robusta*), albizia (*Albizia lebbeck*), *laua‘e* (*Phymatosorus scolopendria*), and various exotic weeds and grasses.

1.3.2 Built Environment

The only structure within the project area is the existing HECO monopole, located approximately 15 m southeast of the proposed antenna location (see Figure 4). A well-worn hiking trail traverses the project area, situated along the ridgeline.

Ameron quarry operations lie just to the south and southeast. Residential subdivisions of Kāne‘ohe lie to the north and west.

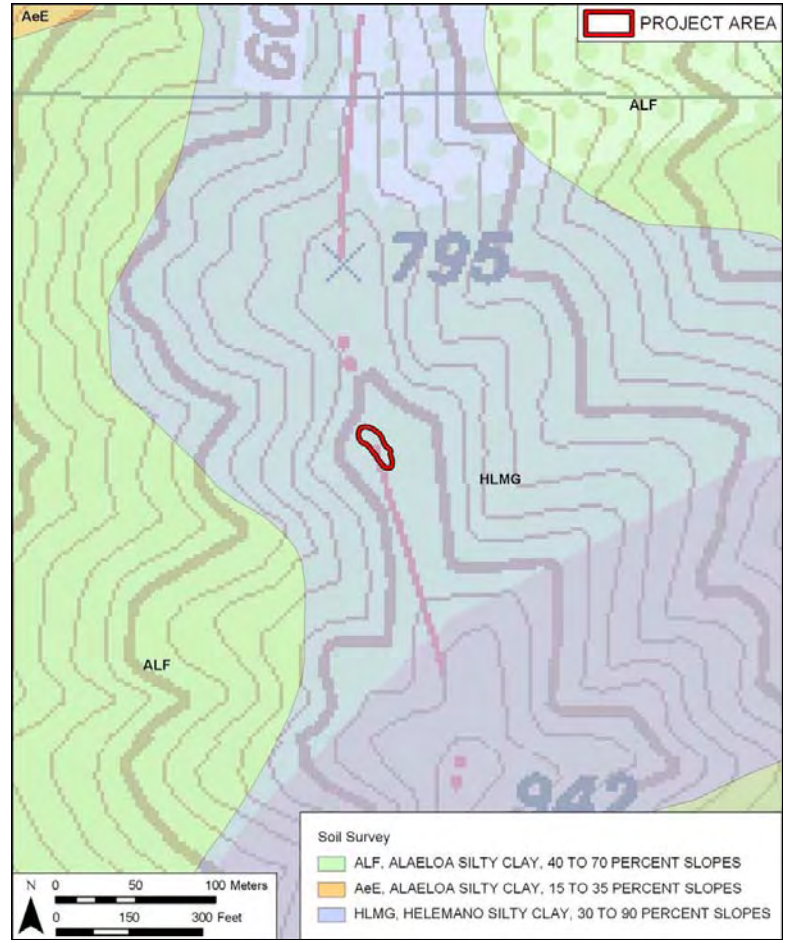

Figure 5. U.S. Geological Survey 7.5-Minute Series Topographic Map, Kāne‘ohe (1998) quadrangle, with overlay of the Soil Survey of the State of Hawai‘i (Foote et al. 1972), indicating the sediment type within the project area

Section 2 Methods

2.1 Document Review

Historic and archival research included information obtained from the University of Hawai‘i at Mānoa’s Hamilton Library, the State Historic Preservation Division Library, the Hawai‘i State Archives, the State Land Survey Division, and the Archives of the Bishop Museum. Previous archaeological reports for the area were reviewed, as were historic maps and primary and secondary historical sources. Information on Land Commission Awards was accessed through Waihona ‘Āina Corporation’s Māhele Data Base (www.waihona.com).

This research provided the environmental, cultural, historic, and archaeological background for the project area. The sources studied were used to formulate a predictive model regarding the expected types and locations of historic properties in the project area.

2.2 Field Methods

The fieldwork component of the archaeological literature review and field inspection was conducted on September 27, 2010 by CSH archaeologist Todd Tulchin, B.S., under the general supervision of Hallett H. Hammatt, Ph.D. (principal investigator). The fieldwork required one person-day to complete. The fieldwork was carried out under archaeological permit number 10-10 issued by the Hawai‘i State Historic Preservation Division/Department of Land and Natural Resources (SHPD/DLNR), per Hawai‘i Administrative Rules (HAR) Chapter 13-282. The project area was accessed via helicopter. The field inspection of the project area consisted of a complete pedestrian inspection of the project area and ridgeline in the immediate vicinity of the project area.

Section 3 Traditional Background Research

3.1 Mythological and Traditional Accounts

The current project area is located within the Windward O‘ahu district of Ko‘olaupoko, and is situated at the boundary between the *ahupua‘a* (land division) of Kāne‘ohe (to the west) and Kailua (to the east). Kāne‘ohe is a large *ahupua‘a* of approximately 8,000 acres, extending from the crest of the Ko‘olau Range to the coast at Kāne‘ohe Bay, and including most of the Mōkapu Peninsula.

3.1.1 Kāne‘ohe Ahupua‘a

The meaning of the place name Kāne‘ohe may come from *kāne* (man), which may be a reference to Kāne, the god of creation, and *ohe*, which means “bamboo.” The word *kāne* has also been interpreted as “husband.” The place name Kāne‘ohe has been attributed to a story about a woman who compared her husband’s cruelty to the cutting edge of a bamboo knife (Clark 2002). Kāne‘ohe may also be derived from *‘ohe*, which is said to be one of the *kinolau* (body forms) of the god Kāne (Abbott 1992:15).

The following story relates to the origin of the place name Kāne‘ohe:

> …in Kaneohe proper, the people learned a new use for the Ohe…In olden times anyone who did not conform to the way of life lived so industriously by the shore people, was called E-epa, or non-conformist. The E‘epa were not actually “touched in the head”, or lo-lo’ [crazy], but just different. They liked to wander off by themselves and dwell among the mysteries of the upland forests where they listened to the music of Nature, and often became poets or musicians.
>
> Those upland reaches, all unexplored territory and sacred to the Spirits or Akua of Nature, where referred to as the Wao, or places of mystery. In order to keep children from wandering to the uplands, their elders told the little ones, “Do not go up there or the Bamboo Man may keep you. We would mourn your absence in loneliness. Remain at home and learn your useful duties.”
>
> Hano-ihu…longed to explore. Pu‘ili…longed to accompany her playmate, Hano-ihu, when he wandered far. But, being more timid, she contented herself during the boy’s absences and kept his secret of those upland trips he enjoyed.
>
> One sad day, Hano-ihu did not return. The people searched and could find no trace of the disobedient boy. Finally, the villagers decided the boy had died, and they told the other children that the Bamboo Man had taken the boy-wanderer.
>
> Pu‘ili…decided that he was not dead and she must search for him. Acting upon the thought, the little girl followed the direction often taken by the boy and was soon alone in the dark recesses of the forest lands of Wao, the Mysterious.
>
> She saw nothing to fear. Rather, she delighted in the beauty of the forests, the fragrance of the ferns and blossoms growing besides singing rills of sweet waters,

and danced along happily to the whistling of the Wind Gods in the tree tops touching the blue sky far above.

Soon she realized the whistling was not actually the Wind, for it had a bird-like note that repeated itself in a gentle rhythm. Also, she saw the bamboo moving in the breeze and heard how it rattled its branches. She found two lengths of a bamboo branch and, one in each hand, beat time on the two sticks while she followed the plaintive note calls.

Before her…she saw her beloved playmate sitting on the bank. Beside him was a tall, thin man whose eyes watched the boy, while the child blew upon a bamboo length. The man’s lean hands waved to the rhythm of the notes, and the girl went dancing toward the pair, keeping time with her pair of bamboo sticks.

Hano-ihu and the tall man finished their melody, then praised the little Pu‘ili for joining them.…She sat with them and learned that the man was Kane‘ohe, the Bamboo Man who, as a child, had followed the lure of Wao and had invented a bamboo flute. Kindly, the old man explained to the children how the art of creativity often is lost unless those inspired do follow the call. He told them, “Now we shall return to the village, for I have answered the call and you two little ones will be musicians like me. In honor of this occasion, I shall name the flute after you, my boy...we shall name the time-keeping sticks for her.”

Gaily, the three went down the forest trail of Wao the Inspiring. They were welcomed with feasting and joy. That is how we have the Ohe, or Bamboo, instruments today. The Hano-ihu or Nose flute; and the Pu‘ili, or notched Bamboo sticks; and the hula named for these gifts of Kane‘ohe, the Bamboo Man. (Paki 1972:29-30)

3.1.2 Kawa‘ewa‘e Heiau

The following legend speaks to the importance of Kāne‘ohe and the antiquity of Kawa‘ewa‘e Heiau, approximately 700 m west of the current project area. The word “kāwa‘ewa‘e” literally refers to a type of stone or coral used for polishing canoes, or rubbing off pig bristles (Pukui and Elbert 1986). Thrum (1906:48) reports that Kawa‘ewa‘e Heiau was erected in the beginning of the 12th century by the high chief ‘Olopana. Kawa‘ewa‘e Heiau was said to have been constructed by *menehune*, the legendary race of small people who built structures by night (Fornander 1878:23).Windward O‘ahu is famous for legends of Kamapua‘a, the half man, half pig demigod renowned for making mischief and for his masterful escapes from retribution for his chicken and taro thievery. Kamapua‘a and the Kawa‘ewa‘e Heiau are the focus of one story.

In the version of the story presented by King David Kalākaua (1990), Kamapua‘a, resentful of his father/uncle (depending on which story is being told) rejection of this hog-child, retreats to the mountains where he attracts a band of like-minded thieves and commences to “harass the estates of Olopana”, stealing ‘Olopana’s pigs, fowls and fruits as well as taking pleasure in breaking his nets, cutting adrift his canoes and robbing his fish-ponds (Kalākaua 1990:143). Enraged by Kamapua‘a’s pillage and acts of rebellion, ‘Olopana orders his capture. After several battles and failed attempts to catch Kamapua‘a, ‘Olopana’s army succeeds in delivering

Kamapua‘a to the high chief to the “great joy and relief of the people of Koolau” (Kalākaua 1990:145). Kalākaua relates the following:

Olopana had erected a heiau at Kaneohe, Lonoaohi officiated as high priest, and thither he resolved to take his rebellious son or nephew, and offer him as a sacrifice to the gods. Hina [Kamapua‘a’s mother] pleaded for the life of Kamapuaa, but Olopana could not be moved. Satisfied that he would listen to no appeals for mercy, she determined to save her son, even at the sacrifice of her husband, and to that end secured the assistance of the high priest, through whose treachery to Olopana the life of Kamapuaa was saved.

On the day fixed for the sacrifice Kamapuaa…was taken to the heiau, followed by Olopana, who was anxious to witness the ghastly ceremonies, and with his own eyes see that his troublesome enemy was duly slain and his body laid upon the altar. In offering human sacrifices the victim was taken without the walls of the heiau and slain with clubs by the assistants of the high-priest. The body was then brought in and placed upon the altar in front of the entrance to the inner court, or sanctuary, when the left eye was removed by the officiating priest, and handed…to the chief who had ordered the sacrifice….

Standing with three or four attendants, at the door of his tabooed retreated…Olopana saw his victim preliminarily led to the place of sacrifice, and a few minutes after motion for the ceremonies to begin. Kamapuaa was taken without the walls of the temple to be slain.…Passing beyond the outer wall the party entered a small walled enclosure adjoining, and the executioner raised his club and brought it down upon the head of his victim. Kamapuaa smiled, but did not move. Twice, thrice with mighty sweep the club descended upon the head of Kamaupua‘a, but scarcely bent the bristly hairs upon his crown.

With a semblance of wonder the executioner, whose tender blows would have scarcely maimed a mouse, dropped his club and said:

“Three times have I tried and failed to slay him! The gods refuse the sacrifice!”

“It is so, it is so, it is so!” chimed his companions….

Therefore, instead of slaying Kamapuaa, the assistants, as they had been secretly instructed to do by the high-priest, removed the cords from his limbs, smeared his hair, face and body with the fresh blood of a fowl, and on their shoulders bore him back and placed him upon the altar as if dead.

The high-priest approached the apparently lifeless body, and bent for a moment over the face, as if to remove the left eye; then placing on a wooden tray the eye of a large hog, which had been procured for that purpose, he sent an assistant with it to Olopana, at the same time retiring within the inner court, and leaving by the side of Kamapuaa, and near his right hand, as if by accident, the sharp ivory pahoa, or dagger, with which he had, to all appearance, been operating.

Giving but a single glance at the eye presented to him by the assistant of the high-priest, Olopana passed it to an attendant without the customary semblance of

> eating it, and approached the altar alone. Kamapuaa did not breathe. His face was streaked with blood, his eyelids were closed, and not a single muscle moved to indicate life.
>
> Olopana looked at the hated face for a moment, and then turned to leave the heiau….As he did so Kamapuaa clutched the dagger besides his hand, and, springing from the altar, drove the blade into the back of Olopana. Again and again he applied the weapon until the chief, with a groan of anguish, fell dead at the feet of his slayer. (Kalākaua 1990:145-146)

Kalākaua goes on to describe Kamapua‘a’s release from custody by the high-priest, and how “the people rose almost in a body to hunt him down and destroy him” (Kalākaua 1990:147) since they had, “suffered through his plundering visitations, and hundreds of lives had been sacrificed in his pursuit and final capture (Kālakaua 1990:147). Kamapua‘a and his cohorts eventually sail away from O‘ahu to the Windward Islands in search of refuge.

3.1.3 Kalāheo ‘Ili

The project area is within the *‘ili* (land sections within an *ahupua‘a*) of Kalāheo (Figure 6). Kalāheo translates as “proud day” (Pukui et al. 1974:73). Research did not identify any *mo‘olelo* (traditional accounts) associated with Kalāheo.

3.2 Historical Background

3.2.1 Pre-Contact Period

The *ahupua‘a* of Kāne‘ohe was prosperous and densely populated in pre-contact times. With fresh water from *mauka* springs and perennial streams, as well as a well-developed fishpond system, Kāne‘ohe was rich in agricultural and aquacultural productivity, and one of the primary population centers on O‘ahu:

> …along the windward coast, beginning with Waikane and continuing through Waiahole, Ka‘alaea, Kahalu‘u, He‘eia, and Kane‘ohe, were broad valley bottoms and flatlands between the mountains and the sea which, taken all together, represent the most extensive wet-taro area on Oahu. These taro lands were irrigated from both streams and springs. Along the shores thereabouts were also some very large salt-water fishponds. This whole region must have supported a dense population…
>
> The area that included what is now Kane‘ohe and Kailua, which was rich in fishponds and tillable lands, was the seat of the ruling chiefs of Ko‘olaupoko (Short Ko‘olau) which was the southern portion of the windward coast. (Handy and Handy 1972:271-272)

Nathaniel Portlock, captain of the British vessel *King George*, provided the following description of Kāne‘ohe circa the late 1780s, shortly after western contact:

> The [Kāne‘ohe] bay all round has a very beautiful appearance, the low land and valleys being in a high state of cultivation, and crowded with plantations of taro, sweet potatoes, sugar cane, etc., interspersed with a great number of coconut

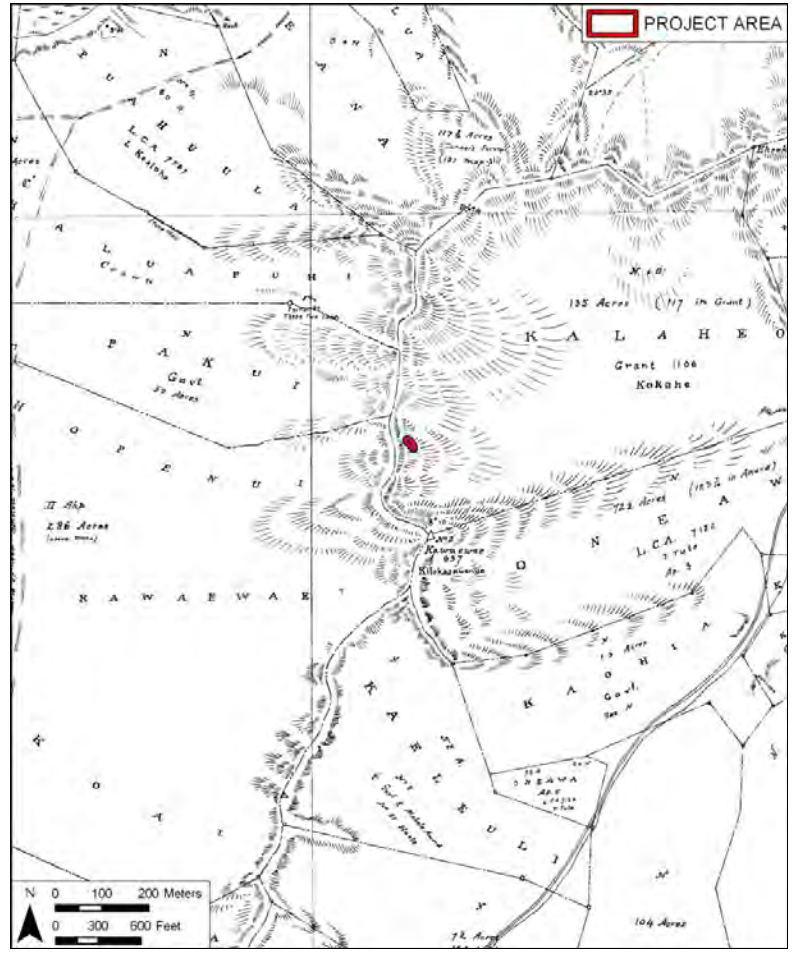

Figure 6. 1876 Map of Kaneohe and West Kailua (RM 585), C.J. Lyons surveyor, showing the location of the project area within Kalāheo ‘Ili

> trees, which renders the prospect truly delightful. (Portlock 1789:74, cited in Handy and Handy 1972:455)

Pre-contact land use in Kāne‘ohe consisted primarily of plantations of *kalo* (taro), bananas, sweet potatoes, and coconut trees, as well as groves of *hala* (pandanus; used for making household furnishings such as mats) and *wauke* (paper mulberry; used for making cloth) (Handy and Handy 1972:456). Handy and Handy (1972) describe how the natural environment of Kāne‘ohe was conducive to development of a complex agricultural system:

> The broken topography of Kaneohe arranges the areas of flatland like chains of pockets connecting along its stream channels between hills. On the north side of the *ahupua‘a* near the boundary of He‘eia, Kea‘ahala Stream flows into Kalimukele, coming out of He‘eia. Some of the best *lo‘i* still in use in 1953, *mauka* of the highway, were irrigated by Kea‘ahala, and a large old *lo‘i* system once extended downstream below the highway. An elaborate system of water rights prevailed in ancient times throughout these sections irrigated from Kea‘ahala.
>
> The other streams—Wailele (formerly Pani‘ohelele), Hi‘ilaniwai, Kahuaiki, Mamalahoa—likewise watered many taro *lo‘i*… Hi‘ilaniwai is a very long stream, with its origin in the slopes that drain Pu‘u Lanihuli, the peak that flanks the northern side of the Nu‘uanu Pali road and the southern boundary of Kaneohe. In fact all of the *ahupua‘a* is like a vast green amphitheater below the serrated sheer cliffs that extend from Pu‘u Lanihuli northward to Ha‘iku Valley and known as the Ke-ahi-a-Kahoe (Fires-of-Kahoe) Cliffs. As the ground rises steeply from the stream beds along their upper courses, there is little evidence of systematic terracing observable in these areas, as might have been expected. The lowland areas were so extensive that evidently the more laborious terracing of the interior slopes was not regarded by the early Hawaiians as necessary.
>
> The *kula* lands between the streams were planted in pandanus, *wauke*, bananas, and sweet potatoes. *Kalo malo‘o* (dry-taro) was not planted here. The number of names of *‘ili* and *kuleana* on *kula* lands along the Hi‘ilaniwai and its tributaries, however, indicates intensive cultivation of products other than taro, and the abundant rains sweeping down from the cliffs made such cultivation profitable. (Handy and Handy 1972:455-456)

In general, lands suitable for development of *lo‘i* (irrigated terraces) were located along main streams and coastal lowlands (Devaney et al. 1982:36). *Lo‘i* development required diversion of stream water for irrigation, and construction of terraces to pond the water:

> …this [taro] root, the principal food of the inhabitants of these Islands, grows only in low, well watered places, and where no such places are provided by nature the natives frequently with great difficulty make excavations so that water may collect in these basins which frequently are several ells deep. (Billie Ms.:131, cited in Devaney et al. 1982:35-36)

In addition to the extensive agricultural cultivation, the people of Kāne‘ohe Bay sought the bountiful marine resources:

> …the sea adjoining an *ahupua‘a* [Kāne‘ohe] was considered to be an extension of that *ahupua‘a*; its resources were shared by the chief and all of the tenants (*hoa‘āina*) living in the *ahupua‘a*. Access to the sea was part of the *mauka-makai* concept, which made the products of land and sea available to the people living in the *ahupua‘a*. (Devaney et al. 1982:135)

Just as the land-based resources of the *ahupua‘a* were managed through subdivision into *‘ili*, the marine resources of the *ahupua‘a* were also partitioned, with discreet fisheries associated with the *‘ili* along the Kāne‘ohe Bay coast. In addition to shoreline and offshore fishing, fishponds were constructed along the Kāne‘ohe Bay shoreline to provide regular supplies of fish to the inhabitants of the *ahupua‘a*:

> Shoreline fishing is highly susceptible to the vagaries of weather and surf conditions. With walled fishponds, Hawaiians provided for themselves a regular supply of fish when other types of fishing were not possible or yielded an insufficient supply. The fringing reefs along the shoreline of Kaneohe Bay were ideal for the type of walled fishponds that extended out from the land.
>
> Mullett, one of the world’s most important food fishes, was the most common species raised by Hawaiians in their fishponds; *awa* (milkfish) followed a close second. (Devaney et al. 1982:140)

Kamakau relates the number of fishponds in an area to the population that would have been necessary for their construction:

> The making of walls (*kuapa*) of the shore ponds was heavy work, and required the labor of more than ten thousand men…
>
> Many *loko kuapa* were made on Oahu, Molokai and Kauai, and a few on Hawaii and Maui. This shows how numerous the population must have been in the old days, and how they must have kept the peace, for how could they have worked together in unity and make these walls if they had been frequently at war…? If they did not eat the fruit of their efforts how could they have let the *awa* fish grow to a fathom in length; the *‘anae* to an *iwilei*, yard…? (Kamakau 1976:47, cited in Devaney et al. 1982:142)

3.2.2 Early Historic Period to Mid 1800s

In 1795 Kamehameha, at that time the Hawai‘i Island chief, invaded O‘ahu to secure control of the islands of O‘ahu, Moloka‘i, and Lāna‘i after his successful conquest of Maui. The O‘ahu Island chief Kalanikūpule, Moloka‘i Island chief Ka‘iana, and their forces met Kamehameha’s army in the valley of Nu‘uanu. The following account describes the final stages of the battle at the Nu‘uanu Pali, the knife-edge ridge along the Ko‘olau Range separating Nu‘uanu from Kāne‘ohe Ahupua‘a:

> The forces of Kamehameha charged; in the onslaught many of the Oahuans were slain, and the rest pursued with great slaughter until they were driven to the end of the valley, which terminates in a precipice of six hundred feet, nearly perpendicular height, forming a bold and narrow gorge between two forest-clad mountains. A few made their escape; some were driven headlong over its brink,

> and tumbled, mangled and lifeless corpses, on the rocks and trees beneath; others fought with desperation and met a warrior's death, among whom was Kalanikupule, who gallantly contested his inheritance to the last. (Jarves 1872:85)

Kamakau (1992:172) offers an alternate fate for Kalanikūpule, noting that he escaped to the mountains with some of his men for several months, but was later discovered and sacrificed to Kamehameha's war god Kūkā‘ilimoku.

Following the conquest of O‘ahu by Kamehameha, the lands of the island were divided between Kamehameha and his followers. Likely due to its agricultural and fishery productivity, Kāne‘ohe Ahupua‘a was seen as the "most valuable part" of the Ko‘olaupoko District (Kamakau 1992:303). Kāne‘ohe Ahupua‘a was retained by Kamehameha as his personal property, and was later inherited by his sons Liholiho and Kauikeaouli, Kamehameha II and III (Kame‘eleihiwa 1992:233).

In the early 1800s, there were three primary routes to Windward O‘ahu from the growing town of Honolulu. These were:

> …around the island by canoe; through Kalihi Valley and over the pali by ropes and ladders (Graham 1826:142); and over the Nuuanu Pali, the easiest, quickest, and most direct route. (Devaney et al. 1982:163)

The trail over the Nu‘uanu Pali was a heavily utilized transportation corridor since it allowed the people of Windward O‘ahu to bring their agricultural products to Honolulu for sale. The Reverend Reuben Tinker described his trip over the Nu‘uanu Pali in 1831:

> It seemed to me a sublime pass, yet almost too fearful to be enjoyed, for though not unaccustomed to hills, and the ups and downs of life, I suffered from apprehension lest I should fall from the rocky steep. I took off my shoes and by setting my feet in the crevices of the rocks, I worked myself along, assisted by a native, who saw nothing to wonder at but my awkwardness and fear on passing this grand highway, though to them common. The natives do not think it is either wonderful or difficult; it is the main road connecting the opposite sides of the island, and men and women are going up and down with their ordinary burdens on their shoulders, and in their arms, such as bundles of taro and potatoes, calabashes of poi, fowls, goats and pigs. Mothers were passing along the most precipitous places with their children on their shoulders, as careless of danger as if they were on a level plain… (Tinker 1901:88, cited in Sterling and Summers 1978:225)

Traditional agricultural practices, including wetland taro cultivation, continued to dominate land use in Kāne‘ohe in the early years following western contact, although to a lesser degree. Introduced diseases dramatically reduced the native Hawaiian population to a fraction of its pre-contact level:

> In the reign of Kamehameha, from the time I was born until I was nine years old, the pestilence (*mai ahulau*) visited the Hawaiian Islands, and the majority (*ka pau nui ana*) of the people from Hawaii to Niihau died. (Malo 1839:125, cited in Devaney et al. 1982:8)

Agricultural lands were subsequently abandoned due to the decrease in population. In 1828, the missionary Levi Chamberlain embarked on a tour around the island of O‘ahu to determine the progress occurring at schools established to educate native Hawaiians. During his tour, Chamberlain (1828:26) made observations of the landscape and people around the island commenting on the "present neglected state" of formerly cultivated agricultural lands:

> [The natives] ascribed it to the decrease in population. There have been two seasons of destructive sickness, both within the period of thirty years, by which, according to the account of the natives, more than one half of the population of the island was swept away. The united testimony of all, of whom I have ever made any inquiry respecting the sickness, has been, that "Greater was the number of the dead than of the living."
>
> …it may, I think, be safely asserted, that since the discovery of these islands by Cap. Cook there has been a decrease of population, by desolating wars, the ravages of disease and other causes, of at least one half of the number of inhabitants that might have been fairly estimated, at the time that celebrated voyager last visited these islands. (Chamberlain 1828:26)

3.2.3 The Māhele (Land Divisions)

In 1845, the Board of Commissioners to Quiet Land Titles, also called the Land Commission, was established "for the investigation and final ascertainment or rejection of all claims of private individuals, whether natives or foreigners, to any landed property" (Chinen 1985:8). This led to the Māhele, the division of lands between the king of Hawaii, the *ali‘i* (chiefs), and the common people, which introduced the concept of private property into the Hawaiian society. In 1848, Kamehameha III divided the land into four categories: certain lands to be reserved for himself and the royal house were known as Crown Lands; lands set aside to generate revenue for the government were known as Government Lands; lands claimed by *ali‘i* and their *konohiki* (supervisors) were called Konohiki Lands; and habitation and agricultural plots claimed by the common people were called *kuleana* (Chinen 1985:8-15).

Kamehameha III inherited Kāne‘ohe, and retained the bulk of the *ahupua‘a* during the Māhele. Following the death of Kamehameha III in 1854, his wife, Queen Kalama (Hakaleleponi), retained their Kāne‘ohe lands (Land Commission Award [LCA] 4452). Along with the *ahupua‘a* of Kailua and Hakipu‘u, Kāne‘ohe was seen as "her most valuable *‘Āina*…all in the fertile, well-watered district of Ko‘olaupoko" (Kame‘eleihiwa 1992:264). Several *‘ili* in Kāne‘ohe were subsequently awarded as Konohiki Lands to the *ali‘i*, and those with close ties to the royal family. The title to the *‘ili* typically included ownership of the *‘ili*'s fishpond and offshore fishing rights (Devaney et al. 1982:143). High-ranking *ali‘i* were awarded entire *‘ili,* while lesser konohiki were awarded half of an *‘ili* each (Kame‘eleihiwa 1992:269, 279). In addition to Queen Kalama, 14 *konohiki* LCAs were awarded for Kāne‘ohe lands (Kelly 1976:7).

An 1876 map of Kāne‘ohe (see Figure 6) shows the Crown Lands, Government Lands, and large LCAs distributed to the *ali‘i* and *konohiki* in the vicinity of the current project area. In 1853, Kamehameha III awarded the *‘ili* of Kālaheo, designated as Grant 1106, to Kokahe. Grant 1106 (see Appendix A) states that 301 "Eka" (acres) were used as *kula* and two acres were under *kalo* cultivation.

The lands awarded as Crown Lands and Konohiki Lands, as well as lands designated as Government Lands, were “subject to the rights of native tenants” (Chinen 1958). The Kuleana Act of 1850 “authorized the Land Commission to award fee simple titles to all native tenants who occupied and improved any portion of Crown, Government, or Konohiki Lands” (Chinen 1958:29). Surveyor C.J. Lyons stated:

> Small tenants were permitted to acquire a full title to the lands which they had been improving for their own use…for it was the labor of these people and their ancestors that had made the land what it was. (Lyons 1875:127, cited in Devaney et al. 1982:22)

One hundred seventeen *kuleana* land claims were awarded in Kāne‘ohe Ahupua‘a, with the average award being approximately 2.4 acres (Kelly 1976:8). Testimonies associated with the Land Commission Awards (LCA) indicated the primary land use for the claimed lands was *lo‘i*, irrigated fields used for cultivating taro (Kelly 1976:8). Testimonies also indicated land uses such as: growing breadfruit, coconut, *hala* (*Pandanus tectorius*), gourds, melons, *‘ape* (*Alocasia macrorrhiza*), *pia* (*Tacca leontopetaloides*), pineapple, and banana; salt ponds; and *kula* (pasture) for raising animals (Devaney et al. 1982:23). No *kuleana* land claims were awarded near the project area, and most of the land in the vicinity is designated as Government land (see Figure 6).

Coulter’s (1931) population density estimates for 1853 (Figure 7) show that approximately 600 people lived along the coast of Kāne‘ohe Ahupua‘a north of the proposed project area. While the project area appears to be fairly close to this population concentration, it should be noted that the project area is upland and the population concentration is due to the presence of fishponds constructed along the Kāne‘ohe Bay shoreline including (from west to east): Waikalua Loko, Waikala‘a, Keana, Mikiola, Kaluoa, Mahinui, and Kea‘alau (McAllister 1933; Devaney et al. 1982:147). Additionally, the lowlands adjacent to the fishponds were intensely cultivated with *lo‘i*.

Mid 1800s to early 1900s

The mid-19th century brought great changes to Kāne‘ohe Ahupua‘a, including private and public land ownership laws during the Māhele, commercial rice and sugar cultivation, and ranching. Agricultural cultivation and ranching established the region as a source of market resources for Honolulu and beyond. Fishponds also became commercial entities during this period.

3.2.3.1 Sugar

One of the earliest sugar plantations on O‘ahu was owned by Charles Coffin Harris, who came to Hawai‘i in 1850, planning to practice law. He established the Kaneohe Sugar Plantation Company (circa 1865) on 7,000 acres of Queen Kalama’s land (Dorrance and Morgan 2000:41). In 1871, Harris bought Queen Kalama’s Ko‘olaupoko properties from her heir, Charles Kanaina, as well as some land in Honolulu for $22,448. The sale included “…livestock, tools, fishponds, and fishing rights” (*Bureau of Conveyances Records* Book 34:53, in Devaney et al. 1982:29); the fishponds of Waikalua Loko and Keana were part of this sale. C. C. Harris’s plantation closed in 1891 since the sugar yield was not enough to support the operation (Dorrance and Morgan

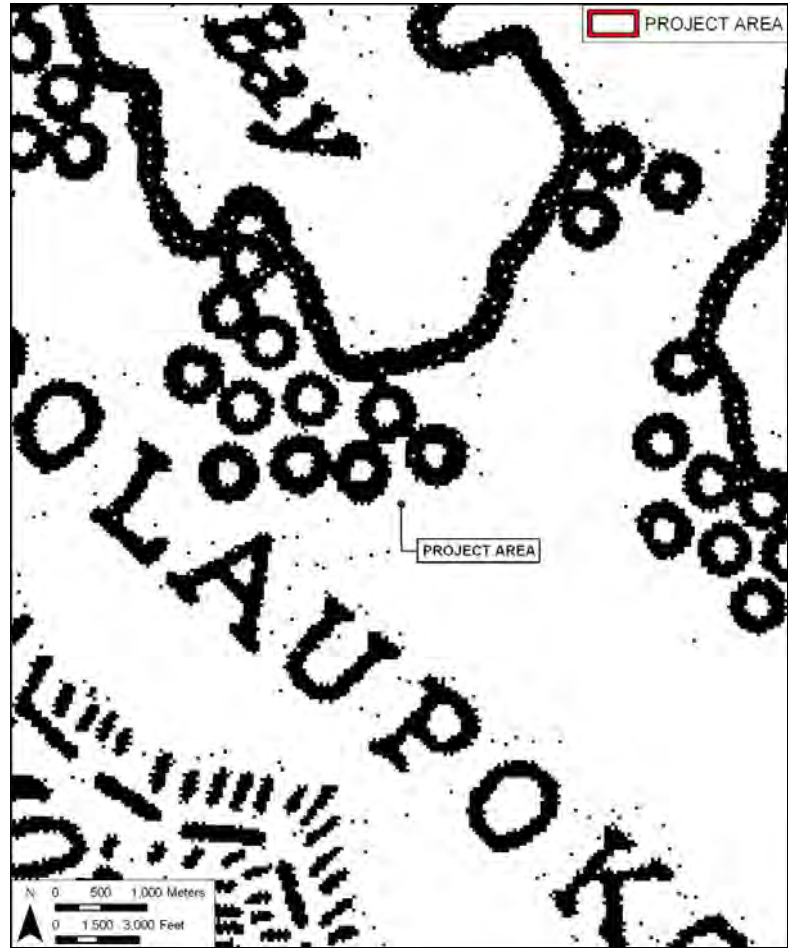

Figure 7. 1853 population density estimates; each symbol represents 50 people (Coulter 1931)

2000:41). Harris's daughter and heir, Mrs. David Rice, incorporated the lands as Kaneohe Ranch and converted them to stock farming. James B. Castle purchased a large block of their land holdings in 1907 (Montgomery 1971, cited in Dorrance and Morgan 2000:42).

3.2.3.2 Rice

Rice cultivation was to eventually supersede taro and dominate the lowlands of Kāne‘ohe. The ancient taro *lo‘i* and *‘auwai* irrigation systems were used and additional new ditches were built to support rice cultivation. During the height of rice cultivation (circa 1880-1920), Chinese dominated the business. "To a great extent the rice business, growing and milling was controlled by Chinese *hui* (firms), which recruited laborers from China, handled investment capital from rich absentee landlords, and tallied profits" (Devaney et al. 1982:49). By the late 1880s, virtually the entire floodplain areas of Kāne‘ohe were under rice cultivation. In 1892-1893, the Kaneohe Rice Mill was erected and began production on property adjoining Waikalua Stream. A flume brought water from the river to the rice mill. About twice a week a steamer came into Kāne‘ohe Bay to pick up and transport rice to market in Honolulu (Ching, personal communication, in Allen et al. 1987:295).

By the 1920s, rice had gradually declined in importance due to a number of factors. Two of the primary reasons for this decline were the beginning of rice production in California and the "annexation of Hawaii by the United States in 1898 [which] resulted in restrictions on the number of Chinese laborers arriving from the Far East" (Devaney et al. 1982:53). However, rice as well as some taro cultivation, continued up to circa 1960.

3.2.3.3 Pineapple

The commercial cultivation of pineapple in Kāne‘ohe began in the 1890s and the first decade of the 20th century. From approximately 1910 to 1925, pineapple cultivation was a major industry in this area. In 1911, the company of Libby, McNeill and Libby built a pineapple cannery in He‘eia. At its peak, 2,500 acres were under pineapple cultivation on Windward O‘ahu (Harper 1972) stretching from Kāne‘ohe to Kahalu‘u. Most of the pineapple lands in Kāne‘ohe were "located below the Pali where the golf course, Hawaii Loa College, and the Hawaiian Memorial Park are today" (Kelly 1987:295-296). A *heiau*, Kaualauki Heiau in He‘eia, was mostly destroyed by pineapple field clearance during this time – a likely fate of many archaeological sites (Kelly 1987:295-296). In 1919, the Kaneohe Ranch Company and Heeia Agricultural Co., Ltd. leased 1000 acres of land in He‘eia, Kāne‘ohe, and Kailua, formerly planted in sugar, to the Libby Company for a term of 17 years. In 1917, Libby leased an additional 600 acres in He‘eia (Libby, McNeill and Libby Ms:2, cited in Kawachi 1990). While the rice fields that covered old taro lands were mainly located near streams and near the coast, the pineapple fields were also grown on the slopes of higher lands, usually on land subleased to individual Japanese farmers:

> Pineapples were planted by individual Chinese and Japanese farmers on moderately sloped hill land where rice and taro could not be grown…these areas included the dissected alluvial terraces and the lower slopes and spurs of the Ko‘olau range. (Miyagi 1963:115)

The change to the Windward landscape due to pineapple cultivation is illustrated by the following passage from a 1914 magazine article:

> At last we reached the foot of the Pali…Joe and I looked over the surrounding hills, but looked in vain for the great areas of guava through which but a few months ago we had fought and cut our way. As far as the eye could reach pineapple had taken the place of the forest of wild guava. The newest industry in Hawaii was beginning even to press upon the cane fields of this side of the island. (Alexander 1914:318, cited in Devaney et al. 1982:62)

The pineapple fields were abandoned when Molokai and Lāna‘i pineapple cultivation began to boom, and Libby dissolved the Ko‘olaupoko enterprise (Kelly 1976:47). The cannery closed in 1923 (Dorrance 1998:95), and most of the former pineapple land went to grass, some of which was used to graze cattle. Several of the small farmers returned to rice cultivation at that time (Kelly 1975:47).

3.2.3.4 Ranching

English Captain George Vancouver introduced cattle and sheep to O‘ahu in 1793 (Henke 1929:8), and by the 1840s, cattle had multiplied into a large herd (Devaney et al. 1982:70). At its peak, Kaneohe Ranch extended from the ocean in Kailua to the Pali and included 12,000 acres and 2,000 head of cattle (Henke 1929:62). By the mid-1860s, the cattle were so numerous as to cause environmental degradation. Alien grasses and other species, such as pigeon peas, were introduced to the area as cattle fodder (Henke 1929:62). Much of the land modification in the upland and hilly portions of Kāne‘ohe may be the result of heavy cattle grazing over a long period of time.

> A view from the Pali looking toward Kaneohe in 1854 revealed that there were "hundreds of cattle…feeding on the rich pasture with which these plains were covered" (Bates 1854:104). By the mid-1860s, we have an indication that livestock was altering the landscape. The undulating plains at the foot of Nuuanu Pali (Kekele lands) were described as "a rich land a while ago but now there are not many plants because animal are permitted there." (Sterling and Summers Ms.:207 in Devaney et al. 1982:70)

Cattle and horse grazing in Kāne‘ohe continued into the 1900s.

3.2.3.5 Fishponds

As previously mentioned, during the Māhele, fishponds were considered to be part of the land to which they were attached. As such, the fishponds were typically designated as Crown or Government Lands, or awarded to the *ali‘i* as Konohiki Lands. Some of the lands owned by the government and *ali‘i*, along with the fishponds, were subsequently sold to entities with commercial agricultural pursuits, such as sugar cane and pineapple cultivation, or ranching:

> Once fishponds were declared private property, they were taxed by the government along with the rest of the real property. When commercial agriculture brought promises of high profits, few large landowners paid much attention to the fishponds attached to their land holdings. They were satisfied to lease them to

> Hawaiians or Chinese who had the technical knowledge necessary to properly manage fishponds. Yet, when disaster struck, such as a break in the fishpond wall, few lessees could afford the capital required to undertake repairs. As a result, many fishponds deteriorated with the passage of time, and the practice of aquaculture among the people, for all practical purposes, ceased. (Devaney et al. 1982:143)

By 1901 only 16 fishponds were present within Kāne‘ohe Bay, perhaps less than half of the fishponds that were present in the mid-1800s. By 1910, this same area was under intensive rice cultivation (Figure 8).

Figure 8. Rice fields adjacent to Kāne‘ohe Bay, circa 1910 (*Mid-Pacific Magazine* Sept. 1913, in Devaney et al. 1982:53)

3.2.4 Early 1900s to Present

A 1919 War Department map (Figure 9) shows barbed wire fencing in the uplands of Kāne‘ohe and Kailua near the project area that is likely related to cattle ranching. The extensive grazing and agricultural cultivation of the inland areas of Kāne‘ohe increased erosion and infilling of near shore marine environments, including fishponds.

In the post-World War II years, the dairy industry rose to prominence over beef cattle ranching. The shortage of available land due to urban expansion, the shortage of fee simple land, and the high price of land leases forced farmers in the dairy districts near Honolulu (e.g., Koko Head) to relocate to more remote areas of O‘ahu (Durand Jr. 1959:241). In the 1950s, Kailua-Kāne‘ohe was an important dairy district of Windward O‘ahu. Dairy farming was dominated by Caucasians particularly of Portuguese and Spanish ancestry, and secondarily Japanese, farmers (Durand Jr. 1959:235). “Among the names of island dairymen, illustrating the Portuguese-

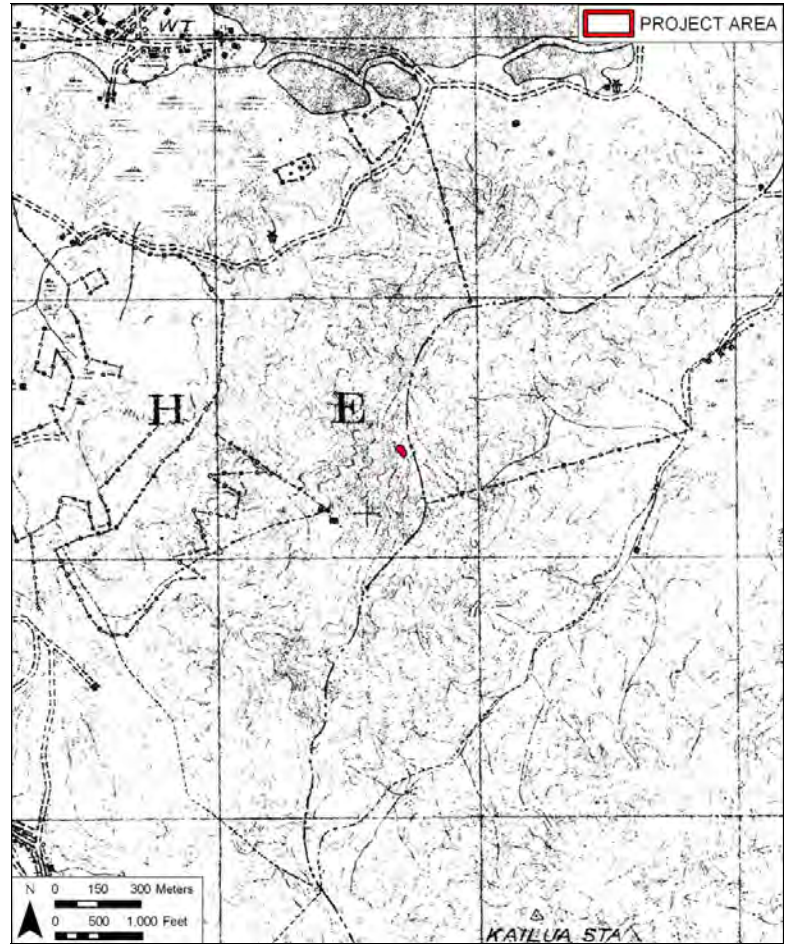

Figure 9. 1919 U.S. War Department Fire Control Map, Waimanalo quadrangle, showing the project area and features discussed in the text

Spanish-Mainland importance…are…Brazil, Carlos, Campos, Costa, Ferreria, Foster, Freitas, Knowles, Medeiros, Moniz, Ornellas, Rapoza, Santos, Toledo, Vause and White” (Durand Jr. 1959:235). This period, however, was relatively short-lived as the opening of the Pali route, exorbitant land prices in Honolulu, and more automobiles on O‘ahu contributed to rapid urbanization in Kailua-Kāne‘ohe (Durand Jr. 1959:244-245). Many landowners decided to develop their land for suburban housing and terminated leases with farm leaseholders.

By the end of World War II, ranching was no longer economically viable for Kaneohe Ranch, so the ranch became primarily a landlord to other farmers. Following the war, residential developments began to changed the face of Kāne‘ohe Ahupua‘a. The opening of the Wilson Tunnel and the expansion of the Pali Highway in the 1950s and 1960s — creating an easier passage from Honolulu through the Ko‘olau Mountains to windward communities — lead the way to a development boom on the windward side of O‘ahu. High tax rates on real estate sales forced many old-time landowners to lease their land to residential developers rather than sell on a fee-simple basis. Kaneohe Ranch at one time leased their land to over 5,000 single-family residential lots in Kailua and Kāne‘ohe. The vast majority of the leaseholds were later sold to the lessees.

3.2.5 Recent Development within the Project Area Vicinity

Figure 10 through Figure 13 are historic maps of the project area and vicinity showing a general lack of development in the area.

Hawaiian Memorial Park opened in 1961 with a land area of 6 acres. Over the years, the cemetery has gradually expanded to its current size of 80 acres. Several subdivisions to the west of the project area were created by subdivision approvals executed in 1964. Pohai Nani, approximately 450 m northwest of the current project also opened in 1964 and is operated by the Evangelical Lutheran Good Samaritan Society, the largest non-profit operator of senior communities in the United States.

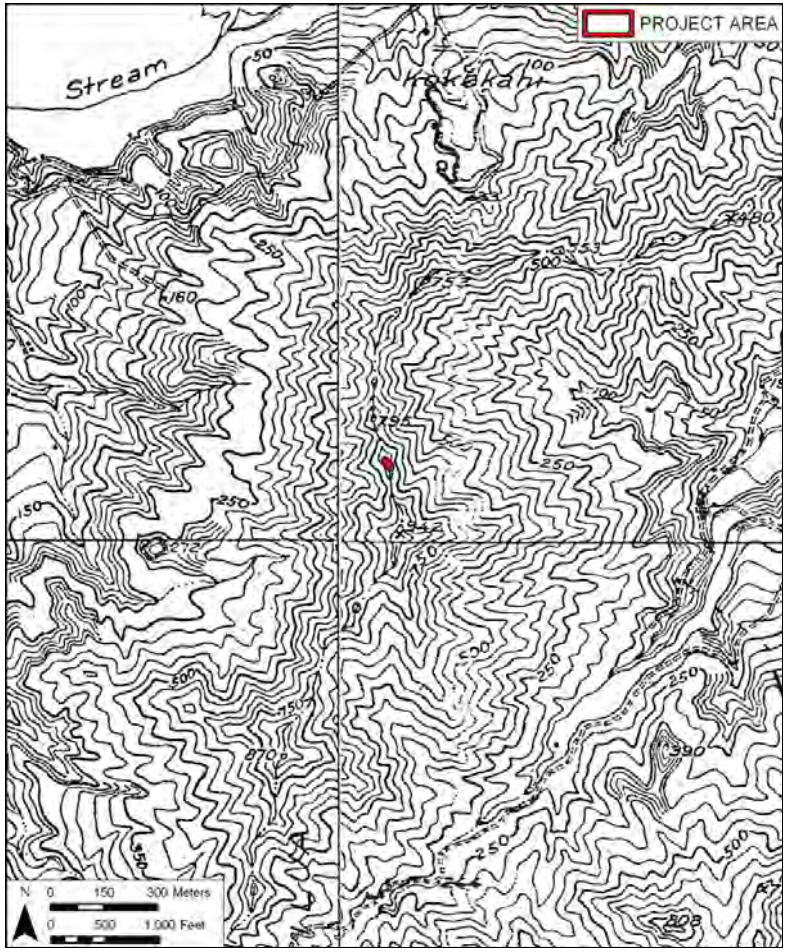

Figure 10. Portion of 1927-1928 U.S. Geological Survey 1:20,000 Scale Topographic Map, Kaneohe and Mokapu quadrangles, showing the approximate location of the project area and its vicinity

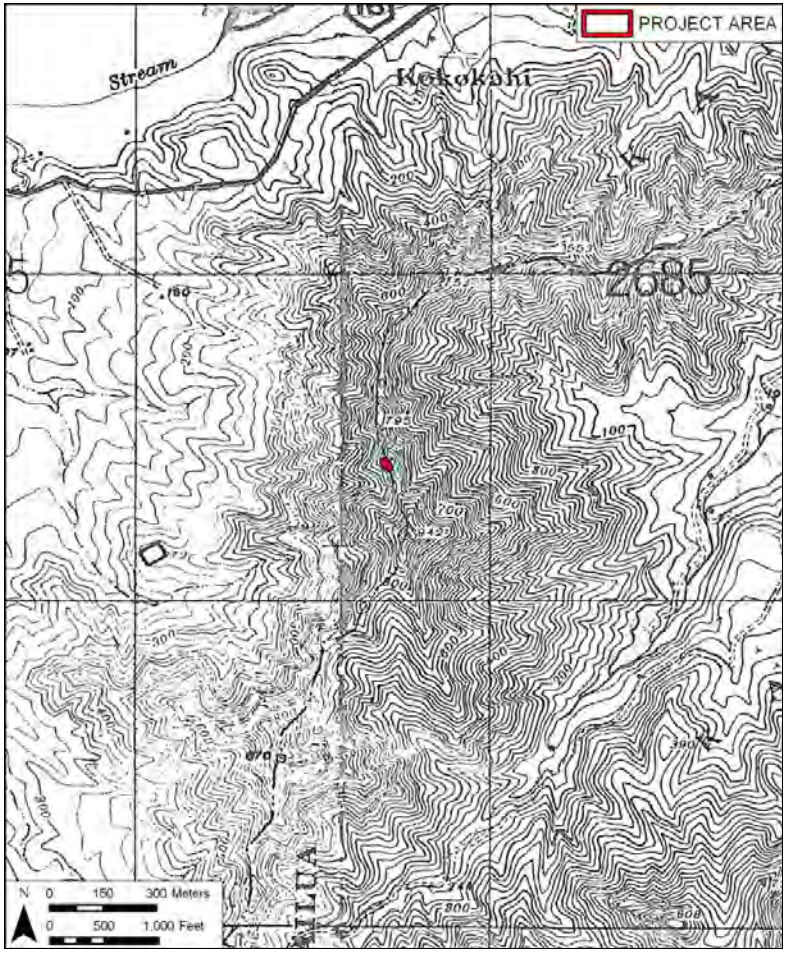

Figure 11. 1943 War Department 1:20,000 Scale Terrain Map, Kaneohe quadrangle showing the project area and vicinity

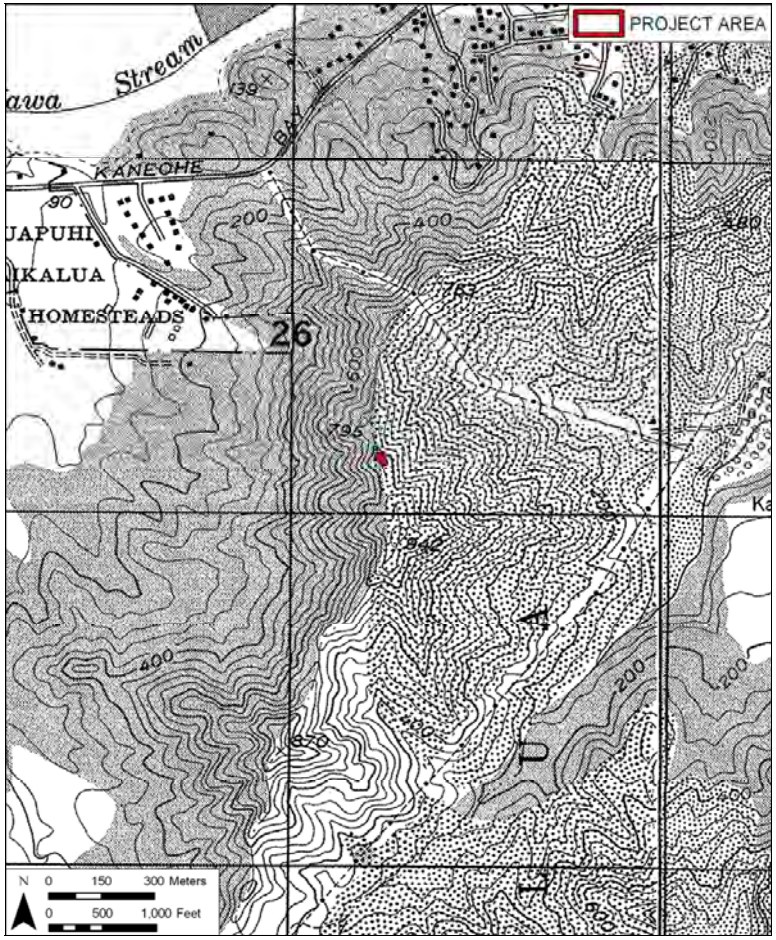

Figure 12. Portions of 1952-1954 Army Map Service 1:25,000 Scale Topographic Maps, Mokapu and Kaneohe quadrangles, showing the project area and vicinity

Figure 13. 1978 U.S. Geological Survey Orthophoto, Kaneohe and Mokapu quadrangles, showing the project area and vicinity

3.3 Previous Archaeological Research

An overview of archaeological studies conducted in the vicinity of the current project area is summarized in Table 1. McAllister’s historic properties are shown on Figure 14 and modern studies are indicated on Figure 15. A discussion of these archaeological findings relevant to the project area follows.

Table 1. Previous Archaeological Studies in the Vicinity of the Study Area

Reference	Type of Investigation	Location	Findings
McAllister 1933	Island-wide survey	Island wide	Identified several historic properties in the uplands of Kāne‘ohe including SIHP # -354, Kawa‘ewa‘e Heiau
Hammatt and Borthwick 1989	Archaeological Survey and Assessment	90-acre Bay View Golf Course Expansion	Documents Waikalua-loko and Waikalua fishponds
Hammatt and Shideler 1989	Archaeological Survey	Veterans Cemetery 90-acres TMK [1] 4-5-33:2	No significant finds
Szabian et al. 1989	Reconnaissance Survey	North and west facing slope of ridge separating Kailua and Kāne‘ohe TMK [1] 4-05-033:001, 2	Describes 11 historic properties (SIHP # -4676 to 4686) with 25 features. Kawa‘ewa‘e Heiau was also identified within the project area. Four of the historic properties identified date to pre-contact, and seven are post-contact.
McCurdy and Hammatt 2008	Archaeological Inventory Survey	Hawaiian Memorial Park TMK [1] 4-05-033:001	11 historic properties were observed within or near the petition area. Six had been previously identified and included Kawa‘ewa‘e Heiau, 2 enclosure and terrace complexes, 1 historic terrace, 1 pit feature, and 1 boundary marker. Five new historic properties were identified, including a quarry, stone enclosure, stone alignment, stone storage, and pit feature

Figure 14. Portion of 1959 Bishop Museum map showing the locations of historic properties identified by McAllister (1933) in relation to the current project area (adapted from Sterling and Summers 1978)

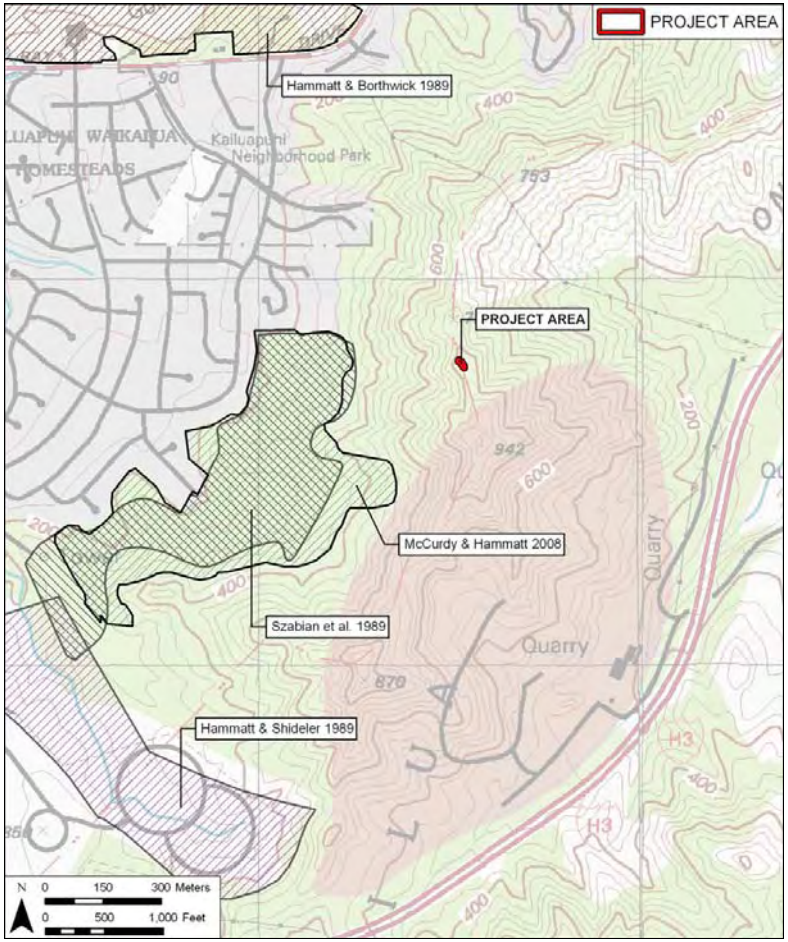

Figure 15. Previous archaeological studies conducted within the vicinity of the project area

3.3.1 Early Archaeological Surveys

3.3.1.1 Thrum 1915

Thrum reported in 1915 on the state of several *heiau* in Kāne‘ohe: Maunahuia within Wakaluawaho that was “in ruins” at the foot of the *pali*; Kukuiokane at Luluku, formerly a large platform; Kaluaolomana at Puuwaniania, a medium walled structure that was still present, and Kawa‘ewa‘e, also present. Three other Kāne‘ohe *heiau* that were associated with each other existed at one time, although that was the extent of Thrum’s knowledge. They were: Pule at Keaahala, Kuakala, nearby, and Naonealaa at Waikalua, “said to have been the principal of the three” (Thrum 1915:90) and situated at the beach end of Waikalua Drive.

3.3.1.2 McAllister (1933)

The first systematic archaeological study of the Kāne‘ohe area was conducted by J. Gilbert McAllister of the Bernice P. Bishop Museum in the 1930s. McAllister (1933) consulted with knowledgeable informants about both physical and legendary sites of each district during his island-wide survey of O‘ahu. The following are brief descriptions of historic properties within 1,000 m of the current project area.

> Site 354. Kawaewae Heiau, Kaneohe side of the ridge which divides the district and Kailua.
>
> This is one of the five heiaus said by John Bell to have been erected by Olopana. Ahukini, Pahukini, Holomakani, and Puumakani are the other four. It is on top of a small knoll and consists of one large inclosure [sic] 120 by 253 feet with a small terrace on the north side which follows the contours of the land. As the structure was used as a cattle pen for many years any traces of heiau features have been obliterated, and it is not known where the opening to the heiau was situated. The walls are massive, averaging about 5 feet in width and from 4 feet to 7 feet in height according to the contours of the land. The inside corners of the wall are rounded; the outside corners appear more angular.
>
> Thrum notes that this heiau was “built by Olopana about the opening of the 12th century.” It is mentioned as one of the heiaus constructed by the menehunes. Lonoaohi is said to have officiated as high priest.
>
> This is the heiau to which Olopana had Kamapuaa brought for sacrifice. Through treachery Kamapuaa is said to have killed Olopana and escaped. (McAllister 1933:179)
>
> Site 355. Small round hill, the name of which is not remembered, near the mountain side of Kawaewae heiau (Site 354). Said by John Bell to have been the location of a *holua* slide. This he saw destroyed when an attempt was made to plant pineapples in this section. Without doubt this is the site of the slide described by Bates in 1853:
>
> Before reaching the mission station at Kaneohe, the road leads through a narrow but fertile ravine, tenanted by a few natives. In leaving the ravine, a low round

> hill, to the right of the path, is rather conspicuous from a long, narrow depression or channel on its side. It was an indication that one of the favorite games of the old Hawaiians had been played there. This game was called the *holua*, and was one of their favorite games of chance…
>
> This same site was seen by Briggs in 1881: “Dewight pointed out to me a long narrow depression on some of the hills to be seen from our path, where old Hawaiians used to play one of their favorite games of chance.”
>
> Site 356. Puumakani Heiau, Kalapuhi, Waikalua, Kaneohe. This heiau was on the ridge facing the Nuuanu Pali, but the stones were removed and used for building a cattle corral farther down the slope. The heiau is said to have been built by Olopana. (McAllister 1933:181)

3.3.2 Modern Archaeological Surveys

3.3.2.1 Bay View Golf Course Archaeological Survey and Assessment

In 1989, CSH conducted an archaeological survey and assessment of the 90-acre Bay View Golf Course for a proposed expansion (Hammatt and Borthwick 1989). Background research indicated over 40 Land Court Awards granted for this area that was traditionally used for taro planting and aquaculture within the three fishponds along Kāne‘ohe Bay. Modern development of the area including the golf course, sewage treatment plant (Kāne‘ohe WWPTF), surrounding residential subdivisions and flood control projects, had caused extensive modifications of the land.

Waikalua Loko fishpond and Waikalua fishpond were the only two archaeological features found within the project area. Waikalua Loko fishpond has been a continuously functioning fishpond since pre-contact; and Waikalua fishpond was in poor condition due to mangrove intrusion, but still showed an intact seawall. Both fishponds were recommended for preservation, and archaeological monitoring during initial clearing and grading was recommended.

Subsurface testing was conducted between Kāne‘ohe and Kawa Streams in a strip of undeveloped pasture between Kāne‘ohe WWPTF and the Bay View Golf Course, in City and County land. The area was thought to be the only possibly undisturbed portion of the floodplain within the project area.

Eight trenches were excavated at 50-100 foot intervals with each trench averaging 7.5 meters long and averaging 230-240 cm. in depth (to water table). Both sides of the trenches were examined for cultural materials and features as well as changes in stratification. Modern dumping of imported top soil mixed with construction fill, likely to reclaim the lowland areas for pasture land was evident throughout the project area. Former wetland taro/rice agricultural soil underlies this fill. Typically, these soils had partial gleying in the lower portions (due to poor drainage) and iron staining in the upper portion (from the water flow along crop roots). Strata IIA and IIB appeared to have the same depositional origin (alluvium) with different weathering and variation in moisture regime and drainage.

Neither cultural materials nor features were observed within the backhoe trenches. A former *‘auwai* shown on early maps was not discerned in the profiles of any of the trenches, nor was

there any indication of earthen field boundaries. Only “the original ponded, gleyed sediments associated with former taro/rice planting” was found beneath approximately 60-120 cm of fill (Hammatt and Borthwick 1989:40). No terracing or buried cultural material was observed. Archaeological monitoring was however recommended during initial grubbing and grading of the property.

3.3.2.2 Proposed Hawai‘i State Veterans Cemetery

In 1989, CSH conducted an archaeological survey for the proposed Hawai‘i State Veterans Cemetery (Hammatt and Shideler 1989). No historic properties were identified within the 90-acre project area although background research indicated that Pu‘u Makani Heaiu was within the central western portion of the project area. The rocks had apparently been removed from the *heiau* to construct a cattle pen sometime before 1876. A Kāne‘ohe survey map by C.J. Lyons dated 1876 shows the cattle pen.

Bishop Museum had surveyed a portion of the project area adjacent to Kawa Stream, where they identified four historic properties (Szabian et al. 1989, see below). CSH determined that the historic properties (SIHP # -4676 to -4679) were remnants of 20th century pineapple cultivation clearing of the Kawa Stream plain. Mechanical land clearing for pineapple appeared to have removed any prior settlement or structures from the property. No further work was recommended.

3.3.2.3 Proposed Pikoiloa Cemetery Project

In 1989, Bishop Museum’s Applied Research Group (Szabian et al. 1989) conducted an archaeological reconnaissance survey for the proposed Pikoiloa Cemetery, approximately 300 m west of the current project area. In addition to Kawa‘ewa‘e Heiau (SIHP # -0354), previously listed on the National and State Register of Historic Places, eleven historic properties (SIHP # -4676 to -4686) were recorded with at least 25 associated features. Of these, four were interpreted as pre-contact and seven as historic in nature.

The historic properties consisted of a pre-contact wall complex; five wall remnants, some of which contained terracing; a terrace mound; and four areas containing terracing, one of which was an enclosure. “An intensive archaeological survey”, including “extensive clearing, mapping, and subsurface testing” was recommended to “further our understanding of the prehistory of the Kāne‘ohe area” (Szabian et al. 1989:16). As noted above, Hammatt and Shideler (1989) determined that four of the historic properties identified during this study were actually the result of mechanical clearing.

3.3.2.4 Proposed Hawaiian Memorial Park Expansion

Between October 2006 and October 2007, CSH conducted an archaeological inventory survey for the proposed Hawaiian Memorial Park expansion (McCurdy and Hammatt 2008), approximately 300 m west of the current project area. (Petition area rather than project area is used for the proposed expansion since the project is subject to a State land use boundary amendment petition for the reclassification of land use.) This petition area is approximately the same location as the Szabian et al. (1989) archaeological reconnaissance survey described above.

A total of 11 historic properties were observed within or near the petition area. Six of the historic properties had been previously recorded (SIHP # 50-80-10-354, pre-contact Kawa‘ewa‘e Heiau; -4680, historic terrace; -4681, pre-contact complex of enclosures and terracing; -4683, historic pit feature; -4684, pre-contact complex of enclosures and terracing; and -4686, historic boundary marker). The remaining five historic properties were new discoveries (SIHP # -6929, pre-contact quarry;-6930, pre-contact stone enclosure; -6931, pre-contact stone alignment; -6932, historic stone storage feature; and -6933, historic pit feature). SIHP # -6929, pre-contact quarry, is approximately 265 m west of the current project area, and -6931 is 410 m southwest of the current project area. All of the other historic properties are more than 500 m from the current project area.

Recommendations for the proposed Hawaiian Memorial Park expansion included an archaeological monitoring program, and preparation of a cultural resource preservation plan to address buffer zones and protective measures for all historic properties recommended for preservation within and near the petition area.

Section 4 Results of Fieldwork

4.1 Survey Findings

As previously discussed, the project area consists of a relatively level peak along the ridgeline of the Oneawa Hills. Much of the project area was cleared of vegetation prior to the field inspection, to facilitate landing of the helicopter used to access the project area. This also allowed for good visibility of the ground surface. The proposed location of the new HECO antenna foundation was also marked with survey stakes (Figure 16).

A complete pedestrian inspection of the project area and the immediate vicinity was conducted. The only structure within the project area is the existing HECO monopole (Figure 17). A well-worn hiking trail also traverses the project area, situated along the ridgeline between the locations of the existing HECO monopole and the proposed location of the new HECO antenna foundation. No historic properties were identified in the project area or immediate vicinity. Lands in the vicinity of the project area are steep and unlikely to contain historic properties.

Figure 16. Proposed new HECO Kalaheo Repeater Replacement Project location, view to northwest. Note surveyor’s stakes at the corners and center of the proposed repeater foundation location.

Figure 17. Existing HECO monopole within the project area, view to southeast

Section 5 Summary and Recommendations

5.1 Summary

No historic properties were observed within or in the immediate vicinity of the project area. As the project area is located on a peak of the Oneawa Hills ridgeline, the likelihood of encountering subsurface cultural material within the project area seems exceedingly low. Therefore, the proposed construction of the new HECO Kalaheo Repeater Replacement Project (and removal of the existing HECO monopole) will likely have “no effect” on significant historic properties.

5.2 Recommendations

No further work is recommended for the proposed HECO Kalaheo Repeater Replacement Project. As always, if in the unlikely event that any human remains or other significant subsurface deposits are encountered during the course of development activities, all work in the immediate area should stop and the State Historic Preservation Division should be promptly notified.

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Appendix A Grant 1106

Grant Number(LG)	**1106**	Source Book:	**6**
Grantee:	**Kokahe**	Acreage::	**313** Acs
Ahupua`a	**Kailua**	Year	**1853**
District:	**Koolaupoko**	Cancelled	
Island	**Oahu**	TMK	**1-4-2-15**
Miscellaneous			

Helu 1106, Kokahe, Kalaheo Ili, Kailua Ahupuaa, District of Koolaupoko, Island of Oahu, Book 6, pps. 189-190 [LG Reel 2, 01321-01322]

Helu 1106
Papapala Sila Nui.

Ma keia palapala Sila Nui ke hoike aku nei o Kamehameha III, ke Alii nui a ke Akua i kona lokomaikai i hoonoho ai maluna o ko Hawaii Pae Aina, i na kanaka a pau, i keia la nona iho, a no kona mau hope Alii, ua haawi aku oia ma ke ano alodio ia Kokahe i kona wahi kanaka i manao pono ia ia, i kela Apana aina a pau e waiho la ma Kalaheo Kailua, Koolaupoko, ma ka Mokupuni o Oahu; a penei hoi ka waiho ana o na mokuna:

Apana 1. o Kalaheo ponoi.
E hoomaka ana ke poo malalo o ka papohaku, iwaena o keia me Kaohia, e pili ana me ka aina kalo, a e holo ma Kaohia
Hema 20° Hikina 1.39 kaulahao a
Hema 14° Hikina 1.59 kaulahao a hiki i ka pohaku pea X, a
Akau 80 3/4° Hikina 3.37 kaulahao a
Akau 84 3/4° Hikina 96 pauku ma ka nini pohaku kahiko a i ke kihi kokoke i ka papuaa, alaila iho ma ka papohaku e ku ana me na laau noni a hiki i kona poo, malalo
Akau 26° Komohana 43 pauku i ka pohaku nui ma ke Ala;
Akau 22° Komohana 1.43 kaulahao a hiki i Papaloa; ma ka pohaku kokoke i ka aina kalo, Alaila, ma Papaloa
Hema 80 1/4° Komohana 1.18 kaulahao ma ke kula;
Akau 22 3/4° Komohana 1.25 kaulahao ma kula a me kuauna;
Akau 33° Komohana 82 pauku;
Akau 27 1/4° Komohana 1.67 kaulahao;
Akau 59° Hikina 34 pauku ma kuauna a hiki o Oneawa, alaila ma Oneawa;
Akau 28 3/4° Komohana 1.40 kaulahao kihi
Hema 64 3/4° Komohana 3.58 kaulahao;

Akau 21 1/4° Komohana 1.51 kaulahao (pau ka aina kalo)
Hema 71° Komohana 6.83 kaulahao ma ka aina kula a i kapahu iloko o ke Ahuawa kokoke i ke Ala. Alaila pii ma ka lapa a hiki i kahi i kapaia o Ekeeke, e pili ana me ka mokuna o Kaneohe. Alaila maluna o ka lapa ma ka mokuna o Kailua a me Kaneohe, a hiki i kahi e hui keia, ma Oneawa me ka palena o Kaneohe, a hiki i kahi e hui keia, ma Oneawa me ka palena o Kaneohe, ma ka aoao mauka o keia aina ma ka puu oi. Alaila iho ilalo ma ka lapa a hele ma ka mookeekee pili ana me Oneawa a me Kionaole a hiki i ka pahu ma ke poo makai o ia moo, makai o ke alo, Alaila
Akau 74° Hikina 8.76 kaulahao ma kula a hiki i kuauna.
Hema 20 1/2° Hikina 3.20 kaulahao,
Akau 89° Hikina 34 pauku ma Kionaole a me Kaohia, a hiki i kahi i hoomaka'i.
116.77 Eka.

Apana 2. 1 Loi.
E hoomaka ma ke kihi Akau o ko Kahunahana [Page 190] loi, a e holo
Akau 63 1/4° Hikina 1.33 kaulahao ma Oneawa,
Hema 23° Hikina 1.75 kaulahao ma Kaakepa
Hema 55° Komohana 1.34 kaulahao ma Kionaole a i ke kihi Hema o keia, e pili ana me ko Kahunahana, alaila ma kona aina, a hiki i kahi i hoomaka'i.
0.23 Eka.

Apana 3. Pueohala he lele o Kalaheo ma kahakai.
E hoomaka ma kahakai ma ke kihi e pili ana me Kea, a e holo
Hema 37° Komohana 308 kaulahao ma Kea, a hiki i Wainui, Alaila
Akau 50° Komohana 75.80 kaulahao ma Wainui a hiki i Oneawa, alaila
Akau 57° Hikina 21 kaulahao ma Oneawa a i kahakai, alaila
Hema 41° Hikina 70 kaulahao ma kahakai a hiki i kahi i hoomaka'i.
85 Eka.

Apana 4. Kekele, he lele o Kalaheo.
E hoomaka ma ke kihi Hikina, a e holo
Akau 75° Komohana 12 kaulahao ma Namakaokaua, alaila
Hema 35° Komohana 50 kaulahao ma Luapou a hiki i ka pali o Lanihulu, Alaila
Hema 70° Hikina 32.40 kaulahao ma ke kumupali o Lanihuli, Alaila
Hema 70° Hikina 32.40 kaulahao ma ke kumupali o Lanihuli, Alaila
Akau 12 1/2° Hikina 51.60 kaulahao ma Kaulikola, a hiki i kahi i hoomaka'i.
101 Eka

Koe ke kuleana o na Kanaka.

Aina kula 301 Eka, Aina Kalo 2 Eka.

a maloko o ia Apana 303 Eka a oi iki aku, a emi iki mai paha.

Eia ko kumu o ka lilo ana; ua haawi mai oia iloko o ka Waihona waiwai o ke Aupuni i

elua haneri me kumamahiku dala ($207.00). Aka, ua koe i ke Aupuni na mine minerala a me na mine metala a pau.

No Kokahe, ua aina la i haawiia nona mau loa aku no, ma ke ano alodio, o no kona mau hooilina, a me kona waihona; ua pili nae ka auhau a ka Poe Ahaolelo e kau like ai ma na aina alodio a pau i kela Manawa i keia manawa.

Ai mea e ikea'i, ua kau wau i ko`u inoa, a me ka Sila Nui o ko Hawaii Pae Aina, ma Honolulu, i keia la 26 o Mei 1853.

(Inoa) Kamehameha
(Inoa) Keoni Ana

[Land Grant Helu 1106, Kokahe, Kalaheo Ili, Kailua Ahupuaa, District of Koolaupoko, Island of Oahu, 4 apana, 303 Acres, 1853]

Appendix C

Pre-Assessment Consultation Letters

Tracy Fukuda

From: Ma CIV Henry H [
Sent: Tuesday, October 12, 2010 2:14 PM
To: Tracy Fukuda
Cc: Garnett LCDR Greg P; Murata CIV Kent; Tome CIV Steven K; Yamamoto CIV Lee H; Holland LtCol Aaron B
Subject: FW: HECO KALAHEO REPEATER REPLACEMENT PROJECT, KALAHEO, KAILUA, ISLAND OF OAHU (ENVIRONMENTAL ASSESSMENT PRE-ASSESSMENT CONSULTATION LTR 7040-33 OF SEP 9,2010)
Signed By: There are problems with the signature. Click the signature button for details.

Attachments: wo ltr1.PDF

wo ltr1.PDF

Tracy,
As we have discussed on the phone, this e-mail is sufficient to answer your letter dated Sep 9, 2010. If you have more question, please call me or Jeff Telling for further discussion.
v/r

Henry Ma
Facilities Planner
Marine Corps Base Hawaii
808-257-2171 x242
Henry.Ma@usmc.mil

-----Original Message-----
From: Telling CIV Jeff
Sent: Thursday, October 07, 2010 9:32
To: Ma CIV Henry H
Subject: HECO KALAHEO REPEATER REPLACEMENT PROJECT, KALAHEO, KAILUA, ISLAND OF OAHU

Henry,

The proposed site is outside of KBAY IFR flight paths and approach/departure corridors. I have no issues with the replacement of the existing 30 foot pole with and updated version of the same height. I would suggest that Honolulu Control Facility (HCF) Flight Services be notified since the structure does lies below a VFR route.

Jeff Telling
Airfield Operations Officer
MCAS Kaneohe Bay, HI
Work (808) 257-8389, DSN (457)
Cell (808) 216-3252
Fax (808) 257-0526

7040-33
December 6, 2010

WILSON OKAMOTO CORPORATION
ENGINEERS · PLANNERS · CONSULTANTS
1907 South Beretania Street
Artesian Plaza, Suite 400
Honolulu, Hawaii, 96826 USA
Phone: 808-946-2277
FAX: 808-946-2253
www.wilsonokamoto.com

Mr. Kent Murata, Commanding Officer
Kaneohe Marine Corps Base Hawaii
Installations, Environment & Logistics
P.O. Box 63002
Kaneohe Bay, HI 96863-3002

Attention: Mr. Henry Ma

Subject: Environmental Assessment (EA) Pre-Assessment Consultation
HECO Kalaheo Repeater Replacement Project
Kalaheo, Oahu, Hawaii
Tax Map Key: 4-5-033: por. 001

Dear Mr. Murata:

Thank you for your correspondence (electronic mail, see attachment) dated October 12, 2010 on the Draft EA Pre-Assessment Consultation. We acknowledge the proposed project is outside of KBAY IFR flight paths and approach/departure corridors. We will consult with the Honolulu Control Facility Services, as you suggested.

We appreciate your participation in the Draft EA process. If you have any questions, please call me at 946-2277.

Sincerely,

Tracy Fukuda, Project Manager

cc: Mr. Robert Thompson, HECO

LINDA LINGLE
GOVERNOR OF HAWAII

LAURA H. THIELEN
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

September 30, 2010

Wilson Okamoto Corporation
1907 South Beretania Street
Artesian Plaza Suite 400
Honolulu, Hawaii 96826

Attention: Ms. Tracy Fukuda, Project Manager

Ladies and Gentlemen:

Subject: Pre-Assessment Consultation for Environmental Assessment for HECO Kalaheo Repeater Replacement Project

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

Other than the comments from Office of Conservation & Coastal Lands, Engineering Division, the Department of Land and Natural Resources has no other comments to offer on the subject matter. Historic Preservation will be submitting comments through a separate letter. Should you have any questions, please feel free to call our office at 587-0433. Thank you.

Sincerely,

Charlene Unoki

for Morris M. Atta
Acting Administrator

LINDA LINGLE
GOVERNOR OF HAWAII

LAURA H. THIELEN
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

September 14, 2010

RECEIVED
LAND DIVISION
2010 SEP 23 P 2:21
DEPT. OF LAND & NATURAL RESOURCES STATE OF HAWAII

MEMORANDUM

TO: **DLNR Agencies:**
x Div. of Aquatic Resources
__ Div. of Boating & Ocean Recreation
x Engineering Division
x Div. of Forestry & Wildlife
__ Div. of State Parks
x Commission on Water Resource Management
x Office of Conservation & Coastal Lands
__ Land Division –

Charlene

FROM: Charlene Unoki, Assistant Administrator
SUBJECT: Pre-Assessment Consultation for Environmental Assessment for HECO Kalaheo Repeater Replacement Project
LOCATION: Island of Oahu
APPLICANT: Wilson Okamoto Corporation on behalf of Hawaiian Electric Co., Inc.

Transmitted for your review and comment on the above referenced document. We would appreciate your comments on this document. Please submit any comments by September 28, 2010.

If no response is received by this date, we will assume your agency has no comments. If you have any questions about this request, please contact my office at 587-0433. Thank you.

Attachments

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

Signed:
Date: 9/22/10

DEPARTMENT OF LAND AND NATURAL RESOURCES
ENGINEERING DIVISION

LD/CharleneUnoki
RE:PreAssessConsultationEAHECOKalaheo
Oahu.792

COMMENTS

( ) We confirm that the project site, according to the Flood Insurance Rate Map (FIRM), is located in Flood Zone ___.

(X) **Please take note that the project site, according to the Flood Insurance Rate Map (FIRM), is located in Flood Zones D. The Flood Insurance Program does not have any regulations for developments within Flood Zones D.**

( ) Please note that the correct Flood Zone Designation for the project site according to the Flood Insurance Rate Map (FIRM) is ___.

( ) Please note that the project must comply with the rules and regulations of the National Flood Insurance Program (NFIP) presented in Title 44 of the Code of Federal Regulations (44CFR), whenever development within a Special Flood Hazard Area is undertaken. If there are any questions, please contact the State NFIP Coordinator, Ms. Carol Tyau-Beam, of the Department of Land and Natural Resources, Engineering Division at (808) 587-0267.

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

( ) Mr. Robert Sumitomo at (808) 768-8097 or Mr. Mario Siu Li at (808) 768-8098 of the City and County of Honolulu, Department of Planning and Permitting.
( ) Mr. Carter Romero at (808) 961-8943 of the County of Hawaii, Department of Public Works.
( ) Mr. Francis Cerizo at (808) 270-7771 of the County of Maui, Department of Planning.
( ) Ms. Wynne Ushigome at (808) 241-4890 of the County of Kauai, Department of Public Works.

( ) The applicant should include water demands and infrastructure required to meet project needs. Please note that projects within State lands requiring water service from the Honolulu Board of Water Supply system will be required to pay a resource development charge, in addition to Water Facilities Charges for transmission and daily storage.

( ) The applicant should provide the water demands and calculations to the Engineering Division so it can be included in the State Water Projects Plan Update.

( ) Additional Comments: _____

( ) Other: _____

Should you have any questions, please call Ms. Suzie S. Agraan of the Planning Branch at 587-0258.

Signed: _____
CARTY S. CHANG, CHIEF ENGINEER
Date: 9/22/10

OA-11-50

LINDA LINGLE
GOVERNOR OF HAWAII

LAURA H. THIELEN
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

RECEIVED
OFFICE OF CONSERVATION
& COASTAL LANDS
2010 SEP 14 A 9:38

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION
POST OFFICE BOX 621
HONOLULU, HAWAII 96809

DEPT. OF LAND & NATURAL RESOURCES STATE OF HAWAII

September 14, 2010

MEMORANDUM

RECEIVED LAND DIVISION 2010 SEP 27 P 2:33
DEPT. OF LAND & NATURAL RESOURCES STATE OF HAWAII

~~TO:~~ From:

DLNR Agencies:
x Div. of Aquatic Resources
__Div. of Boating & Ocean Recreation
x Engineering Division
x Div. of Forestry & Wildlife
__Div. of State Parks
x Commission on Water Resource Management
x Office of Conservation & Coastal Lands
__Land Division --

Charlene

TO: ~~FROM:~~ Charlene Unoki, Assistant Administrator
SUBJECT: Pre-Assessment Consultation for Environmental Assessment for HECO Kalaheo Repeater Replacement Project
LOCATION: Island of Oahu
APPLICANT: Wilson Okamoto Corporation on behalf of Hawaiian Electric Co., Inc.

Transmitted for your review and comment on the above referenced document. We would appreciate your comments on this document. Please submit any comments by September 28, 2010.

If no response is received by this date, we will assume your agency has no comments. If you have any questions about this request, please contact my office at 587-0433. Thank you.

Attachments

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

Signed: _____
Date: 9.22.2010

LINDA LINGLE
GOVERNOR OF HAWAII

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
OFFICE OF CONSERVATION AND COASTAL LANDS
POST OFFICE BOX 621
HONOLULU, HAWAII 96809

LAURA H. THIELEN
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

RUSSELL Y. TSUJI
ACTING FIRST DEPUTY

LENORE N. OHYE
ACTING 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

REF:OCCL:AB

Correspondence: OA-11-50

SEP 27 2010

MEMORANDUM

TO: Charlene Unoki, Assistant Administrator
Land Division

FROM: Samuel J. Lemmo, Administrator
Office of Conservation and Coastal Lands

SUBJECT: Pre-Consultation for Environmental Assessment for HECO Kalaheo Repeater Replacement Project
LOCATION: Kalaheo, O'ahu, TMK: (1) 4-5-033: portion 001
APPLICANT: Wilson Okamoto Corporation on behalf of HECO

The Department of Land and Natural Resources (DLNR) Office of Conservation and Coastal Lands (OCCL) has reviewed the information you provided regarding the pre-consultation for an environmental assessment for HECO's Kalaheo Repeater Replacement Project, located at Kalaheo, O'ahu, TMK: (1) 4-5-033: portion 001.

According to your information, HECO proposes to replace an existing monopole, which is 30-feet tall and supports two 8-foot diameter grid antennae, and located on TMK 4-2-015:009, with a new tower to be located approximately 30 feet northeast on TMK 4-5-033:001 (portion). After the replacement equipment is placed in service, the existing monopole will be removed.

The project site appears to be located in the State Conservation District, Limited subzone. The project is an identified land use in the Conservation District pursuant to HAR §13-5-22 *Identified Land Uses in the Protective Subzone*, P-6 PUBLIC PURPOSE USES, (D-2) *Transportation systems, transmission facilities for public utilities, water systems, energy generation facilities utilizing the renewable resources of the area (e.g. hydroelectric or wind farms) and communication systems and other such land uses which are undertaken by non-governmental entities which benefit the public and are consistent with the purpose of the conservation district.*

Should you have any questions, contact Audrey Barker of our office at (808) 587-0316 or audrey.t.barker@hawaii.gov.

7040-33
December 6, 2010

WILSON OKAMOTO CORPORATION
ENGINEERS | PLANNERS | CONSULTANTS

1907 South Beretania Street
Artesian Plaza, Suite 400
Honolulu, Hawaii, 96826 USA
Phone: 808-946-2277
FAX: 808-946-2253
www.wilsonokamoto.com

Mr. Russell Y. Tsuji, Administrator
Land Division
Department of Land & Natural Resources
P.O. Box 621
Honolulu, HI 96809

Subject: Environmental Assessment (EA) Pre-Assessment Consultation
HECO Kalaheo Repeater Replacement Project
Kalaheo, Oahu, Hawaii
Tax Map Key: 4-5-033: por. 001

Dear Mr. Tsuji:

Thank you for your letter dated September 30, 2010 on the Draft EA Pre-Assessment Consultation. We offer the following responses in the respective order of each Division's comments:

Engineering Division

1. We acknowledge that the proposed project is located in Zone D, an area where flood hazards are undetermined.

Office of Conservation & Coastal Lands (REF:OCCL:AB, Correspondence OA-11-50)

1. We acknowledge the proposed project is located in the State Conservation District, Limited Subzone. The project is an identified land use in the Conservation District pursuant to HAR §13-5-22 *Identified Land Uses in the Protective Subzone, P-6 Public Purpose Uses, (D-2).*

We appreciate your participation in the Draft EA process. If you have any questions, please call me at 946-2277.

Sincerely,

Tracy Fukuda, Project Manager

cc: Mr. Robert Thompson, HECO

TF

PHONE (808) 594-1888

FAX (808) 594-1865

STATE OF HAWAI'I
OFFICE OF HAWAIIAN AFFAIRS
711 KAPI'OLANI BOULEVARD, SUITE 500
HONOLULU, HAWAI'I 96813

RECEIVED
SEP 29 2010
WILSON OKAMOTO CORPORATION

HRD10/5247

September 16, 2010

Tracy Fukuda, Project Manager
Wilson Okamoto Corporation
1907 South Beretania Street
Artesian plaza, Suite 400
Honolulu, Hawai'i 96826

Re: Pre-Environmental Assessment Consultation
Hawaiian Electric Company, Inc. Kalaheo Repeater Replacement
Kalaheo, Island of O'ahu

Aloha e Tracy Fukuda,

The Office of Hawaiian Affairs (OHA) is in receipt of your September 9, 2010 letter initiating consultation ahead of a draft environmental assessment (DEA) for the proposed replacement of the Hawaiian Electric Company, Inc. (HECO) repeater situated atop the Oneawa Ridge. It is our understanding an existing 30-foot tall monopole will be replaced with a 30-foot tall tower and dish antennae. This proposed project will support the Malae-Koolau Microwave Radio System, a critical communications link between the windward side of O'ahu and HECO's dispatch center.

The project site is situated on lands within the State Conservation District and therefore subject to applicable provisions of §13-5, Hawaii Administrative Rules. Thus, we anticipate the Department of Land and Natural Resources or Board of Land and Natural Resources issuing an approval for the use of these lands. We have no additional comments at this time. We look forward to the opportunity to review the DEA. Should you have any questions or concerns, please contact Keola Lindsey at 594-0244 or keolal@oha.org.

'O wau iho nō me ka 'oia'i'o,

Clyde W. Nāmu'o
Chief Executive Officer

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7040-33
December 6, 2010

Mr. Clyde Namuo, Chief Executive Officer
Office of Hawaiian Affairs
711 Kapiolani Boulevard, Suite 500
Honolulu, HI 96813

Attention: Mr. Keola Lindsey

Subject: Environmental Assessment (EA) Pre-Assessment Consultation
HECO Kalaheo Repeater Replacement Project
Kalaheo, Oahu, Hawaii
Tax Map Key: 4-5-033: por. 001

Dear Mr. Namuo:

Thank you for your letter dated September 16, 2010 (HRD10/5247) on the Draft EA Pre-Assessment Consultation. The proposed project site is located within the State Conservation District, Limited Subzone. The project is an identified land use in the Conservation District pursuant to HAR §13-5-22 *Identified Land Uses in the Protective Subzone, P-6 Public Purpose Uses, (D-2) Transportation systems, transmission facilities for public utilities, water systems, energy generation facilities utilizing the renewable resources of the area (e.g. hydroelectric or wind farms) and communication systems and other such land uses which are undertaken by non-governmental entities which benefit the public and are consistent with the purpose of the conservation district.*

A Draft Environmental Assessment and Conservation District Use Application will be prepared pursuant to Chapter 343, Hawaii Revised Statutes and Chapter 200 of Title 11, Department of Health Administrative Rules and Title 13, Chapter 5, Hawaii Administrative Rules.

We appreciate your participation in the Draft EA process. If you have any questions, please call me at 946-2277.

Sincerely,

Tracy Fukuda, Project Manager

cc: Mr. Robert Thompson, HECO

LINDA LINGLE
GOVERNOR

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

MICHAEL D. FORMBY
INTERIM DIRECTOR

Deputy Directors
FRANCIS PAUL KEENO
JIRO A. SUMADA

IN REPLY REFER TO:

STP 8.0246

TF

October 6, 2010

RECEIVED
OCT 13 2010
WILSON OKAMOTO CORPORATION

Ms. Tracy Fukuda
Project Manager
Wilson Okamoto Corportation
1907 South Beretania Street
Artesian Plaza, Suite 400
Honolulu, Hawaii 96826

Dear Ms. Fukuda:

Subject: Hawaiian Electric Company, Inc. (HECO)
Kalaheo Repeater Replacement Project
Pre-Consultation for Draft Environmental Assessment (DEA)

Thank you for requesting the State Department of Transportation's (DOT) review of the subject project.

DOT understands that the HECO proposes to replace an existing repeater at the top of Oneawa Ridge. The project will include replacing the existing 30-foot monopole with a 30-foot tall communication/transmission tower with an 8-foot and 6-foot solid dish antennae.

DOT does not anticipate any significant adverse impacts to the state transportation facilities. However, the applicant should be informed that a permit is required from DOT Highways Division, to transport oversized and overweight equipment/loads within the State highway facilities.

DOT appreciates the opportunity to provide comments. If there are any other questions, please contact Mr. David Shimokawa of the DOT Statewide Transportation Planning Office at telephone number (808) 831-7976.

Very truly yours,

Francis Paul Keeno

for MICHAEL D. FORMBY
Interim Director of Transportation

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7040-33
December 6, 2010

Mr. Michael Formby, Interim Director
Department of Transportation
869 Punchbowl Street
Honolulu, HI 96813

Subject: Environmental Assessment (EA) Pre-Assessment Consultation
HECO Kalaheo Repeater Replacement Project
Kalaheo, Oahu, Hawaii
Tax Map Key: 4-5-033: por. 001

Dear Mr. Formby:

Thank you for your letter dated October 6, 2010 (STP 8.0246) on the Draft EA Pre-Assessment Consultation. We acknowledge that DOT does not anticipate any significant adverse impacts to the State's transportation facilities. A permit will be applied for with DOT Highways Division if oversized and overweight equipment/loads are transported within the State's highway facilities.

We appreciate your participation in the Draft EA process. If you have any questions, please call me at 946-2277.

Sincerely,

Tracy Fukuda

Tracy Fukuda, Project Manager

cc: Mr. Robert Thompson, HECO

DEPARTMENT OF INFORMATION TECHNOLOGY

CITY AND COUNTY OF HONOLULU

650 SOUTH KING STREET, 5TH FLOOR
HONOLULU, HAWAII 96813
Phone: (808) 768-7684 ▯ Fax: (808) 527-6272 ▯ Internet: www.honolulu.gov

KIRK W. CALDWELL
ACTING MAYOR

GORDON J. BRUCE
DIRECTOR & CIO

TF

September 27, 2010

Ms. Tracy Fukuda
Project Manager
Wilson Okamoto Corporation
1907 South Beretania Street, Suite 400
Honolulu, Hawaii 96826

SEP 28 2010
WILSON OKAMOTO CORPORATION

Dear Ms. Fukuda:

Subject: Environmental Assessment (EA) Pre-Assessment Consultation
HECO Kalahea Repeater Replacement Project,
Kalaheo, Oahu, Hawaii. Tax Map Key: 4-5-033: Por. 001

The Department of Information Technology has reviewed your draft project per the letter dated September 9, 2010. We have no comments that we can add to the project.

Should you have any questions, please call me at 768-7601, or have your staff contact Alvin Sunahara at 768-7630.

Sincerely,

Gordon J. Bruce
Director and CIO

cc: Robert Thompson, HECO
Alvin Sunahara, DIT

7040-33
September 7, 2010

WILSON OKAMOTO CORPORATION
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Honolulu, Hawaii, 96826 USA
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FAX: 808-946-2253
www.wilsonokamoto.com

Mr. Gordon Bruce, Director and CIO
Department of Information Technology
650 South King Street, 5th Floor
Honolulu, HI 96813

Subject: Environmental Assessment (EA) Pre-Assessment Consultation
HECO Kalaheo Repeater Replacement Project
Kalaheo, Oahu, Hawaii
Tax Map Key: 4-5-033: por. 001

Dear Mr. Bruce:

Thank you for your letter dated September 27, 2010 on the Draft EA Pre-Assessment Consultation. We acknowledge that you have no comments to offer at this time.

We appreciate your participation in the Draft EA process. If you have any questions, please call me at 946-2277.

Sincerely,

Tracy Fukuda, Project Manager

cc: Mr. Robert Thompson, HECO

WILSON OKAMOTO
C O R P O R A T I O N

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