LINDA LINGLE
GOVERNOR

RUSS K. SAITO
COMPTROLLER

KATHERINE H. THOMASON
DEPUTY COMPTROLLER

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

(P)1008.4

MEMORANDUM

TO: Ms. Genevieve Salmonson, Director
Office of Environmental Quality Control (OEQC)
Department of Health

FROM: Russ K. Saito
State Comptroller

SUBJECT: Finding of No Significant Impact (FONSI) for Anuenue (formerly Rainbow) Radio Facilities and Towers, Statewide, Kahua Ranch Site, North Kohala District, Hawaii, TMK: 5-9-002:002

The Department of Accounting and General Services has reviewed the comments received during the 30-day public comment period which began on April 8, 2003. The agency has determined that this project will not have significant environmental effects and has issued a FONSI. Please publish this notice in the January 23, 2004, OEQC Environmental Notice.

If you have any questions, please call me at 586-0400, or have your staff call Mr. Allen Yamanoha of the Public Works Division at 586-0488.

2004-01-23 FONSI
ANUENUE (FORMERLY RAINBOW)
RADIO TOWERS AND FACILITIES,
KAHUA RANCH SITE

FINAL ENVIRONMENTAL ASSESSMENT

Anuenue (formerly Rainbow) Radio Facilities and Towers Statewide

Kahua Ranch Site

North Kohala District, Island of Hawaii

DAGS Job No. 16-10-0256

Prepared for:

State of Hawaii

Department of Accounting and General Services

Prepared by:

Wilson Okamoto Corporation

January 2004

FINAL
ENVIRONMENTAL ASSESSMENT

Anuenue (formerly Rainbow) Radio Facilities and Tower
Kahua Ranch Site
North Kohala District, Hawaii

Prepared for:

State of Hawaii
Department Accounting and General Services
Division of Public Works
1151 Punchbowl Street
Honolulu, Hawaii 96813
Consultant Contract No. 49936

Prepared by:

Wilson Okamoto Corporation
1907 South Beretania Street, Suite 400
Honolulu, Hawaii 96826
WOA: 6608-01

January 2004

SUMMARY

Proposing Agency:	State of Hawaii Department of Accounting and General Services 1151 Punchbowl Street Honolulu, Hawaii 96813
Accepting Agency:	State of Hawaii Department of Accounting and General Services 1151 Punchbowl Street Honolulu, Hawaii 96813
EA Preparer:	Wilson Okamoto Corporation 1907 South Beretania Street, Suite 400 Honolulu, Hawaii 96826 Contact: John L. Sakaguchi, AICP, Senior Planner Tel: 808.946.2277; Fax: 808.946.2253
Project Location:	Kahua Ranch, North Kohala District, Hawaii
Recorded Fee Owner:	Kahua Ranch, Ltd.
Tax Map Key:	5-9-002:002
Area:	7,200 SF (0.165 acres) approximately
State Land Use Classification:	Agricultural
County Zoning:	Agriculture (AG-20)
Proposed Action:	Construction of one self-supporting tower with mounted antennas, one building, and other supporting facilities for the State of Hawaii Department of Accounting and General Services (DAGS) Information and Communication Service Division to support the modernization of the shared State and Federal microwave system to digital operation.
Impacts:	No significant impacts were determined from construction and operation of the Anuenue Radio tower, antennas, and facilities at the Kahua Ranch site.

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PREFACE

Chapter 343, Hawaii Revised Statues (HRS), as amended, Environmental Impact Statements, requires that a government agency or a private developer proposing to undertake a project consider the potential environmental impacts of the proposed project by preparing an assessment. Use of public funds for a project. is among the criteria set forth in Chapter 343, HRS which requires preparation of an environmental assessment. The Anuenue (formerly Rainbow) Radio Tower and Facilities will be constructed and operated with funds provided by the State of Hawaii Department of Accounting and General Services (DAGS).

This Environmental Assessment (EA) has been prepared to meet the requirements of Chapter 343, HRS, as amended, and Hawaii Administrative Rules Title 11, State of Hawaii Department of Health, Chapter 200, Environmental Impact Statement Rules. A Finding of No Significant Impact (FONSI) has been determined for the project as shown in Chapter 5.

1. INTRODUCTION

1.1 Project Background

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

1.2 Purpose and Need

The primary purpose of the Anuenue (formerly Rainbow) Radio Facilities at the Kahua Ranch site will be to support the rebuilding and modernization of a microwave communication system to be owned by DAGS and shared with State and Federal agencies. The Anuenue Radio system is a follow-on to the "Hawaii Rainbow Communications System," commonly known as "Rainbow." which was an agreement among three State and three federal agencies to share infrastructure and microwave radio transmission systems. The Rainbow resulted in a statewide system of radio tower facilities and microwave radio interconnections that were used by federal, State, and local agencies in support of their law enforcement, public safety, emergency response, and civil defense missions. The Rainbow agreement dissolved at the end of September 2002.

The Anuenue Radio Facility at Kahua Ranch will be totally funded by the State of Hawaii and represents a part of the infrastructure provided by the State to the Anuenue Radio system and to support other public agency projects. The Anuenue project is a partnership between the DAGS and the US Coast Guard (USCG). In addition to the two Anuenue partner agencies, other public agencies planning to use the Anuenue Radio

Facility include: State of Hawaii Department of Defense Civil Defense Division, State of Hawaii Department of Health Emergency Medical Services System, State of Hawaii Department of Land and Natural Resources (DLNR), Forestry & Wildlife Division, DLNR Conservation & Resources Enforcement Division, US Department of the Interior National Park Service, Haleakala National Park, County of Maui Police Department, and County of Hawaii Police Department. The Kahua Ranch radio facility will be administered by the ICSD. Thus, the Anuenue Radio Facility at Kahua Ranch will be a public facility to be used by public agencies for public purposes.

The Anuenue Radio Facility at Kahua Ranch is one of three radio facilities that was funded by the State Legislature to support the modernization of the Anuenue Radio system. Legislative funding was sought and provided with the understanding that the *three facilities to be developed would be designed to accommodate the radio* communications infrastructure needs of other State and county agencies.

The purpose of the Anuenue Radio system is to install a modern high capacity digital interconnect to replace the Rainbow analog radio channels used by the various agencies. The digital interconnect will facilitate voice, digital radio, video, and data communications. The backbone of the new digital system will have the capability to transmit 155 Mbit/s (megabits per second), which is equivalent to 2016 traditional voice channels or about 17 times the capacity of the Rainbow analog system. The conversion to a digital system is needed to handle the expanding voice and data communications requirements of the public safety community. The conversion to high capacity digital microwave was also forced both by the Federally-mandated reassignment of analog microwave frequencies to personal communications systems (cellular telephones) and public safety agencies' growing need for communications services to properly serve the public in the coming years.

In addition to the Kahua Ranch Facility, DAGS intends to construct facilities on eastern Oahu and central Molokai for the Anuenue. The USCG is refurbishing its existing facilities at Mauna Kapu, Oahu and Haleakala, Maui and will construct new facilities in central Oahu and west Hawaii to accommodate the new digital microwave radio system. Existing State facilities elsewhere on Kauai, Oahu, Lanai, Maui, and Hawaii will also be used to support the Anuenue. The ICSD will license, own, and operate the microwave

radio links that will connect the Kahua Ranch Facility to USCG radio sites on Maui and Hawaii.

The new series of radio sites for Anuenue, including the Kahua Ranch Facility, is necessary to meet the line of sight criteria and to provide the minimum path length required for the new digital microwave radio system to operate reliably. Even if the frequencies had not been reassigned by the Federal government, frequencies in the 2 GHz (gigahertz) microwave band previously used by the Rainbow could not have been used to provide high capacity digital bandwidth due to regulatory constraints. Further, current regulatory trends either have or will soon reallocate all of the 2 GHz frequencies previously used for long haul and over water point-to-point microwave to personal communications services (cellular telephones) or other bandwidth hungry innovative technologies. The Anuenue can only operate in the frequencies that remain available for microwave interconnect; these frequencies in the higher frequency 6 GHz to 8 GHz range require closer spacing between microwave repeater stations.

The Kahua Ranch Facility will significantly upgrade the infrastructure that supports local government communications. The site will be used by the County of Hawaii Police Department to support the rebuild of the County loop microwave system. New County of Hawaii microwave links will connect from the Kahua Ranch Facility to sites at Kohala Gym, Moanuiahea, and Huehue. The County of Hawaii land mobile radio system (LMR) tower top antenna will provide dispatch radio coverage for the Police Department and other County users in the Kohala area.

Maui County will use the Kahua Ranch Facility to provide look back coverage to serve coastal areas from Kipahulu to Hana on Maui. Space will also be made for the U.S. Department of the Interior National Park Service land mobile radio system needed to provide coverage to the eastern portions of Haleakala National Park.

USCG radio systems to support public safety and the roll out of the new Rescue21 program will be housed at the Kahua Ranch Facility. The Kahua Ranch Facility will provide Federal, local, and State agency land mobile radio systems with data and voice communication coverage for users in the field that are within view of the Kahua Ranch Facility.

1.3 Project Location and Conditions

1.3.1 Project Location

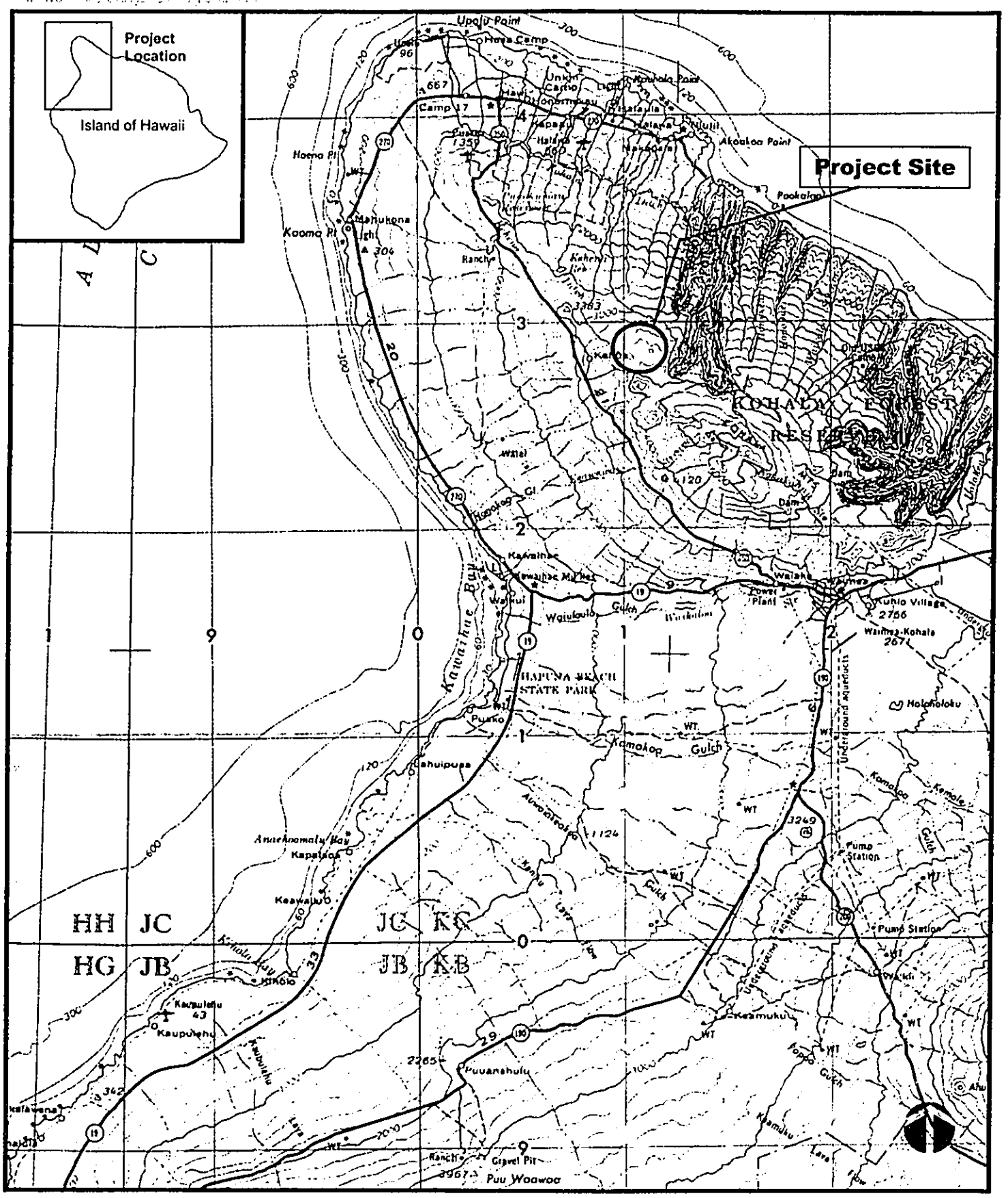
The project site is located about 11 miles north and west of Waimea and 7.5 miles southeast of Hawi, North Kohala District, in the Kohala Mountains in the northwestern portion of the island of Hawaii. The project site is located about one mile east of Kohala Mountain Road (State Route 250) and will occupy an area of about 7,200 square feet (0.165 acres) on the slopes to the southwest of Puu Waiakanonula at an elevation of about 3,817 feet mean sea level (msl). Since late 1920's, the project site and surrounding lands have been used for cattle grazing by Kahua Ranch, Ltd., the landowner. Figure 1.1 shows the project location map. Figure 1.2 shows the project site map. Figure 1.3 shows the tax map. Figure 1.4 shows the project site topographic map. Figure 1.5 shows site photographs.

Kahua Ranch is prime location to base LMR systems of various government agencies as the site provides excellent coverage of the "backside" of Haleakala and the entire eastern end of Maui County. In addition, the Kahua Ranch site also offers coverage of the ocean area off the windward coast of the Big Island as well as excellent local area coverage in the North Kohala area.

1.3.2 Existing Project Site Conditions

The Kahua Ranch project site is located within Tax Map Key: 5-9-02:2, and will be used under an easement agreement between the State of Hawaii and Kahua Ranch, Ltd. The approximately 7,200 square-foot project site is currently an open grass-covered portion of the puu used for cattle grazing. No buildings or other structures are located on the project site. See Figure 1.4.

The project site is located between an existing 40-foot high guy-supported three-legged tower and supporting communication facilities owned by the County of Hawaii Police Department and the Next Generation Weather Radar (NEXRAD) facility operated by the US Department of Transportation Federal Aviation Administration (FAA) for the National Oceanic and Atmospheric Administration National Weather Service (NWS). The NEXRAD is a doppler radar system used to track weather conditions and provides no voice communications to aircraft or ground locations. See Figure 1.4.



ANUENUE (FORMERLY RAINBOW) RADIO TOWERS AND FACILITIES - KAHUA RANCH SITE

Project Location Map

Figure No.

1.1

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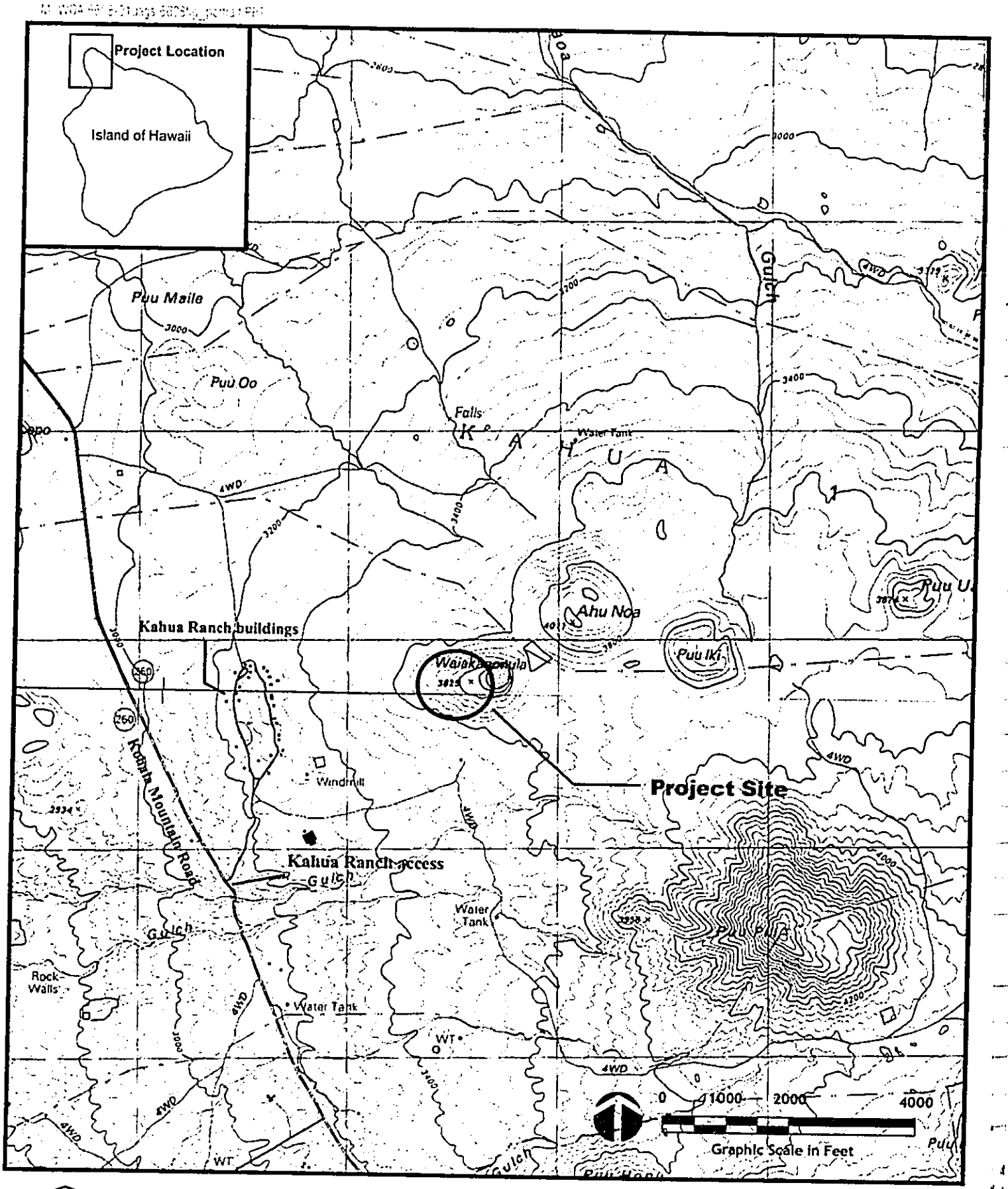

ANUENUE (FORMERLY RAINBOW) RADIO TOWERS AND FACILITIES - KAHUA RANCH SITE

Project Site

Figure No.

1.2

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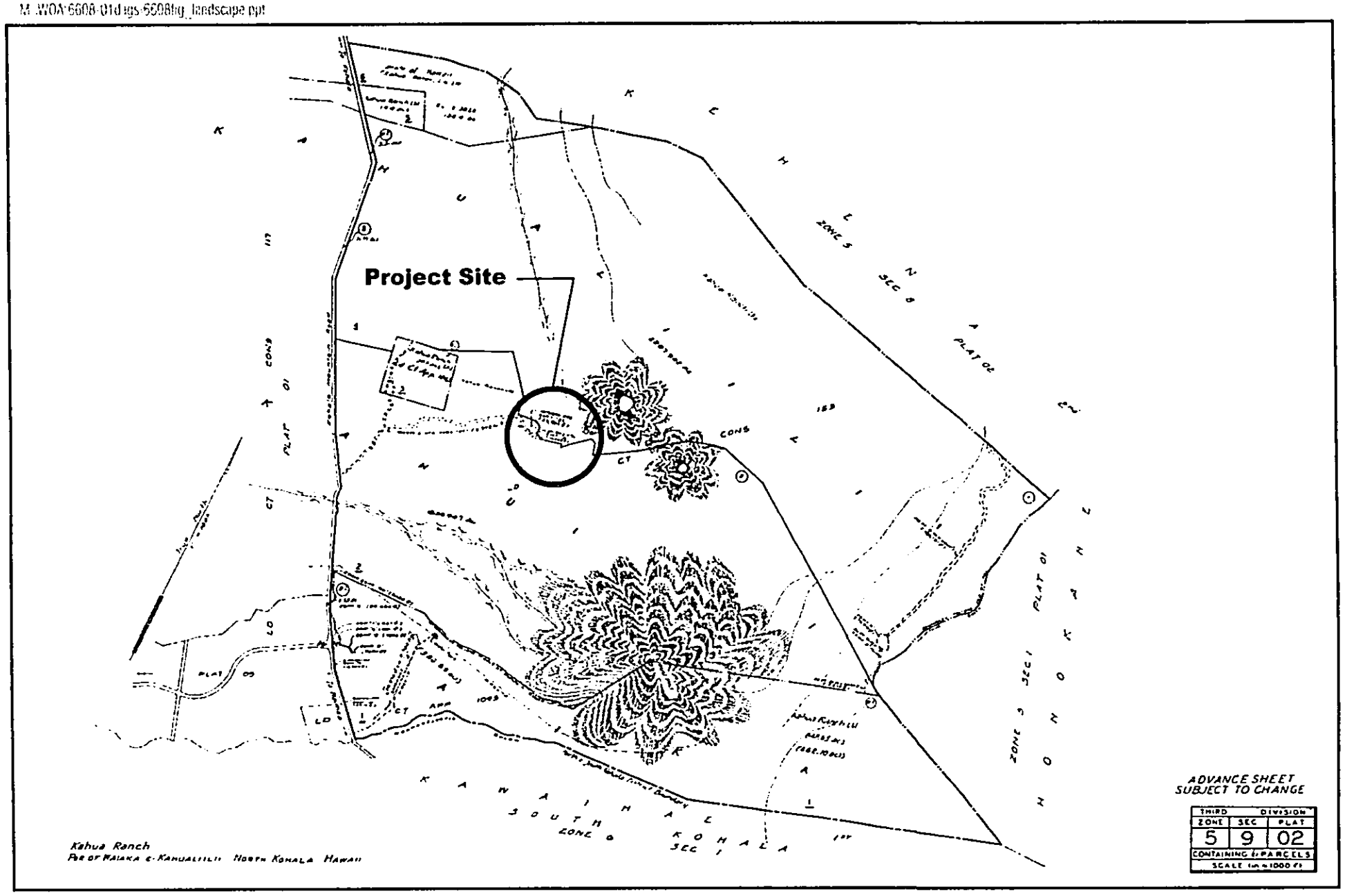

ANUENUE (FORMERLY RAINBOW) RADIO TOWERS AND FACILITIES - KAHUA RANCH SITE

Figure No.

Tax Map Key 5-9-02

1.3

Wilson Okamoto
CORPORATION

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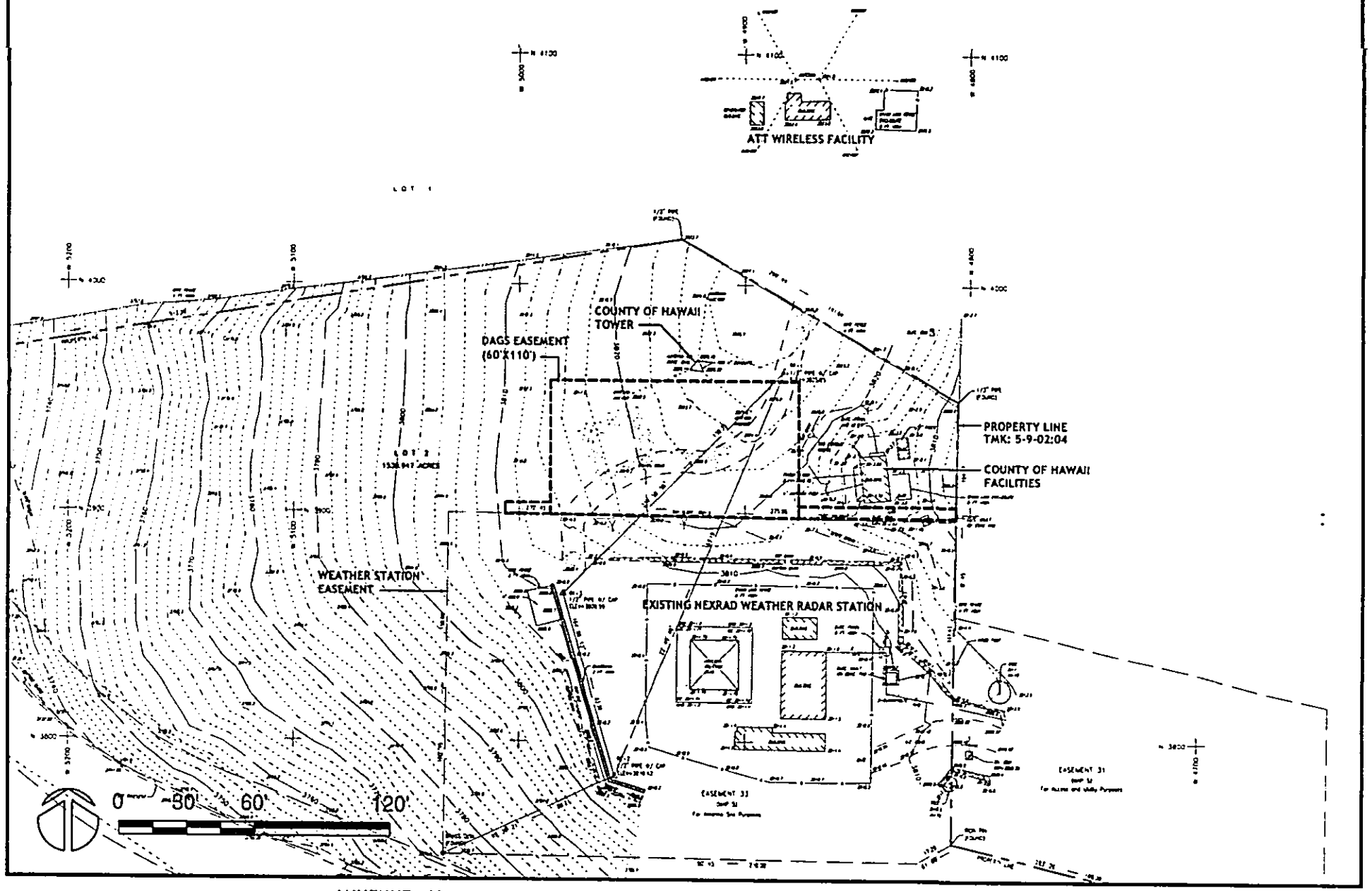

ANUENUE (FORMERLY RAINBOW) RADIO TOWERS AND FACILITIES - KAHUA RANCH SITE

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Project Site Topographic Conditions

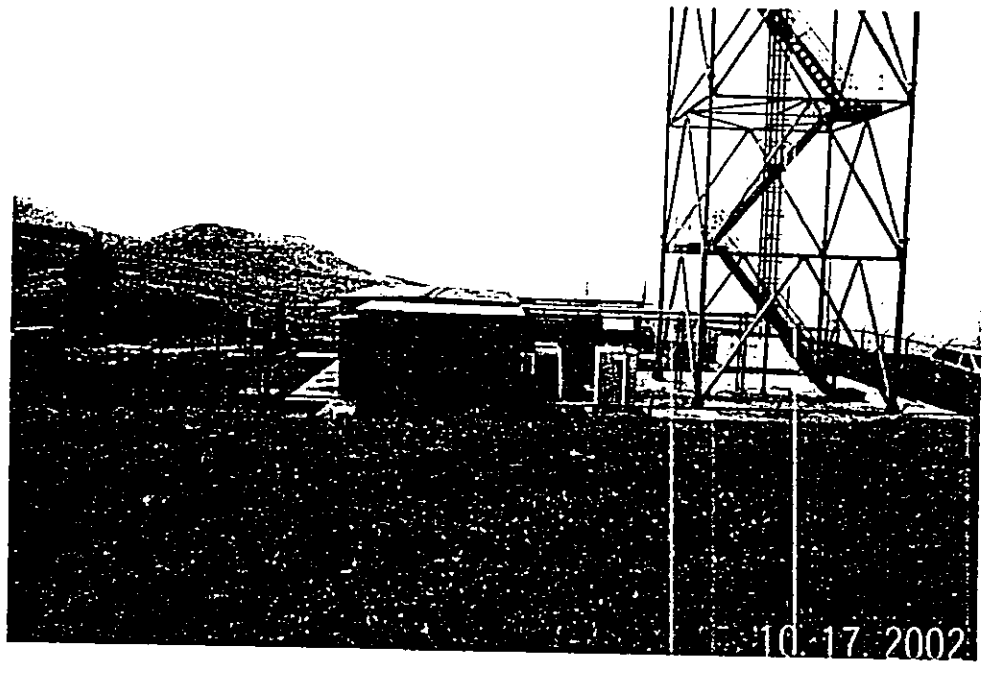
Figure No.

1.4

View of ironwood trees along Kohala Mountain Road

View of project site from Kohala Mountain Road

View from project site looking northwest



View of FAA facilities and portion of tower

FIGURE 1.5

The County of Hawaii Police Department facilities include the 40-foot tower with three grid antennas, a 240 square-foot equipment building, and a 45 square-foot, three-sided shelter to house a propane powered emergency generator. The equipment building and shelter are located to the east of the project site and below an approximately 8-foot high embankment.

The NEXRAD site consists of a four-legged, self-supporting tower that holds a base-truncated dome for the scanning weather radar, two equipment shelters, an emergency generator shelter, an above-ground diesel fuel tank, and a transformer pad all enclosed within a 8-foot high chain link fence topped with barbed wire. A 6-foot high geocell retaining wall is located along the north and east sides of the NEXRAD facilities. The total height of the tower and radar dome is approximately 132 feet high, with the tower being about 99 feet high and the truncated radar dome about 33 feet high. The improved area of the NEXRAD facility is about 0.77 acres (225 feet by 150 feet) and most of the facilities lie at an elevation of about 3,810 feet mean sea level (msl). The NEXRAD site has been cut and graded to provide a relatively level surface for the facilities.

An ATT Wireless facility, consisting of two 94-foot tall poles with antennas and supporting facilities, is located north of the County of Hawaii tower on an adjacent parcel owned by Ponoholo Ranch (TMK: 5-9-02:04). The existing access trail across the Kahua Ranch property leading to the ATT Wireless facility will have to be relocated to the west to accommodate the Anuenue Radio Facility.

A solar powered seismic monitoring station owned and operated by the US Department of the Interior Geological Survey (USGS), Hawaii Volcano Observatory and rain gauge station lie at the end of the access road to the NEXRAD facility.

1.3.3 Other Project Site Data

The project site is designated Intensive Agricultural on the County of Hawaii General Plan Map. The County of Hawaii zoning designation for the project site is Agriculture (AG-20). The Anuenue Radio Facility will be a public facility to be used by public agencies for public purposes. However, a Special Permit approved by the County of Hawaii Planning Commission will be required to construct and operate the Anuenue Radio Facility.

The State Land Use Commission designates the Kahua Ranch project site in the Agricultural District.

The project site is not located within the County of Hawaii Special Management Area (SMA).

1.4 Project Description

1.4.1 Project Site Plan

As previously discussed, DAGS will use the project site under an easement agreement that is being negotiated with Kahua Ranch. The project site will not be subdivided into a separate parcel. The project site will encompass a 60-foot by 110-foot area plus adjacent access driveway for a total area of 7,200 square feet (0.165 acres) on Kahua Ranch land immediately adjacent to and north of the NEXRAD easement. An electrical and communications easement (5-foot by 70-foot) will extend to the east and a drainage easement (5-foot- by 40-foot) to the west. Figure 1.6 shows the site plan.

The project site will include a 70-foot tall four-legged tower, an equipment building, an above-ground fuel tank protected by bollards, and retaining walls along the north and east boundaries. An 8-foot high chain link fence topped with barbed wire will be placed around the north, west and south sides of the building and tower to protect the tower and to prevent access to the building. In addition, the covered lanai area of the building will be fenced. The areas immediately surrounding the tower and to the south of the equipment building will be paved or covered with gravel to limit weed growth within the project site. The paved/gravel area along the south side of the building will provide access to the fuel tank and the County of Hawaii facilities. A gate will be installed in the east retaining wall to permit access to the existing County facilities.

The project site will be graded and sloped slightly to the south and west to allow surface runoff into a subsurface drainage system which be connected to the drainage structures previously constructed for the NEXRAD facilities. An inlet catch basin and underground lines may be used to drain the eastern side of the building. The project site will require a cut of about 8 feet. The design plans show the equipment building will be at elevation about 3,817 feet msl which will place it about 5 feet above the NEXRAD concrete bases.

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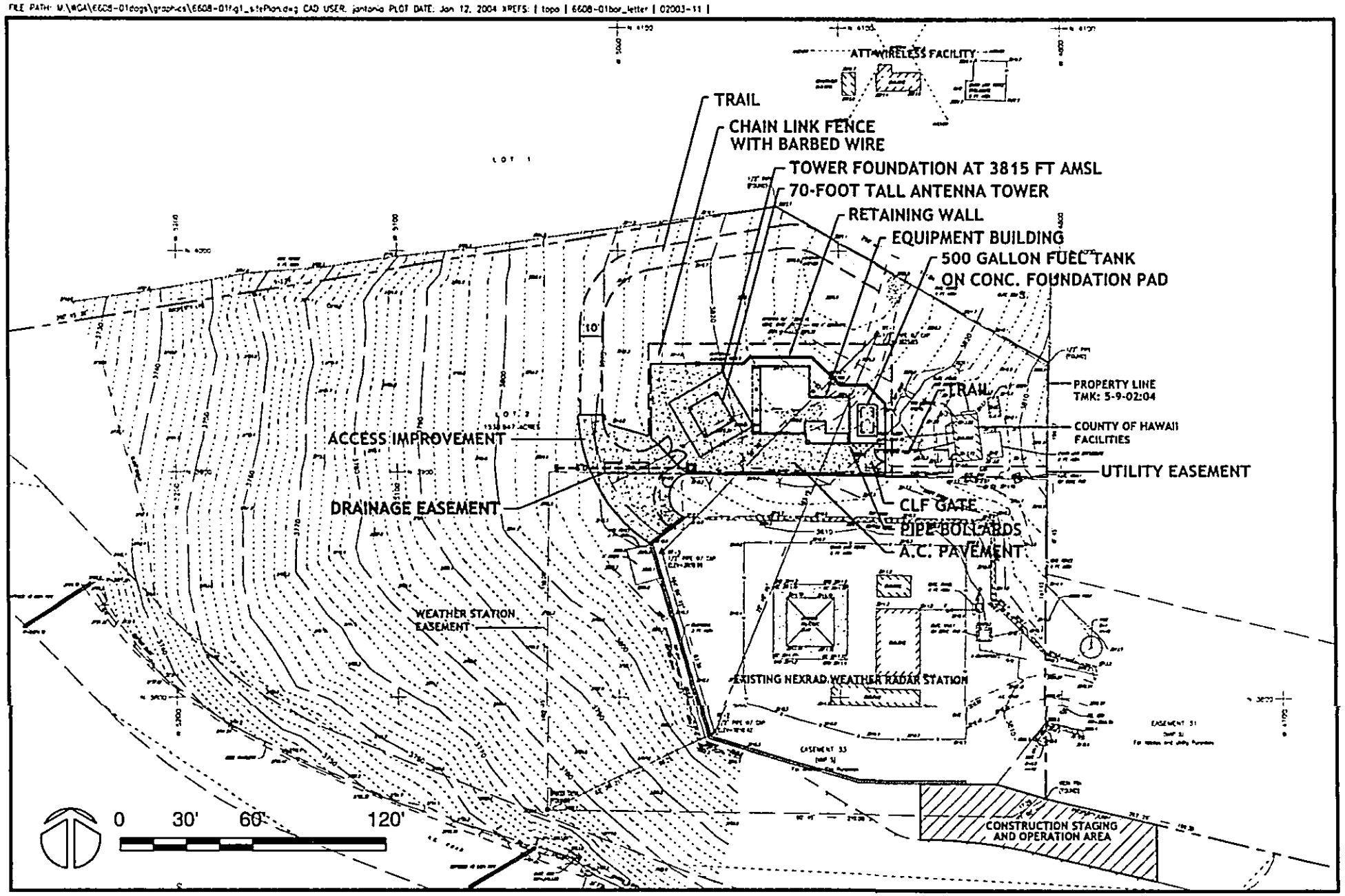


ANUENUE (FORMERLY RAINBOW) RADIO TOWERS AND FACILITIES - KAHUA RANCH SITE

Figure No.

Project Site Plan

1.6

Wilson Okamoto

The piers on the new tower foundation will be at about 3,819 feet msl which will place the top of steel structure of the new 70-foot tall tower about 35 feet below the lowest possible excursion of the NEXRAD's scanning radar beam. The top of the highest whip antenna planned for installation on the top of the new tower will not exceed 21½ feet in height. This will place the tip of the whip antenna 13½ feet below the lowest possible excursion of the NEXRAD radar beam.

A 6 to 8-foot high reinforced concrete retaining wall be placed about 4 feet away from the north wall of the building and along the eastern boundary of the project site. The area behind the wall will be backfilled to approximate the existing ground surface.

No potable water will be provided at the project site.

No toilet facilities will be provided in the building or at the project site.

Contractor personnel and other visitors to the project site can use the areas next to the building to park vehicles while servicing and maintaining the equipment and the facilities and while putting fuel into the exterior above ground fuel tank.

The existing unimproved access trail to the ATT Wireless facilities will be relocated to the west of the project site and will connect to the existing gate

An area to the east and south of the NEXRAD facility will be designated for use by the construction contractor as an operation and staging area. Once construction has been completed, this area will be restored to its current cattle grazing condition.

1.4.2 Project Access

Access to the project site will be via an existing 10-foot wide paved access road constructed as part of the NEXRAD project. The paved access road, which starts about 1,000 feet from the intersection of Kohala Mountain Road and the Kahua Ranch entry, is also used to access the County of Hawaii police facilities, the ATT Wireless site on neighboring property, and the ranch lands of Kahua Ranch. The paved access road, constructed by the FAA, is primarily located within Kahua Ranch lands with a short segment near its terminus located within lands owned by Ponoholo Ranch.

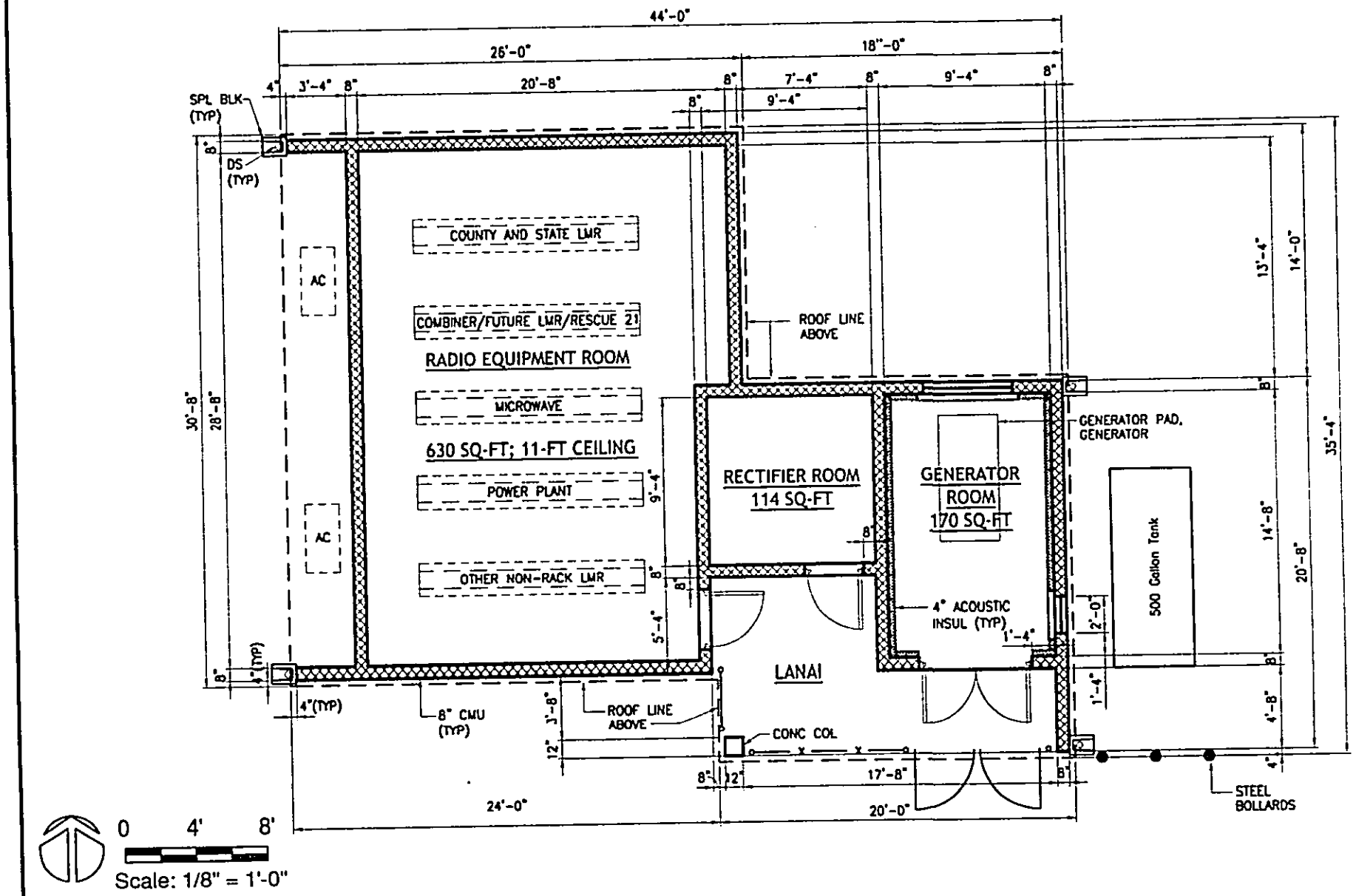
1.4.3 Equipment Building Plan

A three room, single story 914-square foot (SF) radio building with 8-inch thick reinforced concrete-masonry unit (CMU) walls and concrete slab floors will be constructed on the project site to accommodate a 630-SF radio equipment room, a 114-SF battery room, and a 170-SF emergency generator room. A 3-foot wide roof overhang will be provided on the west-facing wall to protect openings in the wall for the approximately 12 elliptical microwave waveguide cables (typically 2.21" by 1.26" oval in cross section) and 10 coaxial cables (typically 0.63" to 1.09" in diameter) which will be installed through the wall openings. Figure 1.7 shows the building floor plan. Figure 1.8 shows the building elevations.

The south side of the equipment building will have a covered lanai to provide protection against wind and rain for the exterior entrances to the radio and battery rooms and the emergency generator. Louvered openings will be provided on the south, north and east walls of the generator room, as needed. A security fence and gate will be constructed along the south end of the lanai to control access. See Figure 1.8.

The radio room will be designed with 11-foot 8-inch high clear height ceiling to accommodate 8-foot tall equipment racks, overhead wiring trays, and microwave waveguide and land mobile radio (LMR) coaxial cables as well as cable and waveguide support hardware. Typically, the equipment racks will be purchased and installed as part of each user agency's radio installation project. Although agencies may share the space or equipment within one rack (as will be done for the Anuenue microwave system), typically, each agency's systems will be grouped into its own rack and/or cabinet group.

An integrated approach will be taken to protect the entire facility from the damage caused by lightning strikes. The equipment racks will be isolated from the floor with an insulation gasket as part of the effort to protect the equipment from damage caused by lighting strikes. An internal ground halo will be provided for connection of non-active metallic items such as door frames and cable racks. Surge protected entryways will be required for all waveguide, coaxial, signal (such as telephone or similar external system connections), and electrical power connections. Protection will also include the establishment of a single point ground for user equipment. The tower and the building ground systems will be interconnected to both a ground well, buried ground halos, and



ANUENUE (FORMERLY RAINBOW) RADIO TOWERS AND FACILITIES - KAHUA RANCH SITE

Figure No.

Floor Plan

1.7

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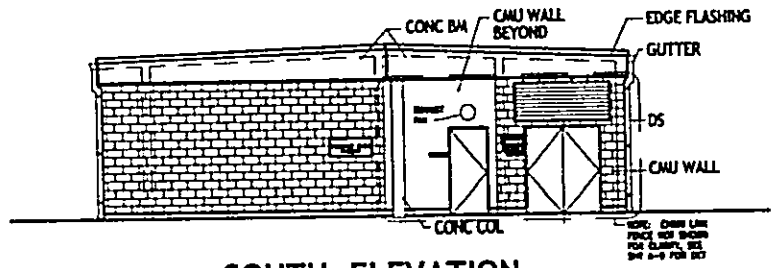
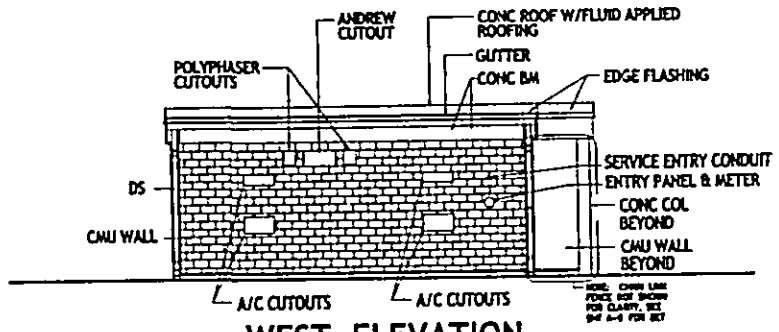
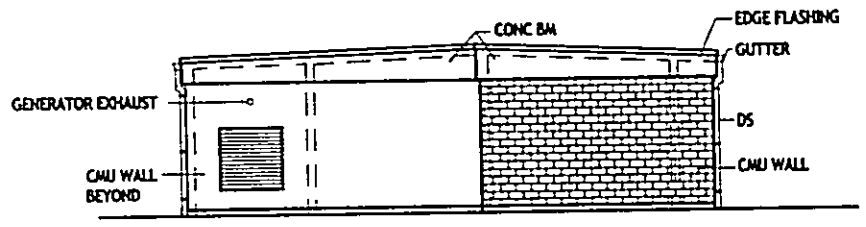


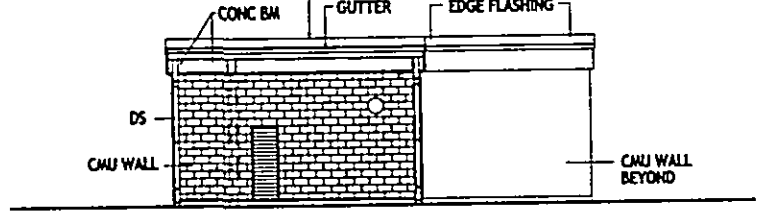
SOUTH ELEVATION



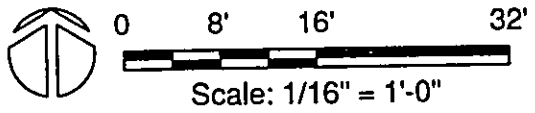
WEST ELEVATION



NORTH ELEVATION



EAST ELEVATION



ANUENUE (FORMERLY RAINBOW) RADIO TOWERS AND FACILITIES - KAHUA RANCH SITE

Figure No.

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Building Elevations

1.8

an exothermically welded connection to the reinforcing bars of the tower (a Ufer ground).

The 114-SF battery room will house several independent backup battery systems, with at least one system to support State equipment and another to support County systems. These battery systems are comprised of strings of valve regulated lead acid (VRLA) batteries cells which are an improved version of the lead acid batteries in found most vehicles. However, the VRLA batteries are supplied with a gelled electrolyte, do not require water, and have been designed not to leak. Although the VRLA cells are not classified as hazardous materials, a spill containment system will be installed which will consist of a acid resistant container filled with a neutralizing absorbent. The containment system will trap any accidental leakage of battery electrolyte. In addition, in the event of leak, The VRLA batteries will be equipped with flame arresting safety vents.

The batteries to be installed will be similar to those found at other State facilities which have used 48 individual cells, each weighing 88 pounds, to make a battery that will support the radio equipment for 15 hours without the use of commercial power. Such a battery contains about 920 pounds of gelled electrolyte and 3,360 pounds of lead plates.

The batteries are kept under constant charge by rectifiers that also normally provide direct current (DC) power to the critical radio equipment. The rectifiers will operate from commercial power that is backed up by an autostart generator. The use of the commercial/battery/generator redundancy is standard procedure in the telecommunications industry and at public safety facilities.

The commercial power will be routed to the project site via an underground cable which will connect to the existing underground cable supplying power to the FAA NEXRAD weather station. The commercial power will be purchased from Hawaii Electric Light Co. (HELCO).

In addition, there are underground HELCO ductlines between the County of Hawaii facility and the County's tower and underground ductlines to the ATT Wireless facilities. As requested by HELCO, the design plans will be submitted to HELCO for review to ensure that these ductlines are not damaged during construction of the Anuenue Radio Facility.

Although VRLA batteries have a projected service life of about 20 years, experience to date indicates that replacement should be scheduled at 10-year intervals. It is ICSD policy that all removed batteries be recycled, not disposed, in accordance with all federal and State environmental regulations.

The VRLA batteries will be tested, cleaned, and serviced semi-annually by contractor personnel.

The 170-square foot generator room will house a 40 kilowatt (kW) diesel generator to provide emergency power in the event of a power outage to the commercial system. The DAGS specifications require that the emergency system provide power to the facility in the event of an outage for a 7-day period. The emergency generator will be sized to provide sufficient power for charging the batteries, running the air conditioning for the building, and other facility needs in the event of a commercial system power outage. See Figure 1.7.

A diesel-fuel emergency generator will be used to supply electrical power in cases when commercial power is not available. The diesel fuel will be stored in a separate two-section double-walled Convault style above ground tank. It is expected that at least a 500-gallon total fuel capacity will be required to provide for the desired 7-day supply of fuel. The above ground double-walled tank will not require a spill containment system around its base.

The emergency generator will be tested by operating it once or twice a month for period of about 3 to 4 hours under load test to ensure that is operational during emergency situations. Contractor personnel will conduct the tests and maintain the emergency power system.

The building will be equipped with a building alarm system to telemeter door entry, high temperature conditions, and fire alarms. The equipment room and rectifier room will be will be equipped with a fire suppression system suitable for use in rooms with electronic equipment. The fire suppression system will use a compound of carbon, fluorine, and hydrogen as the suppressant which is non-ozone depleting and safe for use in occupied spaces. County of Hawaii fire protection will be needed at the project site to safely enter the building in the event of a fire and discharge of the fire suppression system.

1.4.3.1 Tower and Building Design Criteria

The DAGS specifications require the building, tower, and antennas remain operational at wind speeds up to 110 miles per hour (mph) and the facilities survive wind speeds up to 155 mph. Wind speeds of 110 mph are the highest sustained winds expected in a Safir-Simpson Category 2 hurricane. Wind speeds of 155 mph are the highest reached in a Safir-Simpson Category 4 hurricane.

Discussions with Kahua Ranch indicate the mean wind speed is about 20 mph at the project site and that wind speeds of 80 mph occur for 15 to 20 days per year. Wind speeds of 110 mph would not be unusual for the project site. Sustained wind speeds of 128 mph have been recorded at the project site.

1.4.4 Tower and Antennas

A four-legged self-supporting pipe-leg, 70-foot high tower will be used to mount a total of 24 antennas including 11 solid microwave antennas, the two largest of which will be 15-foot in diameter. The tower will also support microwave grid antennas, the largest of which is 8-foot in diameter, and other antennas including top mounted whips and side mounted smaller antennas such as directional yagis and panel antennas. The tower will include work platforms, internal climbing ladders equipped with a safety climb device, ladder and trap door locks, waveguide ladder, and covered transmission line bridges between the tower and the building entry point. The tower will initially be left unpainted which will be a light gray shade due to galvanized finish. Eventually the tower will be painted a light gray shade similar to the color of the galvanized finish. Figure 1.9 shows the tower plan, Figure 1.10 the antenna plan, and Figure 1.11 the antenna coverage plan.

A FAA Form 7460-1, Notice of Proposed Construction or Alteration was filed by DAGS with the FAA to obtain approvals for the location and height of the tower and the use of radio transmitting facilities in the vicinity of the NEXRAD facility. On November 24, 2003, the FAA completed Aeronautical Study No. 2203-AWP-4081-OE and determined that the tower does not exceed obstruction standards and would not be a hazard to air navigation. The FAA evaluation also determined that marking and lighting are not necessary of aviation safety.

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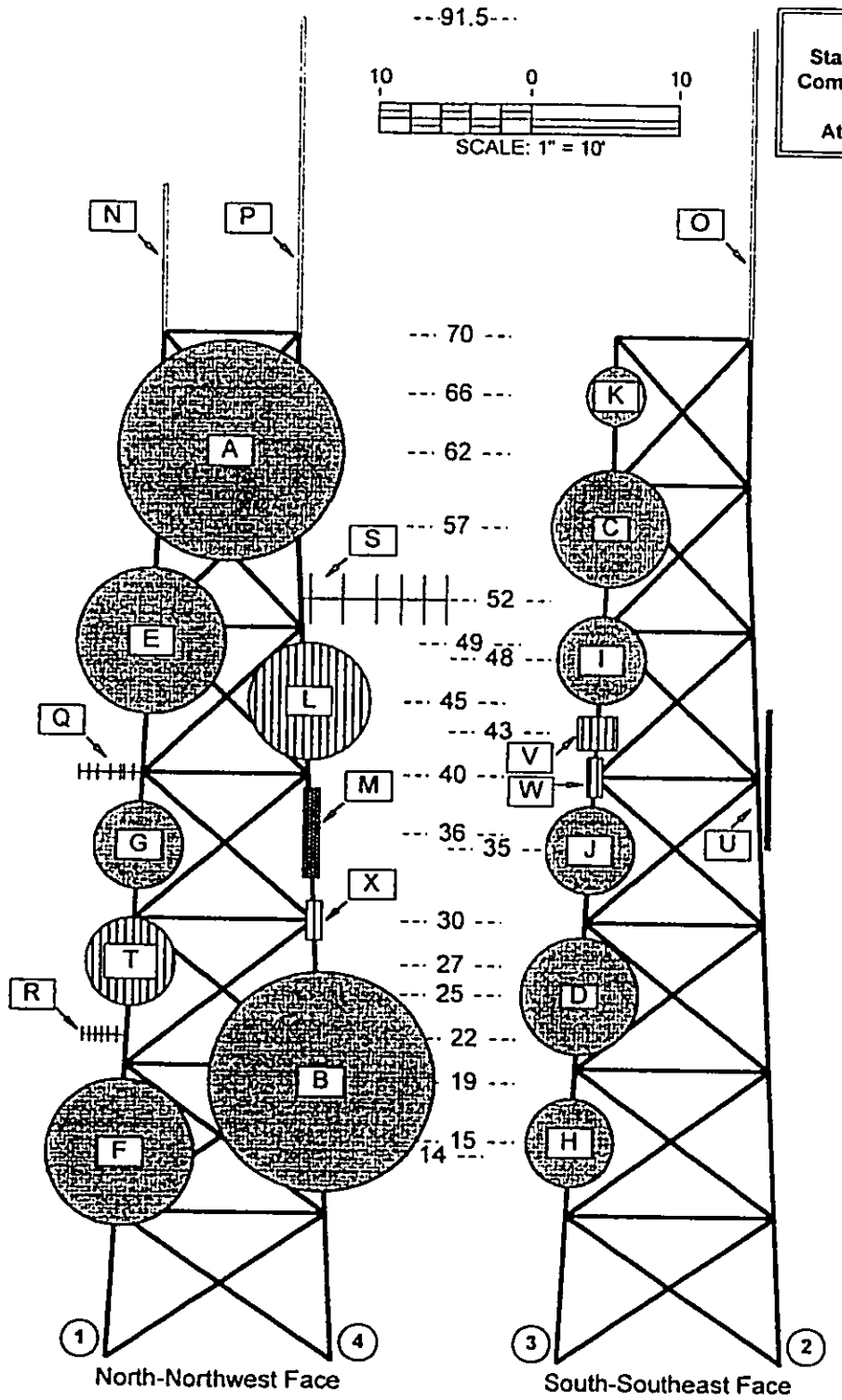

October 23, 2003
State of Hawaii at Kahua Ranch
Complete Description of Proposal
7460-1 Line 21
Attachment 5: Tower Layout

Design Requirements

1. 70' high, 4 leg tower, 15' leg-to-leg at base: Microflect 108-M810-70M
2. 155-mph wind survival with NO radial ice.
3. Work platforms at 15', 40', and 60'.
4. Internal climbing ladder with Safety-Climb Cable.
5. Waveguide ladder.
6. Oversize leg bolts.
7. N-W face of tower must be perpendicular to 330.0 degree bearing; i.e. parallel to 60.0 true
8. c/l of NEXRAD beam above this tower is estimated to be at 105 ft. AGL assuming base of radar tower located 85 feet away is 7 ft lower in ground elevation.

Antennas

A & B	State, Haleakala
C & D	State, Kaupulehu
E & F	(future) State, Hana
G	Haw Cty, Kohala Gym
H & I	Haw Cty, Moauiahea
J & K	Haw Cty, Huehue
L	Maui PD, Haleakala
M	Maui PD, Kipahulu
N	State, 800 MHz whip
O	Haw Cty, VHF whip
P	State, UHF 20' whip
Q	State, UHF yagi, Maui
R	Natl Park, UHF
S	Natl Park, VHF
T	Hawaii HRD
U	Hawaii 48 MHz
V	Kahua Ranch 2.4 GHz
W, X	Kahua Ranch 2.4 GHz

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ANUENUE (FORMERLY RAINBOW) RADIO TOWERS AND FACILITIES - KAHUA RANCH SITE

Tower Plan

Figure No. **1.9**

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ANTENNA SCHEDULE

LABEL	ANTENNA SIZE & DESCRIPTION	CENTERLINE ELEVATION FEET	AZIMUTH TRUE NORTH	PATH DIRECTION	USER
A	15' DIAMETER UHX LOWER 6 GHz DISH ANTENNA w/RADOME	62'	322.2	HALEAKALA USCG	STATE
B	15' DIAMETER UHX LOWER 6 GHz DISH ANTENNA w/RADOME	19'	322.2	HALEAKALA USCG	STATE
C	8' DIAMETER UHX LOWER 6 GHz DISH ANTENNA w/RADOME	57'	200.2	KAUPULEHU USCG	STATE
D	8' DIAMETER UHX LOWER 6 GHz DISH ANTENNA w/RADOME	25'	200.2	KAUPULEHU USCG	STATE
E	10' DIAMETER UHX UPPER 6 GHz DISH ANTENNA w/RADOME	49'	348.0	HANA	FUTURE STATE
F	10' DIAMETER UHX UPPER 6 GHz DISH ANTENNA w/RADOME	14'	348.0	HANA	FUTURE STATE
G	6' DIAMETER LOWER 6 GHz DISH ANTENNA	35'	349.2	KOHALA GYM	HAWAII COUNTY
H	6' DIAMETER LOWER 6 GHz DISH ANTENNA	15'	203.3	MOANUIAHEA	HAWAII COUNTY
I	6' DIAMETER LOWER 6 GHz DISH ANTENNA	48'	203.3	MOANUIAHEA	HAWAII COUNTY
J	6' DIAMETER LOWER 6 GHz DISH ANTENNA	35'	200.1	HUEHUE	HAWAII COUNTY
K	4' DIAMETER LOWER 6 GHz DISH ANTENNA	66'	200.1	HUEHUE	HAWAII COUNTY
L	8' DIAMETER GRID DISH ANTENNA	45'	321.9	HALEAKALA COUNTY	MAUI COUNTY
M	800 MHz FLAT PANEL ANTENNA	36'	339.0	KIPAHULU	MAUI COUNTY
N	800 MHz WHIP ANTENNA	70'	OMNI	OMNI	STATE
O	VHF WHIP ANTENNA	70'	OMNI	OMNI	HAWAII COUNTY & STATE
P	UHF WHIP ANTENNA	70'	OMNI	OMNI	STATE
Q	UHF YAGI ANTENNA	40'	348.0	HANA	STATE
R	UHF YAGI ANTENNA	22'	318.0	HALEAKALA NATIONAL PARK	HALEAKALA NATIONAL PARK
S	VHF YAGI ANTENNA	52'	320.0	HALEAKALA NATIONAL PARK	HALEAKALA NATIONAL PARK
T	6' DIAMETER MINI-GRID ANTENNA	27'	331.2		HAWAII HRD
U	FOLDED DIPOLE ANTENNA	40'	331.0		HAWAII 48 MHz
V	2.4 GHz MINI-GRID ANTENNA (32"x27" SQUARE)	43'	210.0		KAHUA RANCH
W	2.4 GHz 90 DEGREE SECTOR ANTENNA (32"x12")	40'	225.0		KAHUA RANCH
X	2.4 GHz 90 DEGREE SECTOR ANTENNA (32"x12")	30'	315.0		KAHUA RANCH

Wilson Okamoto CORPORATION

ANUENUE (FORMERLY RAINBOW) RADIO TOWERS AND FACILITIES - KAHUA RANCH SITE

Antenna Plan

Figure No. 1.10

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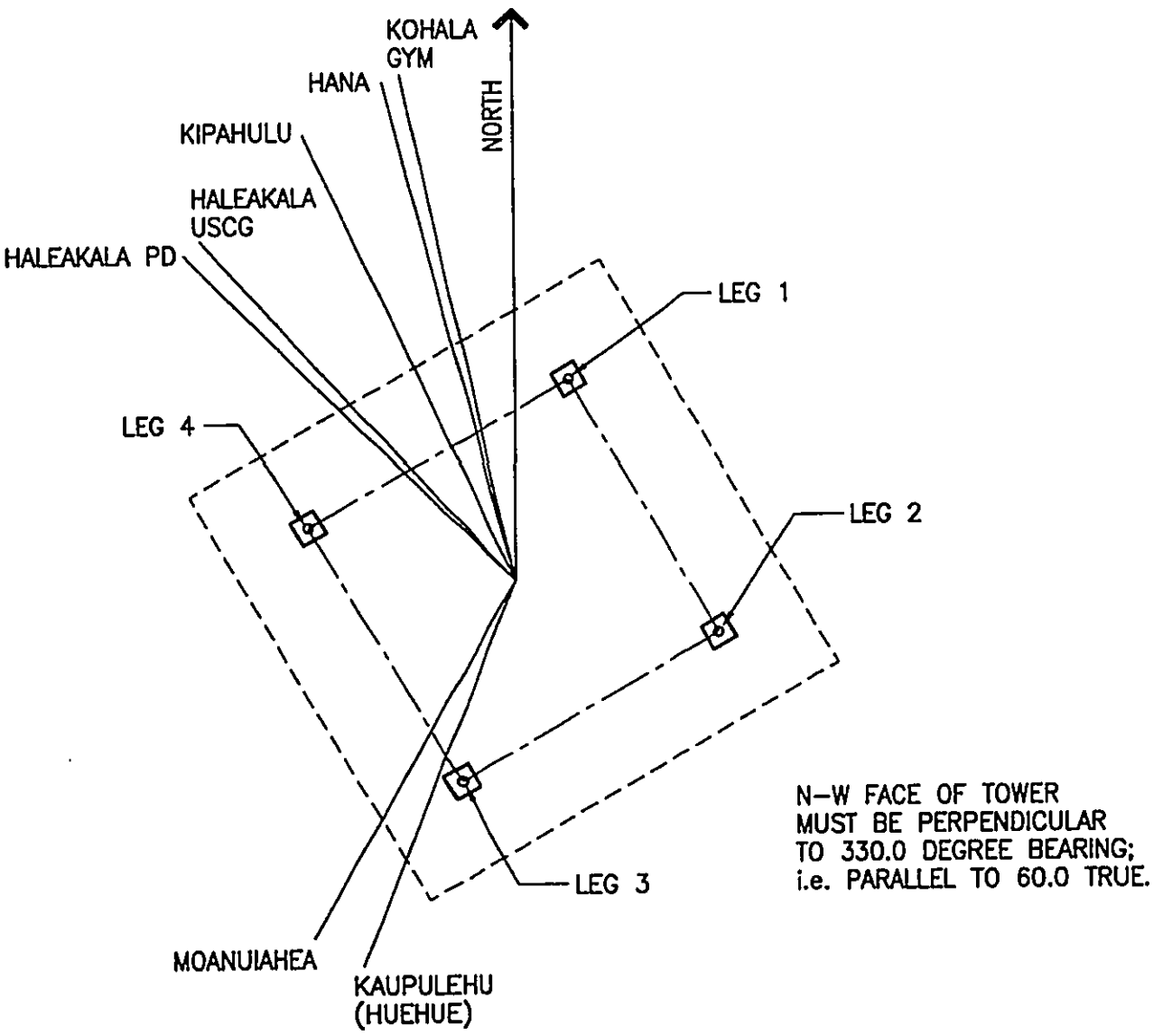

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ANUENUE (FORMERLY RAINBOW) RADIO TOWERS AND FACILITIES - KAHUA RANCH SITE

Antenna Coverage Plan

Figure No. **1.11**

1.4.5 Electromagnetic Radiation (EMR)

The DAGS Anuenue Radio Facility at Kahua Ranch will support multiple radio transmitters that operate in two broad categories: point-to-point microwave and land mobile radio (LMR). The new point-to-point microwave transmitters to be installed by both the State and the County of Hawaii will operate in the 6 GHz microwave bands. Some of the legacy systems that may be relocated to the new tower operate in the 960 MHz and 2 GHz microwave bands. These microwave systems will transmit continuously and concentrate their emission in a narrow highly directional beam that does not move. None of the energy from these microwave transmitters is expected to reach, spill, or scatter into any nearby surface areas or structures that can be accessed by people.

The 6 GHz microwave transmitter output powers are typically in the range of a watt or less. The LMR systems to be installed at the Anuenue Radio Facility will operate on frequencies that range from just above 100 MHz to just under 900 MHz. LMR systems transmit intermittently with their duty cycles related to system traffic. A typical LMR system would have a transmitter output power of 100 watts (or less) and transmit in an omni-directional (or wide sector) pattern with energy concentrated downhill or towards the horizon.

1.5 Project Operation

1.5.1 Personnel

No government or contractor personnel will be assigned to daily operation of the Anuenue Radio facility. However, as previously discussed, contractor personnel will visit the project site to conduct tests and to perform maintenance service on the air conditioning and power systems and to clean the building and surrounding area.

The radio equipment and battery will be serviced at least twice per year by contractor personnel from separate companies with technicians responding intermittently as needed to equipment failures. Technician visits typically would not exceed twenty man-days per year per system (or agency). In total, an average of about 10 to 20 trips/month will be made by contractor personnel to the Kahua Ranch facility.

1.5.2 Hours of Operation

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

1.6 Preliminary Cost Estimate

The budgeted construction cost, excluding the equipment, for the Kahua Ranch facility is approximately $500,000 which will be funded by DAGS.

1.7 Project Schedule

Construction is expected to start in first quarter of 2004 and should require about 6 months to complete. The facility should be in operation by the third quarter of 2004.

2. DESCRIPTION of EXISTING ENVIRONMENT, IMPACTS and MITIGATION MEASURES

2.1 Geology and Soils

2.1.1 Existing Environment

The project site is located on the slopes to the southwest of Puu Waiakanonula, one of a number of volcanic cinder cones occurring in the northwest portion of Hawaii. The County of Hawaii is assigned seismic zone 4 in the 1977 Uniform Building Code (UBC), the zone with the most stringent building structural requirements. Seismic zone 4 is also assigned to the coastal areas of California. Originally enacted in 1927, the UBC was developed by the International Code of Building Officials to guide construction of buildings, structures, and facilities throughout the US. The State of Hawaii and the counties in state, including the County of Hawaii, have adopted the UBC as the applicable code for constructing buildings, structures, and facilities. The County of Hawaii uses the 1991 UBC.

The purpose of the seismic provisions in the UBC is primarily to safeguard against major structural failures and loss of life, not to limit damage or maintain functions. Structures are to be designed and constructed as a minimum to resist the effects of ground motions from seismic events. The site seismic hazard characteristics in the UBC are based on the seismic zone and proximity of the site to active seismic sources.

The Soil Survey of Island of Hawaii prepared by the US Department of Agriculture Soil Conservation Service (now Natural Resources Conservation Service) shows the soils of the project site to be Kahua silty clay loam. A profile of this soil shows a surface layer of very dark silt loam, underlain with grayish-brown silty clay. The permeability is moderately slow, runoff is slow, and the erosion hazard is slight.

2.1.2 Impacts and Mitigation Measures

The Anuenue Radio Facility will be designed and constructed to meet the requirements of latest version of the UBC. This will ensure that the Anuenue Radio Facility can meet the seismic loadings established for Zone 4. This will ensure that the geological conditions at the project site do not adversely affect the building and facilities.

Construction of the equipment building and tower will require subsurface excavation for placement of the foundations and footings for the tower and building. This will disturb surface and subsurface soils and displace the soils with on-grade slab foundations which will be placed on the surface of the surrounding the tower and building. However, this disturbance will not adversely affect the soils and geology of the project site and surrounding area.

2.2 Water Resources and Flood Hazard

2.2.1 Existing Environment

The project site is located on the slopes to the southwest of Puu Waiakanonula at an elevation of about 3,820 feet mean sea level (msl). The US Department of the Interior Geological Survey (USGS) topographic map shows that base of Puu Waiakanonula is located at approximately 3,600 feet msl. The USGS map shows there are no surface water resources on the project site.

The USGS map also shows a naturally occurring pond located about 300 feet to the east of the project site within Ponoholo Ranch and a man-made reservoir about 1,000 feet to the east. The pond in Ponoholo Ranch is not classified as a wetland.

The project site is not shown in the May 1988 (Revised) Federal Emergency Management Flood Insurance Rate Map Community Panel Number 155166 0100C. This would indicate the project site is not located within the flood hazard area of a 100-year floodplain. Thus, the project site is not subject to flooding.

2.2.2 Impacts and Mitigation Measures

There are no surface water sources on the project site. There will be no discharges from the project site directed to waters of the US or waters of the State of Hawaii.

Temporary erosion control measures will be used during construction to prevent runoff to nearby areas, including to the adjacent NEXRAD and County of Hawaii facilities. These mitigation measures will include placement 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 the construction period.

The 7,200 SF project site would be cleared and graded to construct the equipment building and tower foundation. The project site would be sloped to the west to direct surface flow from rainfall away from the equipment building. Surface runoff would be collected by swales or, if needed, a subsurface drainage system.

The surface flow will be directed to lower elevation areas to the west, which are used by Kahua Ranch to graze cattle, or into an underground system connected to the existing NEXRAD system. Directing the runoff to the west will minimize flow to the Ponoholo Ranch lands located to the east.

2.3 Agricultural Lands

2.3.1 Existing Conditions

In 1975, the US Department of Agriculture Soil Conservation Service (now Natural Resources Conservation Service) initiated a nationwide inventory of important farmlands. When completed, the inventory included three categories "prime", "unique", and "other farmlands of state-wide and local importance". This classification was later adopted by the State of Hawaii Department of Agriculture under the title "Agricultural Lands of Importance to the State of Hawaii" (ALISH).

The ALISH system defines "prime agricultural land" as the best suited for food, forage, and timber crops. "Unique agricultural land" is defined as land other than prime, used for the production of high-value food crops. "Other agricultural land" is defined as land used for the production of food, feed, fiber and forage crops, but not classified as "prime" or "unique".

According to the ALISH system, the project site is classified as "other agricultural land", indicating that the lands are not the highest classification for productivity and high yield. Most of the lands east of the project site are also classified as "other agricultural land".

2.3.2 Impacts and Mitigation Measures

The project site occupies an area of about 0.152 acres currently used for cattle grazing. Removal of this "other agricultural land" from cattle grazing would not adversely affect the total land available for cattle grazing in this area of Hawaii. Cattle grazing can

remain an important agricultural activity on the Kahua Ranch lands and on other nearby lands.

2.4 Hazardous Waste

2.4.1 Existing Environment

The project site has been used for cattle grazing by Kahua Ranch since the late 1920's, or for over for almost 75 years. No structures, buildings, facilities, or underground storage tanks (USTs) which might contain hazardous materials have been constructed on the project site. Kahua Ranch has previously indicated in the NEXRAD EA that fertilizers, pesticides, or herbicides have not been used on the project site.

The NEXRAD facility includes an above ground concrete tank to store fuel for the emergency generator. The County of Hawaii Police Department control room and emergency generator shed are located adjacent to the eastern boundary of the project site. Steel propane gas tanks are located along the eastern wall of the control room.

2.4.2 Impacts and Mitigation Measures

The Anuenue Radio Facility will contain valve regulated lead acid (VRLA) batteries which will generate a direct current (DC) power source for the microwave repeaters and the land mobile repeaters. The batteries will not require water and will be equipped with flame arresting safety vents. The VRLA batteries are not classified as hazardous materials and will be mounted over a spill containment system. Thus, the VRLA batteries should not adversely affect the environment of the project site and nearby areas.

The emergency generator is expected to use diesel fuel which will be stored in a two-section double-walled, concrete encased above ground tank such as manufactured by Convault. It is expected that at least a 500-gallon total fuel capacity will be required to provide for the desired 7-day supply of fuel. According to the US Environmental Protection Agency (EPA), an above ground double-walled concrete tank will not require a secondary spill containment system around its base.

The fill pipe will be provided with two or more of the following methods to protect them against overfill. These include: a) direct reading level gauge at the tank which is visible from the fill pipe location; b) valve located within the fill-pipe access to close automatically at a specified fill level; c) audible high level alarm activated by a float switch at a specified fill level. These measures will protect against spills from overfilling when the tank is being filled with fuel.

The County of Hawaii Fire Department has allowed use of above ground fuel storage tanks.

The equipment room and rectifier room will be will be equipped with a fire suppression system suitable for use in rooms with electronic equipment. The fire suppression system will use a compound of carbon, fluorine, and hydrogen as the suppressant which is non-ozone depleting and safe for use in occupied spaces. County of Hawaii fire protection will be needed at the project site to safely enter the building in the event of a fire and discharge of the fire suppression system.

2.5 Biological Resources

2.5.1 Existing Environment

Flora

In October 2002, a botanical survey was conducted to determine the vegetation on the project site. The survey indicates the project site is located in an area where at one time Koa forest would have been the common vegetation type. However, at sometime in the past, the forest was removed and replaced with cattle grazing. The vegetation on the project site and most of the surrounding area is described as Kikuyu grass pasture, which almost forms a monoculture. Several varieties of weed species were also found on the project site. The botanical survey found a total of 12 plant species on the project site. No listed or candidate threatened or endangered botanical species as set forth by the US Department of the Interior Fish and Wildlife Service (USFWS) were found on the project site. See Appendix B.

Fauna

In October 2002, a Survey of Avian and Terrestrial Mammalian Species was conducted on the project site to determine the presence of USFWS or State of Hawaii Department of Land and Natural Resources (DLNR) listed or candidate threatened or endangered species. The survey also examined the presence of species on nearby areas and an assessment of the probability of any usage of the project site by the species detected during the survey. See Appendix B.

A total of 14 birds representing five separate species were recorded during the survey. One species noted during the survey, the Pacific-Golden Plover, is an indigenous (native to Hawaii, but also found naturally elsewhere) migratory species. The remaining four species detected (pigeons and doves, larks, starlings, carduline finches) are alien species commonly found throughout the North Kohala District. No USFWS or DLNR listed or candidate threatened or endangered avian species were detected during the avian survey. See Appendix B.

The project site consists of Kikuyu grass, a species which typically does not grow to a height for bird habitat. No species of trees were found on the project site, although a small grove of ironwood tress can be found near the access road to the NEXRAD site. Thus, the project site would not provide habitat for the bird species recorded during the survey.

No mammalian species were detected on the project site during the survey of October 2002. Numerous domestic cattle, domestic sheep, and dogs were seen in the areas surrounding the project site. See Appendix B.

2.5.2 Impacts and Mitigation Measures

Flora

Construction of the Anuenue Radio Facility will require removal of the surface vegetation from the project site and grading it to for construction of the tower foundation and building. Once graded and prepared, the foundation and footings for building and tower will be constructed. Removal of the surface vegetation will not create an adverse impact to the flora of this area of the island of Hawaii.

The project site contains no listed or candidate threatened or endangered botanical species as set forth by the USFWS. Thus, construction of the Anuenue Radio Facility will not have an adverse impact to threatened or endangered species.

Fauna

The Kikuyu grass on the project site does not include habitat normally used by birds. Nor does the Kikuyu grass produce seeds which would serve as food for birds. Thus, the project site does not serve as a feeding and foraging habitat to attract birds. Thus, loss of Kikuyu grass would not adversely affect the bird population in the area of the project site or any USFWS or DLNR listed or candidate threatened or endangered species.

As with any above ground structure, bird strikes are possible with the 70-foot high Anuenue Radio Facility tower and attached antennas. However, there are a number of factors which indicate the likelihood such birds strikes with the tower and antennas should not occur. First, combined height of the Anuenue Radio Facility tower and antennas is less than the adjacent NEXRAD tower and radome which stand about 133 feet above ground level. This taller tower and radome will be visible to birds flying in the area so that they could avoid both the Anuenue and NEXRAD towers.

In addition, the Anuenue tower will be self-supporting and will use no hard-to-see guys. It is expected that the Anuenue tower will not require lighting that might attract and/or disorient birds in flight at night or during periods of low visibility. It should also be noted that most birds have excellent eyesight and most structures typically do not present a hazard to birds in the area. Overall, the potential for bird strikes with the Anuenue tower and antennas should be low and not present a threat to the birds in the area.

2.6 Traffic

2.6.1 Existing Environment

State Route 250, Kohala Mountain Road, located about one mile west of the project site, provides the primary public access to the northwest portion of Hawaii and to the project site. Kohala Mountain Road is a two-lane road, one lane in each direction, under the control of the State of Hawaii Department of Transportation (DOT). Kohala Mountain

Road has a functional classification of a major collector, one of eight functional classifications used by the DOT.

The closest traffic counts were conducted by the DOT at the intersection of Kohala Mountain Road and Kawaihae Road, State Route 19. The 24-hour two-way traffic volume at the intersection was 2,420 vehicles.

2.6.2 Impacts and Mitigation Measures

Traffic impacts related to construction activities will occur while equipment and materials are moved to the project site. However, this traffic will be short-term occurring during the 4 month construction period. This should not create an adverse affect to traffic on Kohala Mountain Road as volumes on this roadway are relatively low.

No personnel will be assigned on a daily basis to the Anuenue Radio Facility. Contract personnel will visit the project site to conduct tests on the radio equipment and to perform maintenance service on the emergency generator and on other building systems. A total of an average of about 10 to 20 trips per month will occur to conduct the necessary tests and perform maintenance on the equipment at the Anuenue Radio Facility. This level of activity will not create an adverse affect to traffic on Kohala Mountain Road or on the Kahua Ranch access road. The DOT has concurred that the Anuenue Radio Facility will not impact the State highway facilities. See Appendix D.

2.7 Air Quality

2.7.1 Existing Environment

The project site is located in the North Kohala District, an area characterized by low level of residential and commercial development and almost no industrial facilities. A low level of development generally indicates an absence of stationary and mobile sources of emissions which could affect ambient air quality.

Standby emergency generators have been installed at the NEXRAD, County of Hawaii, and ATT Wireless facilities. These generators would be operated during testing and outages of commercial power.

2.7.2 Impacts and Mitigation Measures

Potential short-term adverse air-quality impacts during the construction phase include: 1) generation of fugitive dust from vehicle movement and soil excavation; and 2) exhaust emissions from on-site construction equipment and from construction workers' vehicles traveling to and from the project site. These adverse impacts will be short-term during the period of construction.

Construction activities must comply with provisions of Chapter 11-60.1, Hawaii Administrative Rules (DOH), "Air Pollution Control" and, with respect to fugitive dust, Section 11-60.1-33. In addition, the entire project site is approximately 0.165 acres (7,200 square feet) which will mean a relatively small area of disturbance. The DAGS Contract Specifications *Section 01577 include* a standard Environmental Controls section with specific reference to Chapter 11-60. Under air pollution control, the Environmental Controls specifications include the provision that the contractor must maintain the areas within and without the project limits free from dust which would cause hazards to the work and to other persons or property. The specifications also state the contractor will be permitted to use accepted methods for dust control such as enclosure and filtering. It is expected that the contractor will comply with State regulations and provide adequate means to control dust during the various phases of construction.

Once construction has been completed, operation of the Anuenue Radio Facility will involve visits by contractor personnel who will visit the project site to perform periodic maintenance and testing of equipment and systems. This level of activity will not generate sufficient traffic to adversely affect air quality in the area.

The 40 KW standby emergency generator will be tested once or twice per month to ensure proper operation in the event of an outage of the HELCO system. The testing will involve starting the generator, testing the switching systems, and placing the system under load conditions to ensure proper operation. This testing should require operation of the generator for about 3 to 4 hours per month, or less than 50 hours per year. This level of testing of the emergency generator should not create adverse impacts to the air quality in the area.

2.8 Noise

2.8.1 Existing Environment

The project site is located about one mile east of Kohala Mountain Road within lands used for cattle grazing by the landowner, Kahua Ranch. Residences of Kahua Ranch personnel are located about 3,000 to 3,500 feet west of the project site. The elevation of this area is about 3,300 feet msl, or approximately 500 feet below the elevation of the project site.

Vehicle traffic on Kohala Mountain Road and activities conducted by Kahua Ranch, such as driving farm equipment, would be the primary sources of noise near the project site. Since vehicle traffic on Kohala Mountain Road is light, noise generated by vehicle traffic should not be significant. Kahua Ranch primarily conducts cattle grazing which generates low levels of traffic and noise.

2.8.2 Impacts and Mitigation Measures

Construction activities such as grading, excavating for footings and foundations, and erecting the building and tower will create noise. The equipment used for these activities typically include pick ups trucks, excavators, graders, rollers, backhoes, concrete delivery trucks, water tank trucks, hydraulic cranes, and forklifts. Noise generated by this will be short-term during the period of construction. Once construction has been completed, the noise impact will no longer occur.

Once construction has been completed, noise will be generated by vehicles used by contractor personnel and others visiting the Anuenue Radio Facility for testing and other purposes. An average total of about 10 to 20 trips per month will be made to the project site. This level of traffic should not create an adverse affect to the noise environment in the area of the project site.

The County of Hawaii zoning designation for the project site is Agriculture (AG-20). Title 11 Hawaii Administrative Rule State of Hawaii Department of Health Chapter 46, Community Noise Control identifies maximum permissible sound levels for classes of zoning districts classes using the zoning established by the counties. According to Chapter 46, the maximum permissible sound level at any point at or beyond the property

line is 70 dBA for zoning district Class C, areas equivalent to lands zoned agriculture. The maximum permissible sound level shall apply in a manner deemed appropriate by Director of the Department of Health.

The emergency generator will be placed within the generator room as part of the equipment building. The generator and generator room will be designed to suppress noise from the generator during emergency operations and testing. The generator intake shroud is designed to suppress noise and the room will have insulation placed along the walls. The project site is about 3,500 feet from the homes of Kahua Ranch personnel. Since noise levels decline rapidly with distance from the source, the emergency generator should not create an adverse affect to the noise environment near the Kahua Ranch residences.

2.9 Archaeological and Cultural Resources

2.9.1 Existing Environment

In October 2002, an archaeological field survey was conducted on the project site. The objective of the survey was to determine if an archaeological inventory survey would be required to meet the requirements of the State of Hawaii Department of Land and Natural Resources Historic Preservation Division (SHPD).

The archaeologi1cal field survey consisted of a pedestrian survey of the project site which provided 100 percent coverage of the site. No subsurface testing was undertaken as part of the archaeological survey. The archaeological field survey did not identify and sites or features. See Appendix C.

2.9.2 Impacts and Mitigation Measures

Based on the results of the archaeological field survey, construction of the Anuenue Radio Facility should have no adverse impacts to historic sites. A letter dated May 27, 2003 from the SHPD concluded that "no historic properties will be affected" by construction of the Anuenue Radio Facility. See Appendix D.

2.10 Cultural Impact Assessment

2.10.1 Existing Environment

House Bill No. 2895 H.D.1 was approved by the Governor on April 26, 2000 as Act 50 which amended Chapter 343 Hawaii Revised Statutes to require a cultural impact assessment be included in the preparation of an Environmental Assessment.

2.10.2 Impacts and Mitigation Measures

A Cultural Impact Assessment/Study (CIS) was undertaken to gather information about traditional cultural practices, ethnic cultural practices, and pre-historic and historic cultural remains that might be affected by the Anuenue Radio Facility. See Appendix C.

The CIS indicates that at one time the lands of Kahua Ranch were part of an ancient Hawaiian life system. However, other than a legend that is associated with it, the project site does not have any cultural remains nor is there any evidence that culturally significant practices took place at the project site. See Appendix C.

The types of cultural practices and beliefs subject to the CIS include subsistence, commercial, agricultural, access-related, recreational, and religious and spiritual customs. None of these practices will be affected by the Anuenue Radio Facility. See Appendix C.

In a letter dated May 27, 2003, the SHPD concluded that there was no evidence of cultural practices. Thus "no historic properties will be affected" by construction of the Anuenue Radio Facility. See Appendix D.

2.11 Infrastructure

2.11.1 Water

Existing Conditions

The project site is not served by the County of Hawaii Department of Water Supply system. The Anuenue Radio Facility will not require potable water services for domestic uses or for fire protection.

Impacts and Mitigation Measures

The Anuenue Radio Facility will not create a need for potable water on the project site. Thus, the Anuenue Radio Facility will not have an adverse affect to the County's water system, including sources of water.

Fire protection for the building will include a fire suppression system and hand-held fire extinguishers.

2.11.2 Sewer

Existing Conditions

The equipment building will not have toilet facilities. Thus, the Anuenue Radio Facility will not require wastewater services from the County of Hawaii or use an on-site system for treatment or disposal.

Impacts and Mitigation Measures

The Anuenue Radio Facility will not have an adverse affect to the County's wastewater system nor create adverse affects from the on-site disposal of wastewater.

2.11.3 Electrical

Existing Conditions

Hawaii Electrical Light Company (HELCO) provides commercial electrical power to the North Kohala area. HELCO provides existing electrical service via 12.47 KV, 3-phase underground power lines located on Kohala Ranch Road which lies about 4,400 feet south of the entrance to Kahua Ranch and about 1,850 west of Kohala Mountain Road. Near the intersection of Kohala Ranch Road and Kohala Mountain Road, the underground line then runs above ground for about 5,400 feet until it reaches the substation located near the entrance to Kahua Ranch.

The 12.47 KV, 3-phase power was brought to the NEXRAD site via an underground line located adjacent to the paved access road leading to NEXRAD facilities. The underground line connects to a 150 KVA transformer installed by HELCO located outside of the NEXRAD fenced area. The 150 KVA transformer steps down the voltage to provide 400 amps, 208Y/120-volt, 4-wire service to feed the NEXRAD, COH Police, and ATT Wireless facilities. The existing transformer currently has a total load of about 48 KW.

Impacts and Mitigation Measures

Electrical service to the Anuenue Radio Facility will be provided via the existing 150 KVA HELCO transformer on the NEXRAD site, or if necessary, by installation of separate transformer. Electrical service will be provided to the Anuenue Radio Facility from the transformer via a 200 amp, 120/240 VAC, single phase, 3-wire service to a new meter to be located on the new radio building. The Anuenue Radio Facility will have a maximum design peak electrical load of about 40 kilowatts to service the battery charges, air conditioning, and other systems. Thus, the Anuenue Radio Facility at Kahua Ranch will not create an adverse affect to the HELCO system, as the existing system as the capacity to accommodate the new loads.

2.12 Visual Considerations

2.12.1 Existing Conditions

The Anuenue Radio Facility project site is located within North Kohala District which consists of a number of puus with primarily open, grassed agricultural land used for cattle grazing and undeveloped forested lands. The Kohala Ranch residential development lies to the west of Kohala Mountain Road and extends downslope toward the coast.

Kohala Mountain Road provides the main source of public views in the North Kohala area. Views of the Kohala coast and Pacific Ocean can be seen to west from Kohala Mountain Road. Views of Mauna Kea can also be seen from Kohala Mountain Road when looking to the south. In the vicinity of Kahua Ranch, both sides of Kohala Mountain Road contain an almost continuous row of 40 to 50-foot tall ironwood trees. These trees tend to confine views to the corridor along Kohala Mountain Road and obscure views of the surrounding mountainous areas located on either side of the road. See Figure 1.5

Views of the project site, which is located about one mile east of Kohala Mountain Road, can only be intermittently seen when gaps occur in the ironwood trees. The posted speed limit along Kohala Mountain Road varies from 25 to 35 miles per hour in the vicinity Kahua Ranch which means only glimpses of the project site can be seen. Thus, unless the vehicle is stopped, there are limited opportunities to view the project site when traveling in either direction along Kohala Mountain Road.

The existing 132-foot tall NEXRAD tower and radar dome are the predominant features when viewing the project site. The two, 94-foot tall ATT Wireless pole towers and the 40-foot tall County of Hawaii guy-anchored tower and antennas can also be seen at limited times when traveling along Kohala Mountain Road.

2.12.2 Impacts and Mitigation Measures

The Anuenue Radio facilities will be located on the slopes to the southwest of Puu Waiakanonula, which is located about 5,000 feet (or approximately one mile) from intersection of the Kahua Ranch access road and Kohala Mountain Road, the public

roadway in this portion of the County. Kohala Mountain Road also serves as the western property boundary for the Kahua Ranch properties. Thus, public views of the Anuenue Radio Facility will be confined to short stretches along Kohala Mountain Road when the Anuenue and NEXRAD towers will be visible through gaps in the ironwood trees.

The visual impact of the Anuenue tower and antennas will be mitigated since the tower will initially be left unpainted which will be a light gray shade due to galvanized finish. Eventually the tower will be painted a light gray shade similar to the color of the galvanized finish. At a distance, these colors will not contrast sharply with the adjacent NEXRAD tower and the surrounding background. In addition, the North Kohala area is characterized low cloud cover and misty conditions which will obscure views of the Anuenue tower and antennas. The unpainted galvanized steel-gray color of the tower and antennas will blend effectively with these conditions.

A photograph was taken of the project site to show existing conditions from Kohala Mountain Road about 0.9 miles (4,700 feet) north of the entrance to Kahua Ranch. The photograph was taken from the roadside after stopping the car and shows the project site visible through branches of the ironwood trees. The project site is about 1.1 miles (6,000 feet) from Kohala Mountain Road and approximately 900 feet above the elevation of the road. Figure 2.1 shows the project site from Kohala Mountain Road.

Based on this information, the known height of the NEXRAD tower and radome (about 133 feet tall), and the known height of the Anuenue tower (about 70 feet tall), it was possible to approximate the view of the project site with the Anuenue tower and antennas. This analysis shows that the Anuenue tower would not create a significant adverse impact to public views from Kohala Mountain Road. See Figure 2.1.

Without Tower

With Proposed Anuenue Tower

Wilson Okamoto CORPORATION

ANUENUE (FORMERLY RAINBOW) RADIO TOWERS AND FACILITIES - KAHUA RANCH SITE

Views of Project Site

Figure No. 2.1

2.12.3 Biological Exposure

2.12.4 Existing Electromagnetic Radiation Environment

Radio frequency (RF) radiation is part of the electromagnetic radiation (EMR) spectrum that applies to frequencies between 3 kilohertz (kHz) and 300 gigahertz (Ghz). A variety of commercial communications and data systems are made possible by transmitting information via electromagnetic waves. For example, most amplitude modulated (AM) radio stations transmit signals in the frequency range of 550 kHz to 1,600 kHz, while frequency modulated (FM) radio stations transmit signals in the frequency range of 88 MHz to 108MHz.

information via electromagnetic waves. For example, most amplitude modulated (AM) radio stations transmit signals in the frequency range of 550 kHz to 1,600 kHz, while frequency modulated (FM) radio stations transmit signals in the frequency range of 88 MHz to 108MHz.

The Federal Communications Commission (FCC) has established maximum permissible exposure (MPE) limits to electromagnetic radiation. A summary of the FCC's "Local Official's Guide to RF" explains:

> The FCC's guidelines establish separate MPE limits for "general population/uncontrolled exposure" and for "occupational/controlled exposure." The general population/uncontrolled limits set the maximum exposure to which most people may be subjected. People in this group include the general public not associated with the installation and maintenance of the transmitting equipment. Higher exposure limits are permitted under the "occupational/controlled exposure" category, but only for persons who are exposed as a consequence of their employment (e.g., wireless radio engineers, technicians). To qualify for the occupational/controlled exposure category, exposed persons must be made fully aware of the potential for exposure (e.g., through training), and they must be able to exercise control over their exposure. In addition, people passing through a location, who are made aware of the potential for exposure, may be exposed under the occupational/controlled criteria. The MPE limits

> adopted by the FCC for occupational/controlled and general population/uncontrolled exposure incorporate a substantial margin of safety and have been established to be well below levels generally accepted as having the potential to cause adverse health effects.

The FCC limits for EMR are discussed in detail on the FCC website at http://www.fcc.gov/oet/rfsafety/.

Based on the FCC guidelines, any area located outside of a radio facility fence is defined as a "general population/uncontrolled exposure" area. Almost all people live and work in an "uncontrolled" environment filled with radio energy from sources as diverse as broadcast stations (AM, FM, and TV), cellular telephone transmitter sites and handheld cellular telephones, and mobile radios (LMRs), wireless computer networks, and natural radio energy sources such as thunderstorms. However, this "uncontrolled" environment is safe because the signal energies are usually well below the MPE limits. Although the Anuenue Radio Facility will be considered an "occupational/controlled exposure" environment, the expected EMR levels both on the ground inside the fenced compound and inside the equipment building will be below the MPE limits for a "general population/uncontrolled exposure" environment. Personnel servicing and testing equipment within the building should not be exposed to an EMR hazard. However, tower maintenance personnel can be exposed to potentially unsafe levels of EMR if proper access and work procedures are not followed.

2.12.5 Impacts and Mitigation Measures

EMR consists of time varying electromagnetic fields that have the characteristic of motion or propagation. Unfortunately, radio frequency EMR is often confused with ionizing radiation which has known biological hazards ascribed to X-rays, gamma rays, and particle beam energies. Even moderate levels of ionizing radiation are dangerous as they have sufficient quantum energy to expel an electron from a molecule. This expulsion leaves the molecule positively charged and thereby affecting its interactions with neighboring molecules. In biological systems this ionization can alter the molecule functions fundamentally and often irreversibly.

The energies from nonionizing radiation, such as radio frequency EMR, are much lower such that, even at very high signal intensities, their primary effect is to agitate or vibrate the molecular structure rather than to ionize them. The effect of this agitation is to produce heat. In humans, the heat produced by such exposure is undetectable above the heat produced by the normal metabolic rate. Even at intentional exposure, the thermoregulatory capabilities of mammals and birds can adequately accommodate dissipation of the added heat load.

In a rigorous study completed for a DAGS facility with a similar mix of emitters, the distances required to keep personnel safe from EMR hazards were less than 20 feet for all emitter types and the only hazardous area associated with the microwave emitters occurred immediately in front of those antennas. The lowest microwave dish antenna will be mounted with its centerline at 14 feet above ground level and its bottom rim at 9 feet above ground level. Thus, the Anuenue Radio Facility will not produce an EMR hazard to people or animals beyond the fence line.

3. RELATIONSHIP to PLANS, POLICIES and CONTROLS

3.1 Hawaii State Plan

The Hawaii State Plan, adopted in 1978 and revised in 1988, establishes the overall theme, goals, objectives, and priority guidelines to guide the future long-range development of the State. The Anuenue Radio Facility at Kahua Ranch supports and is consistent with the following State Plan objectives and policies:

Section 226-6 Objectives and policies for the economy - in general.

> *(b) (6) Strive to achieve a level of construction activity responsive to, and consistent with, state growth objectives.*

The Anuenue Radio Facility will involve construction of new facilities at a new site. The Anuenue Radio Facility will increase the level of construction activity on the County of Hawaii during the period of construction which will enhance the state's growth objectives.

Section 226-10.5 Objectives and policies for the economy – information industry

> *(b) (1) Encourage the continued development and expansion of the telecommunications infrastructure serving Hawaii to accommodate future growth in the information industry.*

The Anuenue Radio Facility will enhance the voice communication and data transmission capabilities of public agencies to provide information to all areas of the public sector. The facility has been planned to accommodate the future needs to the public agencies using the Anuenue Radio Facility.

Section 226-11 Objectives and policies for the physical environment - land-based, shoreline, and marine resources.

> *(b) (3) Take into account the physical attributes of areas when planning and designing activities and facilities.*

The Anuenue Radio Facility at Kahua Ranch is located adjacent to three existing similar facilities used by the FAA NEXRAD, County of Hawaii Police Department, and ATT Wireless. The Anuenue Radio Facility project site has been designed to account for the existing facilities and the topographic conditions on the project site to minimize excavation or grading.

Section 226-14 Objectives and policies for facility systems – general.

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

The Anuenue Radio Facility has been planned to be jointly used by Federal, State and County public agencies to provide vital transmission of voice and data communications. The Anuenue Radio Facility will be a single facility which can accommodate the needs of various public agencies.

3.2 Land Use Plans and Policies

3.2.1 State Land Use District

The Hawaii Land Use Law of Chapter 205, Hawaii Revised Statutes, classifies all land in the State into four land use districts: Urban, Agriculture, Conservation, and Rural. The Anuenue Radio Facility project site at Kahua Ranch is located in the Agricultural District classification.

A Special Permit approved by the County of Hawaii Planning Commission will be required.

3.2.2 County of Hawaii General Plan

The County of Hawaii General Plan is a policy document for the long-range comprehensive development of the island of Hawaii and also provides the direction for future growth of the County. The current General Plan was adopted as Ordinance 439 on November 14, 1989.

Among its various sections, the County of Hawaii General Plan contains a series of policies for the long-range comprehensive development of the county and statements of development standards and principles with respect to the most desirable use of land within the county.

The goals, policies and standards from Section 4 of the General Plan applicable to the Anuenue Radio Facility are set forth below.

I. *Public Facilities*

Goal: Encourage the provision of public facilities that effectively service community needs and seek ways of improving public service through better and more functional facilities which are in keeping with the environmental and aesthetic concerns of the community.

Policy: The County shall coordinate with appropriate State agencies and for the provision of public facilities to serve the needs of the community.

Protective Services - Standards
Development of police and fire facilities should entail joint use structures whenever feasible.

The Anuenue Radio Facility will install a modern high capacity digital interconnect to replace the Rainbow analog radio channels used by the various agencies, including the County of Hawaii Police. The backbone of the new digital system will have the capability to transmit 155 Mbit/s (megabits per second) which is equivalent to 2016 traditional voice channels or about 17 times the capacity of the Rainbow analog system. The conversion to a digital system is needed to handle the expanding voice and data communications requirements of the public safety community. The conversion to high capacity digital microwave was also forced both by the Federally-mandated reassignment of analog microwave frequencies to personal communications systems (cellular telephones) and public safety agencies' growing need for communications services to properly serve the public in the coming years. Thus, the Anuenue Radio facility will be consistent with the Public Facilities goals and policies and with the Protective Services Standards of the General Plan.

The courses of action to promote the policies, development objectives, standards and principles are set forth by district in Section 5 of the General Plan. The course of action for the North Kohala District applicable to the Anuenue Radio facility is set forth below.

(4) Public Facilities

(b) Protective Services

Service facilities shall be improved to meet needs.

(c) Government Operations

Expand/improve facilities as necessary

The Anuenue Radio Facility will upgrade and improve the digital voice, video, and data communications capabilities of the public user agencies including the County of Police Department. The Anuenue Radio Facility will be consistent with the North Kohala Public Facilities, Protective Services and Government Operations provisions of the General Plan.

In 1999, the County of Hawaii Planning Department began the process of updating and amending the 1989 General Plan. The County is in the process of public reviews and comments which will be followed by adoption of the General Plan through an ordinance. The latest version of the General Plan Revision (Draft) is December 21, 2001.

3.2.3 County of Hawaii Zoning

The County of Hawaii zoning designation for the project site is AG-2, General Agricultural District. Although the Anuenue Radio Facility will be a public facility to be used by public agencies for public purposes, a Special Permit approved by the County of Hawaii Planning Commission will be required.

3.2.4 County of Hawaii Special Management Area

The Coastal Zone Management Act contains the general objectives and policies upon which all counties within the State have structured specific legislation which created Special Management Areas (SMA). Any development within the Special Management Area boundary requires a SMA Use permit which is administered by the County of

Hawaii. The Anuenue Radio facilities project site is not located within the County's SMA.

4. ALTERNATIVES TO THE PROPOSED ACTION

4.1 No Action Alternative

The No Action alternative would limit public safety radio users to the use of existing voice and data communication systems which have limited capabilities and a questionable amount of service lifetime remaining. The various public agency users would have to rely on dated systems for transmitting data and voice communications. Although there would be no disturbance to the project site, use of the limited and dated systems would not be in the public interest, particularly when the Anuenue Radio Kahua Ranch facility will serve agencies such as the County of Hawaii Police Department, the County of Maui Police Department, and the State Civil Defense. These agencies need adequate and modern communication system to provide the high level of public service needed by the residents of the County of Hawaii and the County of Maui. Based on these considerations, the No Action alternative is not considered a feasible alternative.

4.2 Other Sites

The Anuenue Radio Facility site requires microwave line-of-sight to provide an unobstructed path for signals between the other sites on Maui and the Kona and Kohala coast. 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. A typical site that might meet these criteria is Puu Lapalapa located about five miles north of the Kahua Ranch site.

There are several drawbacks to use of the Puu Lapalapa site or any similar undeveloped location. First, a new access roadway has to be constructed to reach the site. This would increase the development costs of the facilities at the site. Second, electrical power service would have to be brought to the site. This requirement would also increase development costs. Further, the presence of culturally and archaeologically significant resources would it difficult to develop the site. Lastly, construction of a radio facility at a site which does not currently contain similar facilities would detract from the character of the North Kohala District. Based on these considerations, use of another site is not considered a feasible alternative.

5. DETERMINATION

Short-term construction impacts include disruption to the project site and surrounding areas during construction, decline in air quality from construction activities, and increase in noise levels. Once construction has been completed, the short-term adverse impacts will no longer occur.

Based on analysis of the anticipated impacts, a Finding of No Significant Impact (FONSI) is determined for the Anuenue Radio Facility project. The significance criteria to make this determination are set forth below and in Hawaii Administrative Rules Title 11, State of Hawaii Department of Health, Chapter 200, Environmental Impact Statement Rules.

1) *Involve an irrevocable commitment to loss or destruction of any natural or cultural resources*;

The Anuenue Radio Facility project site does not provide habitat for Federal or State of Hawaii listed or candidate threatened or endangered species of flora or fauna. The project site has been used for cattle grazing since the late 1920's. Thus, the Anuenue Radio Facility at the Kahua Ranch project site will not result in the loss or destruction of natural resources.

Based on the results of the archaeological field survey, construction of the Anuenue Radio Facility should have no adverse impacts to historic sites. A letter dated May 27, 2003 from the State of Hawaii Department of Land and Natural Resources Historic Preservation Division (SHPD) concluded that "no historic properties will be affected" by construction of the Anuenue Radio Facility. See Appendix D.

The Cultural Impact Study indicates that at one time the lands of Kahua Ranch were part of an ancient Hawaiian life system. However, other than a legend that is associated with it, the project site does not have any cultural remains nor is there any evidence that culturally significant practices took place at the project site. Thus, development of the Anuenue Radio Facility is not expected to have loss or destruction of any natural or cultural resources.

In a letter dated May 27, 2003, the SHPD concluded that there was no evidence of cultural practices. Thus "no historic properties will be affected" by construction of the Anuenue Radio Facility. See Appendix D.

2) *Curtail the range of beneficial uses of the environment;*

The Anuenue Radio Facility will use lands within Kahua Ranch which have been used for cattle grazing. The Anuenue Radio Facility will occupy an area of 7,200 square feet (0.165 acres) which is a minor portion of the cattle grazing land in the North Kohala area. Thus, the Anuenue Radio Facility will not curtail the beneficial uses of the environment.

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

The Anuenue Radio Facility project will not involve actions or activities which would adversely affect natural resources of the project site. The Anuenue Radio Facility project will be consistent with the guidelines of Chapter 344, HRS, as it will provide a public facility to support the critical functions assigned to the State of Hawaii, the US Coast Guard, National Park Service, the County of Hawaii, and the County of Maui. As such, the Anuenue Radio Facility will not conflict with the State's long-term environmental policies or goals as expressed in Chapter 344, HRS.

4) *Substantially affect the economic or social welfare of the community or state;*

The Anuenue Radio Facility will be a public facility to be used by public agencies for public purposes, including for police departments on the County of Hawaii and County of Maui, the US Coast Guard, the State of Hawaii Department of Defense Civil Defense Division, State of Hawaii Department of Health Emergency Medical Services System. The Anuenue Radio Facility is an integral part of the infrastructure needed to maintain the health and welfare of the community. The Anuenue Radio Facility will have not have an adverse effect to the economic or social welfare of the community.

5) *Substantially affect public health*;

An efficient and well-maintained voice and data communication system is needed to protect the public health of the residents and visitors on Hawaii and Maui. The Anuenue Radio Facility will serve as the facility for Federal, State and County of Hawaii and County of Maui agencies to conduct their mandated public functions. Thus, the Anuenue Radio Facility project will not have an adverse effect on public health.

The Anuenue Radio Facility is not expected to produce any EMR hazard to humans or animals on the ground or in areas beyond the site fence line. Thus, the Anuenue Radio Facility project will not have an adverse effect on public health.

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

The Anuenue Radio Facility will be a public facility which will be used by the State of Hawaii, US Coast Guard, National Park Service, County of Hawaii, and County of Maui to support their mission critical applications. No government or contractor personnel will be assigned to daily operation of the Anuenue Radio Facility. Contractor personnel will visit the project site to conduct tests and to perform maintenance service on the air conditioning and power systems and to clean the building and surrounding area. The contractor personnel are expected to be residents from Hawaii. Thus, construction of the Anuenue Radio Facility will not create secondary impacts, such as population changes or effects on public facilities.

7) *Involve a substantial degradation of environmental quality*;

The Anuenue Radio Facility is anticipated to result in short-term impacts to noise, air quality and traffic in the immediate vicinity of the project sited during the period of construction. The Anuenue Radio Facility project site does not contain Federal or State listed or candidate threatened or endangered species of flora or fauna.

Further, based on the results of the archaeological field survey, construction of the Anuenue Radio Facility should have no adverse impacts to historic sites. A letter dated May 27, 2003 from the State of Hawaii Department of Land and Natural Resources

Historic Preservation Division (SHPD) concluded that "no historic properties will be affected" by construction of the Anuenue Radio Facility. See Appendix D.

The Cultural Impact Study indicates that, other than a legend that is associated with it, the Kahua Ranch project site does not have any cultural remains nor is there any evidence that culturally significant practices took place at the project site. Thus, there will be no loss or destruction of archaeological or cultural resources. In a letter dated May 27, 2003, the SHPD concluded that there was no evidence of cultural practices. Thus "no historic properties will be affected" by construction of the Anuenue Radio Facility. See Appendix D.

Based on the above findings, the Anuenue Radio Facility project will not result in a substantial degradation of environmental quality.

8) *Have a cumulative effect upon the environment or involves a commitment for larger actions;*

The Anuenue Radio Facility does not involve a commitment to further actions to other State of Hawaii related projects on Hawaii. As a result, the Anuenue Radio Facility will not have a cumulative effect upon the environment or involve a commitment by the State to larger actions on Hawaii.

9) *Affect a rare, threatened or endangered species;*

The Anuenue Radio Facility project site does not contain Federal or State listed or candidate threatened or endangered species of flora or fauna. Thus, the Anuenue Radio Facility at the Kahua Ranch project site will not affect a threatened or endangered species.

10) *Detrimentally affect air or water quality or ambient noise levels;*

Operation of construction equipment would increase noise and exhaust emission levels in the immediate vicinity of the Anuenue Radio Facility project site. Once operational, the Anuenue Radio Facility will contribute almost no additional noise or air emissions to the local area.

11) *Affects or likely to suffer damage by being located in an environmentally sensitive area such as a floodplain, tsunami zone, beach, erosion-prone area, geographically hazardous land, estuary, fresh water or coastal water;*

According to the Flood Insurance Rate Map (FIRM), the Anuenue Radio Facility is located in area not subject to flood hazards, a hazardous floodplain or a tsunami zone. The Anuenue Radio Facility project site is also not within the County of Hawaii Special Management Area. In addition, the Anuenue Radio Facility project site is not within the coastal shoreline area. Thus, the Anuenue Radio Facility project site is not located in an environmentally sensitive area.

12) *Substantially affect scenic vistas and viewplanes identified in county or state plans or studies;*

The Anuenue Radio Facility will be located on the slopes to the southwest of Puu Waiakanonula which is located about 5,000 feet from intersection of the Kahua Ranch access road and Kohala Mountain Road, the public roadway in this portion of the County. Thus, public views of the Anuenue Radio Facility will be confined to short stretches along Kohala Mountain Road when the Anuenue and NEXRAD towers will be visible through gaps in the ironwood trees.

The visual impact of the Anuenue tower and antennas will be mitigated since they will be left as unpainted galvanized steel color, which will appear as a light gray color, or will be painted white. At a distance, these colors will not contrast sharply with the adjacent NEXRAD tower and the surrounding background. In addition, the North Kohala area is characterized low cloud cover and misty conditions which will obscure views of the Anuenue tower and antennas. The unpainted galvanized steel-gray color of the tower and antennas will blend effectively with these conditions. Analysis of photographs with the Anuenue Radio tower placed on the Kahua Ranch site view shows that the Anuenue tower would not create a significant adverse impact to public views from Kohala Mountain Road.

13) *Require substantial energy consumption.*

The Anuenue Radio Facility is a public facility to be used by public agencies for public purposes. It is a new facility which will be planned and designed to minimize use of electrical power. Thus, the Anuenue Radio Facility project will not create a substantial increase in energy consumption.

Based on these findings and the assessment of potential impacts from the Anuenue Radio Facility at the Kahua Ranch project site, a Finding of No Significant Impact (FONSI) is determined.

6. CONSULTED PARTIES

6.1 Pre-Assessment Consultation

The following agencies were consulted during the pre-assessment phase of the Draft Environmental Assessment. Each agency was sent a copy of a project summary and a request for their written comments on the project. All written comments and responses are reproduced in Appendix A.

US Department of Transportation Coast Guard
US Fish and Wildlife Service
US Department of Transportation Federal Aviation Administration
US Department of the Interior National Park Service
State of Hawaii Department of Agriculture
State of Hawaii Department of Land and Natural Resources
State of Hawaii Department of Land and Natural Resources Historic Preservation Division
State of Hawaii Department of Hawaiian Home Lands
State of Hawaii Department of Transportation
Office of Hawaiian Affairs
County of Hawaii Civil Defense
County of Hawaii Planning Department
County of Hawaii Department of Public Works
County of Maui Police Department

6.2 Agencies and Organizations Consulted on the Draft EA

The following is a list of agencies and organizations that were consulted during the preparation of the Draft Environmental Assessment. Copies of the comments (▲), substantive comments received (✖), and responses are included in the Appendix D.

Federal

✖ Department of the Army, US Army Engineer District, Honolulu
US Department of the Interior of the Fish and Wildlife Service
▲ US Department of the Interior Geological Survey
✖ US Department of Transportation Federal Aviation Administration

US Department of the Interior National Park Service, Haleakala National Park
US Coast Guard
National Oceanographic and Atmospheric Association, National Weather Service

State Agencies

Department of Agriculture
Department of Business, Economic Development and Tourism
DBED&T - State Energy Office
Department of Defense
Department of Hawaiian Home Lands
✖ Department of Health
Department of Health - Environmental Management Division
▲ Department of Land and Natural Resources
✖ Department of Land and Natural Resources Historic Preservation Division
▲ Department of Land and Natural Resources - Water Resource Management
▲ Department of Transportation
▲ Office of Hawaiian Affairs
✖ Office of Environmental Quality Control
University of Hawaii Water Resources Research Center
University of Hawaii Environmental Center
Thelma Parker Memorial Public Library

County of Hawaii Agencies

County of Hawaii Civil Defense
▲ County of Hawaii Department of Environmental Management
County of Fire Department
▲ County of Hawaii Department of Parks and Recreation
County of Hawaii Planning Department
▲ County of Hawaii Police Department
County of Hawaii Department of Research and Development
✖ County of Hawaii Department of Public Works
County of Hawaii Department of Water Supply

County of Maui Agencies

County of Maui Police Department

Officials

Senator Lorraine R. Inouye
Representative Dwight Y. Takamine
Councilman Leningrad Elarionoff

Public Utilities

✖ Hawaii Electric Light Company

Organizations

Kona Kohala Chamber of Commerce
Waimea Community Association
Ponoholo Ranch

7. REFERENCES

County of Hawaii General Plan, Ordinance 439. County of Hawaii Planning Department. November 14, 1989.

County of Hawaii General Plan Revision, Draft. County of Hawaii Planning Department. December 21, 2001.

Federal Emergency Management Flood Insurance Rate Map Community Panel Number 155166 0100C. May 1988 (Revised).

State of Hawaii Land Evaluation and Site Assessment Commission. *A Report of the State of Hawaii Land Evaluation and Site Assessment System.* February 1986.

The Hawaii State Plan Chapter226,Hawaii Revised Statutes . Office of the Governor Office of State Planning. !988.

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US Department of Transportation Federal Aviation Administration. *Environmental Assessment: Federal Aviation Administration Next Generation Weather Radar (NEXRAD) to Serve the Kohala, Hawaii, Area.* May 1996.

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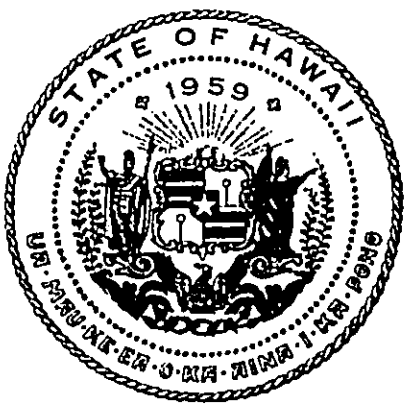

APPENDIX A

U.S. Department of Transportation
United States Coast Guard

Commander
Maintenance & Logistics Command Pacific

Coast Guard Island, Bldg 54
Alameda, CA 94501-5100
Staff Symbol: te-4
Phone: (510) 437-5853
FAX: (510) 437-5666

2000
02/4197
12/11/02

CC: DAGS
RECEIVE
DEC 17 2002
WILSON OKAMOTO & ASSOC.

Mr. John L. Sakaguchi, AICP, Senior Planner
Wilson Okamoto & Associates, Inc.
Suite 400
1907 South Beretania Street
Honolulu, HI 96826

Dear Mr. Sakaguchi:

RE: Draft Environmental Assessment, Pre-Assessment Consultation; RAINBOW Radio Facilities and Towers, Statewide, Kahua Ranch; DAGS Job No. 16-10-0256, North Kohala, Hawaii; Tax Map Key 5-9-02:2

The United States Coast Guard supports the above project and looks forward to a state-of-the-art facility planned at Kahua Ranch on the Island of Hawaii.

This site is vital in the design of a new Joint Federal / State of Hawaii sponsored inter-island microwave system known as the "Anuenue Microwave System". I'm sure you're aware that this new communications system will directly support important Coast Guard missions, including timely search and rescue response to the Hawaiian maritime community and protection of navigable waterways within the State.

We support the planned improvements and are willing to provide testimony to support the project during the approval process.

If you should have any questions, or if there is anything we can do to facilitate this process, please contact Mr. James Cote' at (510) 437-5853, jcote@d11.uscg.mil.

Sincerely,

ROBERT BUHL
Chief, Electronics Systems Projects Branch
U. S. Coast Guard
By direction of the Commander

WILSON OKAMOTO CORPORATION
ENGINEERS PLANNERS
1907 S. BERETANIA ST
SUITE 400
HONOLULU, HI 96826
PH: (808) 946-2277
FAX: (808) 946-2253

6608-01
January 2, 2003

Mr. Robert Buhl, Chief
Electronics Systems Project Branch
United States Coast Guard
U.S. Department of Transportation
Coast Guard Island, Bldg 54
Alameda, California 94501-5100

Attention: Mr. James Cote

Subject: Draft Environmental Assessment (EA), Pre-Assessment Consultation;
Rainbow Radio Facilities and Towers, Statewide, Kahua Ranch Site
DAGS Job No. 16-10-0256
North Kohala, Hawaii, Tax Map Key: 5-9-02: 2
Response to Comment

Dear Mr. Buhl:

Thank you for your December 11, 2002 comment letter (2000 02/4197) on the Pre-Assessment Consultation Notice for the Draft Environmental Assessment (EA) for the Rainbow Radio Facilities and Towers, Statewide at the Kahua Ranch site.

The Draft EA will note that the Coast Guard supports the project and the facility is vital to the joint Federal/State of Hawaii sponsored interisland microwave system.

Thank you for your participation in preparation of the Draft EA.

If you have any questions, please call me at 808.946.2277 or fax to 808.946.2253.

Sincerely,

John L. Sakaguchi, AICP, Senior Planner

Enclosures

cc: A. Yamanoha, DAGS (w/o encl.)
R. Hlivak, DAGS (w/o encl.)

LINGLE
JNIOR

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

JAN - 9 2002

(6608-01) JS

GLENN M. OKAMOTO
INTERIM DIRECTOR
1/14/03

cc: DAGS, VIA FAX

IN REPLY REFER TO

HWY-PS
2.9008

RECEIVED
JAN 10 2003
WILSON OKAMOTO CORPORATION

Mr. John L. Sakaguchi
Senior Planner
Wilson Okamoto & Associates
1907 S. Beretania Street, Suite 400
Honolulu, Hawaii 96826

Dear Mr. Sakaguchi:

Subject: Draft Environmental Assessment, Pre-Assessment Consultation
Rainbow Radio Facilities and Towers, Statewide, Kahua Ranch Site
North Kohala, Hawaii, TMK: 5-9-02:2

Thank you for your transmittal requesting our comments regarding the proposed project.

The proposed radio telecommunication facilities and towers at the Kahua Ranch Site will not adversely impact our State highway facilities.

If you have any questions, please contact Ronald Tsuzuki, Head Planning Engineer, Highways Division, at 587-1830.

Very truly yours,

GLENN M. OKIMOTO
Interim Director of Transportation

LINDA LINGLE
GOVERNOR
STATE OF HAWAII

STATE OF HAWAII
DEPARTMENT OF HAWAIIAN HOME LANDS
P.O. BOX 1879
HONOLULU, HAWAII 96805

6608-01 J.

RAYNARD C. SOON
Chair
12/16/

RECEIVED
DEC 16 2002
WILSON OKAMOTO & ASSOC., INC.

cc: DAGS

December 13, 2002

Mr. John L. Sakaguchi, AICP
Senior Planner
Wilson Okamoto & Associates, Inc.
1907 S. Beretania Street
Suite 400
Honolulu, Hawaii 96826

Dear Mr. Sakaguchi:

Subject: Draft Environmental Assessment, Pre-Assessment Consultation, Kahua Ranch Site, North Kohala, Hawaii

Thank you for your November 25, 2002, letter requesting comments on the Pre-Assessment Consultation of the Draft Environmental Assessment for the proposed Rainbow Radio Facilities and Towers project.

The Department of Hawaiian Home Lands (DHHL) has no comment on the project summary provided. However, we request that DHHL be provided with all future reports for review and comments.

Should you have any questions, please call Linda Chinn, Acting Land Management Branch Manager, at 587-6432.

Aloha,

Mike McElroy, Administrator
Land Management Division

M. LINGLE
GOVERNOR

(6608-01) JS

RECEIVED
DEC 18 2002
WILSON OKAMOTO & ASSOC., INC.

ROBERT K. COLOMA-AGARAN
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES

LINNEL T. NISHIOKA
DEPUTY DIRECTOR FOR
THE COMMISSION ON WATER
RESOURCE MANAGEMENT

12/20/02

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND RESOURCES ENFORCEMENT
CONVEYANCES
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION
P.O. Box 621
HONOLULU, HAWAII 96809

CC: DAGS, ~~HTA~~ ~~FEX~~ 12/20/02

December 18, 2002
RAINBOWRADIODAGS.RCM
NAV-LD L-3593/3841/3846/3847/3960

John L. Sakaguchi, AICP
Wilson Okamoto & Associates, Inc.
1907 South Beretania Street, Suite 400
Honolulu, Hawaii 96826-1980

Dear Mr. Sakaguchi:

SUBJECT: Pre-Assessment Consultation for Preparation of a "Draft Environmental Assessment" for the Rainbow Radio Facilities and Towers, Statewide, Kahua Ranch Site, DAGS Job No. 16-10-0256 - North Kohala, Island of Hawaii, Hawaii - TMK: 5-9-2: 02

Thank you for your letter dated November 25, 2002, pertaining to the subject matter. A copy of your letter, project summary and location maps were distributed to the following Department of Land and Natural Resources' Divisions for their review and comment:

- Division of Aquatic Resources
- Division of Forestry and Wildlife
- Division of State Parks
- Engineering Division
- Commission on Water Resource Management
- Land Division Planning and Technical Services
- Land Division Hawaii District Land Office

Based on the attached responses, the Department of Land and Natural Resources has no comment to offer on the subject matter at this time.

If the Land Division receives any comments related to the proposed project, they will be forwarded to your office at that time. Please provide the Land Division with two (2) copies of the Draft Environmental Assessment when they become available. Should you have any questions, please contact Nicholas A. Vaccaro of the Land Division Support Services Branch at 587-0384.

Very truly yours,

Charlene E. Unoki
for DIERDRE S. MAMIYA
Administrator

C: HDLO

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION
P.O. BOX 621
HONOLULU, HAWAII 96809

2002 DEC -9 A 11:07

BOATING AND OCEAN RECREATION
CONSERVATION AND RESOURCES ENFORCEMENT
CONVEYANCES
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
LAND DIVISION
STATE PARKS
WATER RESOURCE MANAGEMENT

December 4, 2002

LD/NAV L-3593
Ref.: RAINBOWRADIODAGS.CMT Suspense Date: 12/15/02
DAGS: 16-10-0256

MEMORANDUM:

TO:
XXX Division of Aquatic Resources
XXX Division of Forestry & Wildlife
XXX Division of State Parks
XXX Engineering Division
Division of Boating and Ocean Recreation
XXX Commission on Water Resource Management
Land Division Branches:
XXX Planning and Technical Services
XXX Hawaii District Land Office

FROM: for Charlene E. Unoki, Acting Assistant Administrator
Land Division

SUBJECT: Pre-Assessment Consultation for the Preparation of A Draft Environmental Covering the Rainbow Radio Faculties and Towers, Statewide, Kahua Ranch Site (DAGS JOB NO. 16-10-0256) North Kona, Hawaii - TMK: 3rd/ 5-9-002: 002
Consultant: Wilson Okamota & Associates, Inc. (946-2277)

Please review the attached letter and project summary dated November 26, 2002, pertaining to the subject matter and submit your comments (if any) on Division letterhead signed and dated within the time requested above. Should you need more time to review the subject matter, please contact Nicholas A. Vaccaro at ext.: 7-0384.

If this office does not receive your comments on or before the suspense date, we will assume there are no comments.

(✓) We have no comments. ( ) Comments attached.

Signed:

Date: 12/23/02

(608-01)

ONE (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

12/12/02

CC: DAGS, VIA FAX
HRD02-849 12/17/02

December 9, 2002

Wilson Okamoto & Associates, Inc.
1907 S. Beretania Street, Suite 400
Honolulu, Hawaii 96826

Attn: John L. Sakaguchi, AICP

Subject: Draft Environmental Assessment, Pre-Assessment Consultation;
Rainbow Radio Facilities & Towers, Statewide, Kahua Ranch Site
DAGS Job No. 16-10-0256
North Kohala, Hawaii
Tax Map Key: 5-9-02: 2

Dear Mr. Sakaguchi:

This is in response to your request for comments from the Office of Hawaiian Affairs (OHA) with regard to a Draft Environmental Assessment (EA) for the Rainbow Radio Facilities and Towers, Statewide, at the Kahua Ranch site, North Kohala, Hawaii, TMK: 5-9-02: 2.

Although we have no comment at this point in time, OHA reserves the right to review and comment on the EA at a later date when it becomes available. If you have any questions please contact Jalna Keala at 594-1946, or by email at: jalnak@oha.org.

Sincerely,

Ernie Kimoto,
Acting Director
Hawaiian Rights Division

(608-01)

RECEIVED
JAN 0 6 2003
WILSON OKAMOTO CORPORATION

LINDA LINGLE
GOVERNOR

ERIC T. HIRAMO
ACTING CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES

DEAN A. NAKANO
ACTING DEPUTY DIRECTOR FOR
THE COMMISSION ON WATER
RESOURCE MANAGEMENT

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND RESOURCES ENFORCEMENT
CONVEYANCES
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION
P.O. Box 621
HONOLULU, HAWAII 96809

January 3, 2003

cc: DAGS, VIA Fax
L-3937 1/7/03

RAINBOWRADIODAGS.RCM2
NAV-LD

John L. Sakaguchi, AICP
Wilson Okamoto & Associates, Inc.
1907 South Beretania Street, Suite 400
Honolulu, Hawaii 96826-1880

Dear Mr. Sakaguchi:

SUBJECT: Pre-Assessment Consultation for Preparation of a "Draft Environmental Assessment" for the Rainbow Radio Facilities and Towers, Statewide, Kahua Ranch Site, DAGS Job No. 16-10-0256 - North Kohala, Island of Hawaii, Hawaii - TMK: 5-9-2: 02

This is a follow-up to our letter to you (Ref: RAINBOWRADIODAFS.RCM) dated December 18, 2002, pertaining to the subject matter.

Attached herewith is a copy of the Engineering Division response.

Should you have any questions, please contact Nicholas A. Vaccaro of the Land Division Support Services Branch at 587-0384.

Very truly yours,

DIERDRE S. MAMIYA
Administrator

C: HDLO

RECEIVED
2002 DEC 12 P 3:43

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION
P.O. BOX 621
HONOLULU, HAWAII 96809

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
CONSERVATION AND RESOURCES ENFORCEMENT
CONVEYANCES
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
LAND DIVISION
STATE PARKS
WATER RESOURCE MANAGEMENT

December 4, 2002

LD/NAV
Ref.: RAINBOWRADIODAGS.CMT
DAGS: 16-10-0256

L-3593
Suspense Date: 12/15/02

MEMORANDUM:

TO: XXX Division of Aquatic Resources
✓XXX Division of Forestry & Wildlife
XXX Division of State Parks
XXX Engineering Division
Division of Boating and Ocean Recreation
XXX Commission on Water Resource Management
Land Division Branches:
XXX Planning and Technical Services
XXX Hawaii District Land Office

FROM: for Charlene E. Unoki, Acting Assistant Administrator
Land Division

SUBJECT: Pre-Assessment Consultation for the Preparation of A Draft Environmental Covering the Rainbow Radio Faculties and Towers, Statewide, Kahua Ranch Site (DAGS JOB NO. 16-10-0256) North Kona, Hawaii - TMK: 3rd/ 5-9-002: 002
Consultant: Wilson Okamota & Associates, Inc. (946-2277)

Please review the attached letter and project summary dated November 26, 2002, pertaining to the subject matter and submit your comments (if any) on Division letterhead signed and dated within the time requested above. Should you need more time to review the subject matter, please contact Nicholas A. Vaccaro at ext.: 7-0384.

If this office does not receive your comments on or before the suspense date, we will assume there are no comments.

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

Signed: Paul J. Conry

MICHAEL G. BUCK, ADMINISTRATOR
DIVISION OF FORESTRY AND WILDLIFE

Date: DEC - 5 2002

RECEIVED
2002 DEC 12 P 3:37

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION
P.O. BOX 621
HONOLULU, HAWAII 96809

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
CONSERVATION AND RESOURCES ENFORCEMENT
CONVEYANCES
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
LAND DIVISION
STATE PARKS
WATER RESOURCE MANAGEMENT

December 4, 2002

LD/NAV
Ref.: RAINBOWRADIODAGS.CMT
DAGS: 16-10-0256

L-3593
Suspense Date: 12/15/02

DIVISION OF AQUATIC RESOURCES

DIRECTOR	Suspense Date
COM FISHERIES	Draft Reply
AQ REC/ENV	Reply Direct
AQ REC/N	Comments
STAFF SVCS	Information
FISH DEV	Comp Acc & Fls
STATISTICS	Return to
AFAC	Copies to
EDUCATION	Remarks:
SECRETARY	
OFFICE SVCS	12-9-02
FED AID	

MEMORANDUM:

TO: ✓XXX Division of Aquatic Resources
XXX Division of Forestry & Wildlife
XXX Division of State Parks
XXX Engineering Division
Division of Boating and Ocean Recreation
XXX Commission on Water Resource Management
Land Division Branches:
XXX Planning and Technical Services
XXX Hawaii District Land Office

FROM: for Charlene E. Unoki, Acting Assistant Administrator
Land Division

SUBJECT: Pre-Assessment Consultation for the Preparation of A Draft Environmental Covering the Rainbow Radio Faculties and Towers, Statewide, Kahua Ranch Site (DAGS JOB NO. 16-10-0256) North Kona, Hawaii - TMK: 3rd/ 5-9-002: 002
Consultant: Wilson Okamota & Associates, Inc. (946-2277)

Please review the attached letter and project summary dated November 26, 2002, pertaining to the subject matter and submit your comments (if any) on Division letterhead signed and dated within the time requested above. Should you need more time to review the subject matter, please contact Nicholas A. Vaccaro at ext.: 7-0384.

If this office does not receive your comments on or before the suspense date, we will assume there are no comments.

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

Signed: [signature]

Date: 12/11/02

RECEIVED
DEC 9 2002
DIV. AQUATIC RESOURCES

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION
P.O. BOX 621
HONOLULU, HAWAII 96809

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
CONSERVATION AND RESOURCES ENFORCEMENT
CONVEYANCES
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
LAND DIVISION
STATE PARKS
WATER RESOURCE MANAGEMENT

2002 DEC -3 P 1:21

December 4, 2002

LD/NAV
Ref.: RAINBOWRADIODAGS.CMT
DAGS: 16-10-0256

L-3593
Suspense Date: 12/15/02

MEMORANDUM:

TO:
XXX Division of Aquatic Resources
XXX Division of Forestry & Wildlife
XXX Division of State Parks
✓XXX Engineering Division
Division of Boating and Ocean Recreation
XXX Commission on Water Resource Management
Land Division Branches:
XXX Planning and Technical Services
XXX Hawaii District Land Office

FROM: for Charlene E. Unoki, Acting Assistant Administrator
Land Division

SUBJECT: Pre-Assessment Consultation for the Preparation of A Draft Environmental Covering the Rainbow Radio Faculties and Towers, Statewide, Kahua Ranch Site (DAGS JOB NO. 16-10-0256) North Kona, Hawaii - TMK: 3rd/ 5-9-002: 002
Consultant: Wilson Okamota & Associates, Inc. (946-2277)

Please review the attached letter and project summary dated November 26, 2002, pertaining to the subject matter and submit your comments (if any) on Division letterhead signed and dated within the time requested above. Should you need more time to review the subject matter, please contact Nicholas A. Vaccaro at ext.: 7-0384.

If this office does not receive your comments on or before the suspense date, we will assume there are no comments.

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

Signed: Carl T. Unoki

Date: 12/13/02

2002 DEC 05 A10:15

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02 DEC 5 P3:12
COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION
P.O. BOX 621
HONOLULU, HAWAII 96809

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
CONSERVATION AND RESOURCES ENFORCEMENT
CONVEYANCES
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
LAND DIVISION
STATE PARKS
WATER RESOURCE MANAGEMENT

December 4, 2002

LD/NAV
Ref.: RAINBOWRADIODAGS.CMT
DAGS: 16-10-0256

L-3593
Suspense Date: 12/15/02

MEMORANDUM:

TO:
XXX Division of Aquatic Resources
XXX Division of Forestry & Wildlife
XXX Division of State Parks
XXX Engineering Division
Division of Boating and Ocean Recreation
✓XXX Commission on Water Resource Management
Land Division Branches:
XXX Planning and Technical Services
XXX Hawaii District Land Office

FROM: for Charlene E. Unoki, Acting Assistant Administrator
Land Division

SUBJECT: Pre-Assessment Consultation for the Preparation of A Draft Environmental Covering the Rainbow Radio Faculties and Towers, Statewide, Kahua Ranch Site (DAGS JOB NO. 16-10-0256) North Kona, Hawaii - TMK: 3rd/ 5-9-002: 002
Consultant: Wilson Okamota & Associates, Inc. (946-2277)

Please review the attached letter and project summary dated November 26, 2002, pertaining to the subject matter and submit your comments (if any) on Division letterhead signed and dated within the time requested above. Should you need more time to review the subject matter, please contact Nicholas A. Vaccaro at ext.: 7-0384.

If this office does not receive your comments on or before the suspense date, we will assume there are no comments.

(✓) We have no comments. ( ) Comments attached.

Signed: W. Roy Hardy

Date: 12/11/02

S "KIMO" APANA
MAYOR

R REFERENCE JA.ja
JR REFERENCE

POLICE DEPARTMENT
COUNTY OF MAUI

55 MAHALANI STREET
WAILUKU, HAWAII 96793
(808) 244-6400
FAX (808) 244-6411

December 05, 2002

6608-01
12/10/02
THOMAS M. PHIL
CHIEF OF POLI

KEKUHAUPIO R. A
DEPUTY CHIEF OF

cc: DAGS, VIA F
12/10
RECEIVED
DEC 09 2002
WILSON OKAMOTO & ASSOC.

John L. Sakaguchi, AICP, Senior Planner
Wilson Okamoto & Associates, Inc.
1907 S. Beretania St.
Honolulu, HI 96826

Dear Mr. Sakaguchi:

RE: Draft Environmental Assessment, Pre-Assessment Consultation;
Rainbow Radio Facilities and Towers, Statewide, Kahua Ranch
DAGS Job No 16-10-0256
North Kohala, Hawaii
Tax Map Key: 5-9-02:2

Maui County Police Department supports the above project and looks forward to a state-of-the-art facility planned at Kahua Ranch on the Island of Hawaii. This site is vital to Maui County's emergency network. We currently utilize space within the Hawaii County building which is located at Kahua Ranch. The facility is old and space is very limited at the present time.

Improved facilities, to include a tower and communications shelter is certainly needed at this location. Maui County supports the planned improvements and is willing to provide testimony to support the project as it moves through the approval process.

Should you have any questions, please contact Captain Jeffrey Amaral at 808-264-2831 or at jamaral@mpd.net.

Very truly yours,

THOMAS M. PHILLIPS
Chief of Police

WILSON OKAMOTO CORPORATION
ENGINEERS
PLANNERS
1907 S BERETANIA ST
SUITE 400
HONOLULU, HI 96826
PH (808) 946-2277
FAX (808) 946-2253

6608-01
January 2, 2003

Mr. Thomas M. Phillips, Chief of Police
Police Department
County of Maui
55 Mahalani Street
Wailuku, Hawaii 96793

Attention: Captain Jeffery Amaral

Subject: Draft Environmental Assessment (EA), Pre-Assessment Consultation;
Rainbow Radio Facilities and Towers, Statewide, Kahua Ranch Site
DAGS Job No. 16-10-0256
North Kohala, Hawaii, Tax Map Key: 5-9-02: 2
Response to Comment

Dear Chief Phillips:

Thank you for your December 5, 2002 comment letter (JA.ja) on the Pre-Assessment Consultation Notice for the Draft Environmental Assessment (EA) for the Rainbow Radio Facilities and Towers, Statewide at the Kahua Ranch site.

The Draft EA will note that the County of Maui Police Department supports the project and the facility is vital to the Maui County's emergency network.

Thank you for your participation in preparation of the Draft EA.

If you have any questions, please call me at 808.946.2277 or fax to 808.946.2253.

Sincerely,

John L. Sakaguchi, AICP, Senior Planner

Enclosures

cc: A. Yamanoha, DAGS (w/o encl.)
R. Hlivak, DAGS (w/o encl.)

6608-01

Harry Kim
Mayor

Bruce McClure
Chief Engineer
12/30/02
Deputy Chief Engineer

cc: DAGS, VIA FAX

County of Hawaii

DEPARTMENT OF PUBLIC WORKS
25 Aupuni Street, Room 202 · Hilo, Hawaii 96720-4252
(808) 961-8321 · Fax (808) 969-7138

December 26, 2002

Wilson Okamoto & Associates, Inc.
1907 South Beretania Street, Suite 400
Honolulu, Hawaii 96826
Attn: John L. Sakaguichi, AICP

SUBJECT: Draft Environmental Assessment, Pre- Assessment Consultation:
Rainbow Radio Facilities and Towers, Statewide, Kahua Ranch Site
DAGS Job No. 16-10-0256
North Kohala, Hawaii
TMK: 5-9-002:002

We have reviewed the subject project summary and our comments are as follows:

Building

1. Structures shall conform to all requirements of code and statutes pertaining to building construction.

Earthwork

1. All grading and grubbing activities shall comply with chapter 10 of the Hawaii County Code.

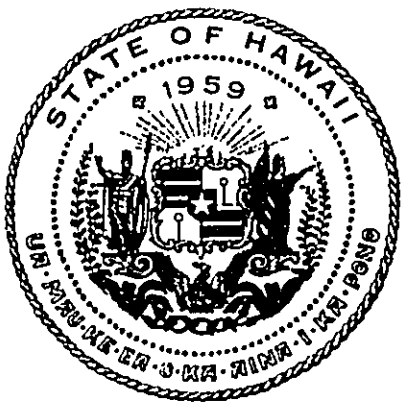
If you have any questions please contact Kiran Emler of our Kona office at 327-3530.

for Galen Kuba, Division Chief
Engineering Division

KE

Enclosures

cc: Engineering-Kona
Engineering-Hilo



APPENDIX B

6608-01

CC: DAGS, VIA FAX

BOTANICAL SURVEY REPORT FOR THE PROPOSED RAINBOW RADIO FACILITIES AND TOWERS, STATEWIDE, KAHUA RANCH SITE

(DAGS JOB NO. 16-10-0256)

FOR

WILSON OKAMOTO AND ASSOCIATES
1907 SOUTH BERETANIA STREET, SUITE 400
HONOLULU, HAWAII 96826

BY
EVANGELINE J. FUNK, PH.D.
BOTANICAL CONSULTANTS
HONOLULU, HAWAII
OCTOBER 2002

TABLE OF CONTENTS

INTRODUCTION

The proposed Rainbow Ranch Radio Facilities and Towers, Statewide, Kahua Ranch Site (DAGS Job No. 16-10-0256) occupies 40,000 square feet of land near the summit of Waiakanonula Pu'u, Kohala, Hawaii. The Pu'u and the proposed Radio Facility Site lie within the Kahua Ranch pastureland. The area receives about 80 inches of rain per year and at the time of the botanical survey the pastures were lush and green.

METHODS

A walk through survey of the area was carried out by a single botanist. All parts of the site were surveyed and data on all of the vegetation were collected. Results of this survey are presented below.

RESULTS

Kahua Ranch is located in what Ripperton and Hosaka (1942) designated the Forest Formation, an area between 3,000 and 6,000 feet elevation where Koa (Acacia koa A. Gray) would have been the common vegetation type. However, the forest has been removed and a working cattle ranch has taken its place.

The proposed Rainbow Radio Facilities and Towers Site is presently part of Kahua Ranch and the vegetation can be described as Browsed Kikuyu Grass Pasture. The kikuyu grass (*Pennisetum clandestinum* Chiov.) forms almost a monoculture and a limited number of weedy plant taxa can be found growing within the kikuyu grass. The most commonly found weeds are *Senecio madagascariensis* Pior., white clover (*Trifolium repens* L.) and horseweed (*Conyza canadensus* (L.) Chonq.). However, these are barely visible in the dense grass cover. In all a total of twelve plant species were found on this site (See Table 1)

ENDANGERED SPECIES

No candidate, proposed, or listed threatened or endangered species as set forth in the Endangered Species Act of 1973, as amended (16 U.S.C. 1531-1543) were found during this survey

CONCLUSIONS

If this vegetative cover is disturbed, in a very short time the kikuyu grass will quickly recover any cleared areas.

Table 1

Scientific Name	Common Name	Status
	Grasses	
Digitaria violascens Link	Smooth crabgrass	Alien
Eragrostis brownie (Kunth) Nees ex Steud	Sheepgrass	Alien
Holcus lanatus L.	Common velvet grass	Alien
Pennisetum clandestinum Chiov.	Kikuyu grass	Alien
Sacciolepis indica (L.) Chase	Glenwood grass	Alien
Sporobolus africanus Rob. & Tour.	Smutgrass	Alien
	Sunflowers	
Conyza candensis (L.) Cronq.	Horseweed	Alien
Eclipta alba (L.) Hassk.	False daisy	Alien
Senecio madagascariensis Pior.		Alien
Taraxacum officinale W.W.Weber	Dandelion	Alien
	Legumes	
Trifolium repens L.	White clover	Alien
	Verbenias	
Verbena litoralis Kunth	Ohi	Alien

BIBLIOGRAPHY

Ripperton, J.C., and E.Y. Hosaka. 1942. Vegetation Zones of Hawaii. Hawaii Agricultural Station Bulletin 89. Honolulu, Hawaii

Wagner, W.L, D.R. Herbst, & S.H. Sohmer. 1990. Manual of the Flowering Plants of Hawaii. Bis Mus. Special Publication 83. Honolulu, Hawaii

(2608-01)

CC: DAGS, V.A
FAX

DRAFT

A Survey of Avian and Terrestrial Mammalian Species for the Rainbow Radio Facilities and Towers Statewide, Kahuā Ranch Site North Kohala District, Island of Hawai'i.

DAGS Job No. 16-10-0256

Prepared by:

Reginald E. David
Rana Productions, Ltd.
P.O. Box 1371
Kailua-Kona, Hawai'i 96745

Prepared for:
Wilson Okamoto & Associates, Inc.
1907 S. Beretania Street, Suite 400
Honolulu, Hawai'i. 96826

October 2002

Table of Contents

Figures & Tables

Introduction

This report summarizes the findings of an ornithological and mammalian survey of approximately a one acre portion of TMK 5-9-02 located on Kahuā Ranch, North Kohala District, Hawai'i (Figure 1). The State of Hawai'i's Department of Accounting and General Services (DAGS), Information and Communications Services Division (ICSD) is proposing to construct and operate an 80 foot microwave tower, various antenna and associated support equipment. The facilities will support the modernization of the currently shared State and Federal statewide microwave system to digital operation. The communications system is used by public safety, emergency and civil defense agencies. Fieldwork was performed on October 17th 2002.

The primary purpose of the survey was to determine if there were any federally or State of Hawai'i listed endangered, threatened, proposed, or candidate avian or mammalian species within, or in the immediate vicinity of the proposed tower. In addition to the study, we also assessed the probability of any usage of the general project site by listed avian and mammalian species given the habitat currently found upon it.

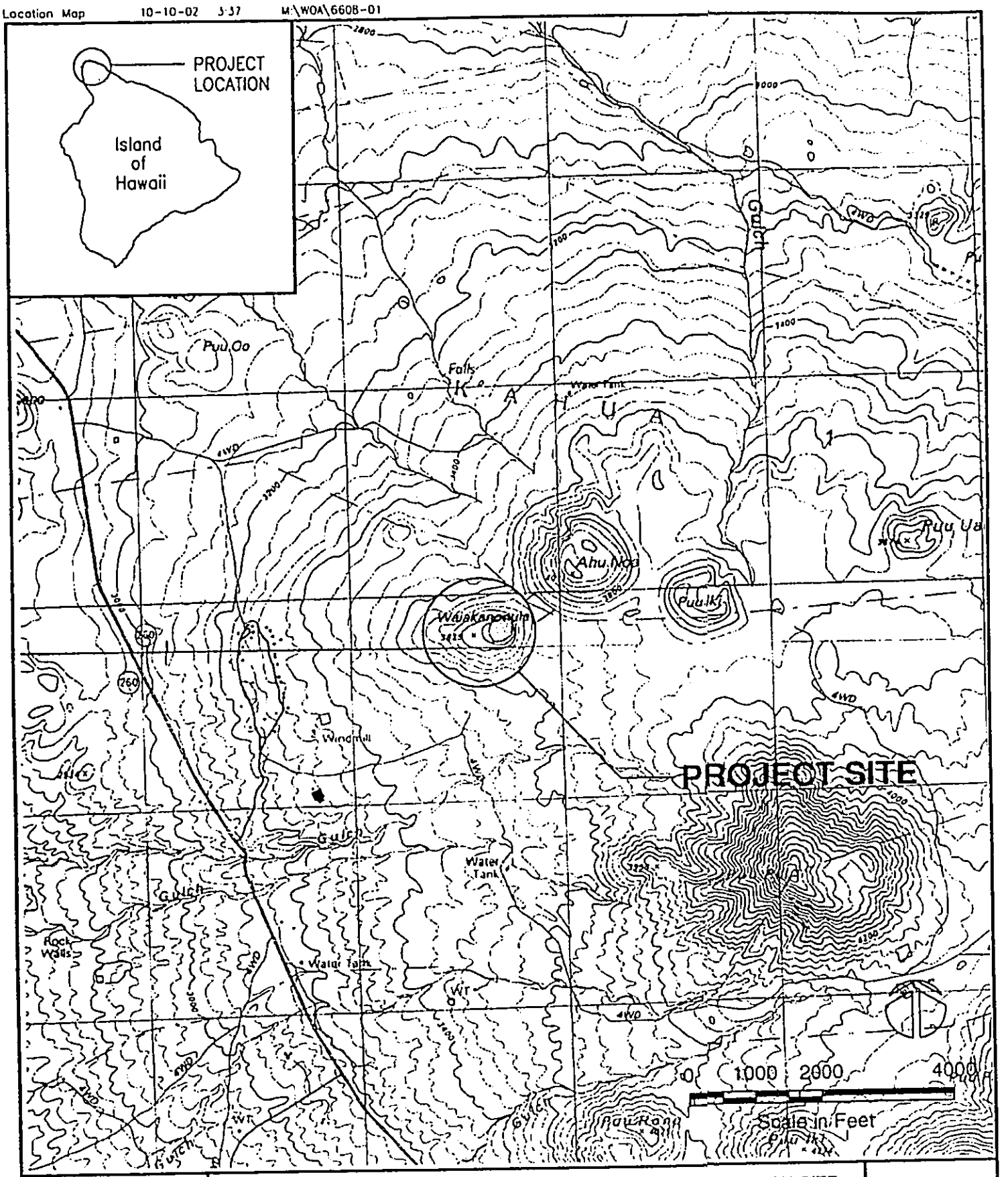
Avian phylogenetic order and nomenclature follows *The American Ornithologists' Union Checklist of North American Birds 7th Edition* (American Ornithologists' Union 1998), and the 42nd and 43rd supplement to *Check-list of North American Birds* (American Ornithologists' Union 2000, 2002). Mammal scientific names follow *Mammals in Hawaii* (Tomich 1986). Plant names follow *Manual of the Flowering Plants of Hawai'i* (Wagner et al. 1990). Place names follow *Place Names of Hawaii* (Pukui et al. 1974).

General Site Description

The approximately 200 x 200 foot site is located on the summit of Pu'u Waiakanonula at an elevation of ~ 3820-feet above mean sea level (amsl), on Kahuā Ranch (Figure1) (USGS 1995). The summit area already has three communications towers and associated support buildings, including a 120 foot tall NEXRAD radome structure which is located within a fenced enclosure. There is a paved access road which extends from the Kohala Mountain Road to the summit of the Pu'u.

The entire site has been highly disturbed by both grazing and the construction and support of the existing communication structures. The vegetation present on summit area of the Pu'u is predominately composed of Kikuyu grass (*Pennisetum clandestinum*) and associated alien (i.e., introduced to Hawai'i by humans) weedy species typically found in pasturelands on the Island of Hawai'i. There is a small grove of cypress (*Cupressus sp.*) and another of Cook pine (*Araucaria columnaris*), to the north of the study site just outside the fenced tower area. There is a man-made reservoir to the north-west of the study site, which at the time of this survey was dry.

Location Map 10-10-02 3:37 M:\WOA\6608-01



WILSON OKAMOTO & ASSOCIATES, INC.
ENGINEERS · PLANNERS

STATE OF HAWAII - RAINBOW RADIO TOWERS - KAHUA RANCH SITE

LOCATION MAP

FIGURE 1

Mammalian Survey Methods

All observations of mammalian species were of an incidental nature. With the exception of the endangered Hawaiian hoary bats (*Lasiurus cinereus semotus*), or *'ōpe'ape'a,* as it is known locally, all other terrestrial mammals found on the Island of Hawai'i are alien species. Most are ubiquitous, thus no trapping program was proposed or undertaken to quantify the usage by alien mammalian species of the study site. The survey of mammals was limited to visual and auditory detection, coupled with observation of scat, tracks and other animal sign. A running tally was kept of all vertebrate mammalian species observed and heard while within the project area.

Avian Survey Methods

We visited the site for two hours on the morning of the 18th of October 2002. A running tally of all avian species detected while in the project area was kept. Field observations were made with the aid of Leitz 10 X 42 binoculars and by listening for vocalizations.

Mammalian Survey Results

No mammalian species were seen within the small study site. Domestic cattle (*Bos taurus*) sign was recorded within the site, as was that of domestic dog (*Canis f. familiaris*). Numerous cattle, domestic sheep (*Ovis aries*), and dogs were seen along the paved road leading up to the summit area. Findings which are in keeping with the ongoing ranching activities being conducted by Kahuā Ranch. All of the alien species recorded during this survey are deleterious to avian and floristic components of the remaining native ecosystems present on the Island.

Avian Survey Results

A total of 14 birds representing five separate species were recorded during the time spent on site (Table 1). One species, the Pacific-Golden Plover (*Pluvialis fulva*), or *kōlea,* is an indigenous (i.e., native to Hawai'i, but also found elsewhere naturally) migratory species. The remaining four species detected, are alien species commonly found throughout the North Kohala District (Table 1). Avian diversity and densities recorded were extremely low. No avian species listed as threatened or endangered under either the federal and State of Hawai'i's endangered species programs were detected during the course of this survey (DLNR 1998, Federal Register 1999a, 1999b, 2001)

Table 1

Avian Species Detected Within the DAGS Rainbow Tower Project Area

Common Name	*Scientific Name*	*ST*	*#*
PLOVERS & LAPWINGS - Charadriidae			
Pacific Golden-Plover	*Pluvialis fulva.*	IM	4
PIGEONS & DOVES - Columbidae			
Rock Dove	*Columbia livia*	A	1
LARKS -Alaudidae			
Sky Lark	*Alauda arvensis*	A	5
STARLINGS - Sturnidae			
Common Myna	*Acridotheres tristis.*	A	1
CARDULINE FINCHES & ALLIES - Fringillidae			
House Finch	*Carpodacus mexicanus frontalis*	A	3

KEY TO TABLE 1

ST	Status
IM	Indigenous (native to Hawai'i, but also found elsewhere naturally) Migratory Species
A	Alien Species (introduced to Hawai'i by humans)
#	Total number of individuals recorded

Discussion

A one-time survey can not provide a total picture of the wildlife utilizing any given area. Certain species will not be detected for one reason or another. Seasonal variations in populations coupled with seasonal usage and availability of resources will cause different usage patterns throughout a year or, in fact, over a number of years. This site and most of the North Kohala District have been experiencing severe drought conditions over the past several years (National Climatic Data Center 2002).

The findings of the mammalian survey are consistent with the highly degraded habitat present on the site. It is likely that Hawaiian hoary bats overfly the project site at least occasionally, as they have been seen in numerous areas in North Kohala, including along the Kohala Mountain Road (Jacobs 1994, R. David unpublished field notes 1985-2001).

Although no rodents were detected during the course of this survey, it is likely that roof rats (*Rattus r. rattus*), Norway rats (*Rattus norvegicus*), European house mice (*Mus domesticus*) and possibly Polynesian rats (*Rattus exulans hawaiiensis*) use various

resources found within the project site. Without conducting a trapping program, it is difficult to assess the population densities of these often hard-to-see mammals. All mammalian species detected are alien to the Hawaiian Islands, and are deleterious to native ecosystems and the native animals and organisms that depend on them.

The low diversity and density of avian species detected during this survey was in keeping with the highly degraded alien species dominated habitat currently found on the site (Table 1). Although not detected during this survey it is possible that small numbers of the threatened Newell's Shearwater (*Puffinus auricularis newelli*), or *'a'o*, overfly the project site between the months of May and October (Banko 1980, Harrison 1990). Newell's Shearwaters were formerly common on the Island of Hawai'i (Wilson and Evans 1890–1899). This species breeds on Kaua'i, and Hawai'i in relatively large numbers, and on Moloka'i in extremely small numbers. Newell's Shearwater populations have dropped precipitously since the 1880s (Banko 1980). This pelagic species nests high in the mountains in burrows excavated under thick vegetation, especially *'uluhe* (*Dicranopteris linearis*). It has been recorded from the Kohala Mountains, and Waipio Valley in in relatively large numbers (Hall 1978, Kepler et al. 1979, Reynolds et al. 1997, Day et al. in press).

The primary cause of mortality in this species is thought to be predation by alien mammalian species at the nesting colonies (Cooper and Day 1995, Day and Cooper 1998, Ainley et al. 2001). Collision with man-made structures is considered by many, to be the second most significant cause of mortality for this seabird species in Hawai'i. Nocturnally flying seabirds, especially fledging birds, can become disoriented by exterior lighting on their way to sea in the summer and fall. When disoriented, seabirds often collide with manmade structures and, if not killed outright, the dazed or injured birds are easy targets of opportunity for feral mammals (Ainley et al. 1995, 1997, 2001, Cooper and Day 1995, 1998, Day and Cooper 1997). There is no suitable nesting habitat within the project area for this species.

The small reservoir located to the north of the site was dry at the time of our survey, and has been for the past three years (Monte Richards, personal communication). In the recent past the endangered Hawaiian Duck (*Anas wyvilliana*) has been recorded from other reservoirs on the ranch in small numbers (Kim Uyehara, personal communication). It is reasonable to assume that when standing water is present in this reservoir that Hawaiian Ducks may use resources found within the pond.

Potential Impacts to Protected Avian and Mammalian Species

Unlike nocturnally flying seabirds, which often collide with man-made structures, Hawaiian hoary bats are uniquely adapted to avoid collision with obstacles, man-made and natural. They navigate and locate their prey using ultrasonic echolocation, which is

sensitive enough to allow them to locate and capture small volent insects at night. It is unlikely that the construction and operation of the proposed facility will have a deleterious impact on this endangered mammalian species.

Any structure that extends above the mean vegetation height in areas that are overflown by the threatened Newell's Shearwater potential pose a threat to this species. The proposed tower will be an un-guyed structure that will not support electrical grid or other utility conductors or lighting; all attributes that significantly increase the potential risk to night flying seabirds in Hawai'i (Ainley et al. 2001; Cooper and Day 1995, 1998, Day and Cooper 1997). The tower will be erected in close proximity to other utility structures, in accordance with the USFWS Interim Guidelines For Recommendations On Communications Towers, Construction, Operation And Decommissioning (2000). In my opinion the construction and operation of the proposed tower and attendant facilities will pose very little risk to Newell's Shearwaters.

When and if the small reservoir located to the north of the proposed tower site holds water long enough to attract the endangered Hawaiian Duck, it is possible that the tower main pose a risk to individual birds. In my opinion the risk is extremely small. Hawaiian Ducks do not fly much after dark, and during daylight hours are very aware of hazards such as utility structures, thus are unlikely to fly into them (R. David, unpublished radar and field observations 1985-2002). To date no dead or injured Hawaiian Ducks have been recovered from around the three existing towers already present on the site (Monte Richards, personal communication). The proposed tower will be lower than the existing NEXRAD radome structure, which will also reduce the probability that the new structure will impact this species.

Recommendations:

At this juncture it is unclear whether the Federal Aviation Administration (FAA) will require an aircraft warning light on the proposed structure. If one is required it is recommended that to reduce the potential for interactions between nocturnally flying Newell's Shearwaters and the structure that the warning light be an intermittently flashing light (strobe), rather than a constantly shining light.

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APPENDIX C

(600-01
CC: DAGS, VIA FAX

Report 194-010803

ARCHAEOLOGICAL ASSESSMENT

RAINBOW RADIO FACILITIES AND TOWERS, STATEWIDE

KAHUA RANCH SITE

DAGS JOB # 16-10-0256

LAND OF KAHUA 2, NORTH KOHALA DISTRICT

ISLAND OF HAWAI'I (TMK: 5-9-02: POR. 2)

By:

Alan E. Haun, Ph.D.
and
Dave Henry, B.S.

Prepared for:

State of Hawaii
Department of Accounting and General Services
c/o Wilson Okamoto & Associates
1907 S. Beretania Street, Suite 400
Honolulu, Hawaii 96826

January 2003

Haun & Associates
Archaeological, Cultural, and Historical Resource Management Services
HCR 1 Box 4730, Keaau, Hawaii 96749 Phone: 982-7755 Fax: 982-6343

INTRODUCTION

At the request of Wilson Okamoto & Associates on behalf of the State of Hawaii Department of Accounting and General Services, Haun & Associates conducted an archaeological assessment of the proposed 0.52-acre Rainbow Radio Facilities and Towers, Statewide, Kahua Ranch Site, situated in the Land of Kahua 2nd, North Kohala District, Island of Hawai'i (TMK: 5-9-02: por 2; *Figure 1*). The objective of the assessment was to determine if an inventory survey would be required by the Department of Land and Natural Resources-State Historic Preservation Division (DLNR-SHPD). The proposed project consists of the erection of an 80 ft antenna tower and a single story building (34 ft by 28 ft) for equipment and power generation.

Project Area Description

The project area consists of a c. 0.52-acre parcel situated on top of Waiakanonula, a hill located on Kahua Ranch land at elevations ranging from 3,810 to 3,825 ft. The parcel is bordered by a barbed wire fence to the north and east, an existing Federal Aviation Administration (FAA) facility to the south, and open pasture to the west (*Figure 2*). The central portion of the parcel is relatively level, with the terrain sloping to the east and west along the inland and seaward sides. The project area is covered in low grass. An existing antenna tower (*Figure 3*) is situated in the central portion of the parcel, and several small buildings associated with this tower are located in the southeastern portion (*Figure 4*).

Waiakanonula consists of a remnant scoria cone associated with the Kohala volcano that dates to c. 120,000 to 230,000 years before present (Wolfe and Morris 2001). Soils within the parcel consist of Kahua silty clay loam (6-20% slopes). This soil is characterized by a thin silt loam surface soil over a thick subsoil of silty clay loam (Sato et al. 1973:22). The lower portion of the subsoil is comprised of mixed silty clay loam and coarse cinders. This soil evidences a slow runoff and a slight erosional hazard and is suitable for pasture and wildlife habitat.

Field Methods

The assessment fieldwork was conducted October 17, 2002. The project area was subjected to a 100% surface examination using five meter interval pedestrian survey transects oriented in a north-south direction. No subsurface testing was undertaken.

BACKGROUND

The Mahele Database (Waihona Aina 2000) lists two Land Commission Award (LCA) claims in Kahua, but neither one was awarded. The only previous archaeological work in the immediate vicinity of the project area is a field inspection of another antenna site on the same hill by Rechtman (2000), which did not identify any sites.

Clark (1987) proposed a settlement pattern model for the Kawaihae-Waimea region, which is applicable to the nearby *ahupua'a* of Kahua. The model consists of four settlement zones as follows:

Coastal Zone	Extends from the coast to between 200 m and 400 m inland with most sites below 30-45 m (98-148 ft) elevation. The Coastal Zone is subdivided into shoreline and inland sub-zones. Subsistence activity had a marine exploitation emphasis including fishing, collecting, and salt making. Agricultural crops included coconut, sweet potato, gourds, and other medicinal, utilitarian, and food plants. Archaeological features include "residential structures, community-oriented structures, burial monuments, agricultural features, military features [recent], and miscel-

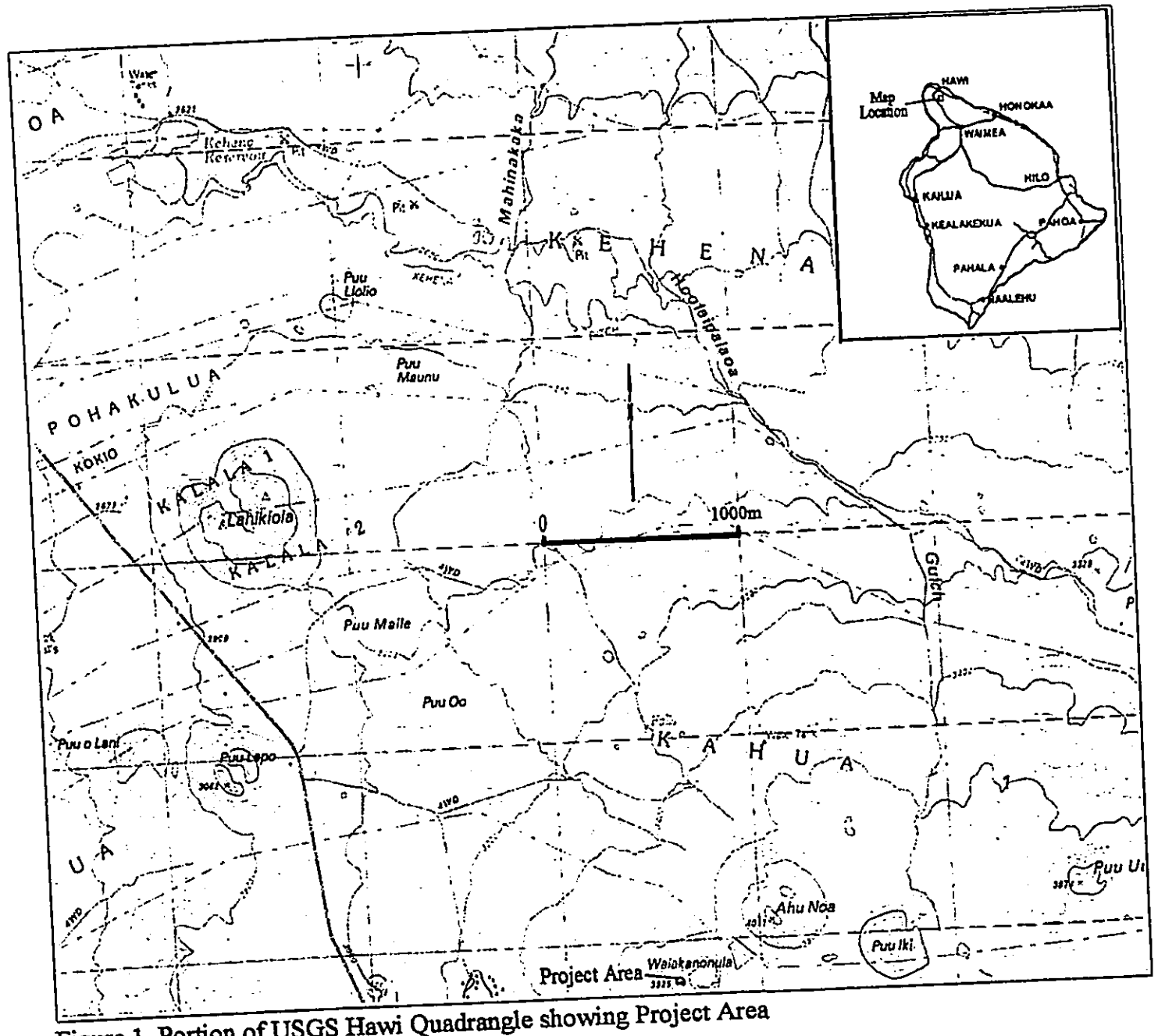

Figure 1. Portion of USGS Hawi Quadrangle showing Project Area

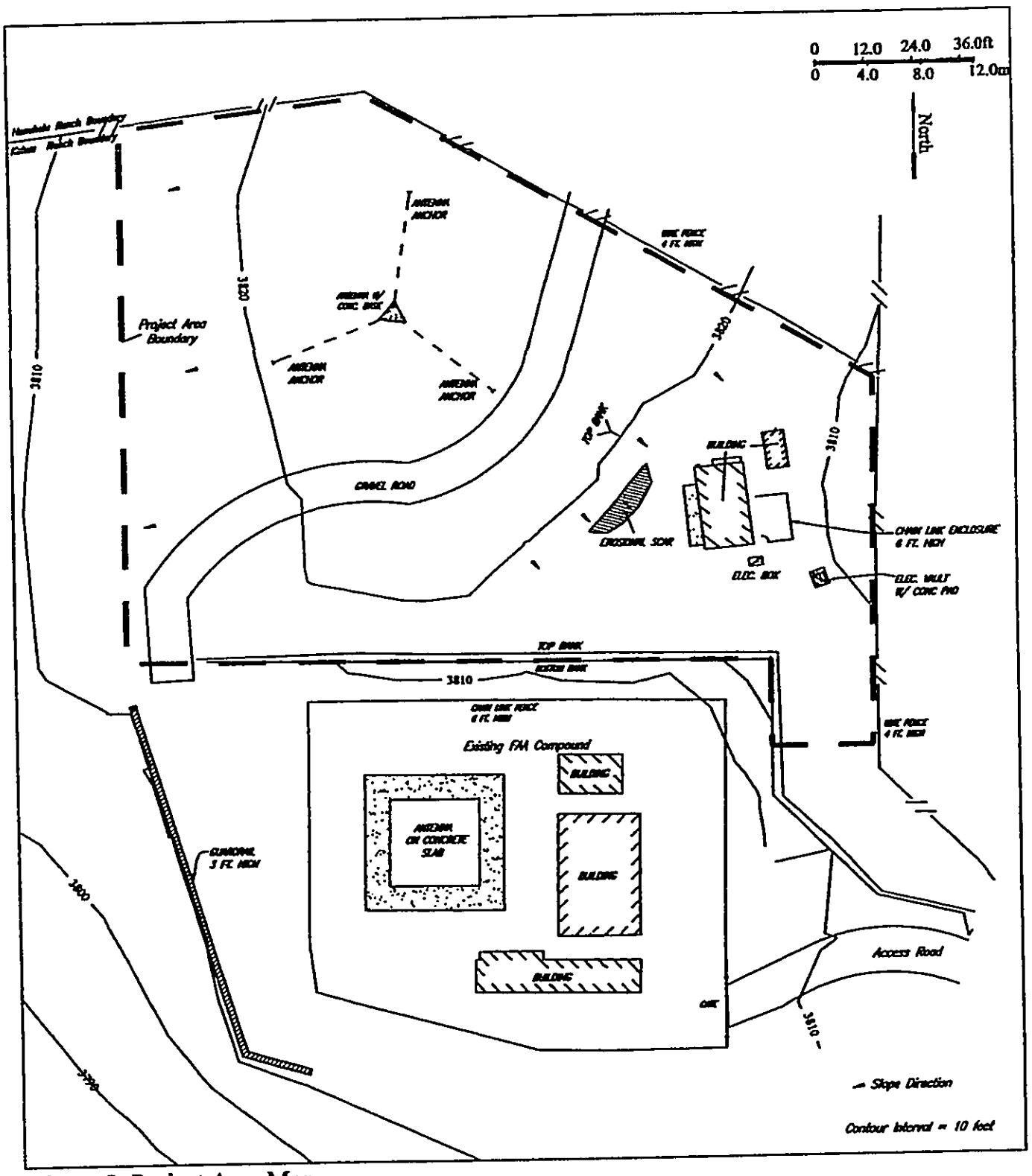

Figure 2. Project Area Map

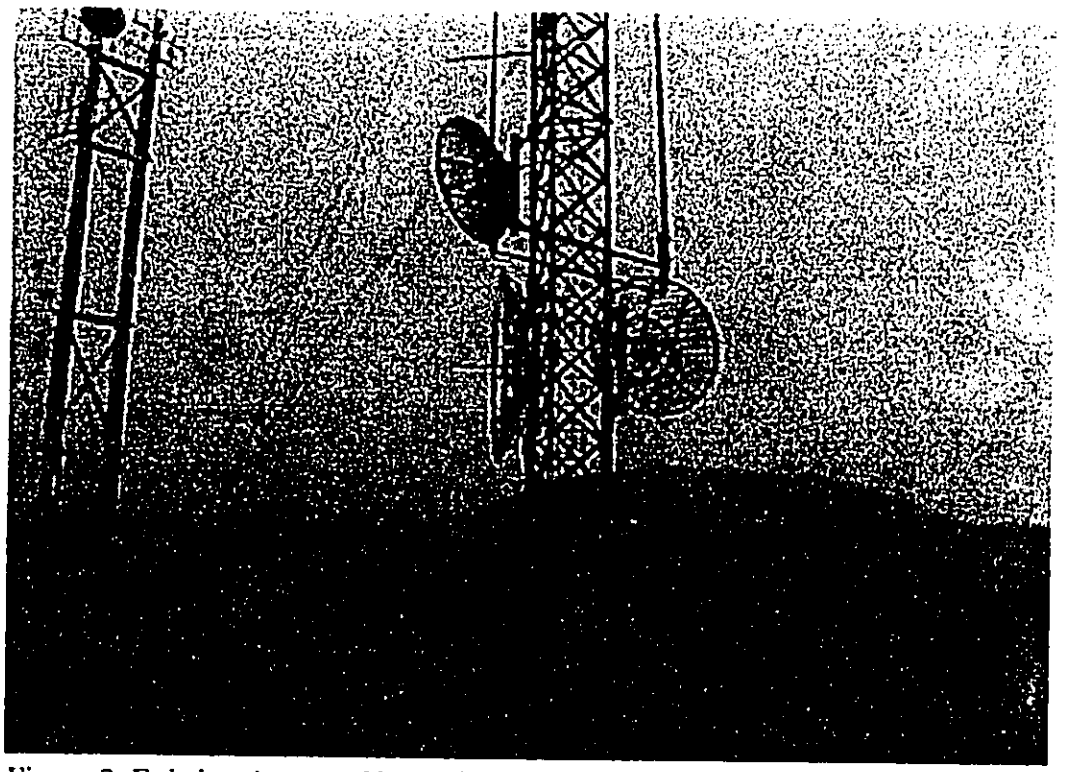

Figure 3. Existing Antenna Tower in Project Area, view to north-northeast

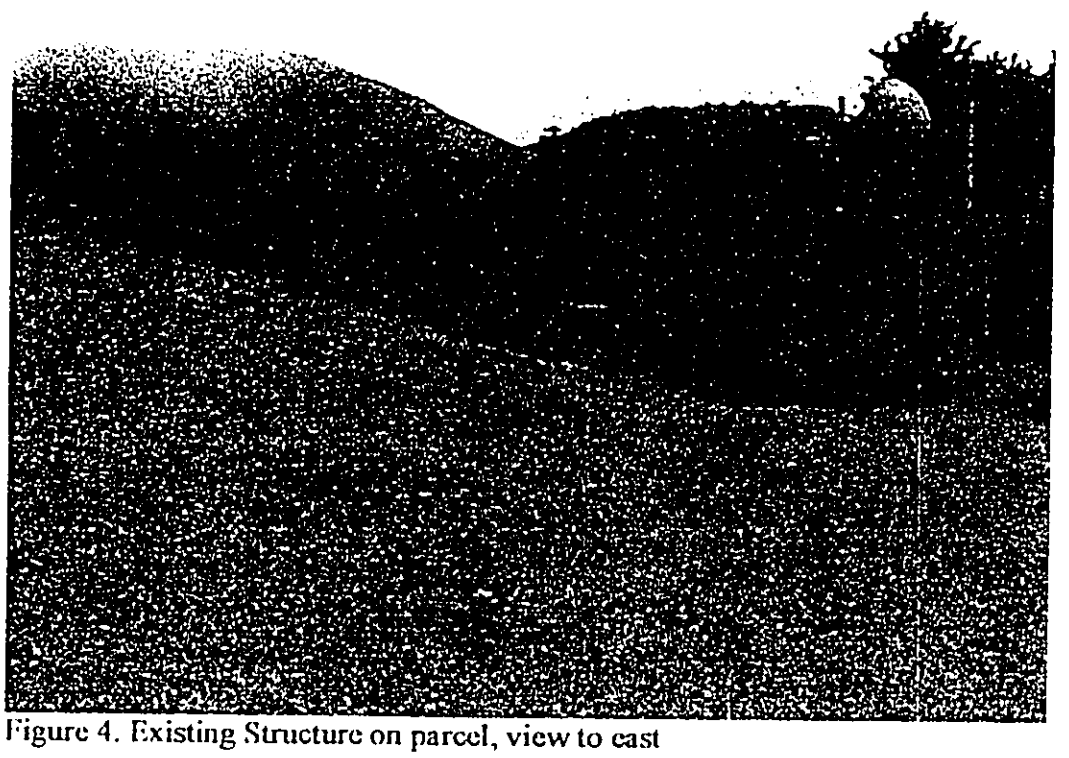

Figure 4. Existing Structure on parcel, view to east

laneous" (1987:247). Habitation sites include single use sites, extended and recurrent occupations, and permanently occupied sites. Habitation features include small walled shelters, caves, overhangs, terraces, platforms, and enclosures. The more intensively occupied habitation sites are clustered in neighborhoods sometimes larger wards.

Intermediate Zone — Extends from the Coastal Zone to between 7.3 and 9.7 km inland at approximately 585 m (1,919 ft) elevation. Subsistence activity limited to small scale seasonal cultivation of alluvial flats near drainages and bird catching. Archaeological features include short-tern occupation sites including midden scatters, fireplaces, small walled shelters, caves, and overhangs, which are typically situated near drainages.

Kula Zone — Extends from the Intermediate Zone to between 7.3 and 9.7 km inland. It ranges in elevation from 585 m to 830 m (1,919-2,722 ft) in elevation, with small sections extending to as much as 975 m (3,198 ft) elevation. Subsistence activity is dominated by agriculture. The zone is divided into two primary sub-zones based on the nature of cultivation. Sub-zone 1 is defined by the presence of formal fields mound complexes, small terraces, modified outcrops, and animal and garden enclosures. Sub-zone 2 is characterized by the absence of formal fields and limited to planting swales, clusters of mounds, and modified outcrops. Irrigation ditches occur in both sub-zones. Crops included sweet potatoes, dry-land taro, gourds, and *wauke*. Habitation sites include single use sites, extended and recurrent occupations, and permanently occupied sites. Habitation features include small walled shelters, caves, overhangs, terraces, platforms, and enclosures. The more intensively occupied habitation sites are clustered in neighborhoods sometimes larger wards. Burial features are also present.

Wilderness Zone — Zone extends inland from the *Kula* Zone to the mountain tops. The zone is divided into two sub-zones. Sub-zone 1 consists of areas that were exploited for a variety of resources including, wood, bark, birds, wild plants foods, and fine-grained basalt for tool manufacture. Sub-zone 2 consists of the highest elevation areas that were not economically exploited and largely untouched except for some religious activity.

The project area falls within Sub-zone 1 of Clark's Wilderness Zone. Potential site types in the sub-zone include trails, temporary camps, and quarries.

FINDINGS

The survey did not identify any sites or features. A 6.0 m long erosion scar was observed on the eastern side of the parcel, below the antenna and west of the existing structures (see *Figure 2*). This scar exposes a reddish-orange saprolitic clay with no cultural remains. The topographic setting of the project area on top of a hill indicates that it is in an erosional, as opposed to depositional, environment and it is unlikely that buried subsurface cultural remains are present.

Based on the fieldwork and limited background research, an inventory survey of the project area is not recommended. This recommendation will require the concurrence of DLNR-SHPD.

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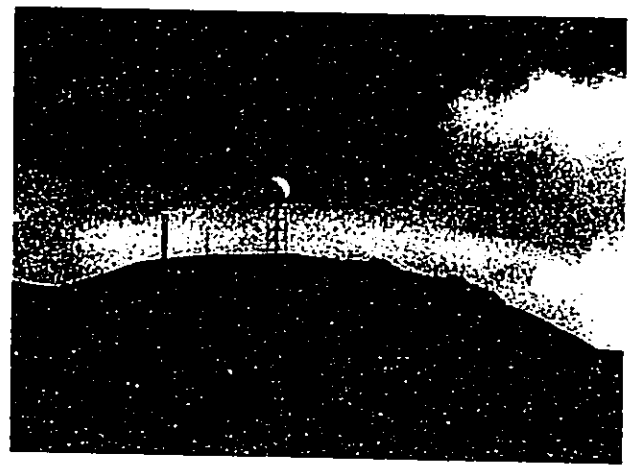
Cultural Impact Assessment
Kahua Ranch DAGS Rainbow Tower & Facilities
Pu`u Waiakanonula, Kahua Ranch, Ahupua`a of Kahuali`ili`i
District of Kohala, Hawai`i Island, Hawai`i



Prepared for
Haun & Associates
Wilso n Okamoto & Associates
DAGS, State of Hawai`i

By Maria E. Ka`imipono Orr
February 25, 2003

EXECUTIVE SUMMARY

At the request of Haun & Associates a Cultural Impact Assessment/Study [CIS] of Pu`u Waiakanonula (a.k.a. Pu`u Waikanan`ula) [TMK: 5-9-02:002], Kahua Ranch, in the *ahupua`a* of Kahuali`ili`i, North Kohala, Hawaii Island, site of the proposed Rainbow Radio Facilities and Towers, was conducted between November 2002 and February 2003. This study was part of a larger study prepared by Haun & Associates and Wilson Okamotot & Associates, Inc. for the State of Hawai`i ICSD.

This study is in compliance with Act 50 SLH 2000 (HB 2895 H.D.1) as it amends the State of Hawaii Office of Environmental Quality Control [OEQC] Guidelines for Environmental Impact Statement law [Chapter 343, HRS]. To this end, the targeted "audience" of this report is the people who will be reviewing it. Therefore, it was written with this in mind and includes an overview of the history of land use by entities such as Kahua Ranch. The literature review included *mo`olelo* or Hawaiian stories and legends of the vicinity, ethnohistoric works from the 19th and early 20th centuries and other pertinent archival material.

A medium level of effort ethnographic survey was conducted, primarily because the area that will be impacted by this undertaking has been a working ranch for over one hundred and fifty years; and the project site has been heavily impacted by the installations of three towers and a maintenance facility. There are people living in the ranch vicinity who are third and fourth generation of people who have lived and worked at Kahua Ranch. While the project site appears to be devoid of cultural remains, other areas of the ranch still has cultural remains that attest to the ancient use of the area.

Despite the dismal accounting of cultural and historical resources, Pu`u Waiakanonula is the subject of an ancient legend known to the locals of the area; a place where its sacred waters were saved by the crowing of a rooster. It is with this consideration that the recommendation that the pond be avoided, is made.

ACKNOWLEDGEMENTS

This project could not have been completed without the assistance, support and *mana`o* of my ethnographic consultants (primary and secondary): Aunty Leina Hoopai; Ms. Sherri Hannum; and Mr. Harold Kailiawa for taking the time to be interviewed. To Mr. Pono von Holt; Mr. Bernard Hoopai; Ms. Hannah Springer and especially Ms. Bernelle Hoopai for providing pertinent information, in spite of busy schedules.

A special mahalo to Mr. and Mrs. "Ikaika" Gerald Napoleon for their hospitality; especially to Aunty Maile Napoleon for helping to get interview referrals.

Additional mahalo also goes out to SHPD archaeologists Sara Collins and Muffet Jourdane for their continuing help; Bishop Museum Archives staff DeSoto Brown, Linda Laurence, Ron Schaeffer and Deanne DuPont for all their kokua and aloha; and to Bishop Museum Library staff B. J. and especially Patty for telling me about *Little Britain*.... Mahalo also to Ms. Joan Burchardt, author of *Little Britain*...for writing this little treasure and who responded to my email questions.

And last but certainly not least, a big MAHALO to Dr. Alan Haun of Haun & Associates for without his support I would not have had this project.

MAHALO!

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INTRODUCTION

At the request of Haun & Associates a Cultural Impact Assessment/Study [CIS] of Pu`u Waiakanonula (a.k.a. Pu`u Waikanānā`ula) [TMK: 5-9-02:002], Kahuā Ranch in the *ahupua`a* of Kahuāli`ili`i, North Kohala, Hawaii Island, site of the proposed Rainbow Radio Facilities and Towers, was conducted between November 2002 and February 2003. This study was part of larger studies prepared by Haun & Associates and Wilson Okamoto & Associates, Inc., for the State of Hawai`i [CSD. For the sake of continuity, the project will be referred to as "Kahuā Ranch" and the project site as "Pu`u Waiakanonula."

The purpose of this CIS was to gather information about traditional cultural practices, ethnic cultural practices and pre-historic and historic cultural remains that may be affected by the implementation of the development project. This study is in compliance with Act 50 SLH 2000 (HB 2895 H.D.1) [Appendix A] as it amends the State of Hawaii Environmental Impact Statement law [Chapter 343, HRS] to include:

> *effects on the cultural practices of the community and State. Also amends the definition of "significant effect" to include adverse effects on cultural practices.*

This report is organized into five parts. Part I describes the project area in terms of location, in the context of *ahupua`a*, district and island, as well as a generalized description of the natural environment [geology, flora and fauna]. Part II explains the methods and constraints of this study. Part III summarizes the review of the traditional and historical literature in the context of the general history of Hawai`i, the island of Hawai`i, the district of North Kohala, and the local history of Kahuāli`ili`i (Ponoholo/Kahuā Ranch) as it pertains to cultural resources, land, water and marine use in the project area. Part IV presents the analysis of the ethnographic survey based on the supporting data (oral history transcripts). Part V summarizes the findings of this cultural impact assessment/study.

SCOPE OF WORK

The scope-of-work (SOW) [Appendix B] was based on the OEQC *Guidelines for Assessing Cultural Impacts* (1997) [Appendix C] and focuses on three cultural resource areas (traditional, historical and archaeological), conducted on two levels: archival research (literature review) and ethnographic survey (oral histories). Since independent contractors have already conducted the archaeological inventory survey of Kahuā/Ponoholo Ranch, this study will only include brief summaries of previous archaeological studies of the project area and vicinity, focusing on information regarding cultural/historical significance.

Scope of Work: Cultural Impact Assessment [in accordance with OEQC Guidelines]

1. identify and consult with individuals with expertise concerning the types of cultural resources, practices and beliefs found within the broad geographical area, e.g., district or *ahupua`a*; or with knowledge of the area potentially affected by the proposed action;

2. receive information from or conduct ethnographic interviews and oral histories with person(s) having knowledge of the potentially affected area;

3. conduct ethnographic, historical, anthropological, and other culturally related documentary research;

4. identify and describe the cultural resources, practices and beliefs located within the potentially affected area; and

5. assess the impact of the proposed action on the cultural resources, practices and beliefs identified.

The research for this cultural impact assessment was conducted within the broader context of the *ahupua`a* (traditional land division) and *moku* (traditional district), as well as the history of the industry in the area. This study is a *low level of effort* [1-3 interviews; limited background research] due to a preliminary assessment that these lands have been utilized for cattle grazing since the mid-late 1800s; and the already heavily-impacted condition of Pu`u Waiakanonula [three towers and maintenance facilities already exist there]. However the *makai* (south of the highway) lands of Kahuā Ranch were known ancient *`uala* (sweet potato) lands; and areas of Kahua Ranch were known Makahiki game fields, as well as training grounds for the warriors of Kamehameha I during his early conquest period.

Research on traditional resources entailed a review of the literature of Hawaiian *mo`olelo* (stories, legends or oral histories) of late nineteenth and early twentieth century ethnographic works, and interviews with knowledgeable consultants who met the following consultant criteria:

- Referred By Hawaiian Cultural Practitioner
- Had/has Ties to Project Location(s)
- Referred By Staff of Kahuā Ranch
- Referred By Staff of Ponoholo Ranch

Historic research focused on the ranching influence. Literature from the following institutions were reviewed: University of Hawai`i-Manoa Hamilton Library-Hawaiian; Bishop Museum Archives; State Historic Preservation Division Library; Kohala Bookstore; information from State Bureau of Conveyances; and personal library.

Archaeological research entailed a limited review of the literature located in the DLNR State Historic Preservation Division library; reports from Haun & Associates; and a site visit.

Photo 2. Kahua Ranch Headquarters.

PART I: PROJECT AREA

Project Location

The project site is located on Pu`u Waiakanonula [a.k.a. Pu`u Waikanānā'ula], which is on the property of both Ponoholo Ranch [TMK: 5-9-02:004] and Kahuā Ranch [TMK: 5-9-02:002], in the *ahupua`a* (traditional land division) of Kahuāli`ili`i, North Kohala, Hawai`i. However, the project site is on the Kahuā Ranch side of the *pu`u* (Richards 2003). Pu`u Waiakanonula is a scoria cone with a summit 3,800-3,825 foot elevation, *mauka* [upland] of the Kohala Mountain Road, west of Pu`u Ahu Noa [a.k.a. Ahu Moa] and northwest Pu`u Pili [Photos 3-4; Figures 1-4].

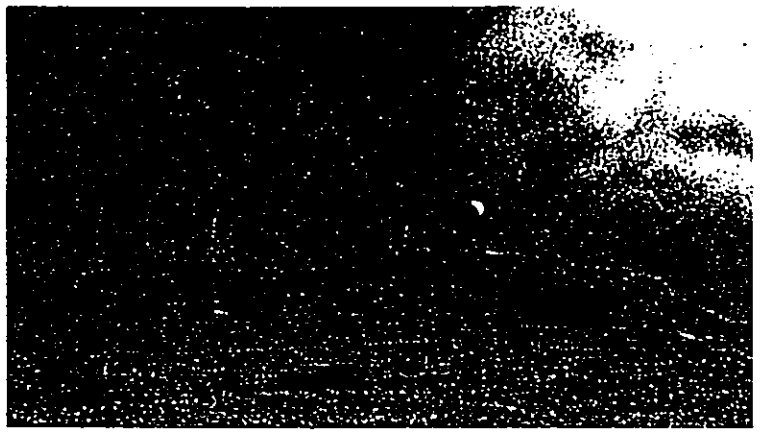


Photo 3. Pu`u Waiakanonula with current towers.

Photo 4. Pu`u Ahu Noa with Pu`u Pili in the background.

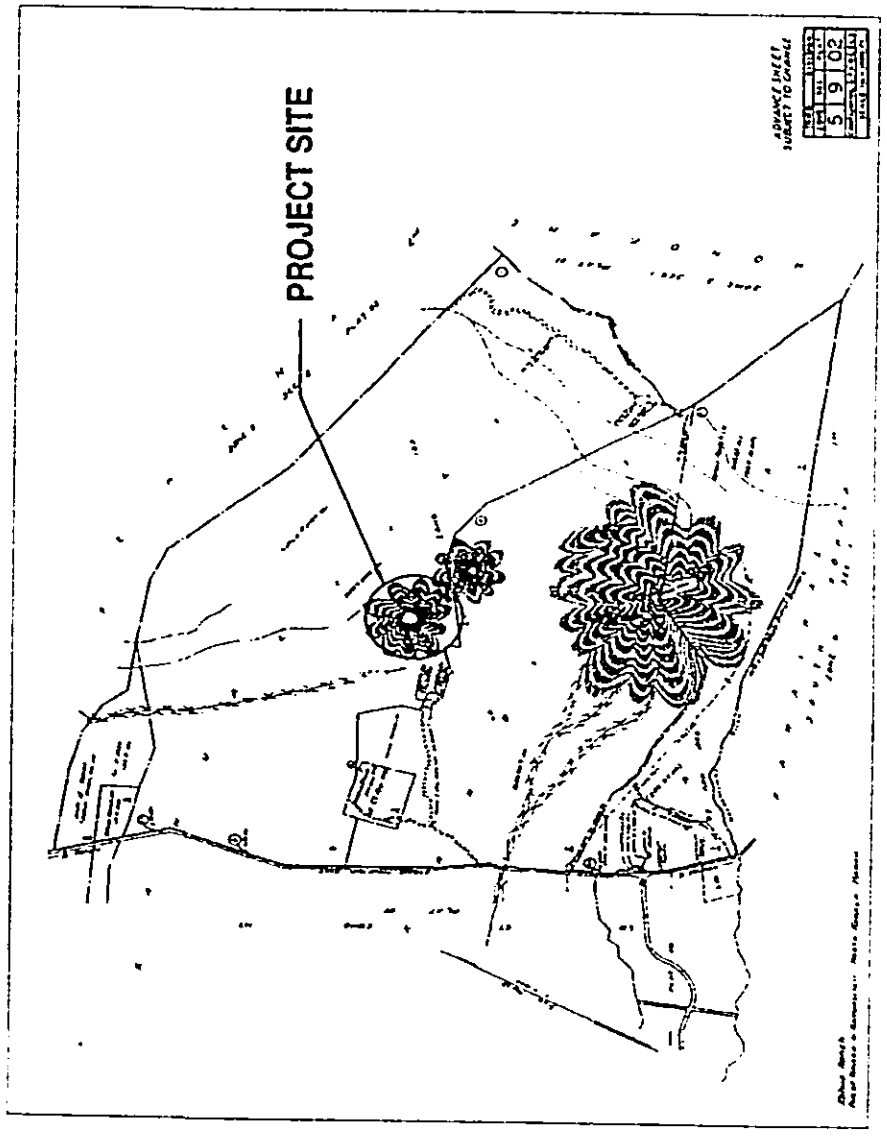


Figure 1. TMK: 5-9-02 map indicating project site (Wilson Okamoto & Associates 2002).

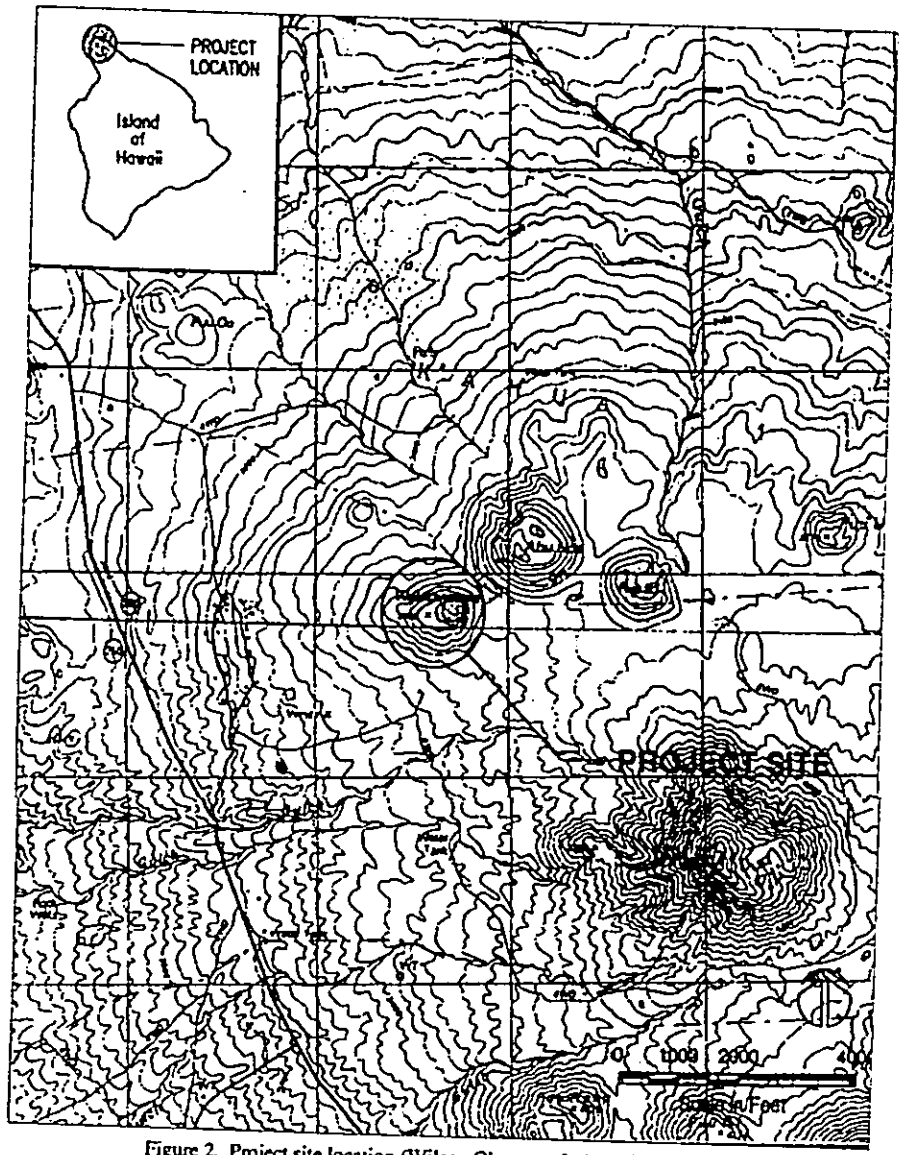


Figure 2. Project site location (Wilson Okamoto & Associates 2002).

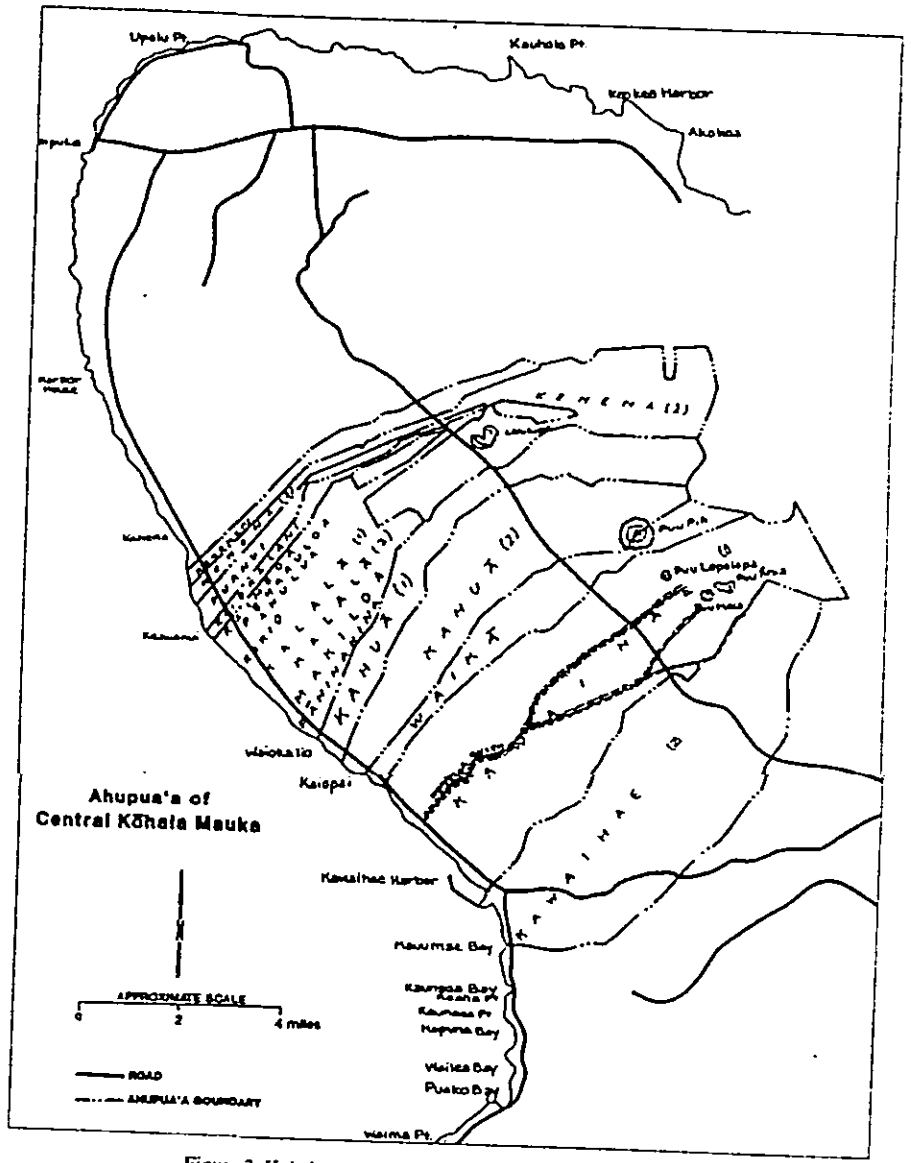
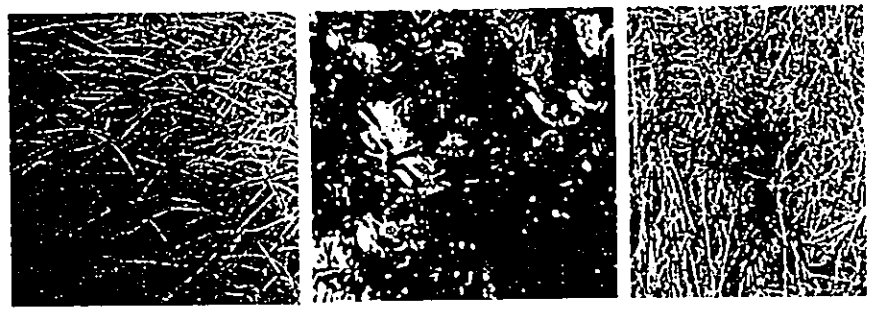


Figure 3. Kohala Ahupua`a (adapted from Langlas 1994:14)

Flora. For the last seventy-five years the project area has been primarily alien or exotic grasslands used for pasturing cattle, horses and sheep. The dominant vegetation on Pu'u Waiakanonula are exotic grasses, with a scattering of other exotic [yellow flower] and native [ferns] flora. However, there are a few native *'ohi'a lehua* (*Metrosideros sp.*) growing on the windward or eastern slope of the *pu'u* (hill) along side ironwood (*Casuarina equistifolia*), Norfolk pine (*Araucaria heterophylla*) and *Eucalyptus sp.* At the top of the eastern slope of Pu'u Waiakanonula are flora associated with a marshy or bog-like area. There was a pooling of water, surrounded by grass and other vegetation. However, a barbed fence and concern for safety prevented a closer inspection.



Photos 5-7. Flora of Pu'u Waiakanonula: typical grass; 'Ohia lehua trees; possible native fern

Photos 8-9. Southeast slope of Pu'u Waiakanonula with ironwoods and other trees; exotic purple flower.

These lands have most likely gone through other modifications over time. In *Hawaii a Natural History*, Carlquist divides each island into six regions: Coast, Dry Forest, Wet Forest, Epiphytic Vegetation, Bog and Alpine. The coastal vegetation are plants that grow near the shore. Most of the native coastal plants consisted of shrubs and herbaceous vegetation such as *naupaka kai* (*Scaevola taccada*), *'ilima* (*Sida fallax*) and *Ipomoea* sp. (Carlquist 1980:269, 300). Within the 0-500' elevation the only native tree is the *hala* (*Pandanus odoratissimus*). Humans have introduced other coastal trees in this zone (Carlquist 1980:267).

The Dry Forest Region [lower and upper] has suffered the most impact by man. This is the area the early Polynesians modified extensively in slash and burn cultivation to expand their subsistence level, intensifying food production with complex irrigated agricultural systems of various crops (Kirch 1985:217). Some of the Dry Forest vegetation that may have been affected by early Hawaiian cultivation practices are the *naio* (*Myoporum sandwincense*), *wiliwili* (*Erythrina sandwincensis*), *'ohe* (*Reynoldsia sandwincensis*), *'iliahi* (*Santalum sp*), *'ohi'a* (*Metrosideros sp*), *koa* (*Acacia koa*), as well as several species of shrubs [i.e., (*Sida cordifolia*), *'ulei* (*Osteomeles anthyllidifolia*)], vines and ground cover (Carlquist 1980: 275-300). These "typical" dry-land forest species however, can be found higher up-slope on leeward coasts (Carlquist 1980:285).

The distinction of a Hawaiian Wet Forest is that it gets more than 70 inches of rain per year, and its most predominant native plant is the multi-range *'ohi'a*. Other native species of this region are the *loulu* palm (*Pritchardia macdanielsii*), *uluhe* (*Dicranopteris*), *hapu* (*Cibotium*), *mailе* (*Alyxia oliviformis*) and an abundant variety of fern, mosses, liverworts, fungi and lichens. The significance of the *'ohi'a* or wet forest is that it is the most bio-diverse region of the Islands. It is here that the greatest evolution and diversification of plants and animals take place, and it was a region relatively unoccupied at first [by early Hawaiians] on the Islands (Carlquist 1980:301, 306).

Epiphytes of the Hawaiian wet forests are limited to the many species of mosses, liverworts, lichens, ferns, about 50 species of Peperomia, and *'ie'ie* (*Freycinetia arborea*), a plant of early Hawaiian ethno-botanical significance that displays qualities of an epiphyte and a climber (Carlquist 1980: 333-5).

Bogs are usually found at higher elevations where rainfall exceeds the porosity level of the soil, and on old volcanic domes with steep slopes and natural damming. They usually consist of mud, very small pockets of standing water and tussocks of sedge (*Oreobolus sp*) or grass (*Panicum sp*). Plants that grow in the bog are usually dwarfed (Carlquist 1980: 351-355).

Fauna. Terrestrial fauna in pre-colonized Hawaii consisted of only one endemic mammal, the hoary bat (*Lasiurus cinereus*), thousands of endemic insects [i.e., damselflies (*Ischnura ramburii* and *Ischnura posita*) found around reservoirs and streams], and about 100 species of endemic birds such as the Hawaiian honeycreeper (*Drepanididae spp*) (Berger, 1972:7, Kirch, 1985:28). Early Polynesian introduced animals included the Southeast Asian pig (*Sus scrofa*), jungle fowl (*Gallus gallus*), dog (*Canidae*), and the Polynesian rat (*Rattus exulans*). Mammals at Kahua Ranch today include various breeds of horses, cattle, and sheep, as well as dogs, cats and feral pigs.

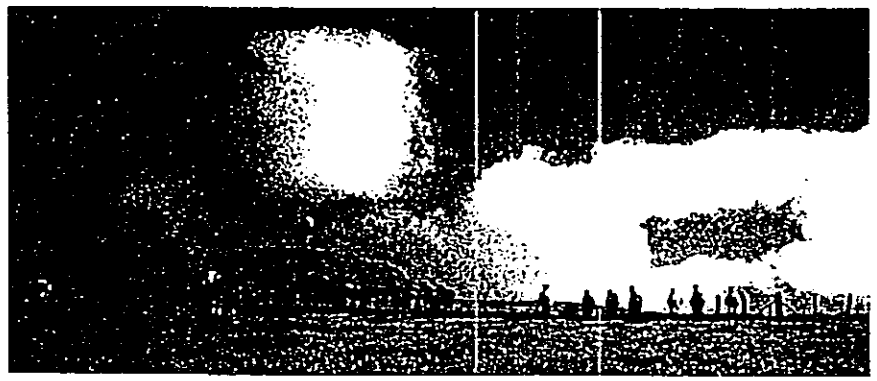


Photo 10. A line-up of horses on Kahua Ranch with Pu'u Waiakanonula in the background.

PART II: METHODS

The Cultural Impact Assessment for Kahuā Ranch was conducted between the months of November through January 2003. The study consisted of three phases: (1) cultural and historical archival research (literature review); (2) ethnographic survey (oral history interviews), transcribing interviews, analysis of ethnographic data; and (3) report writing.

Personnel. The personnel consisted of the researcher who has a masters degree in Anthropology, with a graduate curriculum background in the archaeology track as well as anthropology theory, cultural resource management, ethnographic research methods, and public archaeology; an undergraduate curriculum background that included Hawaiian History, Hawaiian Language, Hawaiian Archaeology, Pacific Islands Religion, Pacific Islands Archaeology, Cultural Anthropology, as well as a core archaeology track, Geology, and Tropical Plant Botany; and ethnographic field experience that includes over 115 interviews to date.

Level of Effort. This study is a *low level of effort* [1-3 interviews; limited background research] due to a preliminary assessment that these lands have been cattle grazing lands since 1879s and the already heavily-impacted condition of Pu`u Waiakanonula. However the *makai* (south of the highway) lands of Kahuā Ranch were known *`uala* (sweet potato) lands and according to staff of Kahuā and Ponoholo Ranches, still has a number of agricultural cultural remains.

Theoretical approach. This study is loosely based on *Grounded Theory*, a qualitative research approach in which "raw data" [transcripts and literature] are analyzed for concepts, categories and propositions. Conceptual labels or codes are generated by topic indicators [i.e., agriculture, flora, ranching]. Categories are generated in a similar manner by forming groupings such as "Land Resource & Use," or "Water Resource & Use," or "Traditional History." Since this was a semi-focussed study, categories were pre-selected as part of the overall research design. However, it is not always the case that these research categories are supported in the data. In the *Grounded Theory* approach, theories about the social process are developed from the data analysis and interpretation process (Haig 1995; Pandit 1996). This step was not part of this cultural impact assessment as the research sample was too small.

Archival Research. Archival research included a limited background literature review. Compiling data took a couple of weeks of intermittent archival research. The majority of the archival research [primary and secondary sources] took place in the Hawaiian Collections of the University of Hawaii Hamilton Library (Manoa Campus), State Historic Preservation Division library, State Bureau of Conveyance, Kohala Bookstore and the researcher's private library. Primary source material included Land Court records, maps, genealogies, oral histories and other studies. Secondary source material included translations of 19th century ethnographic works, historical texts, indexes, archaeological reports, and Hawaiian language resources [i.e., proverbs, place names and dictionary].

Consultant Selection. The selection of the consultants was based on the following criteria:

- Referred By Hawaiian Cultural Practitioner
- Had/has Ties to Project Location(s)
- Referred By Staff of Kahuā Ranch
- Referred By Staff of Ponoholo Ranch

Interview Process. The interview process included a brief verbal overview of the study. Then the consultant was provided with an informed consent or agreement to participate form to review, which was drafted for the edification and protection of each consultant (Appendix D). An ethnographic research

instrument (Appendix E) was designed to facilitate the interview; a semi-structured and open-ended method of questioning based on the person's answers to questions ('talk-story' style). Each interview was conducted at the convenience (date, place and time) of each consultant. A *makana* or gift was given to each consultant in keeping with a traditional reciprocal protocol.

Ethnographic Interview Procedures. Three types of interviews were conducted. Three primary interviews were conducted at the homes of the consultants, at their request, using a Vox Optimus cassette tape recorder with an external microphone. Notes were also taken, but more attention was given to listening intently to each consultant. One mini interview was done in Kapa`au, on the side of the road in front of the house of the person; only hand-written notes were taken. Two mini-telephone interviews were also conducted to clarify a few points. These were at the suggestions of the three primary consultants.

Transcribing Process. The taped interviews were transcribed verbatim by the principal investigator using a Sony Dictator/Transcriber (BM-87DST). Each consultant was given a hard copy of the interview transcripts along with a *mahalo* letter that explained the transcript review process, and a self-addressed, stamped envelope for return of the edited transcripts. This allowed for corrections (i.e., spelling of names, places), as well as a chance to delete any part of the information if so desired. Copies of information from the hand-written notes were sent to each of the mini-interviewees.

Analysis Process. The analysis process followed a more traditional method, as a qualitative analysis software program was not necessary. The interview was manually coded for research thematic indicators or categories (i.e., personal information; land and water resources and uses; site information-traditional and/or historical; and anecdotal stories). For the purpose of this study, it was also not necessary to go beyond the first level of content and thematic analysis, as this was a more focussed study. However, sub-themes or sub-categories were developed from the content or threads of each interview [i.e., irrigation system, ranching, and agriculture].

Research Problems. A typical constraint for most studies is not enough time for archival research as there is a lot of material to review. However, several unforeseen circumstances prevented some interviews from taking place.

- Two potential consultants had work-schedule changes due to inclement weather.
- One consultant had to re-schedule due to family commitments.
- After flying back a second time to Hawai`i, one consultant misunderstood the timing and the interview was re-scheduled for the next day; another potential consultant was again not able to make it due to bad weather forcing last minute changes. This person was called for a very limited telephone interview.

PART III: CULTURAL & HISTORICAL BACKGROUND REVIEW

The Cultural and Historical Background Review entailed a search of primary and secondary source literature. The majority of this research took place in the Hawaiian Collections of the University of Hawaii Hamilton Library (Manoa Campus), State Historic Preservation Division library, State Bureau of Conveyance, Kohala Bookstore, and the researcher's private library. Primary source material included Land Court records, maps, visitor journals, genealogies, oral histories and other studies. Secondary source material included translations of 19th century ethnographic works, historical texts, indexes, archaeological reports, and Hawaiian language resources (i.e., proverbs, place names and Hawaiian language dictionary). A review of the archival material is presented in this section, along with an overview of the chronology of the *moku* (district) of North Kohala, within the context of the broader history of the *moku ʻāina* (island) of Hawai'i and Greater Hawaii.

A. Models of Hawaiian Chronology.

Models of Hawaiian Chronology such as Cordy (1974/1996), Hommon (1976/1986) or Kirch (1985) provide a temporal view of settlement patterns as well as cultural changes through time, from initial settlement through first contact with the western world. Cordy's (1974) first model of a cultural development sequence looked at Initial Settlement Period, New Adaptation Period and a Complex Chiefdom Period. He has since modified this model (1996). Hommon's (1976) model of sociopolitical development sequence included four phases: Phase I AD 500-1400; Phase II AD 1400-1550; Phase III AD 1550-1650; and Phase IV AD 1650-1778. This model was later modified (1986) to three phases: Phase I AD 400-1400 Exploration and Settlement; Phase II AD 1400-1600 Expansion; and Phase III AD 1600-1778 Consolidation. Kirch (1985) believed that initial settlement occurred much earlier than AD 600. His culture-historical sequence model has four phases: Phase I Colonization Period (AD 300-600); Phase II Developmental Period (AD 600-1100); Phase III Expansion Period (AD 1100-1650); and Phase IV Proto-Historic Period (AD 1650-1795) (Kirch, 1985:296-308; Kolb, 1991:205).

It should be noted that a study (Tuggle & Spriggs 2001) refutes the 'early colonization' dates supposition. For decades, the consensus among Hawaiian archaeologists was that evidence from Bellows and Kaʻu supported early Polynesian colonization dates of AD 300 to AD 600 (Tuggle 1997; Kirch 1985). However, Tuggle and Spriggs (2001) have since studied new data and re-evaluated past dates and dating methods and have concluded that acceptable early dates fall within AD 700-1100. These dates appear to coincide with data that eastern Polynesia was settled much later than previously thought (Rolett 1989).

While Kirch's chronology model may need to be revised, his basic period system is still a valid model. Therefore for this cultural impact assessment, Kirch's (1985) model will be used with the following modifications and additions: the dates for the Colonization and Development periods will not be used; Early Historic Period (AD 1795-1899), Territorial History (AD 1900–1949), and Modern Historic Period (post AD 1950) will be added. The reasoning behind using Kirch's model is the belief of many native Hawaiian people that based on oral histories or legends, the migrations of their Polynesian ancestors to Hawai'i took place prior to AD 700. According to Fornander (1917:IV; II: 406), there are seventy-five generations from Wakea to Kamehameha I who was born around AD 1753. If just eighteen years were allotted to each generation (typically a generation is twenty years) that would make the time of Hawaiian progenitors Wakea and Papa Haumea (who settled in Nuʻuanu, Oahu) approximately AD 403. [McKenzie (1983:12) gives thirty years per generation.]

The following overview encapsulates cultural changes over time and highlights significant events and people. More corroborating details follow this overview section with traditional *moʻolelo* and *mele*, historic works and various studies.

An Overview of Human Impact, Settlement and Socio-economic Development in North Kohala in the context of Greater Hawaii

B-1. Colonization Period. First voyager dating is scanty at best, however, based on early site dates from Bellows, Oahu and South Point, Hawaii, Kirch (1985) estimated that the Colonization Period of the Hawaiian Islands was somewhere between AD 300-600. These first Polynesian voyagers to Hawaii "followed the tracks of migratory birds. Mainly they traveled by the stars.... On a voyage of migration, from sixty to a hundred persons could exist for weeks on a large canoe, which might be a hundred feet in length" (Day 1992:3). This feat was "remarkable in that it was done in canoes carved with tools of stone, bone, and coral; lashed with handmade fiber; and navigated without instruments" (Teruia 1995:vii). Based on Moʻokini genealogy chants, the earliest dates for the vicinity of North Kohala are AD 480 for the *heiau* (James 1995:145). However, according to ethno-historian Kamakau, the *heiau* was constructed during the early part of Kirch's Expansion (AD 1100-1650) Period (Kamakau 1976:125).

Reconstructing the cultural sequence for the Kohala district and other places in Hawai'i during the colonization period would involve the 'founder effect' and time necessary to adjust and adapt to a new environment. The colonizers were not able to bring all of the gene pool or cultigens from their homeland, so their new culture consisted of what survived the journey, what was remembered and what could be applied to the new environment (Kirch 1985:285-6). Although early Hawaiians were farmers and felt spiritually tied to the *ʻāina* (land) in many ways (Waters, n.d.), when they first arrived they had to modify both their subsistence practices and the land. Faunal remains analyses indicate that early Hawaiian subsistence depended on fishing, gathering, bird hunting (extinct fossil remains, see Olson and James, 1982), as it took time to clear the dryland forests, plant their crop cultigens, breed their animals, and construct suitable living quarters. Creation chants such as the *Kumulipo* depict a very deep philosophical bond with the land and nature and "the respectable person was bound affectionately to the land by which he was sustained" (Charlot 1983: 45,55). Ancient sites of various *koʻa* (fishing and bird shrines) also imply a spiritual respect for their sustenance.

As the founding groups grew, they fissioned into subgroups anthropologists refer to as *ramages*, with the senior male of the original ramage as chief of the conical clan, although hierarchical ranking was not just relegated through the patrilineal line of descent (Kirch 1985:31). Bellwood refers to these groups as tribal and related by blood (Bellwood 1978:31). In *Ka Poʻe Kahiko* Kamakau refers to Hawaiian ranking in the following passage:

> For 28 generations from Hulihonua to Wakea, no man was made chief over another, and during the 25 generations from Wakea to Kapawa, various noted deeds are mentioned...Kapawa was the first chief to be set up as a ruling chief...from then on the group of Hawaiian Islands became established as chief-ruled kingdoms - Maui from the time of Hekeipawa, son of Kapawa...this was the time that records (oral) began to be kept of the chiefs (Kamakau 1964:3)

B-2. Developmental Period. According to Fornander (1969) certain practices were universal Polynesian customs which the Hawaiians brought from their homeland; such as the major gods *Kane, Ku* and *Lono*; the *kapu* system of law and order; *puʻuhonua* (place of refuge); *ʻaumakua* (ancestral guardian) concept; and the concept of *mana* (supernatural or divine power) (Fornander 1969:61, 113,118,127-8). However, during the Developmental Period, changes occurred bringing about a uniquely Hawaiian culture, documented by the material culture found in archaeological sites. The adze (*koʻi*) evolved from the typical Polynesian variations of plano-convex, trapezoidal and reverse-triangular cross section to a very standard Hawaiian quadrangular-tanged adze. A few areas in Hawaii produced quality basalt for adz production. Mauna Kea on the island of Hawaii was a well-known adze quarry. The two-piece fish hook and the octopus lure breadloaf sinker are Hawaiian inventions of this period, as are the *ʻulu maika* stones and the *lei niho palaoa*. The later was a status item worn by those of high rank, indicating a trend toward greater stratification (Kirch 1985:184,204,306). The evidence also indicates that the "ancestral pattern of

corporate descent groups" were still in place (Kirch 1985:302-3). The early culture evolved as the population grew, and many of the changes were related to significant socio-economic changes.

B-3. Expansion Period. The Expansion Period, AD1100-1650, is significant in that most of the "ecologically favorable zones," the windward and coastal areas of all major islands, were now settled, and the more marginal leeward areas were being developed. This was also the period of high population growth, the development of large irrigation field system projects, and dryland farming (Bellwood 1978:98; Kirch 1985:298,303-4). Earlier dates (AD520-1170, AD610-1210) from leeward Kapa`anui were reported by Dunn and Rosendahl (1989) according to Wulzen and Goodfellow (1995), however these sites are believed to be temporary camp sites (Wulzen and Goodfellow 1995:11).

It was during this period that a second major migration settled in Hawaii, this time from Tahiti in the Society Islands (some say Samoa).. It was also during this leeward expansion movement that Mo`ikeha (Oahu), La`maikahiki (Kauai), Pilika`aiea or Pili (Hawai`i) and Kahn Pa`ao settled in the islands during the 13th century (Kamakau 1976:125). Pa`ao was the keeper of the god Ku`ka`ilimoku who had fought bitterly with his older brother, the high priest Lonopele. After much tragedy on both sides, Pa`ao escaped Lonopele's wrath by fleeing in a canoe. Kamakau (1991) told the following story in 1866:

> Puna on Hawai`i Island was the first land reached by Pa`ao, and here in Puna he built his first *heiau* for his god Aha`ula and named it Aha`ula [Waha`ula]. It was a *luakini*. From Puna, Pa`ao went on to land in Kohala, at Pu`uepa. He built a *heiau* there called Mo`okini, a *luakini*. It is thought that Pa`ao came to Hawaii in the time of the *ali`i* La`au because Pili ruled as *mo`i* after La`au. You will see Pili there in the line of succession, the *mo`o kū`auhau*, of Hanala`anui. It was said that Hawaii island was without a chief, and so a chief was brought from Kahiki; this is according to chiefly genealogies. Hawai`i island had been without a chief for a long time, and the chiefs of Hawai`i were *ali`i maka`ainana* or just commoners (Kamakau 1991:100). There were seventeen generations during which Hawai`i island was without chiefs--some eight hundred years (Kamakau 1991:101, 102).

There are several versions of this story which are discussed by Beckwith (1976), including the version where Mo`okini and Kaluawilinau, two Kahn of Moikeha decide to stay on at Kohala (Beckwith 1976:352, 353, 370-373). Pa`ao brought with him the Ku practice of human sacrifice, used in monumental *luakini heiau* or war temples. Pili started a line of *ali`inui* that would continue to the Kamehameha "dynasty." The evolution of the *luakini heiau* is difficult to place archaeologically, and although the arrival of Pa`ao may have been a real event, the uniqueness and complexity of *heiau* were most likely a local (Hawaiian) development (Kolb 1989:3). The bones of the *kahuna* Pa`ao is said to be deposited in a burial cave in Kohala in Pu`uwepa [possibly Puuepa] (Kamakau 1987:41).

The uniquely Hawaiian invention, the *loko* or fishpond aquaculture, was developed in the fifteenth century or the later half of this period (Kirch 1985: 303). There are several *mo`olelo* or stories about significant personalities from this expansion time period; from Pa`ao to Liloa and Umi. During the last 200 years of the Expansion Period, the concept of *ahupua`a* was established, as well as class stratification, territorial groupings, powerful chiefs and "*mo`i*" or king (Kirch 1985:303-6). This land unit became the equivalent of a local community, with its own social, economic and political significance. Ahupua`a were ruled by *ali`a 'ai ahupua`a* or lesser chiefs, who for the most part, had complete autonomy over this generally economically self-supporting piece of land, which was managed by a *konohiki*. Ahupua`a were usually wedge or pie-shaped, incorporating all of the eco-zones from mountain to the sea and for several hundred yards beyond the shore, assuring a diverse subsistence resource base (Hommon 1976:15,16).

The *ali`i* and the *maka`ainana* (commoners) were not confined to the boundaries of the ahupua`a. Not only did the *makai* (ocean) and *mauka* (mountain) people share seafood and produce by lighting a fire when there was a need, they also shared with their neighbor *ahupua`a ohana* (Hono-ko-hou 1974:14,15).

The ahupua`a was further divided into smaller sections such as the *`ili, mo`o`aina, pauku`aina, kihapai, koele, hakuone* and *kuakua* (Hommon 1976:15; Pogue 1978:10). The chiefs of these land units gave their allegiance to a territorial chief or *mo`i* (king). *Heiau* building flourished during this period as religion became more complex and embedded in a socio-political climate of territorial competition. Monumental architecture such as heiau, "played a key role as visual markers of chiefly dominance" (Kirch 1990:206).

Mo`olelo* about events that took place in the early to mid 1600s were revealing in that they illustrate that many of the battles of this period were relatively quickly contained by the opposing *ali`i [see *History of Kualii* (Kualii ca. 1630-1660s) in Fornander 1917:IV: II: 364-434]. These stories also illustrate the on-going inter-relationships between the people of the various islands. In the *History of Kualii*, the exploits of Kualii (great-great grandson of Kahuihewa, *ali`inui* of Oahu) take him to every island and he eventually unites all the islands "from Hawaii to Niihau" (Fornander 1917:iV: II: 406).

B-4. Proto-Historic Period. The Proto-Historic Period, A. D. 1650-1795, appears to be marked with both intensification and stress. Many wars took place during this time between intra-island chiefdoms and inter-island kingdoms. During the early part of this period Maui *ali`inui* Kama-lala-walu ignored the advice of his counsel and sent his brother Ka-uhi-o-ka-lani (both sons of Kiha-a-Pi`ilani) to spy on Hawai`i island, to see how large the population was. They returned and reported the following:

> 'We went all around Hawaii. There were many houses, but few men. We went to Kohala and found the men only on the shores....' The spies had seen the land of Kohala but had failed to see the people for on all of the fields where sports were held from inner Kohala to outer Kohala, from Kohala of the coastal cliffs to Kohala of the inland, a crowd of people gathered every day from morning to night to play. Kohala was known as a thickly-populated land. The spies thought that if Kohala was conquered, Kona, Ka`u and Puna would be easily taken, and they felt that Hilo and Hamakua would lend no assistance. This was true, for the chiefs of these districts were cousins of the chiefs of Maui (Kamakau 1992:56-57).

Hawai`i warriors came from Puna and Ka`u; and warriors from Waimea and Kohala met on the plains of Waimea where the battle of Pu`u`oa`oaka commenced just outside these plains. The light-weighted lava rocks here contributed to the defeat of the Maui warriors who were used to heavier water-worn rocks. The Maui warriors retreated; some to Kawaihae, others to Kohala. Very few escaped alive, such as Ka-uhi-a-Kama, son of Kama-lala-walu who was killed on the plain of Puako (Kamakau 1992:59-60

After the death of Hawai`i Island *ali`inui* Lono-i-ka-makahiki, his children did not succeed him. Instead Hawai`i Island was divided into smaller divisions. The descendants of Kanaloa-kua`ana [Keawe, Ke`eaumoku, Kalani`opu`u and Keoua] ruled Kohala, Kona and Ka`u. The descendants of Keawe-nui-a-`Umi ruled Hilo and Hamakua. This was not a peaceful period. The chiefs of Kona and Hilo fought each other for the various resources each area had [Hilo's bird feathers, war canoes, fine tapa; Kona's food, drinking water and fish]. These wars lasted for several centuries (Kamakau 1992:61-62).

It was during the later part of the Proto-Historic period that the *Royal Kolowalu Statute* or Kualii's Law was enforced. Kualii Kuniaakea Kuikealaikausokalani lived for an extremely long time, was said to sometimes have supernatural powers, and was the first to "unite" all the islands. This *ali`inui* of Oahu died at Kailua in Ko`olaupoko in AD 1730, supposedly at the age of one hundred and seventy five.

> It (Kualii's Law) was strict, unvarying and always just. It was for the care and preservation of life; it was for the aged men and women to lie down in the road with safety; it was to help the husbandmen and the fishermen; to entertain (morally) strangers, and feed the hungry with food. If a man says, "I am hungry for food," feed (him) with food, lest he hungers and claims his rights by swearing the *kolowalu* law by his mouth, whereby that food becomes free, so that the owner thereof cannot withhold it; it is forfeited by law. It is better to compensate.... A transgressor, or one who is about to die, is, under the application of this law exonerated of his death or other penalty....(Fornander 1917:IV:II:432).

However, this law did not prevent the continuing battles between families, factions and district chiefs. Kohala *ali`inui* Keawe's half sister Ka-lani-kau-lele-ia-iwi was the mother of Alapa`i-nui-a-Ka-uaua, who went to live on Maui with his half sister, Ke-ku`i-apo-iwa-nui (wife of Ke-kau-like, Maui *ali`inui*) after his father's (Ka-uaua-nui-a-Mahi) death at the hands of the Hilo chiefs. When Alapa`i heard of Keawe's death and the unrest between the district chiefs, he went back to Hawai`i Island with plans to make war on all the chiefs. He captured the chiefs of Kohala and Kona, and became ruler of those districts. However, when his brother-in-law Ke-kau-like heard about Alap`i's victory, Ke-kau-like made war on Alapa`i in order to return Kohala and Kona to their chiefs. He wasn't successful, but Ke-kau-like's warriors prevented Alapa`i from conquering the Hilo and Ka`u chiefs (Kamakau 1992:64-65). However, during these battles a lot of damage was done on the landscape.

> The fighting began with Alapa`i at Kona. Both sides threw all their forces into the fight. Ke-kau-like cut down the trees throughout the land of Kona. Obliged to flee by canoe before Alapa`i, he abused the country people of Kekaha. At Kawaihae he cut down all the coconut trees. He slaughtered the country people of Kohala, seized their possessions and returned to Maui (Kamakau 1992:66).

In retribution, Alapa`i decided to carry the battle to Maui. While Alapa`i and his warriors were encamped in Kohala, Kamehameha was born to Ke-ku`i-apo-iwa (II) in Kapakai (`I`i, John Papa 1983:3), in the *ahupua`a* of Kokoiki, in the *moku* of North Kohala [Kamakau (1992:67) says it was AD 1736; however others say it was between AD 1753 and 1758 with more leaning towards AD 1753 [Cahill 1999:56-57)] near the Mo`okini *heiau*. He was quickly taken by Kohala chief Nae-`ole and hidden in Halawa (Kamakau 1992:67-69), his ancestral homeland (Williams 1919:121). However, before Alapa`i reached Maui, a dying Ke-kau-like made his son Kamehamehanui his successor. Ke-kau-like died enroute to Kula (Kamakau 1992:69). When Alapa`i heard of his death, he decided not to make war on his sister's son. While visiting them on Maui Alapa`i heard that the O`ahu chiefs attacked his relatives on Molokai, so he went there to help (Kamakau 1992:70).

Alapa`i was said to have been a good ruler and loved by the common people, but his rule had come about by slaying *ali`inui* Ka-lani-nui-`i-a-mamao [father of Kalani`opu`u and Keoua] and his brother Ka-lani-ke`e-au-moku, rightful *ali`inui* of Hawaii island, and taking control. This would be the cause of several battles between Alapa`i and his nephew, Kalani`opu`u (Kamakau 1992:75-78).

In 1754 Alapa`i became ill and appointed his son Keawe-`opala as ruler. However, this was short-lived due in part to shifting allegiances of Keawe-`opala's chiefs (i.e., Ke`eaumoku) and *kahuna* to go with Kalani`opu`u. It was that same year that Kalani`opu`u, a lover of war, became *ali`inui* of Hawaii island (Kamakau 1992: 78-79). Kalani`opu`u was the son of Ka-lani-nui-i-a-mamao (ruling chief of Ka`u whom the *Kumulipo* was composed for) however, his biological father was said to be Pele-io-holani, *ali`inui* of Oahu (Kamakau 1992:110; see also `I`i 1983). About 1759 Kalani'opu'u conquered East Maui from his wife's brother the Maui king Kamehamehanui by using Hana's prominent Pu'u Kau'iki as his fortress. He appointed one of his Hawaii chiefs, Puna, as governor of Hana and Kipahulu (Kamakau 1992:78-80).

Conflict between Hawai`i chiefs continued. Ke`eaumoku, son of Keawe-poe-poe rebelled against Kalani`opu`u and set up a fort at Pololū and Honokane. He was attacked by Kalaniopu`u so he moved to Maui. In 1766 Maui *ali`inui* Kamehameha-nui became ill in Hana and ceded his lands to his younger brother Ka-hekili-nui-'Ahu-manu (Kahekili), a fierce warrior and "manipulator." Following the death of Kamehameha-nui, Ke`eaumoku "married" his widow Namahana, a cousin of Kamehameha I. Their daughter Ka'ahumanu, would later become a favorite wife of Kamehameha I (Kamakau 1992:79-84, 309).

Between 1775 and 1779 fighting continued between Kalani`opu`u and Kahekili. In 1775 Kalani'opu'u and his Hana forces raided and severely destroyed the neighboring Kaupo district, before continuing several more raids on Molokai, Lanai, Kaho'olawe and parts of West Maui. It was at the battle of Kalaeoka`ilio that Kamehameha, nephew and favorite warrior of Kalaniopu`u, was first recognized as a great warrior and given the name of Pai`ea (hard-shelled crab) by the Maui chiefs and warriors (Kamakau 1992:84). Kalani'opu'u returned again to Maui in 1776, but was severely defeated by Kahekili's warriors.

In January 1778 Cook landed in Waimea, Kauai and the culture of old Hawaii began its spiraling change (see Day 1992). Cook left Hawaii for several months, but returned later in the year. Kalani'opu'u was fighting Kahekili's forces in Wailua, Maui on November 19, 1778 when Cook's ship was sighted on his return trip to the islands. Kalaniopu'u visited Cook on the *Resolution*, while Kahekili visited Clerke on the *Discovery* (Kuykendall and Day 1976:16). When Cook sailed into Kealakekua Bay on January 17, 1779, Kalani'opu'u was still fighting Kahekili on Maui. At this time Kahekili's brother Ka`eo-kulani was ruling chief of Kauai; Ka-hahana was ruling chief of Oahu and Molokai; Kahekili`ahumanu of western Maui, Lanai and Kaho`olawe; and Kalaniopu'u was ruling chief of Hawaii and Hana (Kamakau, 1992:84-86, 92, 97-98). On January 25th Kalaniopu'u visited Cook again at Kealakekua Bay, presenting him with several feather cloaks. By February Cook's scheme to kidnap Kalaniopu'u as a hostage were thwarted and Cook was killed following a skirmish over a stolen cutter (Kuykendall and Day 1976:18).

The off and on warring between the Hawaii and Maui forces continued, but Kalani`opu`u was aging. Kalanio`opu`u schemed for peace by having his son Kiwala`ō by Kalola, sister of Kahekili, and their twin half-brothers, go to Kahekili, who had the battles cease (Kamakau 1992:88-89; Desha 2000:49-50). Kalanio`opu`u declared his young son Ka-lani-kaui-ke-a-ouli Kiwala`ō to be his heir; to his nephew Kamehameha he gave the war god, Ku-ka`ili-moku (Kamakau 1992:107). But even before the death of Kalani`opu`u in 1772, chiefs and *kahuna* were already taking sides between Kiwala`ō and Kamehameha.

Kamehameha and a few other chiefs were concerned about their land claims which Kiwala`ō did not seem to honor, so after usurping Kiwala`ō with a sacrificial ritual, Kamehameha retreated to his district of Kohala. While in Kohala, Kamehameha farmed the land growing taro and sweet potatoes (Handy and Handy 1978:531). After Kalani'opu'u died civil war broke out and the wars between Maui and Hawaii also continued (Kuykendall and Day 1976:23, 24; Handy and Handy 1978:528; King 1990).

In 1781 after Kahekili heard about the death of Kalani'opu'u, Kahekili, split his forces and sent them through Maui's south-eastern Kaupo Gap and the north-eastern Ko'olau Gap into Hana. After damming and diverting the supply of spring water to Pu'u Kau'iki, the Hawaii chiefs were finally defeated, and the Maui *ali'inui* regained control of Hana in1782 (Kamakau, 1992:84-86; 115-116; Fornander 1900:Vol II 146-7, 150, 216). Following his Hana victory, Kahekili went on to gain control of all the islands except Hawaii, by trickery and warfare (Kamakau 1992:116, 128-141).

Kiwala'ō was killed in 1782 (Cahill 1999:62), but the warring between the forces of Hawai`i Island districts continued. By 1790 Kamehameha I had gained enough control of the island of Hawaii, that he could leave to join the war parties on Maui. His canoe fleet "beached at Hana and extended from Hamoa to Kawaipapa" to battle Kalanikūpule, son of Kahekili (who now ruled Oahu). After several battles along the East Maui coast, Kamehameha's forces reached Wailuku where the "great battle" took place. This would be the beginning of the end of independent ruling chiefs because of the inequity of battle strategy and weaponry. Kamehameha brought a cannon from the *Eleanora* along with the expertise of her captain, Isaac Davis, and crewmember John Young, who were now advisors and *aikane punahele* (favorites) of Kamehameha I (Kamakau 1992:147-148).

Demographic trends during the Proto-Historic Period indicate a population reduction in some areas, yet show increases in others, with relatively little change in material culture. There was a continuum of craft and status material, intensification of agriculture, *ali'i* (chief) controlled aquaculture, upland residential sites, and oral records which were rich in information. The Ku cult, along with its *luakini heiau*, and the *kapu* (restriction or regulation) system were at their peak, although western influence was already altering the cultural fabric of the islands (Kirch 1985:308, Kent 1983:13).

In 1790 when Captain George Vancouver made his first stop in the Hawaiian islands he was told that Kalaniopu`u was dead; Hawai`i was ruled by Keoua Kuahu`ula (half-brother of Kiwala`ō), his uncle Keawe-mau-hili, and Keoua's cousin, Kamehameha (Day 1984:77). Vancouver went on to trade with Kalanikūpule in Waikiki. He then found that the ruling chief of Kauai, Ka-umu-ali`i, was a mere child; his father Ka`eo was on Maui with Kahekili. Vancouver also noted a decrease in the population and the number of chiefs since the arrival of Cook (Kamakau 1992: 162-163). That same year Keoua Kuahu`ula [twin brother of Keoua Pe`e`ale, sons of Kalaniopu`u and Kane-kapo-lei (Kamakau 1992:120)] ravaged Kamehameha's birthlands of Kohala. At the advice of *kahuna*, Kamehameha personally helped to construct the heiau Pu`u Kobola in the summer of 1791, to assure his victory over his cousin, Keoua, who was sacrificed at the *heiau* (Day 1984:77; Kamakau 1992:154-157).

On his second voyage to Hawaii in 1793, Vancouver counseled the chiefs to stop making war on each other. He gave Kamehameha some cows and sheep (at Vancouver's advice Kamehameha put a ten-year *kapu* on them). Vancouver went on to visit Kahekili in Lahaina and made the same request; then on to Waikiki to Kalanikūpule. When Vancouver returned in January 1974 on his third and last visit, he gave Kamehameha three bulls and more cows and sheep [horses came later in1803 from Captain Richard J. Cleveland]. Kahekili had recently died (late 1793) in Waikiki at the age of eighty-seven and Ka`eo was now ruling Maui (Kamakau 1992:162-166; Brennan 1995:15-23, 31-34).

By 1794 at least eleven foreigners were living on the island of Hawaii; these included American, English, Irish, Portuguese, Genoese, and Chinese (Day 1992:23-25) most likely boldovers of the sandalwood trade. In November and December 1974 a great battle was fought in `Aiea, Oahu between Ka`eo and his nephew Kalanikūpule. Ka`eo was killed and his young son Ka-umu-ali`i became ruling chief of Kauai (Kamakau 1992:168-169).

B-5. Early Historic Period. The Early Historic Period (AD 1795-1900) is marked by very significant events. In February 1795 Kamehameha's war fleet landed in Lahaina and covered the coast from Launiupoko to Mala. All the food patches and cane fields were overrun by Hawaii warriors; and on Molokai the coast from Kawela to Kalama`ula was also covered by warrior-laden canoes (Kamakau 1992:171). Also in 1795, Kamehameha invaded O`ahu, covering the beaches from Wai`alae to Waikiki. Several foreigners were living with Kalanikūpule at that time (Kamakau 1992:172, 174). Kamehameha took the daughter of Kalola, Ke-ku`i-apo-iwa Liliha and her daughter, Kalanikauiaka`alaneo to O`ahu to witness the Battle of Nu`uanu Pali and the defeat of Oahu. It was during this trip that the name Koōpūolani was given to Kalanikauiaka`alaneo (Kleiger 1998:21). Kamehameha's forces defeated Kalanikūpule's O`ahu forces. After several months of hiding, Kalanikūpule was found and sacrificed to Kamehameha's war god (Kamakau 1992:174).

When Kamehameha I conquered Oahu, Maui, Molokai and Lanai (with the help of western advice and technology), subsequently unifying the Island Kingdom (Kent 1983:16), it marked the end of the Proto-Historic Period. Hawaii's culture and economy continued to change radically as capitalism and industry established a firm foothold. By 1796 Kamehameha had conquered all the island kingdoms except Kauai, but it wasn't until 1810 when Kaumuali`i ceded his kingdom of Kauai, Ni`ihau, Lehua and Ka`ula and gave his allegiance to Kamehameha that the Hawaiian Islands were unified under one rule (Kuykendall and Day 1976:26-29, 32).

At this time the sandalwood (*Santalum ellipticum*) trade in Hawaii was flourishing; the Fijian and Marquesan supply of sandalwood was exhausted, so Hawaii became known as the "sandalwood mountains" to entrepreneurs of Southern China. Sandalwood came under the personal control of Kamehameha I, who had become "a fervent consumer of high-priced western goods" (Kent 1983:17-20). The sandalwood industry, discovered by Euro-Americans in 1790, and turned it into commerce by 1805 (Oliver 1961:261), was flourishing by 1810 to the point where the subsistence level fell apart, as farmers and fishermen were ordered to spend most of their time logging, causing famine to set in, and a

population decline. However, Kamehameha did managed to keep some control on the trade (Kuykendall and Day 1976:43; Kent 1983: 23, 29; Bushnell 1993:212).

Kamehameha I died on May 8, 1819 in Kailua-Kona and once again the culture of Hawaii was to change radically. Six months after his death, his son and successor Liholiho, met with *kuhina nui* Ka'ahumanu, and a council of chiefs and chiefesses at Kawaihae. His advisors, which included his father's *kahuna* Hewahewa, convinced the new king Kamehameha II to abolish the *kapu* system. He signified his agreement by sitting down and eating with his mother Keōpūolani, breaking the *`ai kapu*. (Oliver 1961:260; Kuykendall and Day 1976:41; Kamakau 1992:222-228).

Liholiho's cousin Kekuaokalani, caretaker of the war god Ku-Kailimoku, disagreed and revolted. By December of 1819 the revolution was quelled. Kamehameha II sent edicts throughout the kingdom renouncing the ancient state religion, ordering the destruction of the *heiau* images and the *heiau* structures to be destroyed or abandoned and left to deteriorate, allowing the personal family religion, the *'aumakua* worship, to continue (Oliver 1961:260; King 1990; Kamakau 1992:222-228).

Ironically, in October of 1819, seventeen Protestant missionaries had set sail from Boston to Hawaii. They arrived in Kailua-Kona on March 30, 1820 to a markedly changed culture; one with a "religious" void, and a growing appetite for western products. Many of the ali`i who were already exposed to western material culture welcomed the opportunity to become educated in a western style and adopt their dress and religion. Soon they were rewarding their teachers with land and positions in the Hawaiian government (King 1990). During this period, the sandalwood trade was wreaking havoc on the commoners who were weakening with the heavy production, exposure, and famine just to fill the coffers of the ali`i who were no longer under any control constraints (Oliver 1961:261; Kuykendall and Day 1976:42; Bushnell 1993:212). On a stopover in the Kohala district in the early 1800s Ellis wrote the following:

> About eleven at night we reached Towaihae [Kawaihae], where we were kindly received by Mr. Young...Before daylight on the 22nd, we were roused by vast multitudes of people passing through the district from Waimea with sandal-wood, which had been cut in the adjacent mountains for Karaimoku, by the people of Waimea, and which the people of Kohala, as far as the north point, had been ordered to bring down to his storehouse on the beach, for the purpose of its being shipped to Oahu. There were between two and three thousand men, carrying each from one to six pieces of sandalwood, according to their size and weight. It was generally tied on their backs by bands of ti leaves, passed over the shoulders and under the arms, and fastened across their breasts.... (Kuykendall and Day 1976:42, 43, Ellis 1984:397)

The lack of control of the sandalwood trade was to soon create the first Hawaiian national debt as promissory notes and levies were initiated by American traders and enforced by American warships (Oliver 1961:261, 262). In 1825, Kuhina-nui Ka`ahumanu [King Kamehameha III was just a child] placed a *kapu* on cutting sandalwood trees. She saw what it was doing to the people; neglecting their crops and fishing and getting into debt. Beef then became a barter item (Brennan 1995:48). In 1832, Kamehameha III sent a high chief to California to bring some *vaqueros* back to Hawaii to help with the training of horse and cattle handling. Although the cattle were being slaughtered by the thousands for their hides and tallow, their numbers were increasing beyond belief. Over 100,000 wild cattle were roaming the mountains of Waimea alone. Many crops were ruined by the hordes of cattle (Brennan 1995:51-54). The solution was for the *vaqueros* or *paniolo* as Hawaiians called them, to first train Hawaiian and *haole* men to be good horsemen or wrangler or cowboy (*paniolo*). This was the beginning of Hawai`i's cattle kingdom (Brannen 1995:70). Paniolo Jack Purdy and John Parker, Kamehameha III's chief cattle killer, partnered to furnish the king with badly needed beef for bartering with foreign ships (Brennan 1995:74).

The Hawaiian culture was well on its way towards Western assimilation as industry in Hawaii went from the sandalwood trade, to a short-lived whaling industry, to cattle ranching, and the more lucrative, but insidious sugar industry.

"For the first time Hawaiian masses were drawn to a cash economy as workers and producers." In 1836 the first sugar plantation was established on Kauai (Kent 1983:22, 23, 29). However, sugar cane (*Saccharum officinarum* L.) was Polynesian introduced and served a variety of uses. The *ko kea* or white cane was the most common, usually planted near Hawaiian homes for medicinal purposes, and to counteract bad taste (Handy and Handy 1978:185). Sugar cane was a snack, a condiment, a famine food, fed to nursing babies, and helped to strengthen children's teeth by chewing on it (Handy and Handy 1978:187). It was used to thatch houses when *pili* grass (*Heteropogon contortus*) or *lau hala* (*Pandanus odoritissimus*) were not abundant (Malo 1987:121, 124). Sugar cane was also used in relation to taro and sweet potato. Handy and Handy (1978) explain:

> In wet-taro farming, cane was planted along the embankments separating the flooded terraces and flats. In dry-taro and sweet potato fields on the sloping *kula* or in the lower forest zone, cane was planted as hedges along the lines of stone and rubbish thrown up between the fields. Thus it helped the planter to utilize to the maximum his soil and water, and acted as a windbreak against the gusty breezes which blow in most valley bottoms, along the coasts, and on the uplands where taro is grown (Handy and Handy 1978:186).

Sugar cane was grown on all islands and when Cook arrived, he wrote of seeing sugar cane plantations. The Chinese on Lanai are credited with first producing sugar as early as 1802. However, it was not until 1835 that sugar became established commercially, primarily to replace a waning sandalwood industry (Oliver 1961:263; Kuykendall and Day 1976:92).

Many of the Hawaiian chiefs became involved in the early days of the sugar industry. Hawai'i's Governor (John Adams) Kuakini, son of Ke'eaumoku and Namahana (Kamakau 1992:149) grew sugar cane and had a mill in South Kohala; he also had a sugar plantation in North Kohala in the 1830s-1840s (Dorrance 2000:17). Between 1863 and 1897 there were 14 sugar plantations in North Kohala (Dorrance 2000:82). Kohala was a land in transition and eventually a major force in the sugar industry beginning with the arrival of American missionary Elias Bond (KTF 1975:68; Stephenson 1977:7). In a comprehensive study of North Kohala, Tomonari-Tuggle (1988) relates this transition in the following passages:

> The arrival in 1841 of Elias Bond, of the Protestant American Board of Commissioners for Foreign Missions, to Kohala marked the beginning of a 22-year period of transition in the district's history. In those years a new religion, a new land tenure system, and a changing economy altered the lifestyles and worldview of the indigenous population of the district. The Kohala community was in flux, attempting to find a firm footing in a changing world, in a much larger network of social, political, and economic interactions than had previously existed (Tomonari-Tuggle 1988:I-23).

> When Elias Bond directed his efforts to initiating sugar as a major agricultural industry in Kohala, he could not have foreseen the incredible success of his modest venture. His primary concern was to develop a means for the Hawaiian people of the district to compete successfully in the market economy that had evolved in Hawaii. What resulted was a vigorous, stable, and competitive industry which survived over a century of changing economic situations. For the Hawaiian people, however, the impact was not what Bond anticipated (Tomonari-Tuggle 1988:I-39).

In 1860 Rev. Bond engaged his "long-time acquaintance" (Stephenson 1977:7), Samuel N. Castle in founding the Kohala Sugar Company on lands owned by Bond and his neighbor Dr. James Wight. When George W. Wilfong was hired as the company manager he was surprised to see an abundance of wild sugar cane growing for several miles around. He asked a Hawaiian who gave him the following answer:

> After the Kamehameha war (i.e., after 1790 on Hawai'i) the *konohiki* (headman of land divisions) were ordered to plant cane about the land; so when their chiefs came that way with their many followers, which was the custom of the chiefs of that day, they would have cane to eat (Dorrance 2000:3).

The first crop of the Kohala Sugar Company was harvested in January 1865 (KTF 1975:69). Kohala's transition was a reflection of what was happening elsewhere in Hawaii, as the sugar industry grew. The industry brought in tens of thousands of laborers from Asia, Europe, the Americas, Oceania, and Africa to work on the many plantations and mills that were being established on all major islands, which had a profound effect on life in Hawaii (Oliver 1961:123). This influx not only radically changed the culture, but also drastically altered ethnobotanical agricultural lands, destroying traditional architectural features in the process.

In Kohala sugar cane was transported by ox-cart to various landings. However, by 1879 North Kohala had seven mills and five landings and due to demands a 20-mile railroad was built between 1881 to 1883, from windward Niuli'i to leeward Mahukona Landing. Then in 1904 a monumental task and major engineering feat was initiated. The Kohala Ditch (Figure 4) was completed in 1906, and provided a minimum of 20 million gallons of water per day to irrigate sugar cane fields in the northern locales of the district (Tomonari-Tuggle 1988:I-42). However, it was not without adverse consequences.

> Construction of the Kohala Ditch and the railroad greatly impacted subsistence activities, not in an actual loss of land but in the ability to effectively utilize it. The Ditch tapped the headwaters of the Kohala valleys and gulches and essentially cut the water supply to makai areas, thus ending irrigated kalo cultivation on a wide scale...construction of the Ditch coincided with the abandonment of Hoookane Nui Valley (Tomonari-Tuggle 1988:I-49, 50).

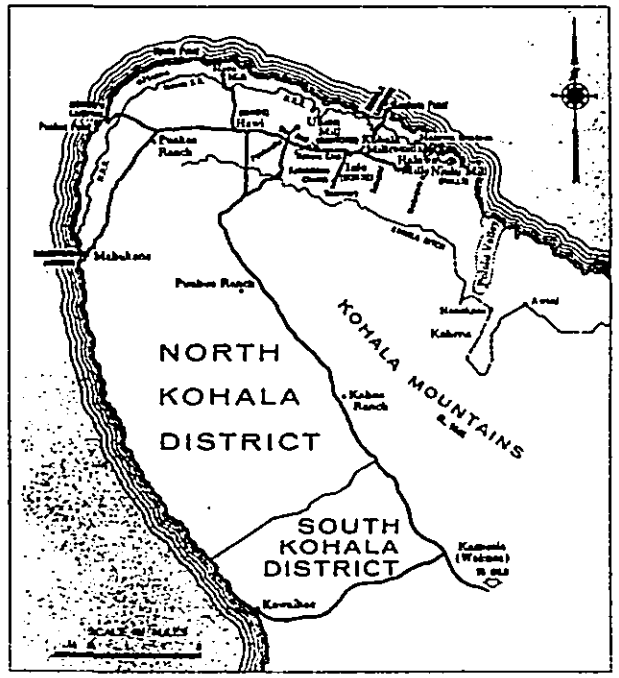


Figure 4. Map illustrating the Kohala Ditch (from Stephenson 1977:ii).

While coastal and *kula* North Kohala were affected by the sugar industry because lands were modified with extensive fields of sugar cane, the higher uplands were modified when forests were cut down to provide fuel for the sugar mills.

In the 1840s a political act of the Hawaiian Kingdom government would change forever, the land tenure system in Hawai'i and have far-reaching effects. The historic land transformation process was an evolution of concepts brought about by fear, growing concerns of takeovers, and western influence regarding land possession. King Kamehameha III, in his mid-thirties, was persuaded by his *kuhina nui* and other advisors to take a course that would assure personal rights to land. One-third of all lands in the kingdom would be retained by the king; another one-third would go to *ali'i* as designated by the king; and the last one-third would be set aside for the *maka'ainana* or the people who looked after the land. In 1846 he appointed a Board of Commissioners, commonly known as the Land Commissioners, to "confirm or reject all claims to land arising previously to the 10th day of December, AD 1845." Notices were frequently posted in *The Polynesian* (Moffat and Kirkpatrick, 1995). However, the legislature did not acknowledge this act until June 7, 1848 (Chinen 1958:16; Moffat and Kirkpatrick 1995:48-49), known today as *The Great Mahele*. In 1850, the Kingdom government passed laws allowing foreigners to purchase fee simple lands (Speakman 2001:91).

The 1840s also heralded other changes as well. The Hawaiian government, with the aid of the missionaries, encouraged the sugar industry as well as other enterprises such coffee, cotton, rice, potatoes, and silk worms (Speakman 2001: 93). Subsistence crops were ruined by displaced dirt and dust, natives were being asked to grow sugar cane on their lands in exchange for money, only to find themselves indebted, and forced to surrender homelands; land-use disputes between natives and other cultures ensued; and restrictions on government lands prevented subsistence hunting and gathering. Subsistence-based culture was eventually lost with the escalating dependence on purchased goods and the growing development related to sugar production (Tomonari-Tuggle 1988:50, 51).

Disease also had a devastating affect on the population and the landscape, killing *ali'i* and *maka'ainana* alike; measles epidemics in 1848 and 1849, was followed by the horrendous smallpox epidemic in 1853. Ten thousand people are said to have died of this disease in Hawaii (Kamakau, 1992:411, 418). John Papa 'Ī'i in *Fragments of Hawaiian* History (1984) talks about the impact of this disease and as *kahu* or guardian of several young *ali'i*, he had to take several of them off of Oahu island. They just kept sailing from island to island and usually were not allowed to land as Oahu was thought to be the source of the smallpox ('Ī'i 1984:171).

By 1858 at least 2,119 foreigners lived in Hawaii. Many were merchants who traded with whalers, while the missionaries lived in various locations throughout the islands. "Foreigners engaged in agricultural pursuits with the idea of reaping a profit from the land, in contrast with the Hawaiians, who carried on...subsistence agriculture" (Coulter 1971:11). In the 1860s the U. S. Civil War brought about a boost for the sugar industry in Hawai'i as sugar plantations in the South were boycotted or destroyed.

B-6. Territorial History (AD 1900-1949). This period saw Native Hawaiians running for Congress (Daws 1974 297); and much of the lands being sold in fee simple. Several events, which took place in the early 1900's eventually, created a downward spiral effect on the sugar industry. Mainland labor union leaders went into the fields organizing membership drives, the military began a major drive to install airfields and encampments, and the Federal government imposed quota restrictions on sugar exports (Oliver 1961:147, 148).

By 1920 only five sugar companies were operating in North Kohala: Kohala Sugar Company, Hālawa Plantation, Hawi Mill and Plantation, Union Mill Company, and Niuli'i Mill and Plantation. In 1929 the Hālawa lands were leased by Kohala and Niuli'i; Hawi merged with Kohala in 1931; Niuli'i and Union Mill merged in 1932; and Union was purchased by Kohala Sugar Company in 1937. By 1941 Kohala Sugar Company was the only mill and plantation in operation with 14,385 acres of sugar cane (KTF

1975:69, 70). Hawaii's involvement in World War II had a terminal effect on the Kohala Sugar Company. Māhukona Harbor was closed by the military for security reasons, and this halted the use of the railroad. Many of Kohala's men joined the services. Labor unions had a growing voice and the political infrastructure of Hawaii changed when the Democrats gained control (Tomonari-Tuggle 1988:159-62).

While ranching had an early start in North Kohala [see above AD 1832], Kahuā Ranch was founded long before the current owner's families purchased it in1928. This will be discussed further in other sections of this report.

B-7. Modern History (AD 1950-). Post World War II brought about an influx of people and industries to Hawai'i, allowing the tourism industry and offshoot enterprises to flourish. 1950 also marked the introduction of radiocarbon analysis which shifted the focus of study in archaeology from relative dating excavated material cultural remains to carbon dating; this was followed by a research focus on settlement and subsistence patterns, and land and marine use.

Along with the rise of the tourism industry, and competing sugar markets abroad, the sugar companies saw a sharpening decline in business (the Sugar Acts of 1934 and 1937, and ILWU Strike of 1946 didn't help). The 1950s and 1960s were the bleakest years for the sugar industry and it was becoming apparent that the sugar industry was beyond salvage (Kent 1983:107-108). More changes were soon to take place on the landscapes of Hawaii. The lack of jobs in Kohala caused an exodus to O'ahu during the construction boom of the sixties. As an economic remedy, Kohala Sugar Company offered its employees an option to purchase lots in newly created subdivisions. On the heels of this offer, new jobs were being created in the tourist industry as Mauna Kea Hotel, followed a few years later by other hotels in Waikoloa, were built and occupied in the late 1960's and early 1970's (Tomonari-Tuggle 1988:159-62).

In the 1960s, various federal and state environmental and historic preservation laws and regulations were passed, mandating surveys and impact studies of the landscape, prior to development. Technology and mechanization initiated in the 1950s to 1970s helped to bring about the decline of plantation camps and lifestyles, yet in 1959 "one out of twelve people employed in Hawaii was in the sugar industry" (Vorfeld 2002:1). However, technology could not save the sugar industry, which could not compete with unfavorable sugar markets and higher costs.

On March 1, 1971, Castle and Cooke, Inc. announced that they would be closing Kohala Sugar Company on December 31, 1973. This news hit the community very hard. A Legislative-appointed task force was created to search for alternative measures. Through the efforts of the Kohala Task Force (KTF), the Legislature, and Castle and Cooke, termination was postponed for two years while KTF, Castle and Cooke, and the North Kohala community explored other economic endeavors. Some of the following ventures were considered: sorghum; feed grain; quail farm; tropical plant nursery; prawn farm; window factory; plastic drip manufacturer; turtle, oyster, clam and lobster farm; and a hog farm (KTF 1972:1-25).

In 1975 Kohala Sugar Company owned 20,647 acres of land the northeastern part of the peninsula, but only 13,600 acres were in sugar cane and 300 acres in macadamia nuts. The plantations encompassed 15 miles along the coast from Pololū Valley to a few miles past Upolu Point. The sugar cane lands stretched across the northern and northeastern slopes of Kohala Mountain, at an elevation of 5,500 feet. Much of that terrain is exposed to strong, gusty trade winds, as well as to the venturi effect of tradewinds barreling through the Kohala Mountain-Mauna Kea Mountain saddle and the Kohala-Haleakala land masses (KTF 1975:66). By the 1990s most of the sugar plantations reluctantly closed down operations. The vacant lands soon gave way to various development projects and the need for more Environmental Impact Studies (EIS). However, the Native American Graves Protection and Repatriation Act of 1990 (NAGPRA) and its implementing regulations (43 CFR Part 10) shifted the focus of studies to include a greater interaction with indigenous peoples, and a lesser focus on invasive methods of study.

In 2000 Hawai'i Legislature passed an EIS amendment resolution which the governor signed as Act 50. This legislation has broadened the scope of environmental impact studies to include cultural impact studies in order to assure that traditional Hawaiian and other ethnic cultural practices are not adversely impacted by proposed projects, as vacant sugar fields give way to the ever-growing population, expanding tourist and real-estate industries, and other development projects.

C. Traditional Literature

The ethnographic works of the late 19th and early 20th century contribute a wealth of information that comprise the traditional literature--the *mo'olelo, oli,* and *mele*--as well as glimpses into snippets of time, and a part of the Hawaiian culture relatively forgotten. The genealogies handed down by oral tradition and later recorded for posterity, not only give a glimpse into the depth of the Hawaiian culture of old, they provide a permanent record of the links of notable Hawaiian family lines. The *mo'olelo* or legends allow *ka po'e kahiko*, the people of old, the *kupuna* or ancestor, to come alive, as their personalities, loves, and struggles are revealed. The *oli* (chants) and the *mele* (songs) not only give clues about the past, special people and *wahi pana* or legendary places, they substantiate the magnitude of the language skills of *na kupuna kahiko* (the people of old).

C-1. Genealogies. *Po'e ku'auhau* or genealogy *kahuna* (masters) were very important people in the days of old. They not only kept the genealogical histories of chiefs "but of *kahunas*, seers, land experts, diviners, and the ancestry of commoners and slaves.... An expert genealogists was a favorite with a chief." During the time of 'Umi-a-Liloa, genealogies became *kapu* (restricted) to commoners, which is why there "were few who understood the art; but some genealogists survived to the time of Kamehameha and even down to the arrival of the missionaries" (Kamakau 1992:242).

Surviving genealogies illustrate that the ruling families of each island were interrelated quite extensively. The chiefs of O'ahu, Kauai, Hawaii, Maui and Molokai had one common ancestry. Families branched out, but conjoined several times in succeeding generations (Kamakau in McKenzie, 1983:xxv). Not only were the chiefs or *ali'i* related to each other, they were also related to the commoners. In *Ruling Chiefs*, Kamakau states that "there is no country person who did not have a chiefly ancestor" Kamakau (1992:4). "It is said that the chiefs of Hawai'i island were from Maui and from O'ahu and Molokai between the times of 'Aikanaka and Hanala'anui" (Kamakau, 1991:101).

Malo (1987) also wrote about the connection between the *maka'ainana* and the chiefs. "Commoners and *alii* were all descended from the same ancestor, Wakea and Papa" (Malo, 1987:52). This is evident in the genealogies. Genealogies were very important to the chiefs, because ranking was very important. The genealogies not only indicated rank, they ascertained a link to the gods. The following excerpt explains the idea and importance of rank and the role of genealogies:

> Position in old Hawaii, both social and political, depended in the first instance upon rank, and rank upon blood descent—hence the importance of genealogy as proof of high ancestry. Grades of rank were distinguished and divine honors paid to those chiefs alone who could show such an accumulation of inherited sacredness as to class with the gods among men...a child inherited from both parents.... The stories of usurping chiefs show how a successful inferior might seek inter-marriage with a chiefess of rank in order that his heir might be in a better position to succeed his parent as ruling chief...a virgin wife must be taken in order to be sure of child's paternity—hence the careful guarding of a highborn girl's virginity (Beckwith:1990:11).

One could defend and/or prove their rank by knowing or having one's genealogist recite one's genealogy. "To the Hawaiians, genealogies were the indispensable proof of personal status. Chiefs traced their genealogies through the main lines of 'Ulu, Nana'ulu, and Pili, which all converged at Wakea and Papa (Barrere, 1969:24). Two well-known genealogy chants are the *Kumuhonua* and the *Kumulipo*.

C-1-a. Kumuhonua. The *Kumuhonua*, first published by Fornander in 1878, in *The Polynesian Race* Vol. I, was based on information from Kamakau and Kepelino. Kumuhonua, the man, was of the Nanaulu line, and the older brother of Olopana and Moikeha (McKenzie 1986:14-15). However, the birth chant *Kumuhonua* has been a subject of controversy as noted in following *Preface* by Kenneth P. Emory:

> We have become painfully aware that the Kumuhonua 'legends' are not ancient Hawaiian legends, nor is the genealogy which accompanies them a totally authentic genealogy...in his second volume (1880) when he relates events from the period of the arrival in Hawaii of migrant chiefs from Tahiti to the time of Kamehameha, in these writings he is dealing with relatively untampered, authentic Hawaiian traditions and genealogies...we must ever be on guard against the effects of this impact in what was recorded subsequently about the pre-contact period..... The world of the Polynesian began to be transformed overnight by Western influence." (In Barrere, 1969:i).

Barrere (1969) explains that some of the *Kumuhonua* legends were recorded by Kamakau and Kepelino between the years 1865 and 1869, however, the 'genealogy' of the *Kumuhonua*, published by Fornander, was given to him "to provide credibility to the legends...this 'genealogy' (was) constructed from previously existing genealogies--the *Ololo* (*Kumuhonua*) and the *Paliku* (*Hulihonua*) which are found in the *Kumulipo* chant (see Beckwith 1951:230-234) and interpolations of their own invention" (Barrere, 1969:1).

C-1-b. Kumulipo. A better example is the famous Creation Chant *The Kumulipo*. Feher (1969) has several notable Hawaiian scholars write passages in his *Kumulipo: Hawaiian Hymn of Creation-Visual Perspectives by Joseph Feher*. In the *Introduction* Momi Naughton states "The Kumulipo belongs to a category of sacred chants known as *pule ho'ola'a ali'i*, "prayer to sanctify the chief," which was recited to honor a new-born chief (Feher, 1969:1).

In her passage, Edith McKenzie states:

> "The *Kumulipo* is a historical genealogical chant that was composed by the court historians of King Keaweikekahiali'iokamoku of the island of Hawai'i about 1700 AD in honor of his first born son Ka-lani-nui-'I-a-mamao. This important chant honors his birth and shows the genealogical descent of both the *ali'i* (chiefs) and the *maka'ainana* (commoners) from the gods, in particular Wakea...." (Feher, 1969:1).

In a passage by Roger T. Ames, he corroborates this idea and states that "what is of particular humanistic interest is the way in which the *Kumulipo* as a repository of cultural authority served Hawaiian society in transmitting its cultural legacy and organizing its community. In doing so, it combines both a linear sense of temporal development, and the richness of one particular moment in time" (Feher, 1969:3).

C-1-c. *Hawaiian Genealogies*. Edith McKenzie completed the first volume of *Hawaiian Genealogies* in 1983, based on genealogy articles translated from 19th Century Hawaiian newspapers such as *Ka Nonanona* and *Ka Nupepe Kuokoa* in the late 19th century and early 20th century. These articles were in response to a call to preserve the Hawaiian heritage. Some of the information came from Malo's (1838) *Hawaiian History*, and in Fornander's (1880), *The Polynesian Race* (Book I) (McKenzie, 1983:1).

The ruling chiefs of the various islands came from combinations of genealogies or branches.). A list of Hawai'i Island Chiefs is provided in Appendix E. Most of the people are in a loose chronological order, however, the multiple unions of a particular person is not necessarily in a chronological order, as much of that information was not provided in most cases. This list is not by any means inclusive as many lesser unions (mates and offspring) were not listed or recorded in official genealogies.

Youngblood (1992) found that he could draw on both Fornander and Beckwith's translations of *The*

Kumulipo to sketch a socio-political history of Hawaii (Youngblood, 1992:34). In his re-creation he found that stemming from Wakea and Papa are two major Hawaiian genealogies: the *Nana'ulu* and the *'Ulu*. The *Nana'ulu* was the wellspring for the *ali'i* of O'ahu and Kauai, while the *'Ulu* line supplied the chiefs of Maui and the Big Island.

Using thirty years to account for one generation, McKenzie determined that Wakea was born in AD 190; Umi-a-Liloa in 1450; Keawekehahialiiokamoku in 1650, Kalanihuiikupuapaikalanui Keoua in 1710; and Kamehameha I in 1740" (McKenzie, 1983:12). Volume Two of *Hawaiian Genealogies* was published in 1986 and consists of information extracted from genealogical lists published in thirteen newspapers from 1858 to 1920. It compliments genealogies found in other works, such as Fornander's (1880) *An Account of the Polynesian Race...* and David Malo's *Hawaiian Antiquities* (McKenzie, 1986:v).

The following excerpt is from Kamakau's article in *Ka Nupepa Kuokoa* October 7, 1865, and was translated by McKenzie (1986). It illustrates some of the mid-19th century sentiment regarding genealogies:

> *I na makaainana, he mea waiwai ole, no ka mea ua papa ka lakou mau makua o hoohalikelike, a hookanau keiki o ke kuaana a pii aku i na li'i. Nolaila ia ao ole ia ai na keiki a na makaainana, ma kahi makuakane a makuahine, a kupuna aku no.... Ia lakou i ka poe o keia wa, aole waiwai o keia mea he mooalii aole a lakou mau kuleana nui iloko. Aka, ma ko lakou noonoo iho he waiwai nui. Ua komo lakaou iloko, ua waiwai na'lii i na kupuna; a ua waiwai pu lakou i koo lakou ike ana. No ka mea, ua kapu i ka makaainana aole e ike i keai mea. Aka, no ka pii ana i ka naauao a me ke akamai o na keiki a na makaainana; nolali, ua noa na wahi kapu, ua pii waleia. O ke koeana mai o na kupuna oia kahi waiwai.*
>
> To the commoners, a genealogy was of no value because their parents forbad (sic) it lest comparisons should occur and country children be born and rise up as chiefs. Therefore, the children of the commoners were not taught beyond father, mother, and perhaps grandparents.... To us, the people of this time, there is no value of this thing of a chiefly lineage; we have no great interest in it. But in our thoughts it is of great value. We have entered into discussion of it; the chiefs valued the chiefs and ancestors; and we also value our knowledge of it. Because it was forbidden to the commoners, they were not to know this. However, due to the rise of wisdom and skill of the children of the commoners, therefore, all of the ranking privileges were no longer restricted; it was only lifted. What remains of the ancestors is something of value (McKenzie 1986:18-19).

C-2. Mo'olelo. Legends, stories or *mo'olelo* are a great cultural resource as well as entertaining. Leib and Day (1979) state in their annotated bibliography of Hawaiian legends, that legends "are a kind of rough history." They noted Luomala's idea of the value of legend and myth in the serious study of a culture and her following quote. "To a specialist in mythology, a myth incident or episode is as objective a unit as an axe, and the differences and similarities of these units can be observed equally clearly and scientifically." Leib and Day also expressed concern about authenticity, and sometimes found it difficult to determine if a legend was a primary or secondary source. The following definitions of terminology, including the Hawaiian classification of prose tales--*mo'olelo* or *ka'ao*, come from their work (Leib and Day 1979:xii, 1):

Tradition	used to refer to that which is handed down orally in the way of folklore
Folklore	a rather inclusive term, covering the beliefs, proverbs, customs, and literature (both prose and poetry) of a people
Myth	a story of the doings of godlike beings
Legend	deals with human beings and used interchangeably with 'myth'... because the collectors and translators of the tales often failed to make the strict distinction

Ka'ao	"pure fiction"
Mo'olelo	deals with historical matters and somewhat didactic in purpose... included tales of the gods, as well as tales of historical personages... many have recurring patterns, plots, and types of characters

C-2-a. History of Mo'olelo Collecting. According to Leib and Day (1979) a substantial number of legends were collected and written in Hawaiian, during the century following Cook's arrival in Hawaii. A few accounts of the mythology were printed in the journals of missionaries and travelers, and a few of the Hawaiian lore were printed in languages other than English. The following synopses are excerpts from the works of Leib and Day's (1979), and gives an overview of the first collectors and compilers of Hawaiian myths and legends.

> The first printed narrative legend of any importance is the epic "Song of Lono" in Byron's *Voyage of H.M.S. Blonde to the Sandwich Islands* (1826), credited by Byron to the American missionaries. Byron had hoped that the missionaries 'will obtain a correct knowledge of the creed and traditions of the Islanders.' Unfortunately, the missionaries were at first more anxious to supplant the native beliefs with new ones than to perpetuate the old ones, with the result that a good many of the legends became altered or were lost. However, the missionaries did a more thorough job of writing down the legends than did the explorers and voyagers (Leib and Day 1979:5). William Ellis, who toured Hawaii in 1823, is credited as "chronologically the first important source of Hawaiian mythology. Although (Ellis) deplored the content of the legends, they showed that the Hawaiians had mental powers which might later be 'employed on subjects more consistent with truth' (Leib and Day 1979:6).
>
> About 1836 a movement was started under the influence of Reverend Sheldon Dibble, to write down in Hawaiian some of the material dealing with the native legendary history, customs, and other lore. Results of the research were published at the Lahainaluna press in 1838. A partial translation made by Rev. Reuben Tinker was issued serially in 1839 and 1840—the first four installments appearing in *The Hawaiian Spectator* and the last four in *The Polynesian*. In 1841 the Royal Hawaiian Historical Society was formed at Lahainaluna. Some of their research and the earlier *Ka Moolelo Hawaii* were incorporated into Dibble's *History of the Sandwich Islands* (1843). After his death in 1843 his work was carried on principally by two of his outstanding native pupils, David Malo and Samuel M. Kamakau. Malo wrote his own *Moolelo Hawaii* about 1840 at the request of Rev. Lorrin Andrews, which was later translated by Emerson as *Hawaiian Antiquities*. In 1858 the Rev. John F. Pogue of Lahainaluna printed a third *Moolelo Hawaii*, based on the 1838 history, but included additional material. Kamakau did not print any of his material for thirty years (Leib and Day 1979:7, 8, 9).
>
> The increase in the amount of Hawaiian lore appearing in the native press in the 1860's and thereafter was at least in part the result of an organized effort to collect and preserve such material. At Kamakau's instigation a Hawaiian society was formed in 1863 to collect material for publication in the native press at the time, and also to aid Fornander's research. Fornander was the greatest collector of Hawaiian lore. He credits as sources, several natives whom he sent on tours of the Hawaiian Islands to collect all available Hawaiian lore, as well as Kalākaua, Lorrin Andrews, Malo, Dibble, Dr. John Rae, Kamakau, Naihe, S.N. Haleole, Kepelino, and Remy. The culmination of this effort was Fornander's (1880) *An Account of the Polynesian Race: Its Origin and Migrations and the Ancient History of the Hawaiian People to the Times of Kamehameha I*. Fornander's collection remains the most important single source of Hawaiian legends (Leib and Day 1979:9, 12, 13).
>
> In June 1865 Kamakau began publishing in *Ka Nupepa Kuokoa*, articles on traditions and legends. His series of articles dealing with Hawaiian history, particularly from the late eighteenth century on, and especially of Kamehameha, appeared weekly in the same publication in October 1866. When the newspaper ceased in 1869, this series continued in *Ke Au Okoa* for nine months. Kamakau then wrote a series on ancient Hawaiian religion, customs, and legendary history in *Ke Au Okoa* until February 1871. All of his writings were in Hawaiian (Leib and Day 1979:8, 9).

Very little work was done in translating Hawaiian mythology into English until late in the nineteenth century. It wasn't until 1888, over a hundred years after the discovery of the Hawaiian Islands, that the first book in English dealing exclusively with Hawaiian mythology was printed: *The Legends and Myths of Hawaii* by King Kalākaua. However, it was more likely authored by former United States Minister to the Hawaiian Islands, R.M. Daggett (Leib and Day 1979:5, 7).

Thrum is one of the most frequently cited authorities on Hawaiian lore. He was born in Australia in 1842 and arrived in Honolulu in 1853. In 1875 he began publication of the *Hawaiian Almanac and Annual*, later known as *The Hawaiian Annual* or *Thrum's Annual*, which appeared yearly under his editorship until his death in 1932. Thrum's coontribution is as editor, compiler, and publisher of translations, not translator. By providing in his *Annual* a place for the publication of such material, and perhaps by persuading authors to provide him with translations, he was instrumental in much legendary matter appearing in printed form. Thrum wrote or rewrote a large portion of his own material (Leib and Day 1979: 17).

Thrum's first book *Hawaiian Folk Tales* was published in 1907 and consisted largely of tales that had previously been published in *Thrum's Annual*. Only 35 of the 260 pages were translated by Thrum, the rest were credited to Rev. A.O. Forbes, Rev. C.M. Hyde, William Ellis, J.S. Emerson, Mrs. E.N. Haley, N.B. Emerson, Mrs. E.M. Nakuina, Walter M. Gibson, Joseph M. Poepoe, and M.K. Nakuina. His second book *More Hawaiian Folk Tales*, published in 1923 was similar. A number were translations from Hawaiian language newspapers of half a century earlier, often with no translator cited. Translators credited were A. F. Knudsen, Henry M. Lyman, W. D. Westervelt, J. H. Boyd, and Lahilahi Webb. Some of the chapters were reprinted or abridged from the Bishop Museum translations of the *Fornander Collection*, of which Thrum was editor. His greatest work, *Fornander's Collection of Hawaiian Antiquities and Folklore*, was published by Bishop Museum in 1916 and 1920 in three volumes. The original editor was W. D. Alexander and most of the work completed under his supervision. However, he died in 1913 and Thrum was appointed to complete the production. Beckwith credits John Wise with the original translation of that work. In 1920 or 1921 Thrum completed another work "Ancient Hawaiian Mythology" which was never published (Leib and Day 1979: 18-19).

A great resurgence of interest in Hawaiian folklore began in the early twentieth century, in part caused by the annexation to the United States. People on the mainland wanted to know more about 'their new island possessions.' The funds of the Bureau of American Ethnology were made available for Hawaiian studies i.e., Emerson's *Unwritten Literature* and Beckwith's *Laeiekawai*. The most important twentieth-century translators of Hawaiian legends have been N. B. Emerson, Thomas G. Thrum, William D. Westervelt, William Hyde Rice, Laura C. S. Green, Martha Warren Beckwith, and Mary Wiggins Kawena Pukui. Emerson's extensive notes were a major contribution to Hawaiian scholarship. Most of them explain the meanings of Hawaiian words. In many, Emerson alludes to legends, giving a number of them briefly and relating a few in some detail. Some of these probably do not exist anywhere else in print (Leib and Day 1979:14).

C-2-b. Mo'olelo Review Sources. Due to the limited research time of this project, only a cursory review of *mo'olelo* sources was done. A few stories in the Kalākaua (1990) collection of legends mentioned Kohala, though not specific enough and will not be recounted here [i.e., "The Triple Marriage of La'amaikahiki" (Kalākaua 1990:120); "Lono and Kaikilani" (Kalākaua 1990:321); "The Adventures of Iwikauikaua" (Kalākaua 1990:338) and Kaiana, the last of the Hawaiian Knights (Kalākaua 1990:384-385, 393, 398)]. In Kalākaua's (1990) *mo'olelo* of "Umi, The Peasant Prince of Hawaii," Liloa's successor Hakau, half brother of 'Umi, sends messengers to the district chiefs of Kohala, Kona, and Hamakua ordering them "to report without delay at Waipio with two thousand warriors each" (Kalākaua 1990:298). Some of the sources reviewed are listed here:

Barrow, Terence (1985)	*More Incredible Hawaii.*
Day, A. Grove (1992)	*Hawaii and Points South: True Island Tales*
Ellis, William (1984)	Polynesian Researches: Hawaii
Fornander, Abraham (1996)	*Ancient History of the Hawaiian People*
Kalākaua (1990)	*The Legends and Myths of Hawaii*

Knudsen, Eric (1946)	*Teller of Hawaiian Tales*
Miyamoto, Kazuo (1991)	*Hawaii, End of the Rainbow*
Pratt, Helen Gay (1996)	*The Hawaiians, an Island People*
Thrum, Thos. G. (1998)	*Hawaiian Folk Tales*
Westervelt, William D. (1963)	*Hawaiian Legends of Volcanoes*
Westervelt, W. D. (1987)	*Myths and Legends of Hawaii*
Westervelt, William D. (1995)	*Hawaiian Legends of Ghosts and Ghost-Gods*
Westervelt, William D. (1996)	*Hawaiian Historical Legends*

Mo'olelo of Pu'u Ahu Moa and Waikanana'ula. The legend of Pu'u Ahu Moa [Pu'u Noa] and Waikanana'ula [Waiakanoaula] was recounted by two of the secondary consultants (Bernard and Bernelle Hoopai) and cited in Part IV of this report. According to legend some *menehune* wanted the waters of Pu'u Waikanana'ula and were in the process of removing the *pu'u* when a rooster from Ahu Moa saw them and crowed even though it was not the usual time to crow. The crowing so startled the *menehune* that they stopped what they were doing and fled. Thus the *moa* (chicken/rooster) saved the *pu'u* and the *wai* (water). The word *'ula* literally means "red" but it also refers to the chiefly red or 'Ulu line (genealogy) associated with Pele and her *'ohana*.

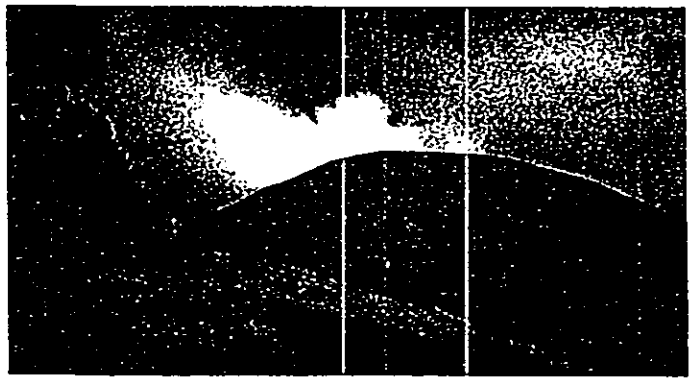


Photo 11. Pu'u Ahu Moa/Noa appears to loom over Pu'u Waikanana'ula in the foreground.

Mo'olelo of Kī'i Pili. This *mo'olelo* was mentioned by another secondary consultant (Hannah Kihalani Springer whose great-grandfather John Maguire was once an owner of Kahua Ranch. Maguire's first wife was Hannah's great grandmother from whom she gets her name Kihalani).

> The two sisters Kihalaninui and Kapaku'iali'i [from Maui] went to Hawai'i to seek Konakaimehala'i, the husband of the former. They took with them a small daughter of Kihalaninui and a wooden image named Pili. They landed at Pololū in Kohala and went to Kahuwā [Kahuā], where the child died. There the child and the image were laid away together. In lamenting, Kapapaku'iali'i cried these words [*Waiho I Kaea ka iwi o kamahele*--Left in Kaea, the bones of the traveler]. This saying is now applied to anyone who dies away from his homeland (Pukui 1983: 318, #2906). [Note: "*ka ea*" could also refer the one's breath of life.]

According to Hannah the child and the *kī'i* or image were buried in a cave at Kahuā. Two other primary consultants (Sherri Hannum and Harold Kailiawa) also mentioned stories of a burial cave located on

Kahua Ranch lands. Ranch hands found it, but when they went to show it to the owner, it couldn't be found again. It is interesting that "Pili" is a special place name of Kahuā Ahupua'a. Pu'u Pili seen below in Photo 12. Is a prominent cinder cone now covered with native flora and other vegetation. However, in a map provided by one of the consultants (Figure 5), Pili is also a place name for an area that appears to be between Pu'u Pili and Pu'u Ahu Moa/Noa.

Photo 12. Pu'u Pili looks mysterious as the clouds envelop it.

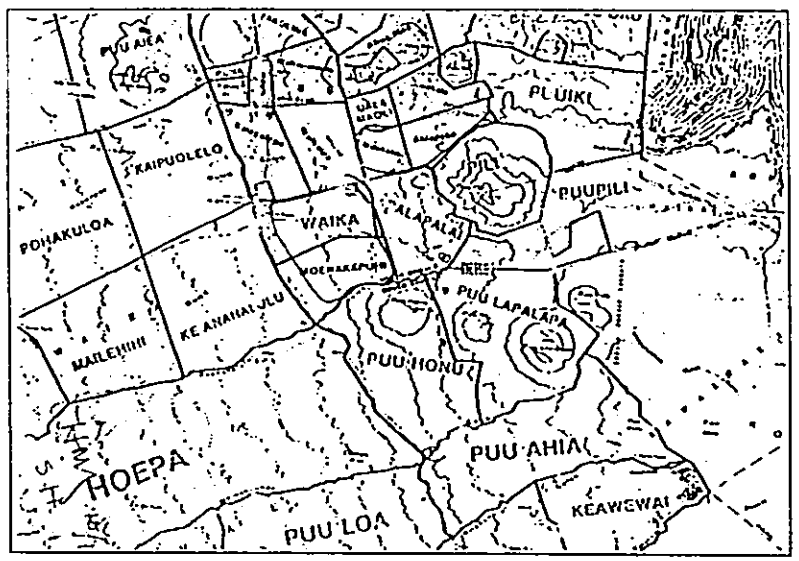


Figure 5. Map of place names of Kahua Ranch lands, including Pili (from Hannum 2002)

C-3. 'Ōlelo No'eau. *'Ōlelo no'eau* or proverbial/traditional sayings usually had several layers of meanings. They reflected the wisdom, observations, poetry and humor of old Hawai'i. Some of them referenced people, events or places. The following *'Ōlelo no'eau* were compiled by Pukui between 1910 and 1960 with both translations and an explanation of their meaning (Williamson, et al. in Pukui, 1983:vii), which are often more *kaona* (hidden or double meaning) than obvious.

'Ōlelo no'eau:	*'A`ohe u'i hele wale o Kohala*
Translation:	No youth of Kohala goes empty-handed.
Meaning:	Said in praise of people who do not go anywhere without a gift or a helping hand.... Another version is that no Kohala person goes unprepared for any emergency (#211, p 25).
'Ōlelo no'eau:	*He pāi kō kea no Kohala, e kole ai ka waha 'ai.*
Translation:	A resistant white sugar cane of Kohala that injures the mouth when eaten.
Meaning:	A person that one does not tamper with. This was the retort of Pupukea, a Hawai'i chief, when the Maui chief Makakuikalani made fun of his small stature. Later used in praise of the warriors of Kohala, who were known for valor (#875, p 95).
'Ōlelo no'eau:	*I `ike `ia no o Kohala i ka pae kō ia kole ai ka waha.*
Translation:	One can recognize Kohala by her rows of sugar cane which can make the mouth raw when chewed.
Meaning:	When one wanted to fight a Kohala warrior, he would have to be a very good warrior to succeed. Kohala men were vigorous, brave, and strong (#1171, p1 27).
'Ōlelo no'eau:	*Ipu lei Kohala na ka Moa`ekū.*
Translation:	Kohala is like a wreath container for the Moa`e breeze.
Meaning:	Kohala is a windy place (#1256, p 136).
'Ōlelo no'eau:	*Kahilipulu Kohala na ka makani.*
Translation:	Kohala is swept, mulch and all, by the wind.
Meaning:	Kohala is a windy place (#1313, p 143).
'Ōlelo no'eau:	*Ka makani `Āpa`apa`a o Kohala.*
Translation:	The `Āpa`apa`a wind of Kohala.
Meaning:	Kohala was famed in song and story for the `Āpa`apa`a wind of that district (#1455, p 157).
'Ōlelo no'eau:	*Kohala 'āina ha'aheo.*
Translation:	Kohala, land of the proud.
Meaning:	The youths, lei-bedecked, were proud of their handsome appearance and of their home district (#1813, p 196).
'Ōlelo no'eau:	*Kohala ihu hakahaka.*
Translation:	Kohala of the gaping nose.
Meaning:	Kohala is full of hills, and the people there are said to breathe hard from so much climbing (#1814, p 196).
'Ōlelo no'eau:	*Kohala i ka unupa`a.*
Translation:	Kohala of the solid stone.
Meaning:	The people of Kohala were known for their firm attitudes (#1815, p 196).

'Ôlelo no'eau: *Kohala, mai Honoke'ā a Keahualono.*
Translation: Kohala, from Honoke'ā to Keahualono.
Meaning: The extent of Kohala (#1816, p 196).

'Ôlelo no'eau: *Ku pē'ia e ka 'Āpa'apa'a.*
Translation: Pounded flat by the 'Āpa'apa'a wind.
Meaning: Said of sudden terrible disaster, or one who has taken a beating. The 'Āpa'apa'a is a wind of Kohala (#1884, p 203).

'Ôlelo no'eau: *Le'i o Kohala i ka nuku na kānaka.*
Translation: Covered is Kohala with men to the very point of land.
Meaning: A great population has Kohala. Kauhiakama once traveled to Kohala to spy for his father, the ruling chief of Maui. While there, he did not see many people for they were all tending their farms in the upland. He returned home to report that there were hardly any men in Kohala. But when the invaders from Maui came they found a great number of men, all ready to defend their homeland (#1973, p 213).

'Ôlelo no'eau: *Lele au la, hokahoka wale iho.*
Translation: I fly away, leaving disappointment behind.
Meaning: Said of one who is disillusioned after giving many gifts. Waka'ina was a ghost of North Kohala who deceived people. He often flew to where people gathered and chanted. When he had their attention he would say, "I could chant better if I had a tapa cloth" (#1975, p 213).

'Ôlelo no'eau: *Lele o Kohala me he lupe la.*
Translation: Kohala soars as a kite.
Meaning: An expression of admiration for Kohala, a district that has often been a leader in doing good works (#1988, p 214).

'Ôlelo no'eau: *Na'ilina wai 'ole o Kohala.*
Translation: The waterless plains of Kohala, where water will not remain long.
Meaning: After a downpour, the people look even in the hollows of rocks for the precious water (#2220, p 243).

'Ôlelo no'eau: *Nani ka waiho a Kohala i ka la'i.*
Translation: Beautiful lies Kohala in the calm.
Meaning: An expression of admiration for Kohala, Hawai'i, or for a person with poise and charm--especially a native of that district (#2276, p 248).

'Ôlelo no'eau: *Na pu'u haelelua, o Pili me Kalāhikiola.*
Translation: The hills that go together--Pili and Kalāhikiola.
Meaning: These two hills that stand together are often mentioned in chants and legends of Kohala (#2292, p 250).

'Ôlelo no'eau: *'Ohi hāpuka ka wahie o Kapa'au.*
Translation: Anything was gathered up as fuel at Kapa'au.
Meaning: Said of one who takes anything and everything. At one time Kohala suffered a drought and food became scarce. The women did their best to raise food at 'Āinakea while the men traveled far in search of some means of relieving the famine. In order to cook their meager, inferior crops, the women used whatever they found for fuel--dried sugar-cane leaves, grasses, potatoes, and so forth (#2365, p 258).

'Ôlelo no'eau: *'Ope'ope Kohala i ka makani.*
Translation: Kohala is buffeted by the wind.
Meaning: [No meaning given] (#2533, p 277).

'Ôlelo no'eau: *'Uala ne'ene'e o Kohala.*
Translation: Ne'ene'e potato of Kohala.
Meaning: A person who hangs around constantly. Ne'ene'e, a variety of sweet potato, also means "to move up closer" (#2811, p 309).

'Ôlelo no'eau: *Waiho I Kaea ka iwi o kamahele.*
Translation: Left in Kaea, the bones of the traveler.
Meaning: The two sisters Kihalaninui and Kapaku'iali'i went to Hawai'i to seek Konakuimehala'i, the husband of the former. They took with them a small daughter of Kihalaninui and a wooden image named Pili. They landed at Pololū in Kohala and went to Kahuwā [Kahuā], where the child died. There the child and the image were laid away together. In lamenting, Kapapaku'iali'i cried these words. This saying is now applied to anyone who dies away from his homeland (#2906, p 318).

C-4. Place Names. Hawaiians of old generally named everything; from winds and mountains, to rocks, springs, canoes, taro patches, fishing stations, and "the tiniest spots where miraculous or interesting events are believed to have taken place" (Elbert in Pukui et al., 1974:x). They all represented a story, some known only locally, while others became legendary. The following place names of Kahua Ranch lands (*ahupua'a* of Kahualiilii or Kahua 1; Kahuanui or Kahua 2; and Waika) were found on maps, old and current. Some of the place names have managed to survive the changes over time.

Table 1. Annotated place names of Kahuā Ranch lands and vicinity.

Ahua Moa	Kahua 2. [From consultant map]
Aliiapoko	Kahua 2. [From consultant map]
Hoola	Kahua 2. [From consultant map]
Keanahalulu	Waika. [From consultant map].
Kehena	*Lit.* Place for refuse (Pukui et al., 1974:104). *Lit.*, the buttocks. "Another approach to the definition of this word stems from an historical legend involving an epidemic of *ma'i oku'u* or cholera that struck very hard in Kohala. So many people died that they were buried together in the crater of this cinder cone. Kehena is the Hawaiianized name for the biblical *Gehena*, the place of eternal burning outside the city limits" (McDonald/McPeek 1977:82-83).
Kahuā	Ranch, Kohala qd. (Pukui et al., 1974:66). *Lit.* The jealousy (McDonald/McPeek 1977:80)
Kahua Heiau	Kahua Ahupu'u.
Kaipuolelo	Kahua 2. [From consultant map]
Kalepolepo	Kahua 2. [From consultant map]
Kalopae Point	Waika (USGS map)
Kapae Gulch	Kahua 2 (USGS map)
Kapoke	Kahua 1 (Langlas 1994:29)
Keanapakalua Falls	Kahua 1 (USGS map)
Keanahalulu	Waika (USGS map)

Keawewai	Kahua 2 (USGS map)
Luakele	Kahua 2 [From consultant map] (first letter may be wrong). Locarion of a Spring (map from Langlas 1994:29). 0
Mailehihi	Waika. [From consultant map].
Moenakapuhi	Waika. [From consultant map]
Ohialehua	Kahua 1 [From consultant map]
Pahale	Kahua 2. [From consultant map]
Pakolina	Kahua 1 [From consultant map]
Palapalai	Waika. [From consultant map]
Pili	Waika. [From consultant map]
Pohakuloa	Kahua 2. [From consultant map]
Poooholo	Name of Von Holt ranch/lands.
Puna	Kahua 2. [From consultant map]
Pu`u Ahumoa	Also Pu`u Ahu Moa. Local name for Pu`u Ahu Noa. Land section, Waiki`i qd, Hawai`i. *Lit.*, gathering (of chickens) (Pukui et al., 1974:6). Hill on Kahua Ranch-4,011' (Juvik and Juvik 1998:18-B4). Hill behind Pu`u Waiakaoooo`ula (McDonald/McPeek 1977:84).
Pu`u Ahu Noa	Hill on Kahua Ranch, NE of Pu`u Waiakaoooula (TMK maps). Kahua 2 [From consultant map].
Pu`u Aiea	Kahua 1. [From consultant map]
Pu`u Hue	Kahua 2 (USGS map)
Pu`uiki	Waika. [From consultant map]
Pu`u Kalihikiola	Known in *mo`olelo* of Kohala, together with Pu`u Pili. See Pu`u Lihikiola below.
Pu`u Lihikiola	*Lit.*, the life-bringing sun (Pukui et al., 1974:73); central place of ancient worship with ten to twelve altars at base of hill--used in the Fall [Makahiki]; also site of famous battle between Maui *ali`inui* Kamalalawalu and Hawai`i *ali`inui* Lonoikamakahiki (Langlas 1994:35-36). Also known as Kalihikiola. [Note: Probably a good vantage point to site the rising Makali`i or Pleiades constellation in the East as the sun sets in the West marking the start of Makahiki, the time of harvest and peace in ancient Hawaiian culture.]
Pu`u Lepo	Kahua 1 (Langlas 1994:29).
Pu`u O`o	Kahua 1 (Langlas 1994:29).
Pu`u Pili	Hill, Kohala qd., Hawai`i. *Lit. pili* grass hill (Pukui et al., 1974:205). A wooded dark green hill behind Kahua was defined by one source as the "hill of closeness" (McDonald/McPeek 1977:84). Hill on Kahua Ranch 4, 708' (Juvik and Juvik 1998:18-B4).
Pu`u Uau	Kahua 2 [From consultant map]

Pu`u Waiakaoooo`ula	"Is another *pu`u* near Kahua Ranch and translates 'water of the red-faced dwarf.' The Legend behind the name says that in the olden days people used to gather water from this place. There were, however, menehunes who wanted to carry the *pu`u* away and keep the water for themselves. One night when the menehunes were trying to carry out their plan the chickens from the neighboring *Ahu Moa* (chicken heap) got up and crowed at midnight instead of their usual sunrise. This so startled the menehunes that they fled, leaving their hill and the water intact" (McDonald/McPeek 1977:84).
Pu`u Waiakaonoula	Hill on Kahua Ranch 3,825' (Juvik and Juvik 1977:18-B4).
Pu`u Waikaniná`ula	Local name for Pu`u Waiakaonoula.
Uala Maoli	Kahua 2. [From consultant map]
Ualakahiki.	Kahua 2. [From consultant map]. [Note: Consultant, Hannah Springer, mentioned the *`uala* or sweet potato fields-the stone mounds can be seen way into the distance from Pu`u Kalihikiola.]
Von Holt Memorial Park	Kahua 2 (USGS map)
Waika.	Waika. [From consultant map]
Waikaloa.	Kahua 2. [From consultant map]
Waikaooooula	Kahua 2. [From consultant map]
Waiakailio Bay	Kahua 2 (USGS map) Also Waiakailio Complex in Kahua 2 & 1.
Waiokanalopaka Falls	Kahua 2. (USGS map)
Waiukuilio Bay	Kahua 2 (Langlas 1994) same as Waiakailio Bay.

D. Historic References.

By and large "Historic References" pertain to notable historic events, overviews of important place names and land tenure within the project area and districts. One of the most significant practices in the history of the Hawaiian people was their concept of the stewardship of the land. However, over time, these practices were replaced by more western methods of land use, as the lands of North Kohala went from the domain of the *ali`inui* to the monarchy, to various individuals and corporate entities.

D-1. History of Land Divisions. It was during the time of Kaka'alaneo of Maui that the division of lands is said to have taken place under a *kahuna* named Kalaihaohi'a. He portioned out the island into districts, sub-districts, and smaller divisions, each ruled over by an agent appointed by the landlord of the next larger division, and the whole under control of the ruling chief over the whole island or whatever part of it was his to govern (Beckwith 1970:383). Each island was divided into *moku* or districts that were controlled by an *ali'i 'ai moku*. Within each of the *moku* on each island, the land was further divided into *ahupua'a* and controlled by land managers or *konohiki*. The boundaries of the *ahupua'a* were delineated by natural features such as shoreline, ridges, streams and peaks, usually from the mountain to the sea, and ranged in size from less than ten acres to 180,000 acres (Moffat and Kirkpatrick 1995:24-29, see also Chinen 1958:3).

Each *ahupua'a* was often divided and sub-divided several times over (i.e., *ili, kuleana, mo'o, pauka, koele, kiha pai*), answerable to *ali'i* where the lesser division was located. However the *ili kupono* or the *ili ku* was "completely independent of the *ahupua'a* in which it was situated...tributes were paid directly to the king himself" (Chinen 1958:4). Rights to lands were mutable or revocable; a ruling chief or any "distributor" of lands could change these rights if displeased, or as favors--usually after a victorious battle, and after the death of the *ali'inui* (Chinen 1958:5).

During the period between 1839 to 1855, several legislative acts transformed the centuries-old Hawaiian traditions of *ali'inui* land stewardship to the western practice of private land ownership. In the first stage, King Kamehameha III (Kauikeaouli) divided up his lands among the highest ranking *ali'i* (chiefs), *konohiki* (land managers), and favored *haole* (foreigners) (Chinen 1958:7-14; Moffat and Fitzpatrick, 1995:11, 17). This historic land transformation process was an evolution of concepts brought about by fear, growing concerns of takeovers, and western influence regarding land possession. Kamehameha III, in his mid-thirties, was persuaded by his *kuhina nui* and other advisors to take a course that would assure individual personal rights to land.

One-third of all lands in the kingdom would be retained by the king; another one-third would go to *ali'i* or chiefs as designated by the king. In 1846 he appointed a Board of Commissioners, commonly known as the Land Commissioners, to "confirm or reject all claims to land arising previously to the 10th day of December, AD 1845." Notices were frequently posted in *The Polynesian* (Moffat and Kirkpatrick, 1995). However, the legislature did not acknowledge this act until June 7, 1848 (Chinen 1958:16; Moffat and Kirkpatrick, 1995:48-49), known today as *The Great Mahele*. "The *mahele* did not actually convey title to the various *ali'i* and *konohiki*; it essentially gave them the right to claim the lands assigned to them--these lands became known as the *konohiki* lands. The *konohiki* chiefs were required to present formal claims to the Land Commission and pay a commutation fee, which could be accomplished by surrendering a portion of their land to the government." The government could later sell these lands to the public. Upon payment of the commutation fee, the Minister of Interior issued a Royal Patent to the chief or *konohiki*. The last one-third was originally designated to the *maka'ainana*, but not acted on--instead it was set aside to the government, "subject always to the rights of the tenants" (Moffat and Kirkpatrick, 1995:41-43; see also Chinen 1958:15-21).

Ili kupono were the only *ili* (parcel) recognized in this process, all the *ili* and lesser divisions were absorbed into the *ahupua'a* claim (Chinen 1958:20). In 1892 the legislature authorized the Minister of Interior to issue Royal Patents to all *konohiki* or to their heirs or assignees where the *konohiki* had failed to receive awards for their lands from the Land Commission. The Act further stipulated "that these Royal Patents were to be issued on surveys approved by the Surveyor General of the kingdom" (Chinen 1958:24; Moffat and Fitzpatrick 1995:41-43). Kamehameha III formalized the division of lands among himself (one-third) and 245 of the highest-ranking *ali'i* and *konohiki* (one-third) between January 27 to March 7, 1948. He acknowledged the rights of these individuals to various land divisions in what came to be known as the *Buke Mahele* or 'sharing book.'

D-2. Land Commission Awards (LCA). An internet search of the Waihona Mahele Database www.waihona.com (*Waihona 'Aina, Inc.*) did not produce any of Land Commission Awards [LCA] in the *ahupua'a* of Kahuāli'ili'i (Kahuā 1) or Kahuāinui (Kahuā 2). According to Haun and Henry (2003) two Mahele claims were made, but were not awarded (Haun and Henry 2003:1). According to Waihona 'Aina staff, Mahele Award #59 was not awarded; LCA #7715 was awarded to Lot Kapuaiwa for Kahuā 1; LCA #8730 to Kinilau for Kahuā 2 was not awarded. The Boundary Commission records show: Kahuāliili Ahupua'a to James Woods and Kahuāinui to J. W. Austin as BC190 in 1905 (WAC 2003). The following map (Figure 6.) from a study done by Tomonari-Tuggle (1981:36) indicates that while lands were awarded by the Land Commission, there were none awarded for the lands of Kahua Ranch.

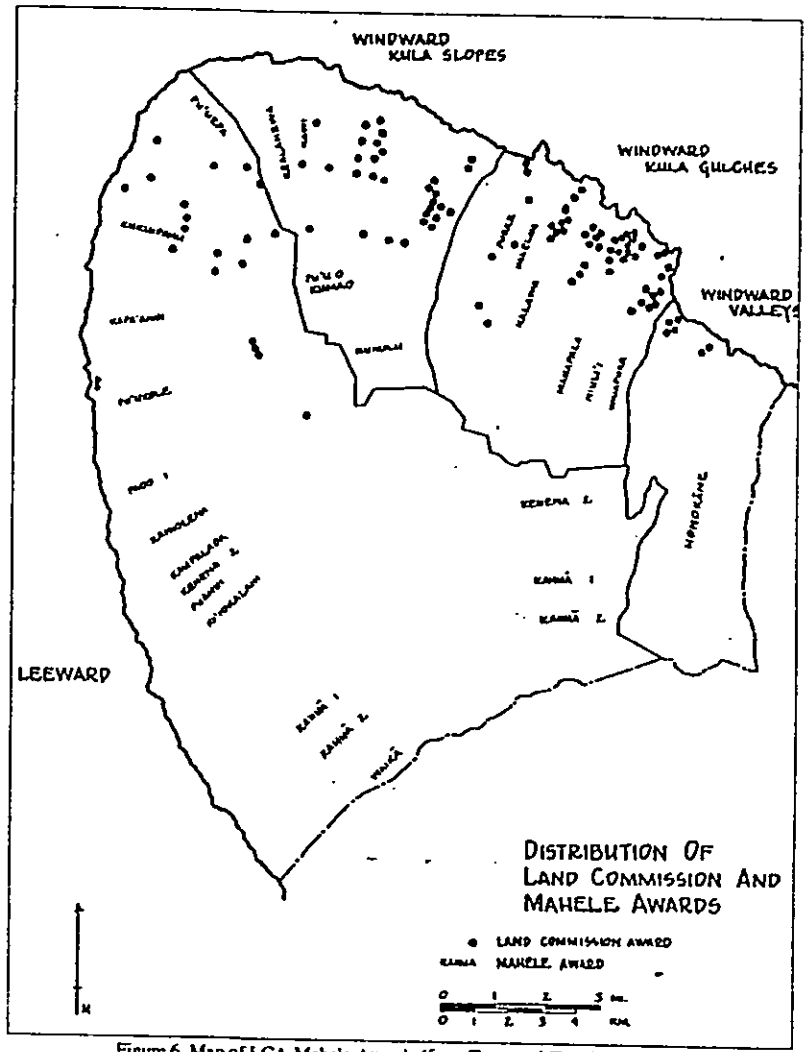


Figure 6. Map of LCA-Mahele Awards (from Tomonari-Tuggle 1981:36).

D-3. North Kohala. The *moku* or district of North Kohala is the entire northern "peninsula" of Hawai'i Island and includes the Kohala Mountain range. Kohala Mountain is the oldest extinct volcano (formed 430,000 years ago) of the five volcanoes (Kohala, Mauna Kea, Hualālai, Mauna Loa and Kilauea) that make up Hawai'i Island, the largest Hawaiian island. Kohala (Zone 9) last erupted 60,000 years ago. Kohala's northwest rift zone extends through to a basin at the headwall of the Pololū landslide, and Pololū and Waipi'o Valleys formed along the faults that bound the landslide. The thick ash that covers Kohala is both local and from Mauna Kea eruptions (Juvik and Juvik 1998:17, 45, 73).

North Kohala was most likely inhabited long before Pa'ao migrated from Society Islands and constructed the Mo'okini Heiau in the *ahupua'a* of Kokoiki [ca. 11th to 13th century]. The *mo'olelo* tells of Pa'ao voyaging to the Hawaiian Islands and finding no suitable *ali'inui*, goes back to 'Upolu [place name in both Samoa and Tahiti] to bring back a chief named Pili to rule. Cultural remains of village sites, other *heiau* such as Kuapālaha, south of Keokea Beach Park, Hale O Kaili overlooking Hapu'u Bay, and Kukui Pahu in Pu'uepa [*heiau* building required a high-ranking chief(s), construction manpower, and people to grow and provide sustenance to the builders], as well as 18th century records and 19th century oral histories, all provide supporting evidence that North Kohala was well-populated at one time. The first missionaries (Ellis, Bishop and Thurston) toured and preached in Kohala in 1823. When missionaries Bliss and Bailey arrived in 1837 there were 8,000 natives who already had a large grass-thatched *hale* (house) built for them at Nunulu; it was later moved to 'Iole (Stephenson 1977:43-44). North Kohala had 15 schools (not all operating at the same time); one of them was Kehena or Pohakuloa School (? – 1920s) located on Kahuā Ranch lands. It was a one-room schoolhouse, once located at the present residence of Mr. Bob Lincoln on Kohala Mountain Road (Stephenson 1977:53). At one time "so many British people lived there that it was sometimes known as 'Little Britan' (Burchardt 2002:19).

D-4. Kahuā Ranch. Kahuā Ranch is located on the northern section of Hawai'i Island on the western slopes and summit of Kohala Mountain, in the *moku* of North Kohala, on the *ahupua'a* of Kahuāli'ili'i, Kahuānui and Waikā. The Native Terrestrial Ecosystem of the Kahuā Ranch lands once ranged from Wet forest to Woodland to Lowland dry and mesic forest-woodland-shrubland versus today where it is totally "transformed by humans" (Pratt and Gon In *Juvik and Juvik* 1998:122). The cultural significance of those terrestrial classifications follows:

Wet Forest and Woodland:	Traditional realm of Hawaiian gods (*wao akua*); not for casual human visitation. Source of plants used for fiber (*olonā – Touchardia latifolia*); weaving (*'ie'ie – Freycinetia arborea*), clothing (*kapa*, beaten-fiber cloth from *māmaki – Pipturus albidus*), medicines, and construction woods. Also was the primary zone for bird collection for featherwork.
Lowland Dry and Mesic Forest, Shrubland	Forested zone was the realm of Hawaiian gods, especially Kū. Sandalwood exploitation of the early 1800s occurred in lowland mesic forests. *Pili* grasslands, a source of thatch material, were maintained by fire; medicinal plants and hardwoods were gathered. Some mesic areas were converted from forest to dryland *kalo* (taro) and *'uala* (sweet potato) agriculture (Pratt and Gon In Juvik and Juvik 1998:126-127).

D-4a. Kahua Ranch Land Transactions. The following (Table 3) lists the various land transactions involving Kahua Ranch lands. The information was compiled only from the *Grantor Index* for the years 1870-1884; 1885-1894; and 1895-1899 [A-J, K and L-Z]. Therefore this list is incomplete. It should be noted that "Waiaka" is listed as the land in some records, yet the same Royal Patents [RP 1668] and Kuleana land [Kul 852B] is listed as Waika, which is the adjacent *ahupua'a* to Kahuanui or Kuha 2. There is an *ahupua'a* of "Waiaka" but it is in Waimea, South Kohala, so "Waiaka" in these cases may be a typo. It should also be noted that any land transaction prior to 1870 is not listed here.

Table 2. Land Transactions for lands of Kahua Ranch: Kahua 1, Kahua 2, & Waika [Waiaka may be typo].

Instr	Grantor	Grantee	Date/I	Bk-Pg	Record	Recv'd	Lands
L	Keelikolani (Ruth)	Allen, W.F.+	7/9/1873	38-165	9/20/1873	Ahupua'a	Kahua
Rel	Hasslocker, Charlotte By Atty	Kamehameha 5th By Admr	7/25/1873	16-397	7/25/1873	Ahupua'a	Kahua
Rel	Mott-Smith, J. by Atty	Kamehameha V By Admr	7/25/1873	16-397	7/25/1873	Ahupua'a	Kahua
Rel	Bishop, S.E.	Chillingworth, S. P.	1/28/1876	27-263	6/28/1876	½ int in leaseholds, livestck, ½int in premises, ½int Allen & Chillingworth	Kahuanui
Rel	Bishop, Sereno as Exor	Allen, William F.	6/28/1876	26-87	6/28/1876	½int in premises, leaseholds, livestock, Allen & Conway	Kahuanui
D	Allen, Wm F. & wf	Woods, James et al	3/28/1882	73-484	5/2/1882	Ap 2RP 1668 Kul 8521 & leaseholds, bldgs, livestock, tools, wagons, etc	Kahua Ranch, Waika etc
L	Keelikolani (Ruth) By Atty	Woods, James +	3/30/1882	73-486	5/2/1882	R: land	Kahualulu
D	Keelikolani	Parker, Samuel	9/9/1882	76-265	9/12/1882	Kul 7715, bldgs, etc	Kahua etc
D	Parke, Wm C. (Marshall)	Allen, Wm F. et al	10/30/1872	36-136	11/7/1872	Int in RP 118 Kul 852B	Waika
D	Bell, William	Anderson, C/Mele				Int in RP 1995 Ilu lands	Kehena
M	Anderson, Charles Mele & hsb	Woods, James Est of					Kehena
M	Trask, W G. et al	Star Mill Co.	7/17/1884	91-130	8/6/1884	Int in 66 2/3 A of RP 780	Kahua Ranch
D	Maguire, John & wf	Holmes, George F	4/1885	94-164	4/23/1885	½int in real & personal property of Kahua Ranch	
D	Holmes, Geo F.	Burchardt, Ernest et al	2/1/1886	100-75	3/8/1886	5/8 int in Ap 2 RP 1668 Kul 852B, leaseholds, bldgs, livestock, harness, wagons+	Kahua etc
Co P/ D	Maguire, John et al		2/1/1886	100-73	3/8/1886	Ranching Business	Kahua
L	Bishop, Charles R.	Kahua Ranch Co	2/16/1886	100-76	3/5/1886	RP 4475 Ap 4	Kahuanui
D	Holmes, Geo. F.	Maguire, John	2/1/1886	119-308	12/4/1889	1/8 int in RP 1668 Kul 852B Ap 2 & leaseholds, bldgs+	Waiaka etc
Co-P D	Burchardt, Arthur et al		2/1/1886	100-73	3/8/1886	Ranching Business	Kahua
Co-P D	Burchardt, Ernest et al		2/1/1886	100-73	3/8/1886	Ranching Business	Kahua
Co-P D	Burchardt, Frederic et al		2/1/1886	100-73	3/8/1886	Ranching Business	Kahua
L	Austin, James W. By Atty	Kahua Ranch Co	2/16/1886	100-76	3/8/1886	RP 4475 Ap 4	Kahuanui
P/A	Holmes, Geo F.	Maguire, John	2/1/1886	119-308	12/4/1889	1/8 int in RP 1668 Kul 852B Ap 2 etc in leaseholds, +	Waiaka etc
Co-P/ D	Kahua Ranch Co		2/1/1886	100-73	3/8/1886	Ranching business	Kahua
D	Parker, Samuel & wf	Irwin, Wm G	7/1/1886	101-178	8/2/1886	½int in Kul 7715	Kahua etc
D	Bell, Geo & wf	Woods, James +	1887	107-30	3/28/1887	53A of RP 1995	Kehena
D	Maguire, John & wf	Burchardt, Ernest et al	11/29/1889	119-309	12/4/1889	1/8 int in RP 1668 Kul 852B Ap 2 & leaseholds, bldgs etc	Waiaka etc
M	Burchardt, Ernest A+ By Atty et al	Purvis, W H	12/2/1889	121-110	12/14/1889	13/24 int in Ap 2 of RP 1668 Kul 852B, leaseholds, +	Waiaka etc
B/S	Maguire, John & wf	Burchardt, E.A. et al	11/29/1889	100-74	12/7/1889	1/8 of 3/8 int in Kahua Ranch Co	Kahua
D	Burchardt, A. G/wf	Burchardt, Ernest	4/1/1890	122-354	4/30/1890	Int in RP 1668 Kul 852B Ap 2, leaseholds, bldgs+	Waiaka etc
D	Burchardt, Ernest A et al	Maguire, John	4/2/1890	119-489	4/30/1890	Int in real, personal & mixed property of Kahua Ranch	Waiaka etc [typo?]
D	Burchardt, Frederic et al	Maguire, John	4/2/1890	119-489	4/30/1890	Int in real, personal & mixed property of Kahua Ranch	Waiaka etc
M	Maguire, John & wf	Burchardt, E.A.	4/2/1890	126-27	4/30/1890	RP 118 Kul 852B Ap 2 leaseholds, bldgs, livestock+	Waiaka etc
Par-A M	Burchardt, Ernest +	Ashton, Frederic	11/9/1891	131-443	2/24/1892	½int in Mtge of John Maguire in Ap 2 RP 1668 Kul 852B, leaseholds, bldg+	Waiaka

Instr	Grantor	Grantee	Date/I	Bk-Pg	Record	Recv'd	Lands
L	Austin, James W. By Atty	Maguire, John	3/15/1892	134-436	3/16/1892	Pc land	Kahuanui
L	Bishop, Charles R.	Maguire, John	3/15/1892	134-436	3/16/1892	Pc land	Kahuanui
D	Irwin, W G & wf	Maguire, John	5/11/1892	136-205	5/31/1892	Kal 7715 Ap 4	Kahua 1
M	Maguire, John & wf	Irwin, Wm G	5/19/1892	138-89	6/8/1892	Kal 7715 Ap 4	Kahua 1
Rel	Purvis, W. H. by Atty	Maguire, John	2/27/1894	121-110	3/29/1894	13/24 int in Ap 2 of RP 1668 Kal 852B, leaseholds, livestocks, etc	
A/M	Gaffard, W.M. Atty	Davies, T H & Co., Ltd		138-89	5/23/1895	Mtge of John Maguire on Kal 7715 Ap 4	Kahua 1
A/M	Irwin, Wm G by Atty	Davies, T H & Co, Ltd		138-89	5/23/1895	Mtge of John Maguire on Kal 7715 Ap 4	Kahua 1
Rel	Burchardt, Ernest A. by Atty	Maguire, John	1896	126-28	8/27/1896	RP 1668 Kal 852B Ap 2, leaseholds, bldgs, livestock	Waika etc

D-4b. Kahuā Ranch: Holmes; Burchardts and Maguire. The early history of Kahuā Ranch is based on letters sent home to England by its early owners, in *Little Britan: Letters from the Hawaiian Kingdom* by Joan Burchardt, a daughter, of Ernest Ashton Burchardt [1853-1932], and niece of Arthur Godfrey Burchardt [1854-] and Frederic Burchardt [1859–1893]; and later summaries by Ernest Burchardt. They wrote letters home to their mother, Jane Ashton Burchardt [1818-1908], in Liverpool and their sister Christina (Chrissie) Burchardt [1856-1977], but only the letters written between 1884 and 1891 survived. Their father, Otto Ernest Lebrecht Burchardt [1808-1882] was the Prussian consul in Liverpool. In 1996 Joan's sister Eleanor found 56 letters from their father and uncles in her attic (Burchardt 2002:v, 19).

Godfrey was the first to leave England in 1878; first to New York, then by rail to San Francisco where he met Theo H. Davies, who became his agent. Godfrey took a steamer to Hilo, then rode [animal] to Ka'u where he had purchased some land above Honoapo "under contract with Hutchinson of Naahelu [sic] Plantation" (Burchardt 2002:9-11). Ernest followed in 1879 to help Godfrey along with "his gang of ten Chinamen", a Japanese "and a native or two" and Frederic came shortly after (Burchardt 2002:12). Ernest later summarizes their earliest experiences:

> Our cane was ready before the new mill at Honoapo was finished and it suffered badly from the delay. We had 140 acres of it... [Fern Hill Plantation, Honuapo; agent W. G. Irwin and Co.; Spreckels was a partner of Irwin (Burchardt 2000:16)]. Godfrey then took some cane belonging to Naahelu Plantation which had been bought by Spreckels, the San Francisco "sugar king." Then he went to Aamano, in Hamakua, & looked after a place belonging to Theo. H. Davies & Co. of Honolulu. And we decided to give up the Kau [sic] venture, on which we had lost money, and I got a job from Davies to work a plantation at Hawi, Kohala, Hawaii, that belonged to the estate of James Woods, who died just then [December 1883 at age 38 (Burchardt 2002:89)] and who also owned Puuhue Ranch. John Maguire, a half white, ran the ranch and put me in the way of working the sugar. And I kept the estate books. This was the beginning of a friendship that has lasted till his death in 1919. He was one of the very best. He married after his first wife died, Eliza Low, who was governess at Puuhue....
>
> Fred was in Kau, closing up the place there, after which he came over to manage Godfrey's place, while Godfrey went home & got married.... We planted on shares with Hawi Mill, which ground the cane & gave us half the sugar. We ploughed & carted with bullocks, ten in a team, worked by natives. And we had about fifty Chinese, to hoe and cut cane.... I visited Godfrey at Aamano [next to Hamakua Mill, Paauilo (Burchardt 2002:20)]. It was a beautiful place cut out of Guava scrub, and very fertile. He had sport there with wild boar, but they had to be shot in the bush, and could not be ridden....
>
> There was a lawsuit between the trustees of the Woods estate and the widow [Mary Parker Woods, later Stillman (Burchardt 2002: 90)], and I had to give evidence and produce my books, and got through it very well. I had a lay readers licence (sic), and read the service at the little church [St

> Augustine's in Kapa'au (Burchardt 2002:22-23, 26)] when the clergy went once a month to Hamakua. And I read the lessons on the other Sundays.... [redacted] It lies on the Kohala mountain, above Puuhue, and on the Waimea road. Fred and I managed it. And Godfrey shortly afterwards went to Maui, where he started a dairy ranch, taking a lot of half bred Jersey cows from us. We branded 970 calves, and reckoned our stock at about 5000 head (Burchardt 2002: 12-15).

The following excerpt is from a letter from Ernest Burchardt to his sister Chrissie in England, dated January 28, 1886:

> *I have at last to tell you that we have settled to go into Kahua Ranch, & have bought 5/8 of the same, Maguire taking 3/8. Please send me out £1300 as soon as convenient. You can send it in a marginal draft, or any other way you prefer, that I can cash at Bishop's Bank. The ranch is a fine one, with certainly over 3000 & probably over 4000 head of cattle on it, & all the necessary horses etc. for working it. There are 3000 acres land in fee simple, & I suppose 13 or 14000 leased. It is a good steady sort of thing, safer than cane. Fred and I will manage it...*(Burchardt 2002:121).

In a letter to his mother dated the same day, Frederic Burchardt writes the following:

> *I have told Chrissie our latest news about our having at last come to terms for the purchase of 5/8ths. Of Kahua ranche* (sic) *& I do not grudge in the least having given up the last six months to searching for an investment, it is entirely a cattle ranche, for the purpose of raising beef, & though of course I know better than to expect it to be a gold mine, yet I have every reason to hope it will be safe, steady business in a small way, we can't yet tell how many head of cattle there are on it, certainly over 3000 head, perhaps nearer 3500, but we have bought in cheap as the market is low at present, owing to some of the ranches being obliged to clear the cattle off their land & sell at any price, in order to clear the land to sell it & at any rate at present prices, cattle show a decent return if reasonably well managed.... I shall want rather an outfit now we are going to live on the ranche, as it is often cold up there & one wants warm clothing as well as cool.... The ranche house is I think about 3000 feet above sea level, & a much more bracing climate than here* [Hawi]...(Burchardt 2002:121-122).

Fred writes in another letter to his mother:

> *The ranch is a very safe one indeed, as it runs from the sea, to an elevation of about 3500 feet in the hills, a gradual slope all the way, is the best watered ranch on Hawaii, & is not as liable to drought as most of them, in fact a large portion is never affected in the driest time; further it is not at all a dangerous country to ride over, as there are no cave pitfalls on it. The stock on it are better bred than on most ranches*...(Burchardt 2002:123).

In a letter dated February 7, 1886 Ernest wrote to his mother about the ranch as he had more time to go into more detail. He describes the ranch, its boundaries and landscape:

> *I have had little time to write any but business letters lately, but now I have a quiet Sunday I can tell you about Kahua. If you look on the map you will see, on our West coast, Kawaihai or Towyhai. That is our south boundary, about. Thence we have five miles of coast northwards; the ranch all lies straight inland from that to the top of Kohala mountain, about six miles away. There are over 15000, probably 20000 acres of land. 3000 are fee simple; the rest leased. There is on the road from Puuhue to Waimea, 5 miles from Puuhue, 12 from Waimea. The upper portion of the ranch is good feed, & well watered, & partly fenced; the lower is rough land, & only to be counted on after rains. It may be much improved by piping down the water.... It is a fine place & will run at least 4000 head. Holmes claims there are that number now.... We shall join with Puuhue & start some butcher's shops here & run out the small Chinese butchers. The cattle are good for this country, but lots of room for improvement yet*...(Burchardt 2002:123-124).

In that same letter [February 7, 1886] Ernest describes the ranch house and ranch routines:

> *There is a fair house, badly placed, being too high up, & consequently windy. The routine of ranch work consists in seeing the cows milked, picking out cattle for the butchers or for shipment, driving about eight times a year to brand the calves, catching & earmarking calves at other times, looking over the fences & keeping them sound, helping Puuhue when they drive, & sending loads of firewood to Kohala: the wood will about pay the rent. The milking is done just to supply the house with butter, & keep a few cows tame, but if we see it pays we can increase it. Pigs & turkeys run nearly wild now but both will pay for a little attention...* Burchardt 2002:124).

The following month in a letter dated March 7, 1886 Frederic wrote to his mother telling her about his going to Honolulu to take care of Kahua Ranch partnership transfers:

> *I have been very busy, down to Honolulu with Holmes & John Maguire, getting our transfer & partnership papers made out, also our principal lease renewal for fifteen years, then back here again...Holmes is still in charge of the ranche, but I go up tomorrow & shall stay there with him, & Ernest will be up there just as soon as another man comes up to relieve him in his present position. I shall be awfully busy for the next month or so...the work mostly consists of seeing after the young calves, we drive them into a pen about once a month with the mothers & brand them, & then let them go again & never have to bother with them again until they are driven into the paddock kept for fattening them previous to killing. Most of our beef, i.e..all the best of it goes to Honolulu, & the smaller beats are eaten by the people here...*(Burchardt 2002:125).

In the same letter Fred explains to his mother about their firewood business; subsequent letters from both Frederic and Ernest mention this activity:

> *One of our principal sources of income from the ranche outside of beef will be firewood which is scarce here, & which we sell for $5 a cartload, also pigs can be made to pay very well & there is a steady demand for pork amongst both natives & Chinese. I feel confidant we can make the ranche pay, not in the gold mine sense of the word, but still a very high rate of interest on the money we are investing...*(Burchardt 2002:125).

The next few letters continue to describe details of a working ranch and the cooperation between Puuhue and Kahua ranches during round-up, branding and driving the cattle to Mahukona for shipping on the steamer. Their letters also described the process of getting the cattle unto the boat as did Ernest's letter to his mother dated May 2 1886:

> *Next morning the steamer was in, so we were off at daylight & marched our cattle to Mahukona. There we found the Kinau shipping sugar, so we had to wait all day, & at night put our cattle in the pen...& next morning at 4 AM I was up & saw the steamer get ready for us.... Two of the men swam out with the cattle to the boat & then threw the rope on board, & the steamer men tied them up with their heads out of the water, & when they had eight pulled away to the steamer & slung the cattle onto her. The horses were very clever at the work, facing the sea quite boldly, & swimming well. We got them all on board in good order...* (Burchardt 2002:133).

The follow is a continuation of Ernest's summary of his life in Kohala, following a brief journey back to England to spend some time with his mother and sister:

> From that time [1887] till the summer of 1890 I was hard at work on the ranch, Fred going home in 1889. We did very well, and it was a good place to live at; 3000 feet above the sea, and never very hot. Lots of hard riding, and good horses. The upper part of the ranch was bush; then grass downs, and lower down, rocky land all the way to the sea. This grew grass after the winter rains. We shipped our best cattle to Honolulu; and the wild cattle to the planters. Being on the main road, we had a number of visitors. Too many, at times (Burchardt 2002:15).

In a letter to his sister dated March 27, 1888 Ernest mentions planting a number of trees around the ranch house, as well as surveying the ranch:

> *Am busy at home with a carpenter who is doing some alterations about the outbuildings; and the men, who are making holes to plant trees in. There will be about 300 trees so planted as to shelter the house & garden, or places where the garden will be when the trees come up high enough. So I can't leave the house...& am therefore putting in a day of small jobs, such as...working out some surveying, overhauling my saddlery, laying out the tree plantation, & getting my letters written.... The district judge & sheriff have been turned out for taking bribes. So much for news out here...*(Burchardt 2002:155).

In his June 29, 1888 letter to his sister, Ernest states that he has completed surveying the ranch:

> *As for work, I have completed a rough survey of the whole place, & enclose you a reduced map; if you compare it with the inch to the mile ordinance map of Liverpool you will get an idea of the dimensions.... We have besides this, about 5000 acres beyond, that will come in at the end of this year, but this, & a small piece beyond it all we occupy at present. We do nearly all our work in the land lying between Hoolepae, Awa (Hoolekalawa) gulch & the Kawaihai road; & most of it within two or three miles of the Waimea road. Fred is putting up fences with a gang of natives. They work four days a week, & go fish peiddling on Friday & Saturday. Weather is windy & rather dry. Cattle all right & looking well, but certainly a late season.... The next job we have to tackle is to level a line for a water flume & pipe. One of the springs will be brought down to the lower land so that the cattle need not go so far for water...*(Burchardt 2002:156-157).

In a letter dated April 2, 1889 to his mother, Ernest mentions water resources on the ranch:

> *The latest idea here is to take some of the streams over a ridge of rocks in a typhon* (sic) *of two inch pipe, & divert it when we want the water into a new course altogether. We find we must provide more storage in our new pipe; there is more water there than I had any idea of at all. I am going to raise the dam five or six feet. Nothing like plenty of water for cattle. We are promised some guinea fowl to turn out on the land; and a pair of geese...*(Burchardt 2002:158).

In a letter to his sister dated September 6, 1889 Ernest mentions in passing "the water pond on the hill.":

> *Well I must have some lunch & look after my work for tomorrow, &...inspect a sick horse, & the water pond on the hill, & so forth, & so on...*

Ernest's letter to his mother dated October 6, 1889 mentions wild bull round-ups and a rat problem:

> *I had an early morning out last week; up at 3, out at 4 after coffee & toast; met the Puuhue men on the edge of the bush at dawn, & worked away till past noon getting very small results, getting only one wild bullock. But we have picked up quite a number of these fellows lately; about fourteen in the last two weeks, & all fat. The wind has changed now, but we shall be at it again before long.... You don't want any rats, do you? The place has been alive with them lately, driven here for water I imagine...*(Burchardt 2002:167).

Ernest's October 17, 1889 letter to his sister mentions the *'ohi'a* woods in his description of the food of a dinner party. He also mentions making mushroom beds, and that the gulch has running water:

> *Went to dine at Kinnersleys last week, & slept there on account of rain. Dinning out, by the way, lacks interest when you know you'll have the big turkey from the first gulch beyond the house & the sirloin of the black cow with the white patch on her side that lived on the edge of the ohia wood. The pleasures of anticipation do not exist for ranchers; you know all about it beforehand. The Kinnersleys came up here on their way to Waimea...they all had breakfast & departed in a body for Waimea; & I went to work making mushroom beds, the day being too vile to go anywhere.... Here comes one of the men to report...says the horses at the new pasture looks well, &...the gulch is running strong, but the grass is very short still. And one of the men I want for Saturday has gone fishing...*(Burchardt 2002:167-168).

The following excerpt is from the summary of Ernest; it is followed by an excerpt from a letter to his mother dated April 3, 1890 noting the event of selling Kahua Ranch to John Maguire:

> In December 1889, Uncle Ben died, leaving his property to Godfrey and Fred. I had already consented to stand for the Legislature, and had to go through with it. Godfrey gave me his share of the ranch, and I sold out to Maguire, meaning to go home as soon as the Legislature was over (Burchardt 2000:15).

> *Left in six days for Honolulu with J. Maguire, & half the planters in Hamakua & Hilo on board. Smooth run this time, except for a short time in the channel: got in by dawn...then down town doing all sorts of business connected to the sale of the ranch to Maguire.... I am to put all accounts in order & generally hand over the business.... Maguire takes all my goods & chattels that he can, at a valuation: and I don't anticipate any trouble in selling the horses, as people are after them on all sides...I expect all papers to be signed by the end of next week, before I leave for Maui.... How it does blow! & the thermometer at 50 deg. & once at 47 deg. at night. Never was such weather* (Burchardt 2002:184-185)

According to information from State of Hawaii Archives Ernest Burchardt was given permission by the Ministry of the Interior on August 29, 1891 to resign from office; yet his own account states that he got home to England in October 1890, perhaps leaving before he received permission (Burchardt 2002:179). Ernest and his brothers were presented with a calabash from their friends in Kohala before Ernest left Hawai'i; the following was inscribed on the main silver presentation plate (Burchardt 2002:190):

ALOA NUI
to E.A. A.G. Fr Burchardt
Molali Makaaniani Kahauanu
of Kahua Ranch Kohala Hawaii
For they are jolly good fellows,
and so say all
the Kohala Boys
July 1890

In her Epilogue, Burchardt (2002) writes the following about her father:

> Ernest...got home in October 1890.... In 1907 he married Viola Mary Bruce Joy, the daughter of George W. Joy, the painter. They had seven children of which I am the sixth.... John Maguire came to visit my father in England...Harrods would not serve him because he was "black," after which we were never allowed to go near the place. He sold the Kahua ranch to James Wood's son Frank Woods, in 1895, and...returned to the Huehue ranch in North Kona (Burchardt 191-192).

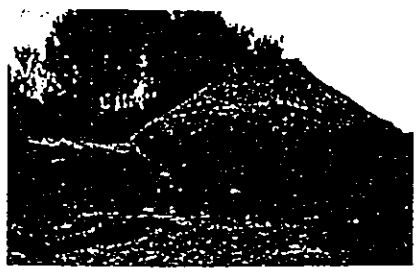


Photo 13. Grass shack on Kahua Ranch during the time the Burchardts owned the ranch (from Burchardt 2002:165).

D-4c. Kahua Ranch & Maguire-Woods-Parker Connections. Information regarding this period of Kahua Ranch comes from several sources--from a descendant of John Maguire, Internet infomercials about Parker Ranch, newspaper articles and reports. In a conversation with secondary consultant Hannah Springer, she explained some of the family genealogy and her ancestor's connections to Kahua Ranch. The following information comes from that conversation.

John Avery Maguire was the son of Charles and Hi'ilawe Maguire. He was half-Hawaiian and half-Scottish. He was born at Pa'ohau Landing in Mānā, Hawai'i Island. John Maguire's first wife was Luka Hopula'au [her inheritance formed the nucleus of Hu'ehu'e Ranch in North Kona]. Hannah Springer is descended from this union. When John's first wife died, he married Eliza Low. John Maguire was a friend and in-law of Samuel Parker [son of Parker Ranch founder John Palmer Parker who came from England, jumped ship off Hawai'i shores in 1809 as a 19 year-old youth; helped Kamehameha I; and married chiefess Kipikane in 1815 (www.parkerranch.com)]. John and Luka's son Charles Maguire married Samuel's daughter Mary in a double wedding with cousins Hannah Low and Robert Hind. Hannah Low was the sister of Eliza Low. Princess Ka'iulani came to this wedding in Mānā. Samuel Parker's sister Mary Parker married James Woods who died early at the age of 38. Their son Frank Woods married his cousin Eva, daughter of Samuel Parker (Springer 2003).

In her article about Kahua Ranch in *The Waimea Gazette*, Melrose (1998) provides a little more information about the Maguire-Woods-Parker connection.

> Pioneer rancher John Palmer Parker started his ranching career in Kohala at Waipuka. Later, he encouraged his granddaughter Mary Ann to marry Englishman James Woods, future owner of Pu'uhue Ranch in North Kohala. The 1868 marriage produced eight children, including a son named Frank, who was eager to get on out and start a ranch on his own. In 1895, he purchased half-interest in the fee simple lands at Kahua Ranch from John Maguire. The previous owners, three English brothers, Godfrey, Ernest and Fred Burchardt, had bought the land in 1886 from George Holmes. After five years of struggle, the brothers sold the land to Maguire, and headed back to England. Maguire later sold his full interest in Kahua to Woods and devoted his energy to Hu'ehu'e Ranch in North Kona. Woods also leased land surrounding Kahua homestead from Captain Austin. It was Austin's good fortune to marry one of Kamehameha's nieces and she owned the lands of Kawaihae. Eventually, the control of that land fell to the Austin Estate managed from Boston, Massachusetts. With Kahua safely in hand, Frank married his young and beautiful cousin, Eva Parker, and prepared to start his own family....

> Frank Woods invested heavily in a new scheme to turn Kahua into a sugar plantation. What he needed was water, and he knew just where to get it. About ten years earlier, Kohala sugar planters built Kehena Ditch to funnel water from the mountain forests above Pololu Valley to their thirsty plantations along the coast. Woods wondered, why that resource, flowing so freely along his mauka boundary, should water only the fortunes of other men. Kahua had the right to siphon off a little water, but Woods planned a major waterway, some eight feet wide and four feet deep, capable of diverting a virtual river of water his way. Woods was within one hundred feet of tapping into the Kehena Ditch when the Kohala sugar planters, alarmed and angry, stopped him.

> At this critical point, the Austin estate land surrounding Kahua Ranch came up for release. [Lincoln] McCandless saw his chance and out-bid Woods. Frank suddenly found himself land-locked on his fee simple lands with no access to Kawaihae, no way to ship his cattle, and with no water from Kehena Ditch. Bitterly disappointed, facing financial ruin, Woods was forced to sell Kahua.

> Ronald von Holt had been ranching at Hono'uli'uli on the Ewa Plain for Oahu Land & Rail Company. His grandfather, Hermann von Holt from Hamburg, arrived in Hawai'i in 1851 and stayed to open a successful store. Ronald wanted to get into ranching on his own and was looking for a start. Atherton Richards, grandson of pioneer missionary William Richards, was also searching for a ranching opportunity, preferably on an outer island. When news of Frank Woods' dilemma reached O'ahu, Ronald approached Atherton Richards about the possibility of buying

Kahua Ranch. Deciding to take the bull by the horns, the two men went to see Lincoln McCandless. As the story goes, McCandless said that sure, he would sell the Kahua property on one condition – that the Makua property be returned to him in the exact state it was before Woods ever got his hands on it....

Richards and von Holt coined the name Kahua Ranch Limited for their new business. Hawaiians had named the land divisions or ahupua 'a Kahuwa Nui and Kahuwa Li'ili'i long before. One meaning of the word kahua is place of encampment. [redacted] Also, the ranch may have been named after a star, kaho'a. One thing is certain. Kahua Ranch is pronounced Kahu-wa, with the stress on the final a.

Today, descendants of Kahua's original Hawaiian families – Ho'opai, Akina, Kainoa, Rafael – still work at Kahua Ranch. During the Depression, Kahua Ranch employed over fifty people. Of course, not all the men were chasing cattle. Some were planting trees. Ronald married Dorothy "Da" Erdman in 1933.... It was a joyful surprise when in 1948 a third child arrived, Harry Martens von Holt II. Named after his paternal grandfather, called Hale Poooholo by the Hawaiians, the baby was called Pono. Atherton Richards, by all accounts a brilliant man, visited Kahua often to check up on his investment. A friend of Dr. Roland Force, director of the Bishop Museum, Atherton brought museum staff to Kahua to catalogue Hawaiian artifacts found on the ranch....

Pu'uhue, the old Woods property, was Kahua's neighbor to the north. For years it was managed by Sam Woods, Frank's brother. (...After Eva Parker's early death, Frank married Kahanu, the widow of Prince Jonah Kuhio Kalanianaole. Sam, not to be outdone, married Tootsie Dowsett, the widow of John Parker III and Thelma Parker's mother.) After Sam's death, the numerous heirs, unable to reach any workable agreement, decided to sell Pu'uhue,...

Langlas (1994) discusses the ranches of Kohala, especially Kahua, in the following selected excerpts:

> The main ranches in Kōhala have been Parker Ranch in Waimea (South Kōhala), and Kahuā, Pu'u Hue and Puukea ranches in North Kōhala. Parker Ranch, centered at Kamuela, expanded to cover nearly all of Waimea in the last half of the nineteenth century, primarily by purchasing government and *ali'i* (chief-owned) lands. It leased additional lands, including the *ahupua'a* of Kawaihae 2, which it leased from the Queen Emma Foundation. Hawaiians from Kawaihae Uka moved to Kamuela to work at Parker Ranch. About 1890, the Lindsey clan is reported to have moved from Keawewai to Kamuela, when Tom Lindsey was made the *luna* (boss) at Parker Ranch (Wellmon 148). Sam Awaa Sr. and several of his sons left Horeps and moved to Waimea to work at Parker Ranch around 1930 (Helen Aveiro). [Note: Up to then Sam Awaa, Sr. worked at Kahua Ranch (Langlas 1994:19).]
>
> The origins of the North Kōhala ranches are less well known. Pu'u Hue Ranch was started by James Woods (probably some time after his marriage to Mary Parker in 1868). Both Pu'u Hue and Puukea ranches were in operation in 1873, according to a journal left by Robert Hind (n.d. 13). Pu'u Hue was being run by Woods and Puukea by the German Padiken. Puukea was bought by James Wright in 1885 and eventually both ranches were run together by the manager of Pu'u Hue. Parker Ranch bought Pu'u Hue in 1932 and leased Puukea until 1946 when it purchased Puukea as well.
>
> Kahuā Ranch history...its origin and development is incomplete.... The heart of the ranch then was the three *ahupua'a* of Kahuā Nui, Kahuā Li'ili'i and Waikā. Those *ahupua'a* went to *ali'i* in the *mahele*. Kahuā Nui was probably purchased by James Austin soon after. By 1903, the Woods family (which owned Pu'u Hue Ranch) owned Kahuā Li'ili'i and Waikā, and the Austin heirs owned Kahuā Nui (Boundary Commission Book 4: 135). By the 1920's Frank Woods (son of James Woods) was ranching Kahuā, leasing Kahuā Nui to Ronald Von Holt and Monty Richards, Sr., who moved to Kahuā from Honolulu and began ranching there. A few years later, they bought the land from the Austin heirs (Langlas 1994:25).

D-4d. Kahua Ranch of Richards and Von Holt. The following information about Kahuā Ranch, is based on research by Langlas (1994); the oral history of Herbert Montague "Monty" Richards, Jr. [descendant of missionary Rev. William Richards (Burchardt 2002:6)], who was interviewed by Anna Loomis for the *Paniolo Hall of Fame* 2000 issue, published by the O'ahu Cattlemen's Association (OCA 2000:Series 2, Tape 3 pp. 1-23); and other historic documents.

According to Monty, Jr., Kahuā Ranch Limited was a corporation founded by Herbert Montague Richards, Sr., Atherton Richards, and Mrs. Theodore (Ruth Midkiff) Richards in March1928. Herbert Sr. was the son of Dr. Theodore and Mary Atherton Richards; grandson of J. B. Atherton; and great-grandson of Amos Starr Cooke and Juliette Montague Cooke (OCA 2000:1-23). Amos Cooke and Samuel Northrup Castle were members of the eighth missionary company, sent to the Sandwich Islands in 1837 by the American Board of Commissioners of Foreign Missions, Boston to "handle the business of the missions." Castle assisted the ailing Levi Chamberlain, and Cooke and his wife started the Young Chief's Boarding School. After Chamberlain died they operated the 'Mission Depository' as fiscal agents, then later after much discussion with Boston, they were allowed to open their own store in 1851 as wholesale and retail merchants, as long as they kept up with Mission business (Smith 1942:7-9). Their partnership was Castle and Cooke, now a diversified corporation and still in operation today. Amos Starr Cooke was the company's first president, and J. B. Atherton was its second president. Castle and Cooke used to handle all of Kahuā Ranch's financial affairs. [However, in the 1950s it was decided to move to the office of Herman Von Holt (OCA pp. 1-23)]. In 1852 the Royal Hawaiian Agricultural Society, which Castle helped organize, experimented by bringing 180 Chinese laborers to Hawaii from Hong Kong (Taylor et al 1976:76). In 1858 the partners began buying stock in sugar plantations started by friends. J.B. Atherton [Cooke's son-in-law] joined Castle and Cooke in 1858 (Smith 1942:8-9).

The partners, Richards and von Holt, expanded Kahuā Ranch, leasing the lands of Kawaihae to the south in the 1930s; also in the 1930s and 1940s the partners leased the lands of Kehena, north of the original ranch to Pu'u Hue Ranch. They purchased privately owned parcels and leased government parcels in Kehena; and many of the Hawaiian cowboys who worked on Kahuā Ranch came from the community of Kehena (Langlas 1994:26).

Herbert, Sr., among other things, worked for Castle and Cooke, and served on the Board of Kahuā Ranch. However the "real partners" of Kahuā Ranch was Atherton Richards [uncle of Monty] and Ronald Kamehameha o Ka Hae Hawaii von Holt [godfather of Monty] who died in 1953. After finishing school on the mainland Herbert Montague Richards, Jr., better known as "Monty" came back to Hawai'i in 1953, and back to Kahuā Ranch in 1955, the place where he was born in 1929. It was then a combination of Kahuā Ranch and Ponobolo Ranch, encompassing 30,000 acres and twenty-plus employees, who were responsible for a range of duties such as checking water, checking fences, fixing fences and slaughtering cattle. Monty became the bookkeeper and rancher-trainee (Assistant to the Manager). Atherton Richards was the president of the corporation, but lived in Honolulu. Rally Greenwell was the manager, but left for Parker Ranch in 1956. When Greenwell left, Atherton took over managerial responsibilities, but continued to live in Honolulu. Monty gradually took over as manager (OCA pp. 1-23).

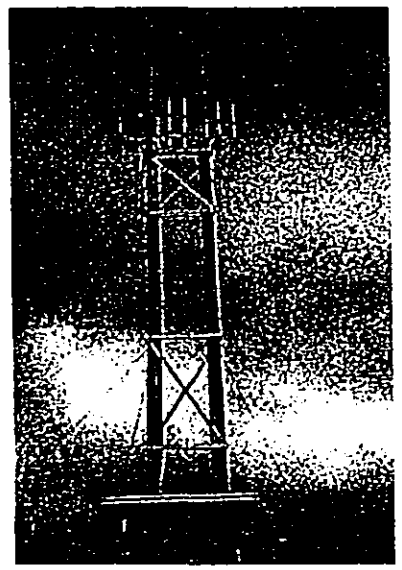
It was the personal philosophies of Monty that helped to shape the direction of Kahuā Ranch. He saw first-hand the problems of the sugar plantation's mono-crop concept and felt it best to diversify. Kahuā Ranch went from strictly cattle ranching to raising dairy heifers, specialty beef (artificially inseminated), sheep (originally from Ni'ihau), diversified agriculture (i.e., carnations, hydroponic lettuce, organic tomatoes, colored lettuce, spinach), wind farm (electricity), eco-tourism, logo retailing, and providing a location for TV commercials. A portion of Kahuā Ranch is now "conservation" land where the watershed is being protected and the native vegetation is allowed to grow back. As a result, the *'ōhi'a-lehua* forest is making a comeback in certain areas (OCA pp. 1-23). The Richards and the Von Holt families ran Kahuā Ranch jointly until the 1980s when they decided to split the ranch. Today "Kahuā Ranch" is legally divided; Kahuā Ranch is run by Herbert Montague "Monty" Richards, Jr. and Ponobolo Ranch is run by Harry "Pono" Von Holt, son of Ronald.

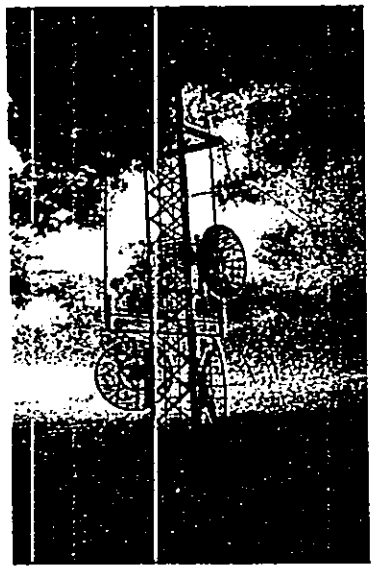
Photo 14. Combination of two historic churches now on Kahua Ranch.

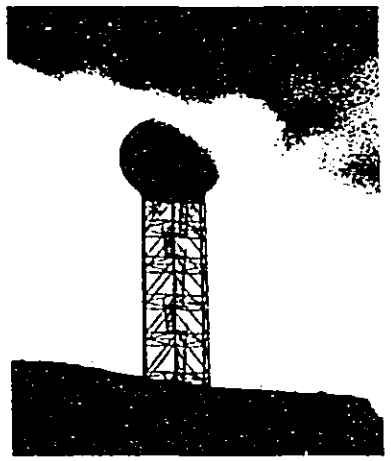
D-5. **Kehena Ditch.** Kehena Ditch is one of the main fresh water sources for Kahua Ranch. The following is from Wilcox (1997), *Sugar Water: Hawaii's Plantation Ditches.*

> The Kehena Ditch Company was financed initially by the Kohala Ditch Company, later joined by Hackfield & Company. Kehena Ditch was started in 1912 and completed it in 1914. Twenty percent of this ditch crossed state land. It terminated in the Puukumao Reservoir, which in the 1960s was determined to be unsafe and was breached. The ditch had been largely abandoned by that time anyway, as it was never a reliable source of water. The state initiated an effort to redirect the water from the upper section of the ditch to Kawaihae and Hawaiian Home Lands, but this effort was interrupted by new federal clean water standards which would have required additional treatment of the water, making it uneconomical. The ditch was abandoned, although Kahua Ranch takes water by pipe from the upper segment, which still runs (Wilcox 1997:147).

D-6. **Pu`u Waiakanonula.** The project site is located on the summit of this *pu`u*, West of Pu`u Ahu Noa/Moa and northwest of Pu`u Pili. It is a cinder cone, most likely formed during the last eruption 60,000 years ago. Very little is known today about Pu`u Waiakanonula except that several consultants say that the locally known name for it is Pu`u Waikanana`ula referring to an old legend about some *menehune* who wanted to steal it for it's water, but were thwarted in their attempt by a vigilant rooster who lived on Ahu Moa. In a map from the 1800s (Burchardt 2002:112), it was noted that it was pasture; unfortunately the name was not included. Today it is primarily covered in grasses, with a few ferns and exotic flora. On the windward (east, summit) side of the *pu`u* there are several species of trees growing: native *`ohia lehua* (*Metrosideros polymorpha*), ironwood (*Casuarina equisetifolia*), Norfolk pine (*Araucaria heterophylla*) and *Eucalyptus spp.* There are also several structures: three antennae towers and their maintenance facilities.







Photos 15-17. Three antenna towers located on Pu`u Waiakanonula, the proximity of the proposed Rainbow Tower & facilties.

E. Previous Archaeological and Historical Research: Kahuā Ranch and Vicinity

Allen (1985a) "Limited Archaeological Reconnaissance Survey, Kahua Shores Coastal Parcel, Kahua 1, North Kohala, Island of Hawaii. PHRI Report 74-031883." [On the coast, too far from project site.]

Allen (1985b) "Limited Archaeological Reconnaissance Survey, Kahua Shores Coastal Parcel, Kahua 1-2 and Waikā, North Kohala, Island of Hawaii. PHRI Report 76-03183." [On the coast, too far from project site.]

Hammatt and Borthwick (1986) "Archaeological Survey and Excavations at Kohala Ranch, North Kohala, Hawaii.

Hammatt and Borthwick (1987) "Archaeological Reconnaissance of 1,288 Acres for a Proposed Residential Community, at Kohala Ranch, North Kohala, Hawaii.

Hammatt and Borthwick (1990) "Archaeological Reconnaissance of Gulch Areas Within 1,214 Acres for a Proposed Residential Community, Kohala Ranch, North Kohala, Hawaii.

Barrera (1991) "Kahua, North Kohala, Hawaii Island: Archaeological Inventory Survey of TMK: 5-9-07:7." This survey was in the transition zone between coastal and uplands "at an elevation between 525 and 725 feet above sea level, and vegetation consists primarily of grass and *kiawe* trees." No cultural features were found as the property was "too far from the ocean for coastal settlements and too far from the upland agricultural fields to have supported agricultural pursuits" (pp. 1-2).

SHPD (1993) "Inadvertent Burial Discovery Report." A skull from a previously disturbed grave was discovered by children in a lava blister in The Meadows. Fabric was also found.. Everything was re-interred in the lava blister.

Walker and Rosendahl (1994) "Archaeological Inventory Survey: Proposed NEXRAD and ATCBI Sites and Related Access Road Corridor." Survey of the corridor for the proposed road to be built from Kohala Mountain Road up to the site.

Langlas (1994) "Pu'u of Mauka Kawaihae and Kalalā Ahupua'a, District of Kohala, Hawai'i Island: Report of an Investigation of the Hawaiian Cultural Significance of 'Candidate Sites for the NEXRAD Installation: Ethnographic Background and Site Assessment.'" Proposed location on Pu'u Mala [SE of project site]. Nearby Pu'u Lapulapu was the only pu'u within the vicinity to have cultural sites.

- Central Kohala Mauka: from Kawaihae Uka (above Kamuela town) to Kehena (halfway to Hawi town)
- Distinct identities up to WWII
- High degree of intermarriage
- Strong sense of community solidarity; outsiders don't have authority to speak about the locality and its traditions
- 20 individuals contacted for this study; 11 interviewed
- Ranch owners: Monty Richards and Harry Poopobolo Von Holt
- 3 ditches found; 1 known and 2 unknown
- 20th century: 3 Hawaiian settlements in the area; Hawaiian communities at Kawaihae Uka and Kehena; midway between them is Kahuā Ranch which employed them and maintained employee housing for some of them
- in 1800s Kawaihae Bay was important shipping point for sandalwood from Waimea; later for sweet potatoes and Irish potatoes from Kawaihae Uka and Waimea for provisions for whaling ships (AD 1840-1860); also for Kohala cattle industry-wild and domestic--(up to 20th century)

- in 1800s Kawaihae Bay had Hawaiian settlement-- salt production and fishing; white merchant; Congregational church
- at Kawaihae Uka (1 and 2) had substantial population of Hawaiians (makai of Kohala Mountain Road) growing sweet potatoes up to 1920s; irrigation by ditches (Langlas 1994:24-26).
- church called Mauna Horeb (Mauna Horepa) built by North Kawaihae Uka community of Kaalaia; Kawaihae Uka proper community of Mākēlā also built a church called Sinai near Pu'u Mākēlā
- epidemics of 1848 (measles, whooping cough) and 1853 (smallpox) killed many Hawaiians in the Waimea/Kawaihae area
- in early 20th century a forest of *naio, koai'e and ohi'a* still existed at Kawaihae Uka even though cattle were grazing there
- about 1952 the Mauna Horepa church was moved to Kahuā Ranch; and joined with another old Kohala church to make it bigger
- ranches in North Kohala included: Kahuā, Pu'u Hue, and Puakea
- Pu'u Hue Ranch was founded by James Woods after his marriage to Mary Parker in 1868
- In 1873 Pu'u Hue was being run by the Woods family and Puakea by the German Padiken.
- Cultural changes included Hawaiians who can not speak Hawaiian or remember the traditional stories connected with the place-names;

Grave and Franklin (1998) "Archaeological Inventory Survey, Kahua Makai/Kahua Shores Coastal Parcels. Lands of Kahua 1 and 2 and Waikā, North Kohala Ranch District, Island of Hawaii. [On the coast, too far from project site.]

Rechtman (2000) Letter report of an Archaeological Survey or 0.23-acre area on Pu'u Waiakanoula (sic), Kahuā 2nd, North Kohala District, Island of Hawai'i. An archaeological survey of 100x100 feet area was conducted on Pu'u Waiakanoula. This is the site of a U.S. Cellular cell tower site and weather station dome tower. The tower location is accessed from Kohala Mountain Rd. on paved ranch roads through Poopobolo Ranch. Associated infrastructure consists of an 8 x 20 ' utility building and a 6 x 10' blockhouse generator. The site is located about 6.5 miles inland at an elevation of about 3,825' within TMK: 3-5-9-02:4, a 2207,902-acre parcel, a portion of Kahuā Ranch. Other surveys have been done at Kahuā 2nd but at lower elevations. Based on these studies and other data, a settlement pattern can be posited for the southern *ahupua'a*:

- Primary permanent residences were along the coast
- Inland agriculture [i.e., Kohala Field System] only partially extended south into Kahuā 2nd
- Kahuā 2nd field system spanned 1,800 to 3,200 feet
- Project area above that zone, in the mountain forest zone
- No archaeological resources were observed in the project area.

Haun and Henry (2003) "Archaeological Assessment, Rainbow Radio Facilities and Towers, Statewide Kahuā Ranch Site DAGS Job #16-10-0256, Land of Kahuā 2, North Kohala District, Island of Hawai'i (TMK: 5-9—02:2)." The project area consists of 0.52-acres parcel situated on top of Waiakanoula on Kahuā Ranch, with elevations ranging from 3,810-3,825 feet. The area is covered with low grass. Existing antenna towers are situated in the central portion of the parcel, along with several buildings. The hill is a remnant scoria cone associated with Kohala volcano. Wilderness Zone: Sub-zone 1; potential site types include trails, temporary camps and quarries. No features identified; no inventory survey recommended (Haun and Henry 2003:1, 5)

PART IV. ETHNOGRAPHIC SURVEY

Research Themes or Categories

In order to comply with the scope of work of this cultural impact assessment/study, the ethnographic survey was designed so that information from consultants interviewed would facilitate in determining if any cultural sites or practices would be impacted by the implementation of the DAGS Rainbow Radio Facilities and Tower on Pu'u Waiakanonula located on Kahua Ranch, in the *ahupua'a* of Kahuāli'ili'i, North Kōhala, Hawai'i Island. To this end the following research categories or themes were incorporated into the ethnographic instrument: Consultant Background, Land Use & Resources, Ranching Influences; Heritage Resources, Water Use and Resources, and Anecdotal Stories. Except for the 'Consultant Background' category, all the other research categories have sub-categories or sub-themes that were developed based on the ethnographic data or responses of the consultants. These responses or clusters of information then become supporting evidence for any determinations made regarding cultural impacts.

Consultants were selected because they met the following criteria: (1) consultant grew up, lives or lived on Kahua Ranch (2) consultant is familiar with the history of North Kōhala; (3) consultant is involved with Kahua or Ponoholo Ranches (4) consultant is familiar with the *mo'olelo, oli* and *mele* of the area. Six individuals were interviewed—three primary and three secondary.

A. Consultant Background

Each consultant was asked to talk about their background; where they were born and raised, where they went to school and worked, and a little about their parents and grandparents. This category helps to establish the consultant's connection to the project area, their area and extent of expertise, and how they acquired their proficiency. In other words, how the consultant met the research consultant criteria. Two of the three primary consultants were born elsewhere, but now live and work on Kahua Ranch; one of the primary consultants was born and raised and worked on Kahua Ranch. Three secondary consultants were born and raised on Kahua Ranch; two now live and work on what is now Poooholo Ranch; and one has moved away to Kapa'au. Another secondary consultant was born elsewhere, but has family ties to Kahua Ranch before it was purchased by the Richards/Von Holt families. One primary and four secondary consultants have parent(s)/and or grandparent(s)/great-great grandparent(s) who live/lived and/or worked on Kahua or Ponoholo Ranch. One consultant is retired from Kahua Ranch, but continues to live on what is now Ponoholo Ranch. Table 3 provides the demographics of the consultants.

Table 3. Demographics of Consultants in relation to Kahuā (Kahuā=Kahua Ranch or Ponoholo Ranch)

Name	Age Range	Born/raised	Live	Work	*Parent(s) born	Parent(s) work
Bernard	40-55	X	X	X	X	X
Bernelle	20-30	X			X	X
Hannah	55-75				X	X
Harold	40-55		X	X		
Leina	55-75	X	X	X	X	X
Pooo	55-75	X	X	X	X	X
Sherri	40-55		X	X		

*Parent=parent and/or grandparent or great-grandparent

All of the excerpts of primary consultants are in the exact words of each consultant or paraphrased to insert words that are "understood" or to link sentences that were brought up as afterthoughts or additions elsewhere in the interview. Excerpts from secondary consultants are based on notes taken (in person or on the telephone) during conversations; are generally paraphrased and may not be "verbatim." The following excerpts in "Consultant Background" provide a summary of each primary consultant, as well as information about their parents and grandparents. Background information about the secondary consultants are also presented here, if information was available from other sources (i.e., published oral histories, from relatives, from local media). First names will be used as three consultants have the same last name.

> My name is Genevieve Leina'ala (Akina) Hoopai. I was born (1940) and raised on Kahua Ranch right in the back of the office that we have now. That was the housing for our parents [Charles and Rose (Pe'ahi) Akina] then. I was born there and when I made a year old we were living right down below this mountain here. It's called Kalahikiola. The area that we lived is known as Pu'u Lepo. We lived directly down from that with Mom and Dad--just a mile below the highway; the house was bigger and it was good because we had the most children. And they raised eleven children; eight girls and three boys. I'm number seven. We lost a little brother, the last brother at five months. It was a good life. We had a lot of hard times but we managed to make do with whatever we had. Mom made leis and things to help Dad out. And no cars in them old days so they rode horses to and from stores and to work. We had to walk a lot of times to the road--the highway. I think it's less than a mile from the house to the road.... I was born on the Ranch because my father worked here. They're both from Kona--Mom and Dad. Daddy was from Kalaua; and Mama was from Kealakekua—that was where my Mom was born and raised. Dad started out doing yard work for the Greenwells. My husband is James "Kimo" Hoopai, Sr. He started working for Kahua Ranch in 1950. He did all kinds of jobs; rough-rider, regular workman, slaughter. When Uncle Henry Raphael died, Kimo became foreman for the ranch until he retired in January 2002. In 2002, my husband was honored in the Paniola Hall of Fame. Kimo's father was a cowboy for Parker Ranch at Pu'uhue. After Parker Ranch they came here. My son Kimo, Jr. worked for Parker Ranch for 14 years. My son Bernard works for Ponoholo Ranch. My grandchildren all rope, they all ride, and they all knock cattle. The girls knock cattle too. I have seven grandchildren; three girls and four boys. My great-grandson [year and a half] is the fifth generation on the Ranch...he has ridden horses since he was four or five months old; same with his mama, my granddaughter. I worked at the Kahua Ranch nursery in 1985 and left in 2000. Like Mom, I make leis and things now...and take care of my great-grandson Dawston, while his mama works at *Fluenin Da Ditch.*

> Harold Glenn Kailiawa. My family from Ka'u, Kapahala side. And I raised with my stepmother and stepfathe, Bea Kailiawa and John Kailiawa. I went to school in Ka'u. From there I went to Laniakila, to the eighth grade. Then to Hilo High t o the ninth grade and then I came back to Kohala High School to sophomore year. Then I worked at the ranch 1973 – 30 years already I work at Kahua. I like to work the ranch--good ranchhand. I had come work cowboy and then help people do some fence material, fix fence. I rope cattle and brand. When I start here I used to work with the old timers--John Kainoa and Uncle Kimo Hoopai [Harold].

Photo 18. Harold and his dog.

Sherri Hannum. Originally I was born in Missouri and I went to elementary school in St. Louis. And then I lived in England for four years I went to High School in American Boarding School in England. I came to Hawaii in 1971 and I lived in Waipio Valley for 23 years and started a Trail Ride operation down there. I came up here about ten years ago and expanded the Trail Ride. I still have the ride in Waipio, but started this one about ten years ago. And I've been living on Ponoholo and Kahua for the last ten years. One of the things that I've done in Waipio and up here is do a lot of historical narration about the area so I've done a bit of research in this area also. Actually I took Ross Cordy around to a lot of sites up here a few years ago. And also I've gone to different sites up here with Danny [Akaka]. He's like a historical person who works for one of the hotels [Sherri].

Photo 19. Sherri on Pu'u Waiakanoeula

Secondary Consultants. The following people were contacted at the recommendation of the primary consultants because of their knowledge of Kahua Ranch and/or the history of the area. Unfortunately, because of work restrictions they could not be interviewed on tape. However, they did provide information via telephone or in person.

Harry "Pono" Von Holt is the owner of Ponoholo Ranch and former co-owner of Kahua Ranch before the split in 1988.

Bernard Hoopai is the second son of James "Kimo" and Genevieve Leina'ala "Aunty Leina" (Akina) Hoopai, Sr. He worked for several years at Kahua Ranch, but has been working for Ponoholo Ranch for the last seven years.

Bernelle Hoopai. Bernelle is the daughter of Bernard and a guide for *Flumin Da Ditch*, a company in Kapa'au, North Kohala that provides kayak rides on the Kohala Ditch. During these rides, Bernelle informs the kayakers of the history of Kohala and its famous ditch. As a result, Bernelle has become quite knowledgeable about North Kohala. Grandmother Leina Hoopai watches Bernelle's son Dawstin while she works.

Hannah Springer. Among numerous other things, too many to list, Hannah is a former Trustee for the Office of Hawaiian Affairs (OHA), and a cultural practitioner. Hannah is a descendant of John Maguire, one of the early owners of Kahua Ranch.

B. Land Resources & Use

Land resources and uses change over time. Often evidence of these changes is documented in archival records. Occasionally cultural remains are evident on the landscape and/or beneath the surface. Oral histories can give personal glimpses of how the land was utilized over time and where the cultural resources are or may be. Oral histories also provide indications of cultural practices. For over one hundred and fifty years, the lands of Kahua Ranch, which includes the project area, has primarily been used as pasture land for grazing cattle. In the last twenty years the project area has been further modified to include a paved road and structures such as antenna towers and tower maintenance buildings.

B-1. Kahua Ranch. By the time the consultants or some of their parents became involved with Kahua Ranch, it had already gone through four sets of owners. The current owners are second-generation owners; their parents purchased Kahua Ranch in 1928. The father and father-in-law of one of the primary consultants worked for the Ranch, as did the consultant's sons and other relatives.

> Well it's [Kahua Ranch] one of the oldest privately-owned, continuously working ranches in Hawaii. It was established in 1850 and some of the families that are here are descendants probably of the original Hawaiians who were here who became *paniolas* and continued working on the Ranch for generations. The Hoopais are that—Aunty Leina, Uncle Kimo's wife. So they would know more about this area, and more of the Hawaiian legends or stories, they would probably know more from their families [Sherri].

> When my parents came from Kona, my father started here...my parents and my in-laws worked here at Kahua.... When we were growing up at Kahua all the people that I grew up with, with Mom and Dad, were all related. It was either brother-in-law, sister-in-law, all related families. So in my days everybody was related; I mean blood relatives. And then as time went by we noticed that a lot of them moved or died and we no longer have family in their 70s. I think I'm the only one home-grown, born and raised here, left on the old homestead.... Both my boys, Kimo, Jr. and Bernard, started at the Ranch right after highschool—both worked at Kahua. They were "all-around men;" they did everything—cowboys really. And after cowboy they have a lot of different jobs to do [Leina].

> Kahua Ranch started around 1928 and was never part of a plantation. Dad knew there was small farms; still see old house sites when riding around [Bernard].

> The *ahupua'a* is Kahuali'ili'i. It was given to a relative of Kamehameha I who married Captain Austin from New England. That family sold the land to Von Holt & Richards in 1928 [Pono].

> [Danny Akaka] told me a lot of things too about some of the sites up here. My understanding about ancient times is that most of the population was at lower elevations. Probably up to about the 3,000-foot elevation you'll find ruins, which are mostly agricultural sites. And it's not anything of real great significance like no major *heiaus* or anything. Although there's like a small agricultural *heiau* with a platform that's on the lower elevations of the ranch [Sherri].

B-2. Kahua Ranch Diversity. Work on Kahua Ranch involved more than just raising cattle; the owners promoted diversity, therefore their employees were not just cowboys or ranch hands. Some employees had jobs that were quite unrelated to cattle. However, the Ranch also raises a specialty breed of cattle, once had a wind farm and now has a hand in eco-tourism.

> I think it was about twenty-five years ago that they put it [wind farm] in. There were about 250 wind generators. There're some old towers, but there were rows and rows of them going all up this way. And those early wind generators were some of the first designs and they just couldn't stand up to the continuous strong wind that we have here. It's an average of 45-knot winds that we have here. When we have, like right now we're having some kind of high pressure area or low pressure areas and there's high winds in the islands. So when they're high winds like that, up here you can have 60, 70 even 80 mile an hour winds. So there was constant wind damage and they had to bring in parts from the mainland and hire special technicians to repair them. So it was too expensive. They were selling electricity to HECO before that. But they ended up dismantling [most of] them.... The Ranch produces it's own electricity with wind generators and solar panels [Sherri].

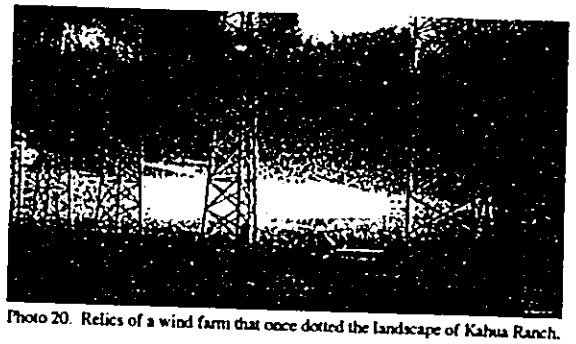


Photo 20. Relics of a wind farm that once dotted the landscape of Kahua Ranch.

Photo 21. Nursery tomatoes (Kahua Ranch)

They grow hydroponic spinach, Manoa lettuce, vine-ripened tomatoes, wasabi [in greenhouses]. They try different things. Because this is a privately-owned ranch, and the price of cattle has dropped, Kahua is very diversified. Moot) Richards who's the manager now has always been real innovative and always tries new things. Like he put in this wind farm which was a failure, kind of, but he continually tries new things. So today Kahua is really diversified: they have the sheep, they have the cattle and even with the cattle they try new things like the Waquiu, which is for the Japanese market. And the agricultural project was another diversification. And then the last few years have gone into tourism. I mean they've had the trail rides up here for a while and I'm kind of an independent contractor and I just pay them a fee. But in the last three or four years the Ranch itself has developed it's own programs which we work with, with the horses where they have Paniola Night: where they've re-built the historical buildings and they made an area where groups come in and they have music and food and kind of a ranch experience--they brand and they rope. We do a wagon ride out of it. And they also have their own ATV tours. So they've gone into tourism and kind of a combination of all of those things they're able to keep the Ranch going [Sherri].

We raised carnations. There was about 40 different types of carnations and I kind of knew every name. It was something that I loved doing. You know you may have problems, but when you open up the door to the greenhouse and you see all the pretty flowers, all the problems go out the window. So I thought it was quite a wonderful place to work. I enjoyed working for Kahua Ranch...it was something I really was happy with. Then after years went by they changed over to do vegetables. They started into the tomatoes, and lettuce and all different types of lettuces and cabbages [Leina].

They're [Waqui] artificially inseminated with Kobe sperm into Black Angus cows and they're [current herd] about the sixth or seventh generation. They [Kahua Ranch] send them to Japan and they get paid about five times as much for those then they do calves going to the mainland. They just started selling those cattle to I think the Four Seasons and you hear them advertise "Island-grown" Kobe beef from Kahua [Sherri].

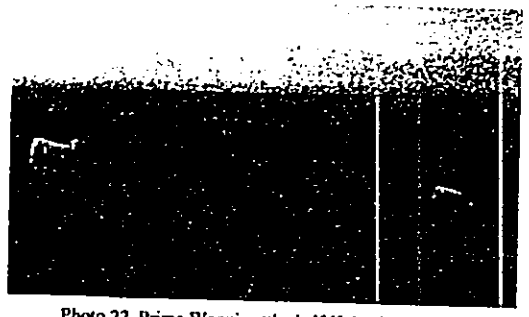


Photo 22. Prime Waqui cattle: half Kobe, half Angus

B-3. General Life. For one of the consultants, life on Kahua Ranch did not include some of the "modern" conveniences we now take for granted, but never-the-less she enjoyed her life there.

> Papa had his farm; we raised our own vegetables and animals like chickens, pigs for our own use at home because pay in those days was really small--Papa folks struggled. But you know Mama always say "We didn't have money but we had love to go around." With love alone you know, she said we could make it. And I really believe in that one, cause I know we made it through it all because of the upbringing with them. It was a hard life but to me a wonderful life. I enjoyed it, I really did. It taught me how to raise my own family. In the early days even with my husband and I when we got married we lived in Oahu and got married there and moved back to Hawaii and started our own family; it was hard in the early days...we kind of struggled like our parents did. But I noticed after all these years, life is so easy for us today. And our children can even see that cause they knew how hard it was to get things when they were little. And to see our grandchildren get more than they had, you know it's really amazing.... [But] living on the Ranch for us it was fun. We didn't have any neighbors so we had to walk (two miles) to the Ranch and play with the other children. But we played baseball, football with the children up there and then we had to walk back home [Leina].
>
> Johnny Kainoa used to tell me about the Ranch life. It's not easy [Harold].

B-4. Ponoholo Ranch. In 1988 Kahua Ranch was split up by the owners, with one partner taking over Ponoholo Ranch. Some of the employees went with the "new" ranch, while others remained.

> Kahua Ranch split in I think '82, '83 or something like that because I lived down there for six years before I came here and I came here in '88. My son Bernard has been working for Ponoholo seven years now [Leina].

B-5. Local Flora. The landscape in Kohala, like other places in Hawai`i changed radically during the sandalwood era in the late 1700s to early 1800s, where sandalwood trees were cut for trade, and other trees were cut for fuel; then again during the sugar plantation era of the mid1800s to mid 1900s. In Kohala, as well as other parts of West Hawai`i, the landscape was also modified by cattle, allowed to run free by decree of Kamehameha I. The *makai* part of Kahua Ranch was most likely modified during the sandalwood era, while the *mauka* section was modified for cattle use. The earliest any of the consultants were involved with Kahua Ranch was from 1940, and most of their descriptions of the landscape reflect periods after the 1940s.

It was really flourishing. Everything was nice and green. I never knew of this drought. We never had such things actually. That's why I told my husband in the years to come it's so strange to see how we go through all this drought. We never really thought about it you know in the young days, but everything was always so nice and green.... Actually this mountain here [Kalahikiola]...didn't have any kind of trees at all. And look at how full it is today. At one time when we were little kids there were no trees at all on that mountain, but now it's just covered.... Kohala had the plantations, but not up here on the Ranch [Leina].

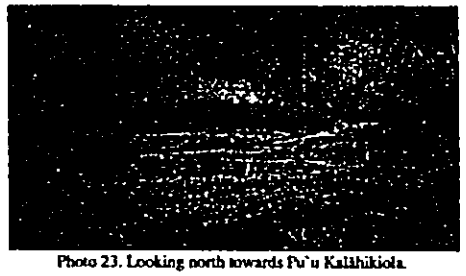
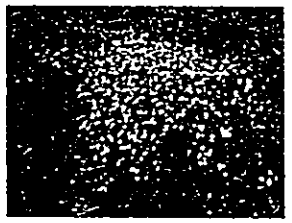


Photo 23. Looking north towards Pu'u Kalāhikiola.

In early 1800s it was thick, but was thinned for cutting firewood for steam ships. There was not much above the 3000' elevation... No sandalwood forest, that was at the lower elevations towards Waimea. There was *lapalapa* and *'ohia*. Now, the fenced areas are coming back. Maintain environ as open grass. *Pili* grass grows in the lowlands [Pono].

Monty also says that there's the sandalwood pit, there's two or three sandalwood pits on the Ranch, which were holes in the ground about the size of a boat hull that was used for measuring sandalwood when the people were taxed in sandalwood here [Sherri].

This whole area has gotten over run by this yellow flower which is toxic to cattle and sheep. In New Zealand they run sheep behind the cattle because the sheep can tolerate it and so the Ranch used the same method to try to control it. When they rotate the cattle they rotate the sheep behind it. The cattle eat the grass and they leave the yellow flower for the sheep and the sheep eat it. They don't totally wipe it out, but they keep it down [Sherri].



Get *kikuyu*, clover, Guinea grass [Harold]. Photo 24. Yellow flowers & kikuyu grass.

That's [*kikuyu*] the regular type of grass that you see out here, the pasture grass. It's one of the main varieties [Sherri].

B-6. Local Fauna. As a working ranch, the domestic animals include cattle, specialty cattle, sheep, and horses. However, the area is also known for feral pigs, and includes other animals as well.

Oh we had a lot of wild pigs, turkeys, goats when we were little kinds. And also we had a lot of birds like the pheasants and all [Leina].

There's also bands of wild cattle that are remnants of those early cattle that were introduced--and they just range free up there [Pu'u Pili area] so they damage the native forest. Also there's a lot of pigs [Sherri].

Puco, Hawaiian hawks, pheasants, majiro, Hawaiian yellow bird, red kalilo...stay in the forest, on the hill [Pu'u Pili].... I know plenty mountains [names]. I been in there hunting all this time [Harold].

B-7. Pu'u Waiakanonula/Waikanana'ula. Pu'u Waiakanonula had a different name according to one of the consultants who grew up on Kahua Ranch. It was part of a local legend, which also involved Pu'u Ahu Moa just east of it and a nice place to visit.

Like my husband was saying a lot of the names he noticed is different. Because in our early days with Mr. Von Holt that was the name that I know was Waikanana'ula. He was our first manager. That's my husband's first boss, and now his son Harry Von Holt is the boss [Leina].

Well I don't really know much about Waikanana'ula but only that when we have friends and family that's the first place that we take them to look around because it's so high up that you can see everything. That's the only thing that we make sure our friends get to see. We had some people come to visit form Ni'ihau that came over and we took them up there...and they were really amazed. Like a lot of the people who come and we take them up there.... To them it's the highlight of their trip because not anybody gets to go there unless someone like Papa takes them to visit. And that's one thing my husband was proud of; he likes showing people what the Ranch has to offer. To us it's such a beautiful place [Leina].

The Dopler towers are on Pu'u Waikanana'ula. There's a boundary fence that separates the Dopler with the US Cellular/Verizon tower. They want to put more antennae on the poles [Bernard].

Check old maps they have the old name. The name Pu'u Waiakanonula comes from water coming down back-ass way [Pono].

B-8. Pu'u Ahu Noa/Moa. This pu'u also apparently had a name change, as the early maps show it as being Ahu Moa, just as the consultants recall. Several consultants mentioned that it was the favorite place of Leina's son Bernard.

Yeah even the [grand] children say that it was their father's office. I guess Bernard is someone who treasures everything he sees. It's like his father, they enjoy showing the friends and family you know. They always say it's their playground or their special place that they like to go to. I guess when you have things on your mind you need to get out, something like that it's comforting to you when you go up and be by yourself up there, you can see and enjoy. I guess it helps to take things off your mind. I mean that's how I feel. I love just going and staying up there. Sometimes I tell my husband if only we could put a house up here.... It's so nice to just visit [Leina].

The pu'u in back of Wakanana'ula is called Ahu Moa (chicken heap), where they were going to put a Radio Cellular tower on, but it was too high. Ahu Noa/Moa has a Spring too [Bernelle].

Ahu Noa was once called Ahu Moa, that is the pu'u that is my "office." Can take a 4-wheel or horse to get to the top. People who live all their lives here go by those names.

There is an old story about the Menehune and the rooster who lived on Ahu Moa. The Menehune wanted to take water from on top of the mountain and steal it at night, but the rooster crowed at night and gave it away. Both pu'u have ponds [Bernard].

There was four of us went up there [Pu'u Ahu Moa] and Bernard Hoopai who comes from this area, that's an area he calls his "office" -- it's like a place that he goes to kind of meditate or he feels is a special place. And we went up there and there were four of us there and we all smelled *maile* kind of at the same time. I mean our hair stood on end and we had chicken skin—it was just like a feeling that where you could feel the old Hawaiian presence there [Sherri].

B-9. Pu'u Pili. This pu'u is southeast of Pu'u Waiakanoonula/Waikanana'ula and is completely covered with vegetation consistent with upper forest zones where the rainfall is higher.

Pu'u Pili that's the one that's all covered...we go and get ferns and things to make their leis. Other than that you know I never really thought about it and did anything when we were younger, but to get for our grandchildren when they need things for hula [Leina].

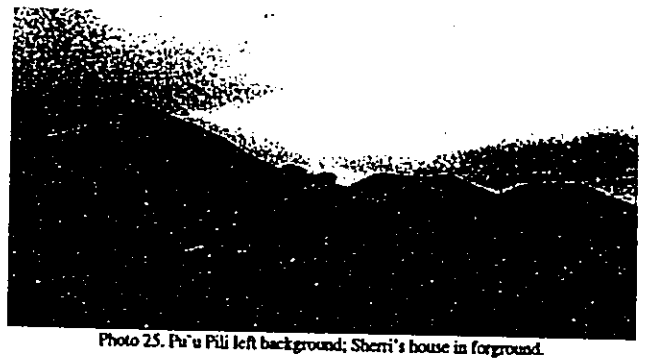


Photo 25. Pu'u Pili left background; Sherri's house in forground.

You can see Pu'u Pili right over there--it's native forest on top of it. It's *ohia, koa* and *hapu* fern--*maile*, and there's other native ferns up there. This area would have been forested like that. And probably at the higher elevations pretty thickly forested. And then as you went down and it got drier, it was dryland forest with a lot of sandalwood.... Actually Pu'u Pili was clear-cut at one time and it's so steep, there was so much erosion that they re-planted it with native plants about 75 years ago. And you can look up even behind here and you can see some areas where you see trees--just a little above here it's conservation zone and it's native forest [Sherri].

B-10. Ranch Burials. A couple of consultants mentioned a Hawaiian burial place on the Ranch, as well as isolated, inadvertent burials.

Get grave yard down there -- Hawaiian grave yard, but we don't touch. Makai side of the...Aiea side. Far. That's why we don't touch em we just leave em alone, just let em go [Harold].

I think that this area up here was more like a gathering area. You know more than a place where people lived. But ah, just recently we were bulldozing, leveling out a spot for a new barn. I'm moving my barn onto Kahua, which is right above the highway...and the

bulldozer operator is an old [resident] here too who worked on Kahua for a long time. He uncovered like a fireplace and he uncovered like burnt stones and wood and opihi shells. He said it was probably a camp site. He also said when he bulldozed where the greenhouses were, he found human bones there. So Hawaiians were up here, but I don't think that there were permanent sites [Sherri].

Photo 26. Barn construction site; possibly ancient camp site. Greenhouse in the mid-left of photo. Pu'u Pili in the background.

It was a burial. Bones. Head. Right before the entrance. Had bones in one box or something. And when he run em over, the bones was in a box and he went broke the box, the head was on top...kind of small little skull. We never like finish. Everybody just like go home. He went bury back though in the ground. He cover 'em. Had nails, old nails...the kind you use for railroad track or something. We went there look at em [Harold].

There's more recent gravesites that have like cement sepulchers that are on the lower elevations around some of those house sites--probably from the late 1800s or something [Sherri].

C. Water Resources and Use.

The Hawaiian word for fresh water is *wai;* the Hawaiian word for wealth is *wai wai.* This is because of the value the ancient Hawaiians placed on fresh water. According to the consultants, both Pu'u Waiakanoonula/Waikanana'ula and Ahu Noa/Moa have fresh water springs on their summits. However, the main source of ranch water comes from Honokane Valley via Kehena Ditch.

C-1. Ranch Water Sources. Several of the consultants knew about the Ranch water sources and provided data about them.

We get it [fresh water] through the mountains. It comes from the mountain and then they put it in catchment like tanks yeah.... Actually the ditch brought the water out before.... I know in them [sugar plantation] days they did maintain the ditches so it was all from the plantations, yeah that they did get the water . They did a lot of taking care of all the ditches and that's where our granddaughter does that fluming the ditch. You need to go on that--they have a lot of amazing stories ... We have our [ditch] system coming out to the Ranch. I guess it was there all the time you know because...the Korean people from the Kohala [plantation] I know they lived up there in the mountains. I went walking one

day and I never really knew about this until one day we went hiking with Pono Von Holt's wife Angie and I saw the ditches where the water comes down. It was really amazing to me because I had never seen that. But they said that a lot of old people, the Koreans who lived and worked in there did that for the Plantation in Kohala. The Koreans built the Kehena Ditch and the Japanese built the Kohala Ditch. Both ditches are rock and cement lined [Leina].

Hoookane Nui River supplys the Kohala and Kehena Ditches. The water source for Kahua Ranch is Kehena Ditch. Kehena comes from the word "Gehena" which means *eternal burning*. A large number of Hawaiians contracted a disease and were burned together [Bernelle].

The old Kehena Ditch is way behind Pu'u Noa/Moa. From Ahu Moa one can see the old ditch that comes from Hoookanenui [the second valley from Pololū], the water source. The ditch was dug by the Plantation [Bernard].

C-2. Streams. Streambeds are in gullies and gulches, but none appear to be running. One of the consultants explains why.

All of these dry gulches were streams with water and were diverted out to irrigate sugar cane down in Hawi. So there were streams with running water through the forest and they cut down all the trees and diverted all the water. It's still very beautiful, but it's very different than what it was.... It's amazing that they could do things like that you know at that time, but today you know.... What the Ranch does--it's Pooobolo and Kahua and Parker Ranch maintain that ditch system back here and they divert water back down and fill up reservoirs. And that's how they get water for the livestock. So they're using the rain water from the forest up above...but it's still is in that system where they divert it back down. It's [stream] not going in its natural course [Sherri].

C-3. Reservoirs. A large reservoir is nestled between Pu'u Waikanonula/Waikanana'ula and Pu'u Ahu Noa/Moa. It was filled with water on the day of the site visit with two of the consultants.

The reservoir between Pu'u Waikanana'ula and Ahu Moa holds 8 million gallons. Kahua Ranch built it. [Bernard].

Photo 27. Kahua Ranch reservoir nestled between Pu'u Waiakanonula and Pu'u Ahu Noa.

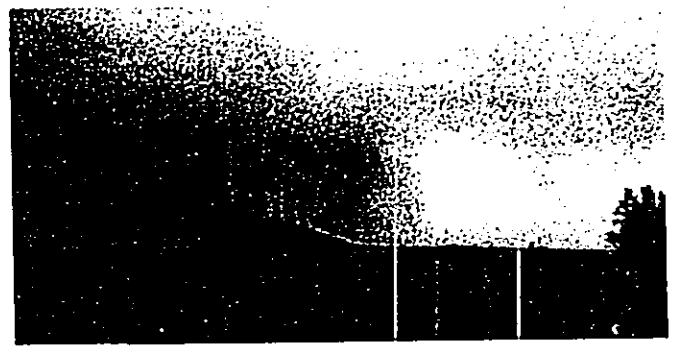


Photo 28. Berm between Pu'u Waiakananula and Pu'u Ahu Noa housing the ranch reservoir.

C-4. Cinder Marsh/Pond. During a site visit with two of the consultants, a small marshy-looking area was observed on Pu'u Waikanonula/Waikanana'ula, southeast of the current towers and facility. The "ponds" have been referred to in other places, sometimes as "springs."

Waikanana'ula refers to the red water that comes from a Spring on the top.... Ahu Noa/Moa has a Spring too [Bernelle].

On the top of Pu'u Waikanana'ula there is a marsh or old pond... Both pu'u have ponds [Bernard].

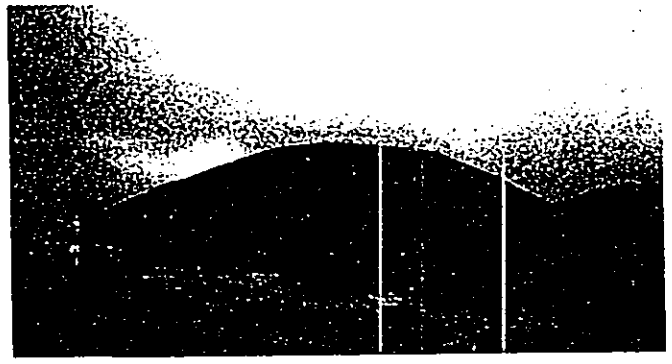


Photo 29. On Pu'u Waiakanonula; marsh pond to right of trees. Ahu Noa in background.

C-5. Mo'olelo. The only *mo'olelo* or legend recalled by two of the consultants was in reference to a story involving both Pu'u Waiakanoo'ula and Pu'u Ahu Moa/Noa.

> Waiakanoo'ula is another pu'u near Kahua Ranch and translates "water of the red-faced dwarf." The legend behind the name says that in the olden days people used to gather water from this place. There were, however, menehunes who wanted to carry the pu'u away and keep the water for themselves. One night when the menehunes were trying to carry out their plan, the chickens from the neighboring Ahu Moa (chicken heap) got up and crowed at midnight instead of their ususal sunrise. This so startled the menehunes that they fled, leaving the hill and the water intact [Bernelle].

C-6. Keawewai. In the ahupua'a of Waika is an area referred to as Keawewai after an ancient chief from Waipio who came to visit the Kohala area and is now connected to a legend about the place.

> There's a local legend about Keawe Wai. When [*aliinui*] Keawe came to these parts he drank water in a place two hills away that had magic water. So the area where the water was, was referred to as Keawe Wai [Sherri].

Photo 30. Keawewai, south of Kahua Ranch.

D. Cultural Resources

This category represents Traditional Hawaiian cultural remains and practices and other ethnic resources and practices. The Traditional Hawaiian cultural remains and practices, includes archaeological remains from the pre-contact era, as well as cultural practices after contact. The sub-categories or sub-themes under this category were developed based on the information shared by the consultants.

D-1. Ancient Sites. The consultant who lived in the area the longest did not know of any artifacts, however, the consultant who is a ranch employee did personally see some artifacts. Another consultant who lives and works on the Ranch relayed some local information.

> No, not that I know of. There may have been [artifacts] but I've never known anything [Leina].

> There is one site on the Ranch, which is down by Pu'u Aica, which is on the lower part of the highway, which is a flat area. And you can see that there's hardly any flat places up

> here on the mountain. It's like two or three football fields and it's just completely flat. And that was an area where they had their games and festivals and also [Makahiki] athletic competition. They say that when Kamehameha I was training his warriors that he used that as a training ground because it was a large flat area [Sherri].

> There once were farms...sweet potatoes and taro; extensive fields from the Ranch to Upolu, makai of the highway from 2500' to 2000' elevation. Mauka was just forest and some smaller farms...still transition area from rain forest to dry forest [Pono].

> Most everything is makai. You see very little--I've only actually seen one site sight above the highway up here. So I think the Hawaiians did prefer the warmer climates. And a lot of what they did was live at the beach area and come up and camp at their sweet potato patches and farm. But they commuted a lot. There were some villages and some house sites that were permanent. But still they were all at lower elevations [Sherri].

> On the lower elevations there's a lot of agricultural ruins where it's rocky you know--'cause all you see are rocks--because it was a dry farming area. You see sweet potato patches were the rocks are piled up in mounds and that was a method that they keep the moisture in. And in a lot of the dry gullies you see "U-shaped" rock walls that was used to catch the water when it flooded--they could use that for irrigation. You see "U-shaped" camping shelters, which was where the farmers who would live at lower elevations and would come up to tend their sweet potato patches would camp. And it was just like a "U-shaped" wind shelter with a little rock wall maybe three feet high. So you can see how the winds are here and it would be just like a shelter from the wind where they would sleep. There's also a lot of terraces, agricultural terraces, and a lot of rock walls. And the rock walls I think were built probably at a little bit later times. Once cattle were introduced to this area, they were introduced right at Kawaihae Harbor, and then they moved up into this area below and what is now Kahua. And at that time it was fairly densely populated on the lower elevations with Hawaiian farmers that grew sweet potatoes and dryland taro. And with the cattle coming in, since they were protected by the *kapu*, the only way that they could protect their crops was to build rock walls around them. And in some areas you'll see long rock walls that go from like the mountain down toward the ocean, like they were trying to keep them from passing a certain point. There's also a lot of little caves that are down in the gullies that were used as burial caves. [Sherri].

D-2 Artifacts. Traditional artifacts at sites can support other evidence that a site is ancient or pre-contact. However, even finding traditional artifacts away from obvious sites can lead to assumptions that ancient Hawaiians were in the area. The actual site over time may have been totally destroyed.

> I haven't heard a whole lot about this upper area, although I've heard some things I'm not sure where they took place. There's another book that I had that I read that was an old book. I think it was published in the '20s or something--*Kahua of Hawaii: Then and Now*. It had a whole chapter on Ronald Von Holt who is Pono's father--Poocholo Ranch--it now belongs to Pono, his son. But he was one of the early owners of Kahua and he was a person who was really interested in finding Hawaiian artifacts. He did like look for grave sites and look for artifacts and collected a lot of the artifacts; he was known for that. In that book it said that there was a place that they called the Disappearing Cave where the cowboys when they were out would see this cave that had artifacts in it--a burial cave. And they knew that Ronald Von Holt would be interested in it and they told him about it. But every time he went to the spot to look for it, it wasn't there. So it was like hiding from him because it didn't want to be found by him. So they call it the "Disappearing Cave" and I don't know where that is [Sherri].

D-3. Historic Sites. Structures built after contact [1778] and before 1950 can be considered "historic" and may be eligible for the Hawaii Registry. Since the Ranch was already in existence

when it was founded in 1928, any structure from that era or before is eligible for the Hawaii Registry of Historic Places The consultants did not mention the Kahua Ranch headquarters or the old church, which would fit this category.

D-4. Gathering. Most local people growing up in rural areas take advantage of resources in the countryside or mountains; native, Polynesian-introduced and exotic flora. One of the consultants recalled her parents gathering plants in the mountains and now finds herself going with her grandchildren.

> Mom, her leis and things mostly we grew at home. We raised a lot of flowers like we had *akulekule* was her main thing and carnations and pansies. She did all them leis, but we did all the planting at the house...ferns and everything came from the yard. 'Cause Pa planted a lot of the stuff at home. Once and a while we would go get *palapalai* [fern] in the mountains, but not that often. When my oldest granddaughter came along we started going to get *'ohia* to make their leis 'cause they participated in the May Day program and she represented the island of Hawaii. Only now I go to the mountain and get things with the [grand]children. I never did when we were growing up. Mom and Dad would gather *hapu'u, palapalai* ferns and *maile* [Leina].

D-5. Place Names. Place names can often give a clue about the significance, or the utilization, description of the area. Place names were mentioned when talking about the *pu'u* and some effort was made to determine meanings. However, original meanings are often lost over time. Stories about Pu'u Waiakanonula/Waikanana'ula, Ahu Noa/Moa and Keawenui may have some clues and were mentioned elsewhere.

> Monty likes to say that the name "Kahua"--there's a lot of interpretations for it, but the one that is an interpretation that he likes to use is "the platform"--that it means "platform" [Sherri].

> And ranching here in Hawaii [island] they use a lot of Hawaiian terminology. They'll have a Hawaiian name for a like a holding pen--that's a *paloa*. And every area has it's own name so if it's a holding pen that's in this one area, that's like Waika then they'll call it the Waika *paloa* or something. They'll have Hawaiian terms for it so you can pinpoint exactly, what area you're talking about.... Well just like these maps--see all these names. These are the names of these areas [Sherri].

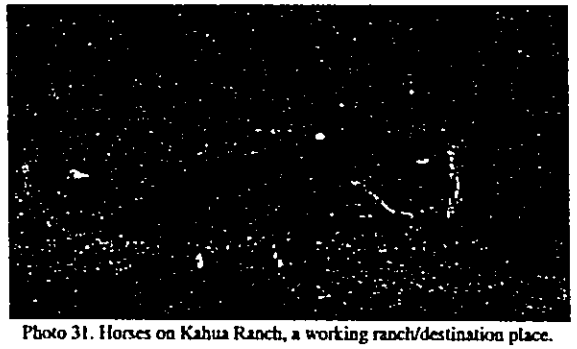


Photo 31. Horses on Kahua Ranch, a working ranch/destination place.

PART V: SUMMARRIES & CULTURAL IMPACT ASSESSMENT

The following summaries are based on the information presented in the previous sections: the traditional and historical literature review and the ethnographic data and analyses. References are not cited unless it is new information and not already cited in the text above. These summaries condense the information above, but also serve to focus on a few significant individuals and events in North Kohala's history in relation to Kahua Ranch and Pu'u Waiakanonula, as well as give a broad overview of land and water use in the general area. The cultural impact assessment is based on two guiding documents, Act 50 and OEQC Guidelines [see Appendices A & B], as well as the *Criteria for Historic Preservation* cited below.

State Historic Preservation Division Draft Rules (1989)
Criteria for Historic Preservation. The "significance" of a site is determined by a set of criteria. The following is the State of Hawaii criteria for historic preservation:

Criterion A:	Be associated with events that have made an important contribution to the broad patterns of our history.
Criterion B:	Be associated with the lives of persons important in our past.
Criterion C:	Embody the distinctive characteristics of a type, period, or method of construction; represent the work of a master; or possess high artistic value.
Criterion D:	Have yielded, or be likely to yield, information important for research on prehistory or history.
Criterion E:	Have an important historical cultural value to an ethnic group of the state.

Summary of Significant People and Events.

According to traditional and historical material, the North Kohala District has gone through a number of significant changes, and witnessed the comings and goings of many significant people over time. Some of these people contributed significantly not only to the history of North Kohala, but of Hawai'i Island and the rest of the Hawaiian Islands. There were several people and events noted in the oral histories and later recorded by explorers, missionaries, native Hawaiian scholars and ethnohistorians, from the time of Pa'ao to Kamehameaha I who caused the various island kingdoms to come under one realm. These significant people lived in North Kohala and were responsible for land modifications, shifts in polity and commerce, and the gene pool of Hawaii's *ali'i* and monarchs. Some of these people and events are noted below.

Mythical Residents.

The most significant mythical resident of North Kohala and the greater Hawai'i Island was the volcano or fire goddess Pele, who left evidence of her visits in the form of *pu'u* which dot the landscape, and according to native Hawaiians, still resides in Kilauea, east Hawai'i Island. Also of note are the *menehune* and the *moa* or rooster that saved Pu'u Waiakanonula/Waikanana'ula.

Ali'inui.

One of the first legendary *ali'inui* in North Kohala was the priest Pa'ao who is said to have arrived on Hawai'i Island between AD 1100-1200. Oral histories credit him with constructing the

Mo'okini Heiau or at least a part of it. However, according to traditional genealogy chants it was constructed around AD 480 (James 1998:143-144). Pa'ao not only brought about a significant change in religious practices (i.e., the Ku cult, human sacrifices), he brought high chief Pili to rule in place of chief's be believed to have lost their *mana* or power due to too many intermarriages with commoners and/or ineffective rule. His new system introduced the concept of hierarchical or *ali'i* rule to the islands and a new order of *kahuna* or priests.

According to local legends and a place name to mark the event, Keawe, the *mo'i* of Hawai'i island–a descendant of Liloa and Umi-a-Liloa–visited North Kohala and the area near Kahua Ranch. The waters that he drank from was said to be magic, hence the place name Keawewai.

During the Proto-historic period of North Kohala, the most significant *ali'inui* were Kalaniopu'u and his nephew Kamehameha I who was born in North Kohala at Kīpakai, Kokoiki, not far from the Mo'okini Heiau. Kamehameha became one of Kalaniopu'u's best warriors, then later usurped the rule of Hawai'i Island from his cousin. Kamehameha went on to conquer the other island kingdoms except for Kauai, which was acquired later.

Historic People.

One of North Kohala's significant historic people was the Reverend Elias Bond who promoted the sugar industry in North Kohala as a way to improve the economic conditions of Hawaiians. The sugar industry did not have the effect he had hoped for; the change it produced was a multi-cultural mix of North Kohala as immigrants from various places were brought in to replace native Hawaiians who either died from diseases or preferred not to work in the sugar industry. Another person who was responsible for significant changes in the landscape of North Kohala was Captain Vancouver who gave Kamehameha I cattle and horses that were protected and allowed to roam free for years. Cattle ranching later became a significant industry for the people of North Kohala.

Significant Events.

While the construction of Mo'okini Heiau and the birth of Kamehameha I in North Kohala were significant events, other events in North Kohala lead to major changes not only in North Kohala, but in other places and other island kingdoms as well. Over time several major battles were launched from North Kohala or fought there. These battles caused notable changes in the polity of places such as Hāna, Kaupo and Kahikinui. Hāna, Maui was occupied several times in the course of its history by the Kohala chiefs. And Kohala was also successfully attacked by *ali'inui* from Hāna, such as King Hua, who constructed a *heiau* in Hāna to assure his victory, and another when he returned victorious.

Summary of Land Resources and Use

Various land use patterns are physically evident as well as recounted in the literature. The physical evidence is in the form of stone ruins that are fortunate to have been preserved relatively intact. Clues regarding function and use can sometimes be extrapolated from the stories, songs, chants and ethnohistorical observations that were also fortunately recorded, as well as from the cultural remains identified during surface and sub-surface studies. Several of these stone cultural remains were recorded during studies of Kahua Ranch lands and also mentioned by the consultants [i.e., *heiau*, caves, platforms, mounds, walls, enclosures, and burials]. However, none of these types of cultural remains were found on Pu'u Waiakanonula, although the *pu'u* is mentioned in a legend of the area.

Ancient Land Use

According to the literature, the North Kohala District was well known. Numerous field systems, such as Lapakahi and the Kohala Field-systems, complexes, fishing villages and *heiau*, indicate a very resourceful population that utilized various ecological zones. If the number and variety of fishes along the North Kohala coasts today are any indication of potential pre-contact fishing yields, ancient Hawaiian would not have gone hungry. The cultural remains in the *kula* or uplands indicate that sweet potato and/or yams were most likely grown there and may have supplemented a fish diet and used for trading. Evidence of extensive field-systems in North Kohala imply a population large enough to work the lands as well as consume the produce. However, keeping in mind the many battles fought and the training areas like the *makai* area of the Kahua Ranch lands, the abundance of food produced could have been used to provide for large armies.

Currently the project site is covered in exotic grasses, both native and exotic trees, and other vegetation. However, there is every indication that Pu'u Waiakanonula was once covered with native vegetation and could have been a place ancient Hawaiians gathered ethnobotanical plants. This hasn't been the case though for over a hundred and fifty years.

Historic Land Resources and Use

Possible historic resources of Pu'u Waiakanonula would have been native trees used for fueling steam ships, then later sugar mills. However, by the time the Burchardt's purchased Kahua Ranch in the 1870s, the hill was already bare. The elevation of Pu'u Waianonula was too high for sandalwood to have grown there. It was also too high for sugar cane to grow there. Early maps of the Buchardts indicate that Pu'u Waiakanonula was used for grazing cattle. The hill currently has three towers and a wood and cement structure used as a maintenance facility. There is also a paved road that goes to the top of the hill.

Summary of Water Resources and Use.

Kahua Ranch gets its fresh water from the Kehena Ditch system. A sizable reservoir at the eastern foot of Pu'u Waiakanonula gets its water from this system. However, there is evidence of ponding on the summit of Pu'u Waiakanonula.

Summary of Survey Findings [Cultural Practices]

It is evident that at one time the lands of Kahua Ranch were part of an ancient Hawaiian life system. Archaeological surveys indicate a multi-use of the land because of the *heiau*, burials, enclosures, house platforms, walls and sweet potato mounds. However, other than a legend that is associated with it, the project site, Pu'u Waiakanonula does not have any cultural remains, nor is there any evidence that cultural practices take place there.

Summary of Consultants Concerns.

There were no apparent concerns with the implementation of the DAGS Rainbow Tower project on Pu'u Waiakanonula; the concerns were if Pu'u Ahu Noa/Moa were to be used for that purpose. There was disagreement on place names such as Pu'u Ahu Moa now being called Pu'u Ahu Noa. Early maps of former owners verify that it was called Ahu Moa. The same kind of descrepancy goes for Pu'u Waiakanonula; it was previously known as Pu'u Waikanana'ula.

Cultural Impact Assessment Summary.

According to the OEQC Guidelines, the types of cultural practices and beliefs subject to assessment may include subsistence, commercial, residential, agricultural, access-related, recreational, and religious and spiritual customs. None of these practices will be affected by this project.

According to the *Criteria for Historic Preservation*, Pu'u Waiakanonula could be considered a *wahi pana* or legendary place, under Criterion E. However, there is some discrepancy regarding the correct name of the *pu'u*. While many significant people important to the broad history of Hawai'i are associated with the area in proximity of Pu'u Waiakanonula, there is no evidence linking them specifically with Pu'u Waiakanonula. It is highly recommended that the area of the marsh pond on Pu'u Waikanonula not be disturbed because of its "sacred waters." The location of the DAGS Rainbow Tower should remain in the same area (*makai* of the boundary fence) as the current towers.

It should also be noted that for over a hundred years, native Hawaiians have lived in a culturally repressed state. It has been only within the last thirty years, due to evolved awareness, that native Hawaiians have been aggressively trying to reclaim their *wahi pana* (sacred and/or legendary places). The passage of Act 50 in 2000 legally recognizes and supports this effort. It is in this spirit that the recommendation above has been made.

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APPENDIX A
A BILL FOR AN ACT RELATING TO
ENVIRONMENTAL IMPACT STATEMENTS
[UNOFFICIAL VERSION]

HOUSE OF REPRESENTATIVES H.B. NO. 2895 H.D.1
TWENTIETH LEGISLATURE, 2000
STATE OF HAWAII

A BILL FOR AN ACT
RELATING TO ENVIRONMENTAL IMPACT STATEMENTS.

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF HAWAII:

SECTION 1. The legislature finds that there is a need to clarify that the preparation of environmental assessments or environmental impact statements should identify and address effects on Hawai`i's culture, and traditional and customary rights.

The legislature also finds that native Hawaiian culture plays a vital role in preserving and advancing the unique quality of life and the "aloha spirit' in Hawaii. Articles IX and XII of the state constitution, other state laws, and the courts of the State impose on government agencies a duty to promote and protect cultural beliefs, practices, and resources of native Hawaiians as well as other ethnic groups.

Moreover, the past failure to require native Hawaiian cultural impact assessments has resulted in the loss and destruction of many important cultural resources and has interfered with the exercise of native Hawaiian culture. The legislature further finds that due consideration of the effects of human activities on native Hawaiian culture and the exercise thereof is necessary to ensure the continued existence, development, and exercise of native Hawaiian culture.

The purpose of this Act is to: (1) Require that environmental impact statements include the disclosure of the effects of a proposed action on the cultural practices of the community and State; and (2) Amend the definition of "significant effect" to include adverse effects on cultural practices.

SECTION 2. Section 343-2, Hawai`i Revised Statutes, is amended by amending the definitions of "environmental impact statement' or "statement" and "significant effect", to read as follows:

"Environmental impact statement" or "statement" means an informational document prepared in compliance with the rules adopted under section 343-6 and which discloses the environmental effects of a proposed action, effects of a proposed action on the economic [and] welfare, social welfare, and cultural practices of the community and State, effects of the economic activities arising out of the proposed action, measures proposed to minimize adverse effects, and alternatives to the action and their environmental effects.

The initial statement filed for public review shall be referred to as the draft statement and shall be distinguished from the final statement which is the document that has incorporated the public's comments and the responses to those comments. The final statement is the document that shall be evaluated for acceptability by the respective accepting authority.

"Significant effect" means the sum of effects on the quality of the environment, including actions that irrevocably commit a natural resource, curtail the range of beneficial uses of the environment, are contrary to the State's environmental policies or long-term environmental goals as established by law, or adversely affect the economic [or] welfare, social welfare[.], or cultural practices of the community and State."

SECTION 3. Statutory material to be repealed is bracketed. New statutory material is underscored.

SECTION 4. This Act shall take effect upon its approval.

Approved by the Governor as Act 50 on April 26, 2000

APPENDIX B

Scope of Work (SOW)

Cultural Impact Assessment [in accordance with OEQC Guidelines]

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

<u>Methods</u>
The specific tasks listed below expand on the above scope of work:

- Conduct historical and cultural background research (i.e., business records, land records; archival documents, literature, reports, letters, photographs, journals, or newspaper files) to locate material that will provide broad patterns of the history of the project area such as subsistence, religious, recreational, and commercial uses of the land; as well as settlement and residential patterns of the area and region; major family groups that inhabited, used or controlled lands within the project area and region; documented legends, myths, or traditional histories associated with the area; and descriptions of traditional practices, customs and beliefs associated with identified traditional cultural practices;
- Prepare a semi-structured ethnographic research instrument that will include questions that will generate general biographical information, association with and knowledge of the project area, its history and use
- Prepare a consent form to be used as written agreement with any individual interviewed concerning the review of content and use of information recorded during the interview
- Identify individuals knowledgeable with the project area e.g., Puukolii Village, Pioneer Mill;
- Conduct and record ethnographic interviews with knowledgeable individuals. If feasible individuals shall participate in field inspections (Makana to be given)
- Transcribe recorded interviews (Approximate time, 3-4 hrs/per hr of recording)
- Prepare a report that will include an overview of the archival material, and an analysis of the ethnographic data;

APPENDIX C

Guidelines for Assessing Cultural Impacts
Adopted by the Environmental Council, State of Hawaii
November 19, 1997

I. INTRODUCTION

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

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

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

II. CULTURAL IMPACT ASSESSMENT METHODOLOGY

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

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

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

The types of cultural resources The historical period studied in a cultural impact assessment should commence with the initial presence in the area of the particular group whose cultural practices and features are being assessed. The types of cultural practices and beliefs subject to assessment may include subsistence, commercial, residential, agricultural, access-related, recreational, and religious and spiritual customs.

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

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

1.identify and consult with individuals and organizations with expertise concerning the types of cultural resources, practices and beliefs found within the broad geographical area, e.g., district or ahupua'a;

2.identify and consult with individuals and organizations with knowledge of the area potentially affected by the proposed action;

3.receive information from or conduct ethnographic interviews and oral histories with persons having knowledge of the potentially affected area;

4.conduct ethnographic, historical, anthropological, sociological, and other culturally related documentary research;

5.identify and describe the cultural resources, practices and beliefs located within the potentially affected area; and

6.assess the impact of the proposed action, alternatives to the proposed action, and mitigation measures, on the cultural resources, practices and beliefs identified.

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

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

III. CULTURAL IMPACT ASSESSMENT CONTENTS

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

1.A discussion of the methods applied and results of consultation with individuals and organizations identified by the preparer as being familiar with cultural practices and features associated with the project area, including any constraints or limitations which might have affected the quality of the information obtained.

2.A description of methods adopted by the preparer to identify, locate, and select the persons interviewed, including a discussion of the level of effort undertaken.

3.Ethnographic and oral history interview procedures, including the circumstances under which the interviews were conducted, and any constraints or limitations which might have affected the quality of the information obtained.

4.Biographical information concerning the individuals and organizations consulted, their particular expertise, and their historical and genealogical relationship to the project area, as well as information concerning the persons submitting information or interviewed, their particular knowledge and cultural expertise, if any, and their historical and genealogical relationship to the project area.

5.A discussion concerning historical and cultural source materials consulted, the institutions and repositories searched, and the level of effort undertaken. This discussion should include, if appropriate, the particular perspective of the authors, any opposing views, and any other relevant constraints, limitations or biases.

6.A discussion concerning the cultural resources, practices and beliefs identified, and, for resources and practices, their location within the broad geographical area in which the proposed action is located, as well as their direct or indirect significance or connection to the project site.

7.A discussion concerning the nature of the cultural practices and beliefs, and the significance of the cultural resources within the project area, affected directly or indirectly by the proposed project.

8.An explanation of confidential information that has been withheld from public disclosure in the assessment.

9.A discussion concerning any conflicting information in regard to identified cultural resources, practices and beliefs.

10.An analysis of the potential effect of any proposed physical alteration on cultural resources, practices or beliefs; the potential of the proposed action to isolate cultural resources, practices or beliefs from their setting; and the potential of the proposed action to introduce elements which may alter the setting in which cultural practices take place.

11.A bibliography of references, and attached records of interviews which were allowed to be disclosed.

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

APPENDIX D

Agreement to Participate in this Cultural Impact Assessment

Project Title: **6608-01 DAGS Rainbow Radio Facility-Kahua Ranch**
Pu`u Waiakanonula, Kahuali`ili`i Ahupua`a, Kohala, Hawai`i
(TMK: 5-9-02)

Investigator: Maria E. Ka`imipono Orr, M.A.

You are being asked to participate in a cultural impact assessment [study] conducted by an independent investigator contracted by Dr. Alan Haun of Haun & Associates as part of an archaeological inventory study to be included in a larger Environmental Impact Study by Wilson Okamoto & Associates, Inc. of the proposed DAGS Rainbow Radio Facility to be located on Pu`u Waiakanonula, Kahua Ranch in the ahupua`a of Kahuali`ili`i, Kohala, Hawai`i. The investigator will explain the purpose of the study, the procedures to be used, the potential benefits and possible risks of participating. You may ask the investigator any question(s) in order to help you to understand the study or procedures. A basic explanation of the study is written below. If you then decide to participate in the study, please sign on the second page of this form. You will be given a copy of this form to keep.

I. Nature and Purpose of the Study

The purpose of this cultural impact assessment is to gather information about the lands of Pu`u Waiakanonula in the ahupua`a of Kahuali`ili`i, also known as Kahua Ranch lands, through interviews with individuals who are knowledgeable about this area; including traditional and historic information such as legends, songs, chants or other information. The objective of this study is to facilitate in the identification and location of any possible pre-historic and/or historic cultural resources, or traditional cultural practices in the area mentioned above, in accordance with applicable historic preservation laws, regulations, and guidelines, including:

Office of Environmental Quality Control [OEQC] Guidelines
and Act 50 HB2895 [A.D.2000], HRS Chapter 343

II. Explanation of Procedures

After you have voluntarily agreed to participate and have signed the consent page, the investigator will tape record your interview and transcribe it later. Data from the interview [ethnographic research] will be used as part of the background history summary for this project. The investigator may also need to take notes and/or ask you to spell or clarify terms or names that are unclear.

III. Discomforts and Risks

Foreseeable discomforts and/or risks may include, but are not limited to the following: having to talk loudly for the recorder; being recorded and/or interviewed; providing information that may be used in reports which may be used in the future as a public reference; knowing that the information you give may conflict with information from others; your uncompensated dedication of time; possible miscommunication or misunderstanding in the transcribing of information; loss of privacy; and worry that your comment(s) may not be understood in the same way you understand them. It is not possible to identify all potential risks, however reasonable safeguards have been taken to minimize risks.

IV. Benefits

This study will give you the opportunity to express your thoughts (*mana'o*), and your opinions will be listened to and shared; your knowledge may be instrumental in the preservation of significant resources and information.

V. Confidentiality

Your rights of privacy, confidentiality and/or anonymity will be protected if you so desire. You may request, for example, that your name and/or sex not be mentioned in write-ups, such as field notes, on tape, on files (disk or folders), drafts, reports, and future works; or you may request that some of the information you provide remain "off-the-record" and not be recorded in any way. In order to ensure protection of your privacy, confidentiality and/or anonymity, you should immediately advise the investigator of your desires. The investigator will ask you to specify the method of protection, and note it on this form below.

VI. Refusal/Withdrawal

You may, at any time during the interview process, chose to not participate any further and ask the investigator for the tape and/or notes. Please note that you will be given an opportunity to review your transcript, and to revise and/or delete any part of the interview.

VII. Waiver

Part I: Agreement to Participate

I, _____, understand that Maria E. Ka'imipono Orr, an independent investigator contracted by Haun & Associates, will be conducting oral history interviews with individuals knowledgeable about the lands of Kahua Ranch, especially Pu'u Waiakanonula, Kahuali'ili'i Ahupua'a. The oral history interviews are being conducted in order to collect information on possible pre-historic and/or historical cultural resources associated with these lands, as well as traditional cultural practices.

I understand I will be provided the opportunity to review my interview to ensure that it accurately depicts what I meant to say about any of these lands.

_____ *I am willing to participate.*
_____ *I am willing to participate, under the following conditions:*

_____
Interviewee **Date**

_____
Investigator **Date**

MAHALO NUI LOA

Part II: Personal Release of Interview Records

I, _____, have been interviewed by Maria E. Ka'imipono Orr, an independent investigator contracted by Haun & Associates. I have reviewed the written transcripts of tape recordings of the interview, and agree that said documentation is complete and accurate except for those matters specifically set forth below the heading "CLARIFICATION OR CORRECTIONS."

I further agree that Haun & Associate may use and release my identity and other interview information, both oral and written, for the purpose of using such information in a report to be made public, subject to my specific objections, to release as set forth below under the heading "SPECIFIC OBJECTIONS TO RELEASE OF INTERVIEW MATERIALS."

CLARIFICATION OR CORRECTIONS:

SPECIFIC OBJECTIONS TO RELEASE OF INTERVIEW MATERIALS:

_____
Interviewee **Date**

_____
Investigator **Date**

MAHALO NUI LOA

APPENDIX E

Ethnographic Survey

Basic Research Instrument for Oral History Interviews

DAGS Rainbow Radio Facility-Kahua Ranch

Pu`u Waiakanonula, Kahuali`ili`i Ahpua`a, Kohala, Hawai`i

This research instrument includes basic information as well as research categories which will be asked in the form of open primary questions which allow the individual interviewed (Consultant) to answer in the manner he/she is most comfortable. Secondary or follow-up questions are asked based on what the Consultant has said and/or to clarify what was said. The idea is to have an interview based on a "talk-story" form of sharing information. Questions will NOT be asked in an interrogation style/method, NOR will they necessarily be asked in the order presented below. This research instrument is merely a *guide* for the investigator and simply reflects general categories of information sought in a semi-structured format. Questions will be asked more directly when necessary.

The Consultants were selected because they met one or more of the following criteria:

- Referred By Hawaiian Cultural Practitioner
- Had/has Ties to Project Location(s)
- Referred By Staff of Kahua Ranch
- Referred By Staff of Ponoholo Ranch

[NOTE: This part of the interview, #1-4 is mutual sharing and rapport building. Most of the information for research categories "Consultant Background" and "Consultant Demographics" come from this section, but not exclusively.]

1. *Name?* *Birth Year?*
   Address? *Phone #?* *Email address?*

   [This information can be addressed in a couple of ways. After the investigator first turns on the tape recorder, the following information will be recorded: Day/Date/Time/Place of Interview/Name of Consultant (if authorized by Consultant)/Name of Investigator/Questions: Have you read the Agreement To Participate?/Do you have any questions before we begin?/Will you please sign the Consent page. The investigator will explain again the purpose of the interview.

   The investigator will then ask the Consultant to "Please tell me about yourself--when/where were you born? where did you grow up? where did you go to school?" This general compound question allows the Consultant to share as much or as little as he/she wants without any pressure. Most of the information for #1 may already be known to the investigator.]

2. *Family Background: History? Hawaiian connection (if any)?*

   [Much of the information for questions #2, 3, and 4 usually comes from the "monologue" answer to Question #1. If it does not, then these questions will be asked. The answers in this section usually establishes how the Consultant meets the criteria; how the Consultant developed his/her information base, etc.]

3. *Youth? Where lived?*

4. *Schooling?*

[NOTE: This part of the interview, #5-7 reflects information sought for the following research categories: "Significant Properties," "Significant People," "Significant Events," "Traditional Cultural Practices," "Traditional Arts/Crafts," and Oral History/Folklore/Place Names." The questions are open-ended so as NOT to "put words in the mouths" of the Consultants.]

5. *Can you tell me what you know about the lands of Kahua Ranch? Specifically the area known as Pu`u Waiakanonula?*

   [NOTE: Generally when people share information about a specific topic/place, they usually state where their information came from. If it isn't volunteered, it is asked as a follow-up question(s). A map of the project area should be available to confirm that investigator and consultant are talking about the same place. Photos would also help if a field trip is not possible. The best scenario would be to be "on-site" at some part of the interview...although this is not always practical.]

6. *What are your recollections and/or personal experiences of this area?*

   [NOTE: If Consultant is related to any Land Commission Awardee [LCA] or subsequent land-owner in the project zone, or former resident or employee of Kahua Ranch, the follow-up question(s) is asked.]

7. *How are you related to the Awardee? Or subsequent land owner? Or former resident?*

8. *Do you know any stories/legends/songs/chants associated with these areas?*

   [NOTE: Possible follow-up questions for Pu`u Waiakanonula or Kahua Ranch:

   - How are you or your family connected to the lands of Kahua Ranch?
   - What year(s) were you and/or your family associated with these lands?
   - What was this place/area called when you were growing up?
   - Can you describe what the area looked like--what kinds of natural and/or man made things?
   - To your knowledge what kind of activities took place in this location?
   - Do you know of any traditional gathering of plants, etc in the area?
   - To your knowledge please describe any gathering practices nearby?
   - Any other land/water use?
   - What was the historic land use? Sugar Cane? Agriculture? Habitation? Dwellings?
   - Where were these "features" located? [Have map ready for marking.]
   - Can you describe any stream/fresh water use?
   - Do you know about any burials in the project area?

9. *Is there anyone you know who can also tell me about the project area?*

   [NOTE: Usually in the course of the interview, Consultants suggest other people to interview.]

10. *As soon as I have transcribed this interview I will send you two copies. Please review the transcript, make any corrections and/or additions. If you're satisfied, please sign the attached third page of the Consent Form thereby releasing the information. Then mail one set back to me in the enclosed stamped addressed envelope.*

MAHALO NUI LOA

APPENDIX F
GENEALOGY LISTS OF HAWAI'I ALI'I

Hawaii Line extracted from McKenzie (1983, 1986) and Kamakau (1992).

Kane	Wahine	Keiki
[redacted]		
Kauholanuimahu	Neula	Kihanuilulumoku [Kiha I]
Kiha I	Waoilea [Ewa, Oahu Chfs]	Liloa-a-Kiha
Liloa	Pinea I [yngr sib of Waoilea]	Hakau [later killed by Umi]
-	Haua [Maui Chfs]	Kapukini
-	Akahiakuleana [←Haua]	Umi-a-Liloa I
Hakau	KukukalaniaPae	Pinea 2
Umi	Obenahena/Hebena	Kamolanuiaumi
-	-	Kahekilinuialokapu
-	Kalamea	Kapunuhahuanuiaumi
-	Makaalua	Nohowaaumi
-	Kapukini/Kapulani	Kealiiokaloa→Kalaniopu'u/Kamehameha I
-	-	Kapulani
-	-	Keaweuuiaumi
-	Piikea-a-Pi'ilani	Aihakoko
-	-	Kumalae→ Aikanaka/Lili'u
-	Kuihewamakawalu	Papaikaneau
-	-	Kuimeheua (k)
-	-	Ulnehu
-	Mokuahualeiakea	Akahiilikapu→ Liholiho/Kamamalu
Keaweuuiaumi	Koihalawai [Kauai Chfs]	Kanaloakua'ana
-	Hoopiliahae	Umiokalani
-	-	Keawepaikana
Keawe	Hoopiliahae	Lililoa 2
Keaweuuiaumi	-	Hoolaaikaiwi
Kaulahea [Maui king]	Kalanikauleleaiwi	Kekulapoiwa Nui
Keawe [Hawaii king]	-	KalaniKeeaumoku
-	-	Kekelakekeaokalani
Kanaunuimahioloi "		Alapainui [Hawaii king]
Lonoikahaupu [Kauai king]	-	Keawepoepoe [Chief- Hawaii/Maui/Oahu/Kauai]
Kaulaheanuiokamoku	Papaikaniau	Kalaniuuikuihooikamoku Kekaulike
Kekaulike [sibs]	Kekulapoiwa Nui	Kamehameha Nui [Ruling Chf Maui]
-	-	Kalola
-	-	Kahekilinuiahumanu 2 [Iron king of Maui]
-	-	Kahoobeiheipahu (w)
-	-	Namakalani
-	-	Manuailehua
-	?	Namahanaikaleleokalani [→ Ka'ahumanu]
Kalaniuuimamao [Ka'u]	Kamakaimoku	Kalaniopu'u *[Hawaii king]
-	-	Keouakalanikupuapaikalaninui→K-I
*[Two fathers: also Begotten by Pele-io-holani, ruling chief of Oahu and Kamakaimoku of Waikele]		
Kalaniopu'u	Kalola [Maui High Chfs]	Kiwalao
-	-	Liliha Kekuiapoiwa
-	Kaneikapolei [Maui line]	Keoua Kuaho'ula [Ka'u]
-	-	Keoua Peeale
-	Mu'olehu	Manoua→ Peter Kaeo of Kauai
-	Halau	Kawelaokalani
-	Kamakolunuikalani	Pualinui [→a Lahaina line]
-	Manoua [Ka'u]	Manono [Died in battle/placed on Mookini altar]
-	-	Kukanaloa [mo'opuna of 3 kings]
Haae	Kekelaokalani	Kekulapoiwa 2 [Oahu/Maui Chiefess]
Keoua Kalanikupu	Kalola (→Keopuolani)	Kekuiapoiwa 3 Liliha
Keoua KupuapaiKalani	Kekuiapoiwa 2	Kamehameha I
-	-	Keliimaikai [Kalanimalokuloku-Kepookalani]
-	?	Kalaimamahu
Keawe Ka'iana	-	KalaniKoaahale Kuakini/John Adams
Kiwalao [Hawaii Chf] (Sibs)	Kekuiapoiwa Liliha 2	Kalanikauika'alaneo Keopuolani [Wailuku]

-	Manona	Kaaimalolo→ Kaeo of Kauai
Kamehameha Nui (sibs)	Kalola [Maui]	Kalaniakuaiokikilo/Kalaniwaiakua [Kapu]
- (Cousins)	Namahanaikaleleonalani	Pele-io-holani
-	-	Kuakinilokalani
Kamehameha I	Kalola-a-Kumuko'a	?
-	Kaneikapolei	Pauli Kaoleioku
-	Peleuli	Kapulikoliko
-	-	Kahoanoku Kina'u
-	Keopuolani [Kapu chiefess]	Liholiho [b Hilo]
-	-	Kalanikauikeaouli Kiwala'o [b Keauhou]
-	-	Harriet Nahienaena
-	Kanekapolei	Kaoleioku
Kalaimamahu [K1 sib]	Kaheiheimalie	Kahahaika'ao'aokapuoka/Kekauluohi
Kamehameha I	-	Kamehameha Kapuaiwa
-	-	Kamehamehamalu Kekuiwaokalani
-	-	Kaho'anoku Kina'u
-	Kauhilanimaka	Kahiwa Kanekapolei (mother of Kepelino)
-	Peleuli	Kinau
-	Kaheiheimalie	Kekauiwa (Lunalilo Kamehameha)

Symbol (→) means descendant or ancestor of

APPENDIX G
SIGNED CONSENT FORMS

APPENDIX D

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

REPLY TO
ATTENTION OF: CEPOH-EC-T

(608-01) JS
4/4/03

April 9, 2003

cc: DAGS, V/A FAX 4/4/03

RECEIVED
APR 9 2003
WILSON OKAMOTO CORPORATION

Civil Works Technical Branch

Mr. John L. Sakaguchi, Senior Planner
Wilson Okamoto Corporation
1907 S. Beretania Street, Suite 400
Honolulu, Hawaii 96826

Dear Mr. Sakaguchi:

Thank you for the opportunity to review and comment on the Draft Environmental Assessment (DEA) for the Anuenue (formerly Rainbow) Radio Towers and Facilities, Statewide, Kauha Ranch Site, North Kohala, Hawaii (TMK 5-9-2: 2). The following comments are provided in accordance with Corps of Engineers authorities to provide flood hazard information and to issue Department of the Army (DA) permits.

a. Based on the information provided, a DA permit will not be required for the project.

b. The flood hazard information provided on page 2-2 of the DEA is correct.

Should you require additional information, please contact Ms. Jessie Dobinchick of my staff at (808) 438-8876.

Sincerely,

James Pennaz

James Pennaz, P.E.
Chief, Civil Works
Technical Branch

LINDA LINGLE
GOVERNOR

(608-01) JS
6/5/03

RUSS K. SAITO
COMPTROLLER

KATHERINE H. THOMASON
DEPUTY COMPTROLLER

(P)1176.3

STATE OF HAWAII
DEPARTMENT OF ACCOUNTING AND GENERAL SERVICES
P.O. BOX 119, HONOLULU, HAWAII 96810
JUN - 3 2003

RECEIVED
JUN 4 2003
WILSON OKAMOTO CORPORATION

Mr. James Pennaz, P.E., Chief
Civil Works Technical Branch
U.S. Army Engineer District, Honolulu
Fort Shafter, Hawaii 96858-5440

Dear Mr. Pennaz:

Subject: Draft Environmental Assessment/Anticipated Finding of No Significant Impact (FONSI), Anuenue (formerly Rainbow)
Radio Facilities and Towers, Statewide, Kauha Ranch Site
North Kohala District, Hawaii
Tax Map Key: 5-9-002:002

Thank you for your April 9, 2003, comments regarding the subject project. Our responses to your comments are as follows:

1. The Final Environmental Assessment will note that a Department of Army permit is not required for the project.

2. Thank you for confirming that the flood hazard information provided on Page 2-2 is correct.

We appreciate your participation in the Draft EA review process.

Sincerely,

Tadashi Yoshizawa

TADASHI YOSHIZAWA
Acting Public Works Administrator

AY:mo
Attachment
c: Mr. John Sakaguchi, Wilson Okamoto Architects Corp.
Mr. Bob Hlivak, DAGS-PW, ICSD
Mr. Daniel Jandoc, DAGS-PW, PMB

U.S. Department
of Transportation
Federal Aviation
Administration

Western-Pacific Region
Real Estate and Utilities Section, AHNL-54B

P. O. Box 50109
Honolulu, Hawaii 96850-5000

4609-01

4/15/03

April 10, 2003

Mr. John L. Sakaguchi, AICP
Senior Planner
Wilson Okamoto Corporation
1907 S. Beretania Street, Suite 400
Honolulu, HI 96826

cc: DAGS, V/A
FAX 4/15/03

Dear Mr. Sakaguchi:

Your letter of April 1, 2003, requested our review and comment of the Draft Environmental Assessment (EA), Anuenue (formerly Rainbow) Radio Towers and Facilities, Statewide, Kahua Ranch Site, North Kohala District, Hawaii: Tax Map Key: 5-9-002:002.

The Federal Aviation Administration (FAA) requests that the proponents of this project submit a "Notice of Construction or Alteration" FAA Form 7460-1 so that an airspace evaluation may be conducted.

A copy of this Draft EA was also sent to our Hawaii-Pacific System Management Office and comments may also be forwarded separately from them.

We appreciate this opportunity to comment on your project. Please contact me at 541-1236, if there are any questions.

Sincerely,

Darice B. N. Young
Realty Contracting Officer

LINDA LINGLE
GOVERNOR

RUSS K. SAITO
COMPTROLLER

KATHERINE H. THOMASON
DEPUTY COMPTROLLER

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

(P)1140.3

MAY - 1 2003

Ms. Darice B. N. Young, Realty Contracting Officer
Wester-Pacific Region
Real Estate and Utilities Section
Federal Aviation Administration
U. S. Department of Transportation
P. O. Box 50109
Honolulu, Hawaii 96850-5000

Dear Ms. Young:

Subject: Draft Environmental Assessment (EA)/Anticipated Finding of No Significant Impact (FONSI), Anuenue (formerly Rainbow) Radio Facilities and Towers, Statewide, Kahua Ranch Site, North Kohala District, Hawaii
TMK: 5-9-002:002

Thank you for your April 10, 2003, comment regarding the subject project. Our response to your comment is as follows:

A Federal Aviation Administration (FAA) "Notice of Construction or Alteration" Form 7460-1 will be submitted so that an airspace evaluation may be conducted.

We appreciate your participation in the Draft EA review process.

Sincerely,

TADASHI YOSHIZAWA
Acting Public Works Administrator

AY:jo
c: Mr. John Sakaguchi, Wilson Okamoto Corporation w/ FAA Letter
Mr. Bob Hlivak, DAGS-ICSD w/ FAA Letter
Mr. Daniel Jandoc, DAGS-PW PMB w/ FAA Letter

6000-01

United States Department of the Interior
U.S. GEOLOGICAL SURVEY
WATER RESOURCES DISCIPLINE
677 Ala Moana Blvd., Suite 415
Honolulu, HI 96813
Phone: (808) 587-2400/Fax: (808) 587-2401

4/3/03
RECEIVED
APR 4 2003
WILSON OKAMOTO CORPORATION

cc: DAGS, VIA FAX 4/3/03

April 3, 2003

Mr. John L. Sakaguchi, AICP
Senior Planner
Wilson Okamoto & Associates, Inc.
1907 S. Beretania St., Suite 400
Honolulu, HI 96826

Dear Mr. Sakaguchi:

Subject: Draft Environmental Assessment, Anuenue (formerly Rainbow) Radio Towers and Facilities, Statewide, Kauha Ranch Site
North Kohala District, Hawaii; Tax Map Key: 5-9-002:002
Review and Comment

Thank you for forwarding the subject Draft Environment Assessment for review and comment by the staff of the U.S. Geological Survey, Water Resources Discipline, Hawaii District office. We regret however, that due to prior commitments and lack of available staff, we are unable to review this document and are returning it for your future use.

We appreciate the opportunity to participate in the review process.

Sincerely,

Gordon Tribble
District Chief

Enclosure

NRCS
Natural Resources Conservation Service
P.O. Box 50004
Honolulu, HI 96850

United States Department of Agriculture

Our People Our Islands In Harmony

6644

5/3/03

April 30, 2003 cc: DAGS

Mr. John L. Sakaguchi, Senior Planner
Wilson Okamoto Corporation
1907 South Beretania Street, Suite 400
Honolulu, HI 96826

Subject: Draft Environmental Assessment, Anuenue Radio Towers and Facilities

Attention: Mr. John L. Sakaguchi,

We have reviewed the above mentioned document and have no comment to offer at this time.

Thank you for the opportunity to review this document.

Sincerely,

LAWRENCE T. YAMAMOTO
Acting State Conservationist

The Natural Resources Conservation Service provides leadership in a partnership effort to help people conserve, maintain, and improve our natural resources and environment.

An Equal Opportunity Provider and Employer

PHONE (808) 594-1888

FAX (808) 594-1865

JS

4/9/03

STATE OF HAWAI'I
OFFICE OF HAWAIIAN AFFAIRS
711 KAPIOLANI BOULEVARD, SUITE 500
HONOLULU, HAWAII 96813

RECEIVED
APR 7 2003
WILSON OKAMOTO CORPORATION

cc: DABS, VIA FAX
4/9/03

April 3, 2003

Mr. John L. Sakaguchi, AICP
Senior Planner
Wilson Okamoto Corporation
1907 S. Beretania Street – Suite 400
Honolulu, HI 96826

SUBJECT: ANUENUE RADIO TOWERS AND FACILITIES, STATEWIDE
KAUHA RANCH SITE NORTH KOHALA DISTRICT,
HAWAII - DEA

Dear Mr. Sakaguchi:

Thank you for the opportunity to review the above referenced Draft Environmental Assessment for construction of one self-supporting tower for mounted antennas and related support facilities.

The Office of Hawaiian Affairs (OHA) has no comment at this point in time. If you have any questions, please contact Jerry B. Norris at 594-1847 or email him at jerryn@oha.org.

Sincerely,

Peter L. Yee
Director
Nationhood and Native Rights

LINDA LINGLE
GOVERNOR OF HAWAII

STATE OF HAWAII
OFFICE OF ENVIRONMENTAL QUALITY CONTROL
[illegible]

1608-01

COMPTROLLER'S OFFICE
DAGS

2003 APR 22 A 10:17

April 7, 2003

Mr. Russ K. Saito, Comptroller
Department of Accounting and General Services
P.O. Box 119
Honolulu, Hawai'i 96810

Dear Mr Saito

Subject: Draft EA for the Ānuenue Radio Towers and Facilities, North Kohala, Hawai'i

Thank you for the opportunity to review the subject document We have the following comments.

1. Please describe the spill containment system for the proposed lead acid batteries.
2. Please describe the cumulative visual impacts of all the communications tower at the site.
3. Please list all the permits that are required for this project

Should you have any questions, please call Jeyan Thirugnanam at 586-4185. Mahalo.

Sincerely,

Genevieve Salmonson
Director

c Wilson Okamoto and Associates

LINDA LINGLE
GOVERNOR

RUSS K. SAITO
COMPTROLLER

KATHERINE H. THOMASON
DEPUTY COMPTROLLER

6/11/03 (P)1183

RECEIVED
JUN 10 2003
WILSON OKAMOTO CORPORATION

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

JUN 9 2003

MEMORANDUM

TO: Ms. Genevieve Salmonson, Director
Office of Environmental Quality Control
Department of Health

FROM: Tadashi Yoshizawa
Acting Public Works Administrator

SUBJECT: Draft Environmental Assessment (EA)/Anticipated Finding of No Significant Impact (FONSI), Anuenue (formerly Rainbow) Radio Facilities and Towers, Statewide, Kahua Ranch Site North Kohala District, Hawaii
TMK: 5-9-002:002:

Thank you for your April 7, 2003, comments regarding the subject project. Our response are as follows:

1. As stated in the Draft EA, the valve regulated lead acid batteries will be supplied with a gel electrolyte and have been designed not to leak. In addition, a spill containment system will be installed, which will consist of an acid resistant container filled with a neutralizing absorbent.

2. Also as indicated in the Draft EA, the Anuenue facility will include a 70-foot high self-supporting tower, an equipment building, and necessary support facilities. No additional facilities are proposed for construction. The main visual impact will be on public views from Kohala Mountain Road. Figure 2.1 in the Draft EA shows the cumulative visual impacts.

3. The required permits will be listed in the Final EA.

We appreciate your participation in the Draft EA review process. If you have any questions, please call Mr. Allen Yamanoha of the Planning Branch at 586-0488.

AY:jo
c: Mr. John Sakaguchi, Wilson Okamoto & Assoc. w/attach
Mr. Bob Hlivak, DAGS-ICSD w/attach
Mr. Daniel Jandoc, DAGS-PW, PMB w/attach

6608-01 JS

LINDA LINGLE

RECEIVED
APR 16 2003
WILSON OKAMOTO CORPORATION

6608-01 4/16/03

PETER T. YOUNG
MEREDITH J. CHING
CLAYTON W. DELA CRUZ
CHIYOME L. FUKINO M.D.
BRIAN C. NISHIDA
HERBERT M. RICHARDS JR.
ERNEST T.W. LAU

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT
P.O. BOX 621
HONOLULU, HAWAII 96809

April 14, 2003

CC: DAGS, VIA FAX 4/16/03

John L. Sakaguchi, AICP
Wilson Okamoto Corportation
1907 S. Beretania Street, Suite 400
Honolulu, HI 96826

ref: G:\Work Doc Reviews\Anuenue Radio Towers doc.doc

SUBJECT: Draft Environmental Assessment, Anuenue (formerly Rainbow) Radio Towers and Facilities, Statewide, Kahua Ranch Site
North Kohala District, Hawaii; Tax Map Key: 5-9-002:002

Thank you for the opportunity to review the subject document. Our comments related to water resources are marked below.

In general, the CWRM strongly promotes the efficient use of our water resources through conservation measures and use of alternative non-potable water resources whenever available, feasible, and there are no harmful effects to the ecosystem. Also, the CWRM encourages the protection of water recharge areas, which are important for the maintenance of streams and the replenishment of aquifers.

[ ] We recommend coordination with the county government to incorporate this project into the county's Water Use and Development Plan.

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

[ ] We are concerned about the potential for ground or surface water degradation/contamination and recommend that approvals for this project be conditioned upon a review by the State Department of Health and the developer's acceptance of any resulting requirements related to water quality.

[ ] A Well Construction Permit and/or a Pump Installation Permit from the Commission would be required before ground water is developed as a source of supply for the project.

[ ] The proposed water supply source for the project is located in a designated water management area, and a Water Use Permit from the Commission would be required prior to use of this source.

[ ] Groundwater withdrawals from this project may affect streamflows, which may require an instream flow standard amendment.

[ ] We are concerned about the potential for degradation of instream uses from development on highly erodible slopes adjacent to streams within or near the project. We recommend that approvals for this project be conditioned upon a review by the corresponding county's Building Department and the developer's acceptance of any resulting requirements related to erosion control.

[ ] If the proposed project includes construction of a stream diversion, the project may require a stream diversion works permit and amend the instream flow standard for the affected stream(s).

[ ] If the proposed project alters the bed and banks of a stream channel, the project may require a stream channel alteration permit

[X] OTHER

We have no comments to offer at this time.

If there are any questions, please contact Tiffany Mathias at 587-0269.

Sincerely,

ERNEST Y.W. LAU
Deputy Director

LINDA LINGLE
GOVERNOR OF HAWAII

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

RECEIVED
MAY 6 2003
WILSON OKAMOTO CORPORATION

PETER T. YOUNG
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

DAN DAVIDSON
DEPUTY DIRECTOR - LAND

ERNEST Y.W. LAU
DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

MAY - 2 2003

(L603-01) EM 5/7/03

cc: DAGS, VIA FAX 5/7/03

L-1574

Earl Matsukawa, AICP, Project Manager
Wilson Okamoto Corporation
1907 S. Beretania Street Suite 400
Honolulu, Hawaii 96826

Subject: Draft Environmental Assessment, Anuenue (formerly Rainbow) Radio Towers and Facilities, Statewide, Kauha Ranch Site North Kohala District, Hawaii, tax map key: (3) 5-9-2:2

Dear Mr. Matsukawa:

Please accept our apology in not responding to your request sooner. A copy of your request was distributed within the Department.

The Department of Land and Natural Resources has no other comment to offer at this time.

Should you have any questions, please contact Nicholas Vaccaro of the Land Division, Support Services Branch at 587-0438.

Sincerely,

for DIERDRE S. MAMIYA
Administrator

Cc: Land Board Member

LINDA LINGLE
GOVERNOR

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION
P.O. Box 621
HONOLULU, HAWAII 96809

PETER T. YOUNG
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES

DAN DAVIDSON
DEPUTY DIRECTOR FOR LAND

ERNEST Y.W. LAU
DEPUTY DIRECTOR FOR
THE COMMISSION ON WATER
RESOURCE MANAGEMENT

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
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MANAGEMENT
CONSERVATION AND RESOURCES
ENFORCEMENT
CONVEYANCES
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE
COMMISSION
LAND
STATE PARKS

April 4, 2003

LD/NAV
Ref.: RAINBOWRADIODAGS.CMT2
DAGS: 16-10-0256

L-1574
Suspense Date: 4/29/04

MEMORANDUM:

TO: XXX Division of Aquatic Resources
XXX Division of Forestry & Wildlife
XXX Division of State Parks
XXX Engineering Division
Division of Boating and Ocean Recreation
XXX Commission on Water Resource Management (Received)
XXX Land-Planning and Technical Services
XXX Land-Hawaii District Land Office (DD)

FROM: Charlene E. Unoki, Acting Assistant Administrator
Land Division

SUBJECT: Draft Environmental Assessment Covering the Rainbow Radio Faculties and Towers, Statewide, Kahua Ranch Site (DAGS JOB NO. 16-10-0256) North Kona, Hawaii
Consultant: Wilson Okamota & Associates, Inc. (946-2277)

Please review the Draft Environmental Assessment, pertaining to the subject matter and submit your comments (if any) on Division letterhead signed and dated by the suspense date.

Note: One copy of the DEA is available for your review in the Land Division Office, Room 220.

Should you need more time to review the subject matter, please contact Nicholas A. Vaccaro at ext.: 7-0384.

If this office does not receive your comments on or before the suspense date, we will assume there are no comments.

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

Signed:

Date:

MICHAEL G. BUCK, ADMINISTRATOR
DIVISION OF FORESTRY AND WILDLIFE
APR 9 ...

LINDA LINGLE
GOVERNOR

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION
P.O. Box 621
HONOLULU, HAWAII 96809

PETER T. YOUNG
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES

DAN DAVIDSON
DEPUTY DIRECTOR FOR LAND

ERNEST Y.W. LAU
DEPUTY DIRECTOR FOR
THE COMMISSION ON WATER
RESOURCE MANAGEMENT

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
COMMISSION ON WATER RESOURCE
MANAGEMENT
CONSERVATION AND RESOURCES
ENFORCEMENT
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ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE
COMMISSION
LAND
STATE PARKS

April 4, 2003

LD/NAV
Ref.: RAINBOWRADIODAGS.CMT2
DAGS: 16-10-0256

L-1574
Suspense Date: 4/29/04

MEMORANDUM:

TO: XXX Division of Aquatic Resources
XXX Division of Forestry & Wildlife
XXX Division of State Parks
XXX Engineering Division
Division of Boating and Ocean Recreation
XXX Commission on Water Resource Management (Received)
XXX Land-Planning and Technical Services
XXX Land-Hawaii District Land Office (DD)

FROM: Charlene E. Unoki, Acting Assistant Administrator
Land Division

SUBJECT: Draft Environmental Assessment Covering the Rainbow Radio Faculties and Towers, Statewide, Kahua Ranch Site (DAGS JOB NO. 16-10-0256) North Kona, Hawaii
Consultant: Wilson Okamota & Associates, Inc. (946-2277)

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If this office does not receive your comments on or before the suspense date, we will assume there are no comments.

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

Signed:

Date: 4-28-03

RECEIVED
APR 8 2003
AQUATIC RESOURCES

LINDA LINGLE
GOVERNOR

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION
P.O. Box 621
HONOLULU, HAWAII 96809
April 4, 2003

PETER T. YOUNG
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES

DAN DAVIDSON
DEPUTY DIRECTOR FOR LAND

ERNEST Y.W. LAU
DEPUTY DIRECTOR FOR
THE COMMISSION ON WATER
RESOURCE MANAGEMENT

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
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KAHOOLAWE ISLAND RESERVE
COMMISSION
LAND
STATE PARKS

L-1574
Suspense Date: 4/29/04

LD/NAV
Ref.: RAINBOWRADIODAGS.CMT2
DAGS: 16-10-0256

MEMORANDUM:

TO:
XXX Division of Aquatic Resources
XXX Division of Forestry & Wildlife
XXX Division of State Parks
XXX Engineering Division
Division of Boating and Ocean Recreation
XXX Commission on Water Resource Management (Received)
XXX Land-Planning and Technical Services
XXX Land-Hawaii District Land Office (DD)

FROM: Charlene E. Unoki, Acting Assistant Administrator
Land Division

SUBJECT: Draft Environmental Assessment Covering the Rainbow Radio Faculties and Towers, Statewide, Kahua Ranch Site (DAGS JOB NO. 16-10-0256) North Kona, Hawaii
Consultant: Wilson Okamota & Associates, Inc. (946-2277)

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Note: One copy of the DEA is available for your review in the Land Division Office, Room 220.

Should you need more time to review the subject matter, please contact Nicholas A. Vaccaro at ext.: 7-0384.

If this office does not receive your comments on or before the suspense date, we will assume there are no comments.

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

Signed: Andrew M. Monk

Date: 4/10/03

LINDA LINGLE
GOVERNOR

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION
P.O. Box 621
HONOLULU, HAWAII 96809
April 4, 2003

PETER T. YOUNG
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES

DAN DAVIDSON
DEPUTY DIRECTOR FOR LAND

ERNEST Y.W. LAU
DEPUTY DIRECTOR FOR
THE COMMISSION ON WATER
RESOURCE MANAGEMENT

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COMMISSION
LAND
STATE PARKS

L-1574
Suspense Date: 4/29/04

LD/NAV
Ref.: RAINBOWRADIODAGS.CMT2
DAGS: 16-10-0256

MEMORANDUM:

TO:
XXX Division of Aquatic Resources
XXX Division of Forestry & Wildlife
XXX Division of State Parks
XXX Engineering Division
Division of Boating and Ocean Recreation
XXX Commission on Water Resource Management (Received)
XXX Land-Planning and Technical Services
XXX Land-Hawaii District Land Office (DD)

FROM: Charlene E. Unoki, Acting Assistant Administrator
Land Division

SUBJECT: Draft Environmental Assessment Covering the Rainbow Radio Faculties and Towers, Statewide, Kahua Ranch Site (DAGS JOB NO. 16-10-0256) North Kona, Hawaii
Consultant: Wilson Okamota & Associates, Inc. (946-2277)

Please review the Draft Environmental Assessment, pertaining to the subject matter and submit your comments (if any) on Division letterhead signed and dated by the suspense date.

Note: One copy of the DEA is available for your review in the Land Division Office, Room 220.

Should you need more time to review the subject matter, please contact Nicholas A. Vaccaro at ext.: 7-0384.

If this office does not receive your comments on or before the suspense date, we will assume there are no comments.

(✓) We have no comments. ( ) Comments attached.

Signed:

Date: 4/16/03

LINDA LINGLE
GOVERNOR

PETER T. YOUNG
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES

DAN DAVIDSON
DEPUTY DIRECTOR FOR LAND

ERNEST Y.W. LAU
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STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION
P.O. Box 621
HONOLULU, HAWAII 96809
April 4, 2003

LD/NAV
Ref.: RAINBOWRADIODAGS.CMT2
DAGS: 16-10-0256

L-1574
Suspense Date: 4/29/04

RECEIVED
LAND DIVISION
HILO, HAWAII
2003 APR -9 A 11:04

MEMORANDUM:

TO: XXX Division of Aquatic Resources
XXX Division of Forestry & Wildlife
XXX Division of State Parks
XXX Engineering Division
Division of Boating and Ocean Recreation
XXX Commission on Water Resource Management (Received)
XXX Land-Planning and Technical Services
XXX Land-Hawaii District Land Office (DD)

FROM: Charlene E. Unoki, Acting Assistant Administrator
Land Division

SUBJECT: Draft Environmental Assessment Covering the Rainbow Radio Facilities and Towers, Statewide, Kahua Ranch Site (DAGS JOB NO. 16-10-0256) North Kona, Hawaii
Consultant: Wilson Okamota & Associates, Inc. (946-2277)

Please review the Draft Environmental Assessment, pertaining to the subject matter and submit your comments (if any) on Division letterhead signed and dated by the suspense date.

Note: One copy of the DEA is available for your review in the Land Division Office, Room 220.

Should you need more time to review the subject matter, please contact Nicholas A. Vaccaro at ext.: 7-0384.

If this office does not receive your comments on or before the suspense date, we will assume there are no comments.

(✓) We have no comments. ( ) Comments attached.

Signed:

Date: 4/11/03

LINDA LINGLE
GOVERNOR

PETER T. YOUNG
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES

DAN DAVIDSON
DEPUTY DIRECTOR FOR LAND

ERNEST Y.W. LAU
DEPUTY DIRECTOR FOR
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RECEIVED
03 APR 8 P1:55
COMMISSION ON WATER
RESOURCE MANAGEMENT

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION
P.O. Box 621
HONOLULU, HAWAII 96809
April 4, 2003

L-1574
Suspense Date: 4/29/04

LD/NAV
Ref.: RAINBOWRADIODAGS.CMT2
DAGS: 16-10-0256

MEMORANDUM:

TO: XXX Division of Aquatic Resources
XXX Division of Forestry & Wildlife
XXX Division of State Parks
XXX Engineering Division
Division of Boating and Ocean Recreation
XXX Commission on Water Resource Management (Received)
XXX Land-Planning and Technical Services
XXX Land-Hawaii District Land Office (DD)

FROM: Charlene E. Unoki, Acting Assistant Administrator
Land Division

SUBJECT: Draft Environmental Assessment Covering the Rainbow Radio Facilities and Towers, Statewide, Kahua Ranch Site (DAGS JOB NO. 16-10-0256) North Kona, Hawaii
Consultant: Wilson Okamota & Associates, Inc. (946-2277)

Please review the Draft Environmental Assessment, pertaining to the subject matter and submit your comments (if any) on Division letterhead signed and dated by the suspense date.

Note: One copy of the DEA is available for your review in the Land Division Office, Room 220.

Should you need more time to review the subject matter, please contact Nicholas A. Vaccaro at ext.: 7-0384.

If this office does not receive your comments on or before the suspense date, we will assume there are no comments.

(✓) We have no comments. ( ) Comments attached.

Signed:

Date: 4/7/03

8 2003 3:33PM HAWAII STATE CD

(608-01

LINDA LINGLE
GOVERNOR

MAJOR GENERAL ROBERT G. F. LEE
DIRECTOR OF CIVIL DEFENSE

EDWARD T. TEIXEIRA
VICE DIRECTOR OF CIVIL DEFENSE

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

PHONE (808) 733-4300
FAX (808) 733-4287

5/9/03
Q

CC: DAGS, VIA FAX 5/9/03

May 8, 2003

Mr. John L. Sakaguchi, Senior Planner
Wilson Okamoto Corporation
1907 South Beretania Street, Suite 400
Honolulu, HI 96826

Dear Mr. Sakaguchi:

Draft Environmental Assessment, Anuenue (formerly Rainbow) Radio Towers and Facilities, Statewide, Kahua Ranch Site, North Kohala District, Hawaii; Tax Map Key: 5-9-002:002, Review and Comment

State Civil Defense planners have reviewed the draft environmental assessment, and strongly support the proposed project at Kahua Ranch. The construction of the proposed radio tower and facility are critical to State modernization and hardening efforts for emergency communications support to the Big Island. The Anuenue system will directly support Homeland Security communications and technology needs.

Should you have any questions, please call Mr. Norman Ogasawara, State Civil Defense, at 733-4300, extension 531.

Sincerely,

for EDWARD T. TEIXEIRA
Vice Director of Civil Defense

c: Hawaii County Civil Defense Agency
Department of Accounting & General Services (ICSD Telecom Services Branch)

(608-01 JS

RECEIVED
MAY 14 2003
WILSON OKAMOTO CORPORATION

5/15/03

LINDA LINGLE
GOVERNOR OF HAWAII

ANTHONY L. FUKUNO, M.D.
DIRECTOR OF HEALTH

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

In reply, please refer to
EMD/CWB

05025PKP.03

May 8, 2003

CC: DAGS, VIA FAX
5/16/03

Mr. John L. Sakaguchi
Senior Planner
Wilson Okamoto Corporation
1907 South Beretania Street, Suite 400
Honolulu, Hawaii 96826

Dear Mr. Sakaguchi:

Subject: Draft Environmental Assessment
Anuenue (formerly Rainbow) Radio Towers and Facilities Statewide
Kahua Ranch Site
North Kohala District, Hawaii

The Department of Health, Clean Water Branch (CWB) has reviewed the subject document and offers the following comments:

1. The Army Corps of Engineers should be contacted at (808) 438-9258 to identify whether a Federal license or permit (including a Department of Army permit) is required for this project. Pursuant to Section 401(a)(1) of the Federal Water Pollution Act (commonly known as the "Clean Water Act"), a Section 401 Water Quality Certification is required for "[a]ny applicant for Federal license or permit to conduct any activity including, but not limited to, the construction or operation of facilities, which may result in any discharge into the navigable waters...."

2. A National Pollutant Discharge Elimination System (NPDES) general permit coverage is required for the following activities:

   a. Storm water associated with industrial activities, as defined in Title 40, Code of Federal Regulations, Sections 122.26(b)(14)(i) through 122.26(b)(14)(ix) and 122.26(b)(14)(xi).

   b. Construction activities, including clearing, grading, and excavation, that result in the disturbance of equal to or greater than one (1) acre of total land area. The total land area includes a contiguous area where multiple separate and distinct construction activities may be taking place at different times on different schedules under a larger common plan of development or sale. An NPDES permit is required before the commencement of the construction activities.

   c. Discharge of treated effluent from leaking underground storage tank remedial activities.

d. Discharge of once through cooling water less than one (1) million gallons per day;

e. Discharge of hydrotesting water.

f. Discharge of construction dewatering effluent.

g. Discharge of treated effluent from petroleum bulk stations and terminals.

h. Discharge of treated effluent from well drilling activities.

i. Discharges of treated effluent from recycled water distribution systems.

j. Discharges of storm water from a small municipal separate storm sewer system.

k. Discharge of circulation water from decorative ponds or tanks.

The CWB requires that a Notice of Intent (NOI) to be covered by a NPDES general permit for any of the above activities be submitted at least 30 days before the commencement of the respective activities. The NOI forms may be picked up at our office or downloaded from our website at http://www.state.hi.us/doh/eh/cwb/forms/genl-index.html.

3. The applicant may be required to apply for an individual NPDES permit if there is any type of activity in which wastewater is discharged from the project into State waters and/or coverage of the discharge(s) under the NPDES general permit(s) is not permissible (i.e. discharges into Class 1 or Class AA waters). An application for the NPDES permit is to be submitted at least 180 days before the commencement of the respective activities. The NPDES application forms may also be picked up at our office or downloaded from our website at http://www.state.hi.us/doh/eh/cwb/forms/indiv-index.html.

4. Hawaii Administrative Rules, Section 11-55-38, also requires the owner to either submit a copy of the new NOI or NPDES permit application to the State Department of Land and Natural Resources, State Historic Preservation Division (SHPD) or demonstrate to the satisfaction of the DOH that the project, activity, or site covered by the NOI or application has been or is being reviewed by SHPD. Please submit a copy of the request for review by SHPD or SHPD's determination letter for the project.

If you have any questions, please contact the CWB at 586-4309.

Sincerely,

DENIS R. LAU, P.E., CHIEF
Clean Water Branch

KP:cu

LINDA LINGLE
GOVERNOR

6608-01

RUSS K. SAITO
COMPTROLLER

KATHERINE H. THOMASON
DEPUTY COMPTROLLER

6/10/03

(1181)

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

JUN - 6 2003

MEMORANDUM

TO: Mr. Denis R. Lau, P.E., Chief
Clean Water Branch
Department of Health

FROM: Tadashi Yoshizawa
Acting Public Works Administrator

SUBJECT: Draft Environmental Assessment (EA)/
Anticipated Finding of No Significant Impact (FONSI)
Anuenue (formerly Rainbow) Radio Facilities and Towers, Statewide
Kahua Ranch Site, North Kohala District, Hawaii
Tax Map Key: 5-9-002:002

Thank you for your May 8, 2003, comments regarding the subject project. Our responses are as follows:

a. The Department of the Army, U.S. Army Engineer District, Honolulu, replied on April 29, 2003, stating that a permit is not required for the subject project.

b. The National Pollutant Discharge Elimination System (NPDES) permit requirements will be reviewed during the design stage. However, based on current criteria for the facilities, none of the NPDES permits identified in your letter are applicable to this project.

c. This project does not involve discharge of wastewater effluent.

d. Chapter 6, Consulted Parties, of the Draft EA lists the Department of Land and Natural Resources Historic Preservation Division as a consulted party.

We appreciate your participation in the Draft EA review process.

AY:mo
c: Mr. John Sakaguchi, WOA w/attach
Mr. Bob Hlivak, DAGS, ICSD w/attach
Mr. Daniel Jandoc, DAGS-PW, PMB w/attach

LINDA LINGLE
GOVERNOR

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

MAY 20 2003

(L08-01) JS
RODNEY K. HARAGA
DIRECTOR
5/21/03
GLENN T. OKIMOTO

IN REPLY REFER TO
HWY-PS
2.0395

RECEIVED
MAY 21 2003
WILSON OKAMOTO CORPORATION

cc: DAGS V/A FAX
5/22/03

Mr. John L. Sakaguchi
Senior Planner
Wilson Okamoto & Associates
1907 S. Beretania Street, Suite 409
Honolulu, Hawaii 96826

Dear Mr. Sakaguchi:

Subject: Draft Environmental Assessment
Rainbow Radio Facilities and Towers, Statewide, Kahua Ranch Site
North Kohala, Hawaii, TMK: 5-9-02:2

Thank you for your transmittal requesting our comments regarding the proposed project.

The proposed radio telecommunication facilities and towers at the Kahua Site will not adversely impact our State highway facilities.

If you have any questions, please contact Ronald Tsuzuki, Head Planning Engineer, Highways Division, at 587-1830.

Very truly yours,

RODNEY K. HARAGA
Director of Transportation

LINDA LINGLE
GOVERNOR OF HAWAII

RECEIVED
MAY 30 2003
WILSON OKAMOTO CORPORATION

(L08-01)

PETER T. YOUNG
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

DAN DAVIDSON
DEPUTY DIRECTOR - LAND

ERNEST Y.W. LAU
DEPUTY DIRECTOR - WATER

6/3/03

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

HISTORIC PRESERVATION DIVISION
KAKUHIHEWA BUILDING, ROOM 555
601 KAMOKILA BOULEVARD
KAPOLEI, HAWAII 96707

May 27, 2003

cc: DAGS, V/A
FAX 6/3/03

Mr. John Sakaguchi
Wilson Okamoto Corporation
1907 South Beretania Street, Suite 400
Honolulu, HI 96826

LOG NO: 2003.0568
DOC NO: 0305PM07

Dear Mr. Sakaguchi

SUBJECT: Chapter 6E-8 Historic Preservation Review of a Draft Environmental Assessment for Anuenue (formerly Rainbow) Radio Towers and Facilities-Kahua Ranch Site
Kahua, North Kohala, Hawaii Island
TMK: (3) 5-9-002:002

Thank you for submitting a copy of the Draft Environmental Assessment (DEA) for the proposed Anuenue Radio Towers and Facilities for our review and comment. The Draft EA was received in our office on April 3, 2003. Our review is late, but you indicated that you would still like comments.

An archaeological and cultural assessment of the proposed radio towers and facilities was conducted by Haun & Associates on October 17, 2002. The results of the two studies are presented in Appendix C of the DEA. No historic properties were found in the archaeological assessment of the 0.52 acre project area located at the 3,810 to 3, 825 foot elevations on Pu'u Waiakanounula. It is unlikely that subsurface cultural deposits exist in the project area because of its small size and inland location where Hawaiian land use was limited to primarily special purpose activities that left little physical evidence, and because of modern use of the project area for cattle pasture.

The cultural assessment study by Maria E. Ka'imipono Orr, indicates that Pu'u Waiakanounula is mentioned in a Hawaiian legend. There is no indication, however, of any traditional cultural properties or practices in the project area.

The archaeological and cultural assessment studies indicate that there are no historic properties in the project area and no evidence for traditional cultural practices. We thus conclude that "no historic properties will be affected" by the construction of the proposed radio tower and other facilities

If you should have any questions about this project please contact our Hawaii Island archaeologist, Patrick McCoy (692-8029)

Aloha,

P. Holly McEldowney

P. Holly McEldowney, Acting Administrator
State Historic Preservation Division

PM:jk

c. Chris Yuen, County of Hawaii Planning Department
Kai Embler, County of Hawaii Department of Public Works

6668-01 JS
4/4/03 BB
cc: DAGS, V/A
Fax 4/9/03

Harry Kim
Mayor

Barbara Bell
Director

County of Hawaii
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
25 Aupuni Street, Room 208 • Hilo, Hawai'i 96720-4252
(808) 961-8083 • Fax (808) 961-8086

April 4, 2003

RECEIVED
APR 9 2003
WILSON OKAMOTO CORPORATION

Mr. John L. Sakaguchi, AICP
Senior Planner
Wilson Okamoto Corporation
1907 S. Beretania Street, Suite 400
Honolulu, HI 96826

Re: Draft Environmental Assessment, Anuenue (formerly Rainbow) Radio Towers and Facilities, Statewide, Kauha Ranch Site
North Kohala District, Hawai'i: TMK: 5-9-002:002

Dear Mr. Sakaguchi,

I am enclosing our comments for your review and action where appropriate.

If I can be of further assistance, please don't hesitate to contact me.

Sincerely,

Barbara Bell
DIRECTOR

cc: SWD

enclosure

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
SOLID WASTE DIVISION
COUNTY OF HAWAII - 108 RAILROAD AVENUE - HILO, HI 96720
HILO (808) 961-8339 WAIMEA (808) 887-3018 KONA (808) 327-3507

Date: 4/4/03

MEMORANDUM

TO: Christopher Yuen, Director
Planning Department

FROM: R. Gonsalves
Solid Waste Division

SUBJECT: SOLID WASTE MANAGEMENT PLAN

Relating to the subject application for E.A. FOR RADIO TOWERS, this division has
AND FACILITIES AT KAHUA
RANCH SITE
TMK: 5-9-002-:002

a) NO_____ comments

and/or

b) THE FOLLOWING clarifications/comments, as indicated:

( ) Commercial operations may not use transfer stations for disposal.
( ) Aggregates and any other construction/demolition waste should be reused to its fullest extent.
( ) Ample room should be provided for recycling.
(X) Greenwaste may be disposed of only at the drop sites located at the Kailua and Hilo Transfer Stations.

/ IF SIGNIFICANT GREEN WASTE BE GENERATED AND MUST BE HAULED OUT FROM PROJECT SITE, THEN FOLLOW ABOVE COMMENT

6608 DI

LINDA LINGLE
GOVERNOR

RUSS K. SAITO
COMPTROLLER

KATHERINE H. THOMASON
DEPUTY COMPTROLLER

6/5/03 (P)1177.3

STATE OF HAWAII
DEPARTMENT OF ACCOUNTING AND GENERAL SERVICES
P.O. BOX 119, HONOLULU, HAWAII 96810
JUN - 3 2003

Ms. Barbara Bell, Director
Department of Environmental Management
County of Hawaii
25 Aupuni Street, Room 208
Hilo, Hawaii 96720-4252

Dear: Ms. Bell:

Subject: Draft Environmental Assessment/Anticipated Finding of No Significant Impact (FONSI), Anuenue (formerly Rainbow) Radio Facilities and Towers, Statewide
Kauha Ranch Site
North Kohala District, Hawaii
Tax Map Key: 5-9-002:002

Thank you for your April 4, 2003, comment regarding the subject project.

The Final Environmental Assessment will note that, if significant green waste is generated and must be hauled from the project site, it will be disposed at the drop sites at the Kailua or Hilo Transfer Stations.

We appreciate your participation in the Draft EA review process.

Sincerely,

Tadashi Yoshizawa

TADASHI YOSHIZAWA
Acting Public Works Administrator

AY:mo
Attachment
c: Mr. John Sakaguchi, WOA
Mr. Bob Hlivak, DAGS-PW, ICSD
Mr. Daniel Jandoc, DAGS-PW, PMB

Harry Kim
Mayor

County of Hawai'i
DEPARTMENT OF PARKS AND RECREATION
101 Pauahi Street, Suite 6 • Hilo, Hawai'i 96720
(808) 961-8311 • Fax (808) 961-8411

Patricia G. Engelhard
Director

Pamela N. Mizuno
Deputy Director

6008-01

4/4/03

cc: DAGS, V/A Fax 4/4/03

RECEIVED
APR 9 2003
WILSON OKAMOTO CORPORATION

April 7, 2003

Wilson Okamoto Corporation
1907 S. Beretania St., Suite 400
Honolulu, HI 96826

Attn: John Sakaguchi, AICP

Re: Anuenue Radio Towers and Facilities, Kahua Ranch Site, North Kohala, Hawaii
Draft Environmental Impact Statement
TMK: (3) 5-9-02:02

Dear Mr. Sakaguchi:

We have reviewed the Draft EA and have concluded that the proposed project will not impact any of our recreational sites or programs.

Thank you for the opportunity to review the draft EA.

Sincerely,

Pat Engelhard

Patricia Engelhard
Director

Harry Kim
Mayor

Dixie Kaetsu
Managing Director

County of Hawaii
DEPARTMENT OF PUBLIC WORKS
101 Pauahi Street, Suite 7 · Hilo, Hawaii 96720-4224
(808) 961-8321 · Fax (808) 961-8630

6008-01

Bruce C. McClure
Director

4/25/03

Ronald K. Takahashi
Deputy Director

cc: DAGS, V/A Fax 4/25/03

April 21, 2003

John L. Sakaguchi, AICP, Senior Planner
Wilson Okamoto Corporation
1907 S. Beretania St., Suite 400
Honolulu, HI 96826

RECEIVED
APR 23 2003
WILSON OKAMOTO CORPORATION

Subject: Draft Environmental Assessment
Anuenue Radio Towers and Facilities
Kahua Ranch Site
North Kohala District, Hawaii
TMK: 5-9-002:002

Thank you for the opportunity to review and comment on the subject project. Please refer to our comments dated December 26, 2002 for the Pre-assessment Consultation. Building and grading permits are required for the proposed project.
If you have any questions, please feel free to contact Kiran Emler of our Kona office at 327-3530.

Galen M. Kuba, Division chief
Engineering Division

KE

c: ENG-HILO/KONA

Harry Kim
Mayor

County of Hawaii
POLICE DEPARTMENT
349 Kapiolani Street • Hilo, Hawaii 96720-3998
(808) 935-3311 • Fax (808) 961-8869

Lawrence K. Mahuna
Police Chief

Harry S. Kubojiri
Deputy Police Chief

(6608-01) 4/28/03
cc: DAGS, VIA FAX 4/28/03
JS

April 23, 2003

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

ATTENTION: Mr. John L. Sakaguchi, Senior Planner

Dear Mr. Sakaguchi:

In response to your letter dated April 1, 2003, my staff has reviewed the Draft Environmental Assessment for the Anuenue Radio Towers and Facilities, Statewide, Kahua Ranch Site, and offers no comments in this matter.

Thank you for the opportunity to respond, and if you have any questions, please contact Assistant Chief Charles M. Chai, Jr., of the Administrative Bureau, at 961-2247.

Sincerely,

LAWRENCE K. MAHUNA
POLICE CHHIEF

CMC/jh

Hawaii Electric Light Company, Inc. • PO Box 1027 • Hilo, HI 96721-1027

(6608-01) JS
5/5/03 WL LO

RECEIVED FILE
MAY 5 2003
WILSON OKAMOTO CORPORATION

April 29, 2003

Wilson Okamoto Corporation
Attn: Mr. John L. Sakaguchi
1907 South Beretania Street, Suite 400
Honolulu, Hawaii 96826

Dear John,

Subject: Comments on the Draft Environmental Assessment
Anuenue Radio Towers and Facilities
Kahua Ranch Site

Thank you for allowing us to review the Draft Environmental Assessment for the proposed facility at Kahua Ranch Site. Following are our comments:

- Subject – Kahua is misspelled.
- The proposed State of Hawaii Facility will be built on the existing vehicle trail used as access to the County of Hawaii and AT&T Wireless Facility. This trail is also used by HELCO to access and maintain our underground facilities. Is there a plan to provide an alternate route?
- We recommend final plans be submitted to HELCO for review and that construction of this facility be coordinated with HELCO to avoid damaging the existing underground ductlines.
- The County of Hawaii has existing ductlines running from their communication building to their tower. We recommend this routing be indicated on the construction plans to avoid damage during construction.
- Figure 1 8 indicates that antenna C& D appears to face HELCO's Huehue Communication Site. If this is true, HELCO would appreciate being contacted by the State of it's intention to install additional antenna on our tower and to use additional rack space in our communication building.
- HELCO has requested co-locating on the State's new tower and in the communication building, however it appears the State has restrictions that denies this request. Because of this, HELCO may build our own communication tower and building in close proximity to where the existing County of Hawaii facility is. HELCO will request a conduit to the State building so we may drop out a DS1 circuit from the County of Hawaii system.

Please call Sidney Hatakenaka at (808) 969-0353 if there are any questions.

Sincerely,

Clyde H. Nagata, P.E.
Manager, Engineering Department

CHN:SH:ln

LINDA LINGLE
GOVERNOR

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

RUSS K. SAITO
COMPTROLLER
KATHERINE H. THOMASON
DEPUTY COMPTROLLER

(P)1182.3

JUN - 6 2003

RECEIVED
JUN 9 2003
WILSON OKAMOTO CORPORATION

660-01
6/10/03
JS

Mr. Clyde H. Nagata, P.E., Manager
Engineering Department
Hawaii Electric Light Company, Inc.
P.O. Box 1027
Hilo, Hawaii 96721-1027

Dear: Mr. Nagata:

Subject: Draft Environmental Assessment (EA)/
Anticipated Finding of No Significant Impact (FONSI),
Anuenue (formerly Rainbow) Radio Facilities and Towers, Statewide
Kahua Ranch Site, North Kohala District, Hawaii
Tax Map Key: 5-9-002:002

Thank you for your April 29, 2003, comments regarding the subject project. Our responses are as follows:

a. The spelling will be corrected in the Final EA.

b. The design drawings will show a new route for access which will encircle the west side of the Anuenue facility. This plan will be included in the Final EA.

c. The design drawings will be submitted to HELCO for review.

d. The design drawings will show the routing of the existing ductlines, provided they are made available.

e. The Department of Accounting and General Services (DAGS) has no intentions of installing an additional antenna at HELCO's Huehue Communication site.

f. If HELCO intends to construct a new facility near the Anuenue facility, a formal request with any requirements should be submitted to DAGS.

We appreciate your participation in the Draft EA review process.

Sincerely,

TADASHI YOSHIZAWA
Acting Public Works Administrator

AY:mo
c: Mr. John Sakaguchi, WOA w/attach
Mr. Bob Hlivak, DAGS, ICSD w/attach
Mr. Daniel Jandoc, DAGS-PW, PMB w/attach

APPENDIX D

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

REPLY TO
ATTENTION OF: CEPOH-EC-T

660B-01 JS
4/9/03

April 9, 2003

CC: DAGS, V/A FAX 4/9/03

RECEIVED
APR 9 2003
WILSON OKAMOTO CORPORATION

Civil Works Technical Branch

Mr. John L. Sakaguchi, Senior Planner
Wilson Okamoto Corporation
1907 S. Beretania Street, Suite 400
Honolulu, Hawaii 96826

Dear Mr. Sakaguchi:

Thank you for the opportunity to review and comment on the Draft Environmental Assessment (DEA) for the Anuenue (formerly Rainbow) Radio Towers and Facilities, Statewide, Kauha Ranch Site, North Kohala, Hawaii (TMK 5-9-2: 2). The following comments are provided in accordance with Corps of Engineers authorities to provide flood hazard information and to issue Department of the Army (DA) permits.

a. Based on the information provided, a DA permit will not be required for the project.

b. The flood hazard information provided on page 2-2 of the DEA is correct.

Should you require additional information, please contact Ms. Jessie Dobinchick of my staff at (808) 438-8876.

Sincerely,

James Pennaz

James Pennaz, P.E.
Chief, Civil Works
Technical Branch

LINDA LINGLE
GOVERNOR

660B-01 JS

RUSS K. SAITO
COMPTROLLER

KATHERINE H. THOMASON
DEPUTY COMPTROLLER

6/5/03

(P)1176.3

STATE OF HAWAII
DEPARTMENT OF ACCOUNTING AND GENERAL SERVICES
P.O. BOX 119, HONOLULU, HAWAII 96810
JUN - 3 2003

RECEIVED
JUN 4 2003
WILSON OKAMOTO CORPORATION

Mr. James Pennaz, P.E., Chief
Civil Works Technical Branch
U.S. Army Engineer District, Honolulu
Fort Shafter, Hawaii 96858-5440

Dear Mr. Pennaz:

Subject: Draft Environmental Assessment/Anticipated Finding of No Significant Impact (FONSI), Anuenue (formerly Rainbow)
Radio Facilities and Towers, Statewide, Kauha Ranch Site
North Kohala District, Hawaii
Tax Map Key: 5-9-002:002

Thank you for your April 9, 2003, comments regarding the subject project. Our responses to your comments are as follows:

1. The Final Environmental Assessment will note that a Department of Army permit is not required for the project.

2. Thank you for confirming that the flood hazard information provided on Page 2-2 is correct.

We appreciate your participation in the Draft EA review process.

Sincerely,

Tadashi Yoshizawa

TADASHI YOSHIZAWA
Acting Public Works Administrator

AY:mo
Attachment
c: Mr. John Sakaguchi, Wilson Okamoto Architects Corp.
Mr. Bob Hlivak, DAGS-PW, ICSD
Mr. Daniel Jandoc, DAGS-PW, PMB

U.S. Department
of Transportation
Federal Aviation
Administration

Western-Pacific Region
Real Estate and Utilities Section, AWP/L-54B

P. O. Box 50109
Honolulu, Hawaii 96850-5000

4609-01

4/15/03

April 10, 2003

Mr. John L. Sakaguchi, AICP
Senior Planner
Wilson Okamoto Corporation
1907 S. Beretania Street, Suite 400
Honolulu, HI 96826

cc: DAGS, V/A
FAX 4/15/03

Dear Mr. Sakaguchi:

Your letter of April 1, 2003, requested our review and comment of the Draft Environmental Assessment (EA), Anuenue (formerly Rainbow) Radio Towers and Facilities, Statewide, Kahua Ranch Site, North Kohala District, Hawaii; Tax Map Key: 5-9-002:002.

The Federal Aviation Administration (FAA) requests that the proponents of this project submit a "Notice of Construction or Alteration" FAA Form 7460-1 so that an airspace evaluation may be conducted.

A copy of this Draft EA was also sent to our Hawaii-Pacific System Management Office and comments may also be forwarded separately from them.

We appreciate this opportunity to comment on your project. Please contact me at 541-1236, if there are any questions.

Sincerely,

Darice B. N. Young
Realty Contracting Officer

LINDA LINGLE
GOVERNOR

RUSS K. SAITO
COMPTROLLER

KATHERINE H. THOMASON
DEPUTY COMPTROLLER

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

(P)1140.3

MAY - 1 2003

Ms. Darice B. N. Young, Realty Contracting Officer
Wester-Pacific Region
Real Estate and Utilities Section
Federal Aviation Administration
U. S. Department of Transportation
P. O. Box 50109
Honolulu, Hawaii 96850-5000

Dear Ms. Young:

Subject: Draft Environmental Assessment (EA)/Anticipated Finding of No Significant Impact (FONSI), Anuenue (formerly Rainbow) Radio Facilities and Towers, Statewide, Kahua Ranch Site, North Kohala District, Hawaii
TMK: 5-9-002:002

Thank you for your April 10, 2003, comment regarding the subject project. Our response to your comment is as follows:

A Federal Aviation Administration (FAA) "Notice of Construction or Alteration" Form 7460-1 will be submitted so that an airspace evaluation may be conducted.

We appreciate your participation in the Draft EA review process.

Sincerely,

TADASHI YOSHIZAWA
Acting Public Works Administrator

AY:jo
c: Mr. John Sakaguchi, Wilson Okamoto Corporation w/ FAA Letter
Mr. Bob Hlivak, DAGS-ICSD w/ FAA Letter
Mr. Daniel Jandoc, DAGS-PW PMB w/ FAA Letter

6600-01

United States Department of the Interior

U.S. GEOLOGICAL SURVEY
WATER RESOURCES DISCIPLINE
677 Ala Moana Blvd., Suite 415
Honolulu, HI 96813
Phone: (808) 587-2400/Fax: (808) 587-2401

RECEIVED APR 4 2003 WILSON OKAMOTO CORPORATION

4/3/03

cc: DAGS, VIA FAX 4/3/03

April 3, 2003

Mr. John L. Sakaguchi, AICP
Senior Planner
Wilson Okamoto & Associates, Inc.
1907 S. Beretania St., Suite 400
Honolulu, HI 96826

Dear Mr. Sakaguchi:

Subject: Draft Environmental Assessment, Anuenue (formerly Rainbow) Radio Towers and Facilities, Statewide, Kauha Ranch Site
North Kohala District, Hawaii; Tax Map Key: 5-9-002:002
Review and Comment

Thank you for forwarding the subject Draft Environment Assessment for review and comment by the staff of the U.S. Geological Survey, Water Resources Discipline, Hawaii District office. We regret however, that due to prior commitments and lack of available staff, we are unable to review this document and are returning it for your future use.

We appreciate the opportunity to participate in the review process.

Sincerely,

Gordon Tribble
District Chief

Enclosure

NRCS
Natural Resources Conservation Service
P.O. Box 50004
Honolulu, HI 96850

United States Department of Agriculture

Our People. Our Islands. In Harmony

April 30, 2003

Mr. John L. Sakaguchi, Senior Planner
Wilson Okamoto Corporation
1907 South Beretania Street, Suite 400
Honolulu, HI 96826

Subject: Draft Environmental Assessment, Anuenue Radio Towers and Facilities

Attention: Mr. John L. Sakaguchi,

We have reviewed the above mentioned document and have no comment to offer at this time.

Thank you for the opportunity to review this document.

Sincerely,

LAWRENCE T. YAMAMOTO
Acting State Conservationist

PHONE (808) 594-1888

FAX (808) 594-1865

JS
(608-01)
4/9/03

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

RECEIVED
APR 7 2003
WILSON OKAMOTO CORPORATION

cc: DABS, VIA FAX
4/9/03

April 3, 2003

Mr. John L. Sakaguchi, AICP
Senior Planner
Wilson Okamoto Corporation
1907 S. Beretania Street – Suite 400
Honolulu, HI 96826

SUBJECT: ANUENUE RADIO TOWERS AND FACILITIES, STATEWIDE
KAUHA RANCH SITE NORTH KOHALA DISTRICT,
HAWAII - DEA

Dear Mr. Sakaguchi:

Thank you for the opportunity to review the above referenced Draft Environmental Assessment for construction of one self-supporting tower for mounted antennas and related support facilities.

The Office of Hawaiian Affairs (OHA) has no comment at this point in time. If you have any questions, please contact Jerry B. Norris at 594-1847 or email him at jerryn@oha.org.

Sincerely,

Peter L. Yee
Director
Nationhood and Native Rights

LINDA LINGLE
GOVERNOR OF HAWAII

(608-01)

COMPTROLLER'S OFFICE
DAGS

2003 APR 22 A 10:17

STATE OF HAWAII
OFFICE OF ENVIRONMENTAL QUALITY CONTROL
235 SOUTH BERETANIA STREET
SUITE 702
HONOLULU, HI 96813
Telephone: (808) 586-4185
Fax: (808) 586-4186
Email: oeqc@oeqc.state.hi.us

April 7, 2003

Mr. Russ K. Saito, Comptroller
Department of Accounting and General Services
P.O. Box 119
Honolulu, Hawai'i 96810

Dear Mr. Saito

Subject: Draft EA for the Ānuenue Radio Towers and Facilities, North Kohala, Hawai'i

Thank you for the opportunity to review the subject document. We have the following comments.

1. Please describe the spill containment system for the proposed lead acid batteries.
2. Please describe the cumulative visual impacts of all the communications tower at the site.
3. Please list all the permits that are required for this project.

Should you have any questions, please call Jeyan Thirugnanam at 586-4185. Mahalo.

Sincerely,

Genevieve Salmonson
Director

c: Wilson Okamoto and Associates

LINDA LINGLE
GOVERNOR

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

RUSS K. SAITO
COMPTROLLER

KATHERINE H. THOMASON
DEPUTY COMPTROLLER

(P)1181.3

6/11/03

(660-01) JS

RECEIVED
JUN 10 2003
WILSON OKAMOTO CORPORATION

MEMORANDUM

JUN 9 2003

TO: Ms. Genevieve Salmonson, Director
Office of Environmental Quality Control
Department of Health

FROM: Tadashi Yoshizawa
Acting Public Works Administrator

SUBJECT: Draft Environmental Assessment (EA)/Anticipated Finding of No Significant Impact (FONSI), Anuenue (formerly Rainbow) Radio Facilities and Towers, Statewide, Kahua Ranch Site
North Kohala District, Hawaii
TMK: 5-9-002:002:

Thank you for your April 7, 2003, comments regarding the subject project. Our response are as follows:

1. As stated in the Draft EA, the valve regulated lead acid batteries will be supplied with a gel electrolyte and have been designed not to leak. In addition, a spill containment system will be installed, which will consist of an acid resistant container filled with a neutralizing absorbent.

2. Also as indicated in the Draft EA, the Anuenue facility will include a 70-foot high self-supporting tower, an equipment building, and necessary support facilities. No additional facilities are proposed for construction. The main visual impact will be on public views from Kohala Mountain Road. Figure 2.1 in the Draft EA shows the cumulative visual impacts.

3. The required permits will be listed in the Final EA.

We appreciate your participation in the Draft EA review process. If you have any questions, please call Mr. Allen Yamanoha of the Planning Branch at 586-0488.

AY:jo
c: ✓Mr. John Sakaguchi, Wilson Okamoto & Assoc. w/attach
Mr. Bob Hlivak, DAGS-ICSD w/attach
Mr. Daniel Jandoc, DAGS-PW, PMB w/attach

LINDA LINGLE

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT
P.O. BOX 621
HONOLULU, HAWAII 96809

RECEIVED
APR 16 2003
WILSON OKAMOTO CORPORATION

6608-01
4/16/

PETER T. YOUNG
MEREDITH J. CHING
CLAYTON W. DELA CRUZ
CHIYOME L. FUKINO, M.D.
BRIAN C. NISHIDA
HERBERT M. RICHARDS, JR.

ERNEST Y.W. LAU

cc: DAGS, VIA FAX 4/16/03

April 14, 2003

John L. Sakaguchi, AICP
Wilson Okamoto Corporation
1907 S. Beretania Street, Suite 400
Honolulu, HI 96826

SUBJECT: Draft Environmental Assessment, Anuenue (formerly Rainbow) Radio Towers and Facilities, Statewide, Kahua Ranch Site
North Kohala District, Hawaii; Tax Map Key: 5-9-002:002

Thank you for the opportunity to review the subject document. Our comments related to water resources are marked below.

In general, the CWRM strongly promotes the efficient use of our water resources through conservation measures and use of alternative non-potable water resources whenever available, feasible, and there are no harmful effects to the ecosystem. Also, the CWRM encourages the protection of water recharge areas, which are important for the maintenance of streams and the replenishment of aquifers.

[ ] We recommend coordination with the county government to incorporate this project into the county's Water Use and Development Plan.

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

[ ] We are concerned about the potential for ground or surface water degradation/contamination and recommend that approvals for this project be conditioned upon a review by the State Department of Health and the developer's acceptance of any resulting requirements related to water quality.

[ ] A Well Construction Permit and/or a Pump Installation Permit from the Commission would be required before ground water is developed as a source of supply for the project.

[ ] The proposed water supply source for the project is located in a designated water management area, and a Water Use Permit from the Commission would be required prior to use of this source.

[ ] Groundwater withdrawals from this project may affect streamflows, which may require an instream flow standard amendment.

[ ] We are concerned about the potential for degradation of instream uses from development on highly erodible slopes adjacent to streams within or near the project. We recommend that approvals for this project be conditioned upon a review by the corresponding county's Building Department and the developer's acceptance of any resulting requirements related to erosion control.

[ ] If the proposed project includes construction of a stream diversion, the project may require a stream diversion works permit and amend the instream flow standard for the affected stream(s).

[ ] If the proposed project alters the bed and banks of a stream channel, the project may require a stream channel alteration permit.

[X] OTHER:

We have no comments to offer at this time.

If there are any questions, please contact Tiffany Mathias at 587-0269.

Sincerely,

ERNEST Y.W. LAU
Deputy Director

LINDA LINGLE
GOVERNOR OF HAWAII

(L603-01) EM 5/7/03

PETER T. YOUNG
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

DAN DAVIDSON
DEPUTY DIRECTOR - LAND

ERNEST Y.W. LAU
DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

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

MAY -2 2003

cc: DAGS, VIA Fax 5/7/03

L-1574

Earl Matsukawa, AICP, Project Manager
Wilson Okamoto Corporation
1907 S. Beretania Street Suite 400
Honolulu, Hawaii 96826

Subject: Draft Environmental Assessment, Anuenue (formerly Rainbow) Radio Towers and Facilities, Statewide, Kauha Ranch Site North Kohala District, Hawaii, tax map key: (3) 5-9-2:2

Dear Mr. Matsukawa:

Please accept our apology in not responding to your request sooner. A copy of your request was distributed within the Department.

The Department of Land and Natural Resources has no other comment to offer at this time.

Should you have any questions, please contact Nicholas Vaccaro of the Land Division, Support Services Branch at 587-0438.

Sincerely,

for DIERDRE S. MAMIYA
Administrator

Cc: Land Board Member

LINDA LINGLE
GOVERNOR

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION
P.O. Box 621
HONOLULU, HAWAII 96809

April 4, 2003

LD/NAV
Ref.: RAINBOWRADIODAGS.CMT2
DAGS: 16-10-0256

L-1574
Suspense Date: 4/29/04

MEMORANDUM:

TO:
XXX Division of Aquatic Resources
XXX Division of Forestry & Wildlife
XXX Division of State Parks
XXX Engineering Division
Division of Boating and Ocean Recreation
XXX Commission on Water Resource Management (Received)
XXX Land-Planning and Technical Services
XXX Land-Hawaii District Land Office (DD)

FROM: Charlene E. Unoki, Acting Assistant Administrator
Land Division

SUBJECT: Draft Environmental Assessment Covering the Rainbow Radio Faculties and Towers, Statewide, Kahua Ranch Site (DAGS JOB NO. 16-10-0256) North Kona, Hawaii
Consultant: Wilson Okamota & Associates, Inc. (946-2277)

Please review the Draft Environmental Assessment, pertaining to the subject matter and submit your comments (if any) on Division letterhead signed and dated by the suspense date.

Note: One copy of the DEA is available for your review in the Land Division Office, Room 220.

Should you need more time to review the subject matter, please contact Nicholas A. Vaccaro at ext.: 7-0384.

If this office does not receive your comments on or before the suspense date, we will assume there are no comments.

(X) We have no comments.

( ) Comments attached.

Signed:
MICHAEL G. BUCK, ADMINISTRATOR
DIVISION OF FORESTRY AND WILDLIFE

Date: APR 9 [illegible]

LINDA LINGLE
GOVERNOR

DIVISION OF AQUATIC RESOURCES

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION
P.O. Box 621
HONOLULU, HAWAII 96809

PETER T. YOUNG
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES

DAN DAVIDSON
DEPUTY DIRECTOR FOR LAND

ERNEST Y.W. LAU
DEPUTY DIRECTOR FOR
THE COMMISSION ON WATER
RESOURCE MANAGEMENT

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND RESOURCES ENFORCEMENT
CONVEYANCES
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

April 4, 2003

LD/NAV
Ref.: RAINBOWRADIODAGS.CMT2
DAGS: 16-10-0256

L-1574
Suspense Date: 4/29/04

MEMORANDUM:

TO:
XXX Division of Aquatic Resources
XXX Division of Forestry & Wildlife
XXX Division of State Parks
XXX Engineering Division
Division of Boating and Ocean Recreation
XXX Commission on Water Resource Management (Received)
XXX Land-Planning and Technical Services
XXX Land-Hawaii District Land Office (DD)

FROM: Charlene E. Unoki, Acting Assistant Administrator
Land Division

RECEIVED
APR 8 2003
AQUATIC RESOURCES

SUBJECT: Draft Environmental Assessment Covering the Rainbow Radio Faculties and Towers, Statewide, Kahua Ranch Site (DAGS JOB NO. 16-10-0256) North Kona, Hawaii
Consultant: Wilson Okamota & Associates, Inc. (946-2277)

Please review the Draft Environmental Assessment, pertaining to the subject matter and submit your comments (if any) on Division letterhead signed and dated by the suspense date.

Note: One copy of the DEA is available for your review in the Land Division Office, Room 220.

Should you need more time to review the subject matter, please contact Nicholas A. Vaccaro at ext.: 7-0384.

If this office does not receive your comments on or before the suspense date, we will assume there are no comments.

(X) We have no comments.

( ) Comments attached.

Signed:

Date: 4-28-03

LINDA LINGLE
GOVERNOR

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION
P.O. Box 621
HONOLULU, HAWAII 96809
April 4, 2003

PETER T. YOUNG
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES

DAN DAVIDSON
DEPUTY DIRECTOR FOR LAND

ERNEST Y.W. LAU
DEPUTY DIRECTOR FOR
THE COMMISSION ON WATER
RESOURCE MANAGEMENT

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND RESOURCES ENFORCEMENT
CONVEYANCES
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

LD/NAV
Ref.: RAINBOWRADIODAGS.CMT2
DAGS: 16-10-0256

L-1574
Suspense Date: 4/29/04

MEMORANDUM:

TO: XXX Division of Aquatic Resources
XXX Division of Forestry & Wildlife
XXX Division of State Parks
XXX Engineering Division
Division of Boating and Ocean Recreation
XXX Commission on Water Resource Management (Received)
XXX Land-Planning and Technical Services
XXX Land-Hawaii District Land Office (DD)

FROM: Charlene E. Unoki, Acting Assistant Administrator
Land Division

SUBJECT: Draft Environmental Assessment Covering the Rainbow Radio Faculties and Towers, Statewide, Kahua Ranch Site (DAGS JOB NO. 16-10-0256) North Kona, Hawaii
Consultant: Wilson Okamota & Associates, Inc. (946-2277)

Please review the Draft Environmental Assessment, pertaining to the subject matter and submit your comments (if any) on Division letterhead signed and dated by the suspense date.

Note: One copy of the DEA is available for your review in the Land Division Office, Room 220.

Should you need more time to review the subject matter, please contact Nicholas A. Vaccaro at ext.: 7-0384.

If this office does not receive your comments on or before the suspense date, we will assume there are no comments.

(X) We have no comments.

( ) Comments attached.

Signed: Andrew M. Monden

Date: 4/10/03

LINDA LINGLE
GOVERNOR

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION
P.O. Box 621
HONOLULU, HAWAII 96809
April 4, 2003

PETER T. YOUNG
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES

DAN DAVIDSON
DEPUTY DIRECTOR FOR LAND

ERNEST Y.W. LAU
DEPUTY DIRECTOR FOR
THE COMMISSION ON WATER
RESOURCE MANAGEMENT

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND RESOURCES ENFORCEMENT
CONVEYANCES
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

LD/NAV
Ref.: RAINBOWRADIODAGS.CMT2
DAGS: 16-10-0256

L-1574
Suspense Date: 4/29/04

MEMORANDUM:

TO: XXX Division of Aquatic Resources
XXX Division of Forestry & Wildlife
XXX Division of State Parks
XXX Engineering Division
Division of Boating and Ocean Recreation
XXX Commission on Water Resource Management (Received)
XXX Land-Planning and Technical Services
XXX Land-Hawaii District Land Office (DD)

FROM: Charlene E. Unoki, Acting Assistant Administrator
Land Division

SUBJECT: Draft Environmental Assessment Covering the Rainbow Radio Faculties and Towers, Statewide, Kahua Ranch Site (DAGS JOB NO. 16-10-0256) North Kona, Hawaii
Consultant: Wilson Okamota & Associates, Inc. (946-2277)

Please review the Draft Environmental Assessment, pertaining to the subject matter and submit your comments (if any) on Division letterhead signed and dated by the suspense date.

Note: One copy of the DEA is available for your review in the Land Division Office, Room 220.

Should you need more time to review the subject matter, please contact Nicholas A. Vaccaro at ext.: 7-0384.

If this office does not receive your comments on or before the suspense date, we will assume there are no comments.

(✓) We have no comments.

( ) Comments attached.

Signed: [signature]

Date: 4/16/03

LINDA LINGLE
GOVERNOR

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION
P.O. Box 621
HONOLULU, HAWAII 96809

PETER T. YOUNG
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES

DAN DAVIDSON
DEPUTY DIRECTOR FOR LAND

ERNEST Y.W. LAU
DEPUTY DIRECTOR FOR
THE COMMISSION ON WATER
RESOURCE MANAGEMENT

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
COMMISSION ON WATER RESOURCE
MANAGEMENT
CONSERVATION AND RESOURCES
ENFORCEMENT
CONVEYANCES
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE
COMMISSION
LAND
STATE PARKS

April 4, 2003

LD/NAV
Ref.: RAINBOWRADIODAGS.CMT2
DAGS: 16-10-0256

L-1574
Suspense Date: 4/29/04

RECEIVED
LAND DIVISION
HILO, HAWAII
2003 APR -9 A 11:00

MEMORANDUM:

TO: XXX Division of Aquatic Resources
XXX Division of Forestry & Wildlife
XXX Division of State Parks
XXX Engineering Division
Division of Boating and Ocean Recreation
XXX Commission on Water Resource Management (Received)
XXX Land-Planning and Technical Services
XXX Land-Hawaii District Land Office (DD)

FROM: Charlene E. Unoki, Acting Assistant Administrator
Land Division

SUBJECT: Draft Environmental Assessment Covering the Rainbow Radio Faculties and Towers, Statewide, Kahua Ranch Site (DAGS JOB NO. 16-10-0256) North Kona, Hawaii
Consultant: Wilson Okamota & Associates, Inc. (946-2277)

Please review the Draft Environmental Assessment, pertaining to the subject matter and submit your comments (if any) on Division letterhead signed and dated by the suspense date.

Note: One copy of the DEA is available for your review in the Land Division Office, Room 220.

Should you need more time to review the subject matter, please contact Nicholas A. Vaccaro at ext.: 7-0384.

If this office does not receive your comments on or before the suspense date, we will assume there are no comments.

(✓) We have no comments. ( ) Comments attached.

Signed:

Date: 4/11/03

LINDA LINGLE
GOVERNOR

RECEIVED
03 APR 8 P1:55
COMMISSION ON WATER
RESOURCE MANAGEMENT

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION
P.O. Box 621
HONOLULU, HAWAII 96809
April 4, 2003

PETER T. YOUNG
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES

DAN DAVIDSON
DEPUTY DIRECTOR FOR LAND

ERNEST Y.W. LAU
DEPUTY DIRECTOR FOR
THE COMMISSION ON WATER
RESOURCE MANAGEMENT

AQUATIC RESOURCES
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KAHOOLAWE ISLAND RESERVE
COMMISSION
LAND
STATE PARKS

L-1574
Suspense Date: 4/29/04

LD/NAV
Ref.: RAINBOWRADIODAGS.CMT2
DAGS: 16-10-0256

MEMORANDUM:

TO: XXX Division of Aquatic Resources
XXX Division of Forestry & Wildlife
XXX Division of State Parks
XXX Engineering Division
Division of Boating and Ocean Recreation
XXX Commission on Water Resource Management (Received)
XXX Land-Planning and Technical Services
XXX Land-Hawaii District Land Office (DD)

FROM: Charlene E. Unoki, Acting Assistant Administrator
Land Division

SUBJECT: Draft Environmental Assessment Covering the Rainbow Radio Faculties and Towers, Statewide, Kahua Ranch Site (DAGS JOB NO. 16-10-0256) North Kona, Hawaii
Consultant: Wilson Okamota & Associates, Inc. (946-2277)

Please review the Draft Environmental Assessment, pertaining to the subject matter and submit your comments (if any) on Division letterhead signed and dated by the suspense date.

Note: One copy of the DEA is available for your review in the Land Division Office, Room 220.

Should you need more time to review the subject matter, please contact Nicholas A. Vaccaro at ext.: 7-0384.

If this office does not receive your comments on or before the suspense date, we will assume there are no comments.

(✓) We have no comments. ( ) Comments attached.

Signed:

Date: 4/7/03

a 2003 3:33PM HAWAII STATE CD

LINDA LINGLE
GOVERNOR

MAJOR GENERAL ROBERT G. F. LEE
DIRECTOR OF CIVIL DEFENSE

EDWARD T. TEIXEIRA
VICE DIRECTOR OF CIVIL DEFENSE

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

PHONE: (808) 733-4300
FAX: (808) 733-4287

(6608-01)

5/9/03
Q

May 8, 2003

CC: DAGS, VIA FAX 5/9/03

Mr. John L. Sakaguchi, Senior Planner
Wilson Okamoto Corporation
1907 South Beretania Street, Suite 400
Honolulu, HI 96826

Dear Mr. Sakaguchi:

Draft Environmental Assessment, Anuenue (formerly Rainbow) Radio Towers and Facilities, Statewide, Kahua Ranch Site, North Kohala District, Hawaii; Tax Map Key: 5-9-002:002, Review and Comment

State Civil Defense planners have reviewed the draft environmental assessment, and strongly support the proposed project at Kahua Ranch. The construction of the proposed radio tower and facility are critical to State modernization and hardening efforts for emergency communications support to the Big Island. The Anuenue system will directly support Homeland Security communications and technology needs.

Should you have any questions, please call Mr. Norman Ogasawara, State Civil Defense, at 733-4300, extension 531.

Sincerely,

EDWARD T. TEIXEIRA
Vice Director of Civil Defense

c: Hawaii County Civil Defense Agency
Department of Accounting & General Services (ICSD Telecom Services Branch)

LINDA LINGLE
GOVERNOR OF HAWAII

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

(6608-01) JS

RECEIVED
MAY 14 2003
WILSON OKAMOTO CORPORATION

5/15/03

CHIYOME L. FUKINO, M.D.
DIRECTOR OF HEALTH

In reply, please refer to:
EMD / CWB

05025PKP.03

May 8, 2003

CC: DAGS, VIA FAX 5/16/03

Mr. John L. Sakaguchi
Senior Planner
Wilson Okamoto Corporation
1907 South Beretania Street, Suite 400
Honolulu, Hawaii 96826

Dear Mr. Sakaguchi:

Subject: Draft Environmental Assessment
Anuenue (formerly Rainbow) Radio Towers and Facilities Statewide
Kahua Ranch Site
North Kohala District, Hawaii

The Department of Health, Clean Water Branch (CWB) has reviewed the subject document and offers the following comments:

1. The Army Corps of Engineers should be contacted at (808) 438-9258 to identify whether a Federal license or permit (including a Department of Army permit) is required for this project. Pursuant to Section 401(a)(1) of the Federal Water Pollution Act (commonly known as the "Clean Water Act"), a Section 401 Water Quality Certification is required for "[a]ny applicant for Federal license or permit to conduct any activity including, but not limited to, the construction or operation of facilities, which may result in any discharge into the navigable waters...."

2. A National Pollutant Discharge Elimination System (NPDES) general permit coverage is required for the following activities:

   a. Storm water associated with industrial activities, as defined in Title 40, Code of Federal Regulations, Sections 122.26(b)(14)(i) through 122.26(b)(14)(ix) and 122.26(b)(14)(xi).

   b. Construction activities, including clearing, grading, and excavation, that result in the disturbance of equal to or greater than one (1) acre of total land area. The total land area includes a contiguous area where multiple separate and distinct construction activities may be taking place at different times on different schedules under a larger common plan of development or sale. **An NPDES permit is required before the commencement of the construction activities.**

   c. Discharge of treated effluent from leaking underground storage tank remedial activities.

d. Discharge of once through cooling water less than one (1) million gallons per day;

e. Discharge of hydrotesting water.

f. Discharge of construction dewatering effluent.

g. Discharge of treated effluent from petroleum bulk stations and terminals.

h. Discharge of treated effluent from well drilling activities.

i. Discharges of treated effluent from recycled water distribution systems.

j. Discharges of storm water from a small municipal separate storm sewer system.

k. Discharge of circulation water from decorative ponds or tanks.

The CWB requires that a Notice of Intent (NOI) to be covered by a NPDES general permit for any of the above activities be submitted at least 30 days before the commencement of the respective activities. The NOI forms may be picked up at our office or downloaded from our website at http://www.state.hi.us/doh/eh/cwb/forms/genl-index.html.

3. The applicant may be required to apply for an individual NPDES permit if there is any type of activity in which wastewater is discharged from the project into State waters and/or coverage of the discharge(s) under the NPDES general permit(s) is not permissible (i.e. discharges into Class 1 or Class AA waters). An application for the NPDES permit is to be submitted at least 180 days before the commencement of the respective activities. The NPDES application forms may also be picked up at our office or downloaded from our website at http://www.state.hi.us/doh/eh/cwb/forms/indiv-index.html.

4. Hawaii Administrative Rules, Section 11-55-38, also requires the owner to either submit a copy of the new NOI or NPDES permit application to the State Department of Land and Natural Resources, State Historic Preservation Division (SHPD) or demonstrate to the satisfaction of the DOH that the project, activity, or site covered by the NOI or application has been or is being reviewed by SHPD. Please submit a copy of the request for review by SHPD or SHPD's determination letter for the project.

If you have any questions, please contact the CWB at 586-4309.

Sincerely,

DENIS R. LAU, P.E., CHIEF
Clean Water Branch

KP:cu

LINDA LINGLE
GOVERNOR

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

RUSS K. SAITO
COMPTROLLER

KATHERINE H. THOMASON
DEPUTY COMPTROLLER

6/10/03

JUN - 6 2003

L608-01

MEMORANDUM

TO: Mr. Denis R. Lau, P.E., Chief
Clean Water Branch
Department of Health

FROM: Tadashi Yoshizawa
Acting Public Works Administrator

SUBJECT: Draft Environmental Assessment (EA)/
Anticipated Finding of No Significant Impact (FONSI)
Anuenue (formerly Rainbow) Radio Facilities and Towers, Statewide
Kahua Ranch Site, North Kohala District, Hawaii
Tax Map Key: 5-9-002:002

Thank you for your May 8, 2003, comments regarding the subject project. Our responses are as follows:

a. The Department of the Army, U.S. Army Engineer District, Honolulu, replied on April 29, 2003, stating that a permit is not required for the subject project.

b. The National Pollutant Discharge Elimination System (NPDES) permit requirements will be reviewed during the design stage. However, based on current criteria for the facilities, none of the NPDES permits identified in your letter are applicable to this project.

c. This project does not involve discharge of wastewater effluent.

d. Chapter 6, Consulted Parties, of the Draft EA lists the Department of Land and Natural Resources Historic Preservation Division as a consulted party.

We appreciate your participation in the Draft EA review process.

AY:mo
c: Mr. John Sakaguchi, WOA w/attach
Mr. Bob Hlivak, DAGS, ICSD w/attach
Mr. Daniel Jandoc, DAGS-PW, PMB w/attach

LINDA LINGLE
GOVERNOR

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

MAY 20 2003

(L08-01) JS
RODNEY K. HARAGA
DIRECTOR
5/21/03
GLENN D. OKIMOTO

IN REPLY REFER TO
HWY-PS
2.0395

RECEIVED
MAY 21 2003
WILSON OKAMOTO CORPORATION

cc: DAGS V.A FAX
5/22/03

Mr. John L. Sakaguchi
Senior Planner
Wilson Okamoto & Associates
1907 S. Beretania Street, Suite 409
Honolulu, Hawaii 96826

Dear Mr. Sakaguchi:

Subject: Draft Environmental Assessment
Rainbow Radio Facilities and Towers, Statewide, Kahua Ranch Site
North Kohala, Hawaii, TMK: 5-9-02:2

Thank you for your transmittal requesting our comments regarding the proposed project.

The proposed radio telecommunication facilities and towers at the Kahua Site will not adversely impact our State highway facilities.

If you have any questions, please contact Ronald Tsuzuki, Head Planning Engineer, Highways Division, at 587-1830.

Very truly yours,

RODNEY K. HARAGA
Director of Transportation

LINDA LINGLE
GOVERNOR OF HAWAII

(L08-01)
RECEIVED
MAY 30 2003
WILSON OKAMOTO CORPORATION

PETER T. YOUNG
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

DAN DAVIDSON
DEPUTY DIRECTOR - LAND

ERNEST Y.W. LAU
DEPUTY DIRECTOR - WATER
6/3/03

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
HISTORIC PRESERVATION DIVISION
KAKUHIHEWA BUILDING, ROOM 555
601 KAMOKILA BOULEVARD
KAPOLEI, HAWAII 96707

May 27, 2003

cc: DAGS, V/A
FAX 6/3/03

Mr John Sakaguchi
Wilson Okamoto Corporation
1907 South Beretania Street, Suite 400
Honolulu, HI 96826

LOG NO: 2003.0568
DOC NO: 0305PM07

Dear Mr. Sakaguchi

SUBJECT: Chapter 6E-8 Historic Preservation Review of a Draft Environmental Assessment for Anuenue (formerly Rainbow) Radio Towers and Facilities-Kahua Ranch Site
Kahua, North Kohala, Hawaii Island
TMK: (3) 5-9-002:002

Thank you for submitting a copy of the Draft Environmental Assessment (DEA) for the proposed Anuenue Radio Towers and Facilities for our review and comment. The Draft EA was received in our office on April 3, 2003. Our review is late, but you indicated that you would still like comments.

An archaeological and cultural assessment of the proposed radio towers and facilities was conducted by Haun & Associates on October 17, 2002. The results of the two studies are presented in Appendix C of the DEA. No historic properties were found in the archaeological assessment of the 0.52 acre project area located at the 3,810 to 3, 825 foot elevations on Pu'u Waiakanounula. It is unlikely that subsurface cultural deposits exist in the project area because of its small size and inland location where Hawaiian land use was limited to primarily special purpose activities that left little physical evidence, and because of modern use of the project area for cattle pasture.

The cultural assessment study by Maria E. Ka'imipono Orr, indicates that Pu'u Waiakanounula is mentioned in a Hawaiian legend. There is no indication, however, of any traditional cultural properties or practices in the project area.

The archaeological and cultural assessment studies indicate that there are no historic properties in the project area and no evidence for traditional cultural practices We thus conclude that "no historic properties will be affected" by the construction of the proposed radio tower and other facilities

Mr. John Sakaguchi
Page Two

If you should have any questions about this project please contact our Hawaii Island archaeologist, Patrick McCoy (692-8029).

Aloha,

P. Holly McEldowney

P. Holly McEldowney, Acting Administrator
State Historic Preservation Division

PM:jk

c. Chris Yuen, County of Hawaii Planning Department
Kai Embler, County of Hawaii Department of Public Works

6608-01 JS
4/4/03 BB
cc: DAGS, V/A
FAX 4/9/03

Harry Kim
Mayor

Barbara Bell
Director

County of Hawaii

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

25 Aupuni Street, Room 208 • Hilo, Hawai'i 96720-4252
(808) 961-8083 • Fax (808) 961-8086

April 4, 2003

RECEIVED
APR 9 2003
WILSON OKAMOTO CORPORATION

Mr. John L. Sakaguchi, AICP
Senior Planner
Wilson Okamoto Corporation
1907 S. Beretania Street, Suite 400
Honolulu, HI 96826

Re: Draft Environmental Assessment, Anuenue (formerly Rainbow) Radio Towers and Facilities, Statewide, Kauha Ranch Site
North Kohala District, Hawai'i: TMK: 5-9-002:002

Dear Mr. Sakaguchi,

I am enclosing our comments for your review and action where appropriate.

If I can be of further assistance, please don't hesitate to contact me.

Sincerely,

Barbara Bell
DIRECTOR

cc: SWD

enclosure

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
SOLID WASTE DIVISION
COUNTY OF HAWAII - 108 RAILROAD AVENUE - HILO, HI 96720
HILO (808) 961-8339 WAIMEA (808) 887-3018 KONA (808) 327-3507

Date: 4/4/03

MEMORANDUM

TO: Christopher Yuen, Director
Planning Department

FROM: R. Gonsalves
Solid Waste Division

SUBJECT: SOLID WASTE MANAGEMENT PLAN

Relating to the subject application for E.A. FOR RADIO TOWERS, this division has
AND FACILITIES AT KAHUA
RANCH SITE
TMK: 5-9-002-:002

a) NO_____ comments

and/or

b) THE FOLLOWING clarifications/comments, as indicated:

( ) Commercial operations may not use transfer stations for disposal.
( ) Aggregates and any other construction/demolition waste should be reused to its fullest extent.
( ) Ample room should be provided for recycling.
(X) Greenwaste may be disposed of only at the drop sites located at the Kailua and Hilo Transfer Stations.

IF SIGNIFICANT GREEN WASTE BE GENERATED AND MUST BE HAULED OUT FROM PROJECT SITE, THEN FOLLOW ABOVE COMMENT

LINDA LINGLE
GOVERNOR

STATE OF HAWAII
DEPARTMENT OF ACCOUNTING AND GENERAL SERVICES
P.O. BOX 119, HONOLULU, HAWAII 96810
JUN - 3 2003

6608 01

RUSS K. SAITO
COMPTROLLER

KATHERINE H. THOMASON
DEPUTY COMPTROLLER

6/5/03 (P)1177.3

Ms. Barbara Bell, Director
Department of Environmental Management
County of Hawaii
25 Aupuni Street, Room 208
Hilo, Hawaii 96720-4252

Dear: Ms. Bell:

Subject: Draft Environmental Assessment/Anticipated Finding of No Significant Impact (FONSI), Anuenue (formerly Rainbow) Radio Facilities and Towers, Statewide Kaulia Ranch Site
North Kohala District, Hawaii
Tax Map Key: 5-9-002:002

Thank you for your April 4, 2003, comment regarding the subject project.

The Final Environmental Assessment will note that, if significant green waste is generated and must be hauled from the project site, it will be disposed at the drop sites at the Kailua or Hilo Transfer Stations.

We appreciate your participation in the Draft EA review process.

Sincerely,

TADASHI YOSHIZAWA
Acting Public Works Administrator

AY:mo
Attachment
c: Mr. John Sakaguchi, WOA
Mr. Bob Hlivak, DAGS-PW, ICSD
Mr. Daniel Jandoc, DAGS-PW, PMB

Harry Kim
Mayor

Patricia G. Engelhard
Director

Pamela N. Mizuno
Deputy Director

County of Hawai'i
DEPARTMENT OF PARKS AND RECREATION

101 Pauahi Street, Suite 6 • Hilo, Hawai'i 96720
(808) 961-8311 • Fax (808) 961-8411

6608-01

4/4/03

cc: OMCS, V/A
FAX 4/4/03

RECEIVED
APR 9 2003
WILSON OKAMOTO CORPORATION

April 7, 2003

Wilson Okamoto Corporation
1907 S. Beretania St., Suite 400
Honolulu, HI 96826

Attn: John Sakaguchi, AICP

Re: Anuenue Radio Towers and Facilities, Kahua Ranch Site, North Kohala, Hawaii
Draft Environmental Impact Statement
TMK: (3) 5-9-02:02

Dear Mr. Sakaguchi:

We have reviewed the Draft EA and have concluded that the proposed project will not impact any of our recreational sites or programs.

Thank you for the opportunity to review the draft EA.

Sincerely,

Pat Engelhard

Patricia Engelhard
Director

6608-01

Harry Kim
Mayor

Bruce C. McClure
Director
4/25/03

Dixie Kaetsu
Managing Director

Ronald K. Takahashi
Deputy Director

cc: DLNR, V/A
FAX 4/25/03

County of Hawaii
DEPARTMENT OF PUBLIC WORKS

101 Pauahi Street, Suite 7 · Hilo, Hawaii 96720-4224
(808) 961-8321 · Fax (808) 961-8630

April 21, 2003

John L. Sakaguchi, AICP, Senior Planner
Wilson Okamoto Corporation
1907 S. Beretania St., Suite 400
Honolulu, HI 96826

RECEIVED

Subject: Draft Environmental Assessment
Anuenue Radio Towers and Facilities
Kahua Ranch Site
North Kohala District, Hawaii
TMK: 5-9-002:002

Thank you for the opportunity to review and comment on the subject project. Please refer to our comments dated December 26, 2002 for the Pre-assessment Consultation. Building and grading permits are required for the proposed project.
If you have any questions, please feel free to contact Kiran Emler of our Kona office at 327-3530.

Galen M. Kuba, Division chief
Engineering Division

KE

c: ENG-HILO/KONA

JS

Harry Kim
Mayor

Lawrence K. Mahuna
Police Chief

Harry S. Kubojiri
Deputy Police Chief

(L608-01) 4/24/03

cc: DAGS, VIA FAX
4/24/03

County of Hawaii
POLICE DEPARTMENT
349 Kapiolani Street • Hilo, Hawaii 96720-3998
(808) 935-3311 • Fax (808) 961-8869

April 23, 2003

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

ATTENTION: Mr. John L. Sakaguchi, Senior Planner

Dear Mr. Sakaguchi:

In response to your letter dated April 1, 2003, my staff has reviewed the Draft Environmental Assessment for the Anuenue Radio Towers and Facilities, Statewide, Kahua Ranch Site, and offers no comments in this matter.

Thank you for the opportunity to respond, and if you have any questions, please contact Assistant Chief Charles M. Chai, Jr., of the Administrative Bureau, at 961-2247.

Sincerely,

LAWRENCE K. MAHUNA
POLICE CHHIEF

CHC/jh

Hawaii Electric Light Company, Inc. • PO Box 1027 • Hilo, HI 96721-1027

(L608-01) JS

5/5/03 WL LO

RECEIVED FILE
MAY 5 2003
WILSON OKAMOTO CORPORATION

5/5/03

April 29, 2003

Wilson Okamoto Corporation
Attn: Mr. John L. Sakaguchi
1907 South Beretania Street, Suite 400
Honolulu, Hawaii 96826

Dear John,

Subject: Comments on the Draft Environmental Assessment
Anuenue Radio Towers and Facilities
Kahua Ranch Site

Thank you for allowing us to review the Draft Environmental Assessment for the proposed facility at Kahua Ranch Site. Following are our comments:

- Subject – Kahua is misspelled.
- The proposed State of Hawaii Facility will be built on the existing vehicle trail used as access to the County of Hawaii and AT&T Wireless Facility. This trail is also used by HELCO to access and maintain our underground facilities. Is there a plan to provide an alternate route?
- We recommend final plans be submitted to HELCO for review and that construction of this facility be coordinated with HELCO to avoid damaging the existing underground ductlines.
- The County of Hawaii has existing ductlines running from their communication building to their tower. We recommend this routing be indicated on the construction plans to avoid damage during construction.
- Figure 1.8 indicates that antenna C& D appears to face HELCO's Huehue Communication Site. If this is true, HELCO would appreciate being contacted by the State of it's intention to install additional antenna on our tower and to use additional rack space in our communication building.
- HELCO has requested co-locating on the State's new tower and in the communication building, however it appears the State has restrictions that denies this request. Because of this, HELCO may build our own communication tower and building in close proximity to where the existing County of Hawaii facility is. HELCO will request a conduit to the State building so we may drop out a DS1 circuit from the County of Hawaii system.

Please call Sidney Hatakenaka at (808) 969-0353 if there are any questions.

Sincerely,

Clyde H. Nagata, P.E.
Manager, Engineering Department

CHN:SH:ln

LINDA LINGLE
GOVERNOR

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

JUN - 6 2003

LUSB-01 6/10/03 JS
RUSS K. SAITO
COMPTROLLER

KATHERINE H. THOMASON
DEPUTY COMPTROLLER

RECEIVED (P)1182.3
JUN 9 2003
WILSON OKAMOTO CORPORATION

Mr. Clyde H. Nagata, P.E., Manager
Engineering Department
Hawaii Electric Light Company, Inc.
P.O. Box 1027
Hilo, Hawaii 96721-1027

Dear: Mr. Nagata:

Subject: Draft Environmental Assessment (EA)/
Anticipated Finding of No Significant Impact (FONSI),
Anuenue (formerly Rainbow) Radio Facilities and Towers, Statewide
Kahua Ranch Site, North Kohala District, Hawaii
Tax Map Key: 5-9-002:002

Thank you for your April 29, 2003, comments regarding the subject project. Our responses are as follows:

a. The spelling will be corrected in the Final EA.

b. The design drawings will show a new route for access which will encircle the west side of the Anuenue facility. This plan will be included in the Final EA.

c. The design drawings will be submitted to HELCO for review.

d. The design drawings will show the routing of the existing ductlines, provided they are made available.

e. The Department of Accounting and General Services (DAGS) has no intentions of installing an additional antenna at HELCO's Huehue Communication site.

f. If HELCO intends to construct a new facility near the Anuenue facility, a formal request with any requirements should be submitted to DAGS.

We appreciate your participation in the Draft EA review process.

Sincerely,

TADASHI YOSHIZAWA
Acting Public Works Administrator

AY:mo
c: Mr. John Sakaguchi, WOA w/attach
Mr. Bob Hlivak, DAGS, ICSD w/attach
Mr. Daniel Jandoc, DAGS-PW, PMB w/attach