

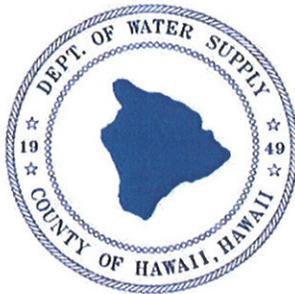
DRAFT ENVIRONMENTAL ASSESSMENT

HINALANI STREET 1.0-MILLION GALLON RESERVOIR and TRANSMISSION WATERLINE

TMK: 7-3-009:049; 7-3-009:030; 7-3-008:038; 7-4-006:016

Kaloko, North Kona District, Hawaii

DWS Job No. 2003-824



Prepared for:

County of Hawaii
Department of Water Supply
Hilo, Hawaii 96720



Prepared by:

WILSON OKAMOTO
CORPORATION
Honolulu, Hawaii 96826

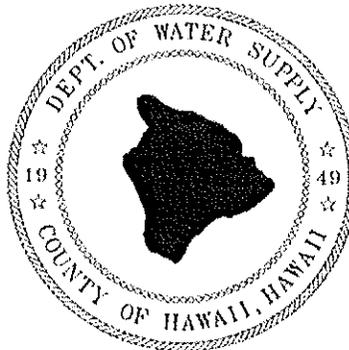
March 2008

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and
Transmission Waterline
Kaloko, North Kona District, Hawaii**

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Prepared for:

County of Hawaii
Department of Water Supply
345 Kekuanaoa Street
Hilo, Hawaii 96720

Prepared by:

Wilson Okamoto Corporation
1907 South Beretania Street, Suite 400
Honolulu, Hawaii 96826
WOC: 7097-01

March 2008

SUMMARY

Proposing Agency:	County of Hawaii Department of Water Supply 345 Kekeuanaoa Street Hilo, Hawaii 96720
Accepting Agency:	County of Hawaii Department of Water Supply 345 Kekeuanaoa Street Hilo, Hawaii 96720
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:	Kaloko, North Kona District, Hawaii
Recorded Fee Owner:	Water Board of the County of Hawaii
Tax Map Key:	Reservoir site, TMK: 7-3-009:049 Transmission line, County of Hawaii right-of-way Other reservoir sites: TMK: 7-3-009:030; TMK: 7-3-008:038; and TMK: 7-4-006:016
Area:	Reservoir 1.39 acres (60,400 square feet) approx. 2,775 feet transmission waterline
State Land Use Classification:	Urban
County Zoning:	Residential (R-15)
Proposed Action:	Construction of one 1.0-million gallon cast-in-place prestressed concrete reservoir on County-owned land and approximately 2,775 linear feet of 24-inch transmission waterline within the right-of-way of Hina Lani Street, a public roadway, by the County of Hawaii Department of Water Supply to increase the storage capacity and improve the quality of potable water for the North Kona area of Hawaii.
Impacts:	No significant impacts are anticipated from construction and operation of the reservoir and transmission line.
Parties Consulted During Pre-Assessment:	US Dept of the Army Corps of Engineers US Fish and Wildlife Service US Dept of the Interior National Park Service State of Hawaii Department of Land and Natural Resources/ Historic Preservation Division State of Hawaii Department of Health State of Hawaii Department of Transportation County of Hawaii Department Environmental Management

County of Hawaii Department of Parks and Recreation
County of Hawaii Department of Research and
Development
County of Hawaii Planning Department
County of Hawaii Department of Public Works
Hawaii Electric Light Company

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PREFACE

Chapter 343, Hawaii Revised Statutes (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 a public agency to prepare an environmental assessment. The Hinalani Street reservoir and transmission waterline will be constructed and operated with funds provided by the County of Hawaii Department of Water Supply. The Hinalani Street reservoir and transmission waterline will not use funds from the State of Hawaii Department of Health Drinking Water State Revolving Fund (DWSRF) program.

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) is anticipated for the project as shown in Chapter 5.

1. INTRODUCTION

1.1 Project Background

The County of Hawaii Department of Water Supply (DWS), a semi-autonomous County agency, has the responsibility to manage, control, and operate the waterworks of the County. The DWS provides service to residential, commercial, industrial, and institutional users in most parts of the County. On the west coast of Hawaii, DWS provides service to users from a series of source wells and shafts, storage facilities, and transmission lines. The DWS Kona Water System extends along on the Kona coast of Hawaii from Keahole on the north to Hookena on the south.

1.2 Purpose and Need

The primary purpose of the Hinalani Street reservoir and transmission waterline project is to provide additional water storage capacity for the DWS North Kona Water System and also to allow use of water from higher elevation wells to improve the overall quality and taste of the water. The reservoir will provide storage for water from the Honokohau Well and Queen Liliokalani Trust Well located east of Hina Lani Street, above or mauka of Mamalahoa Highway. The Hinalani reservoir will be fed through new and existing transmission waterlines along Hina Lani Street.

The 1.0-million gallon (1.0-MG) storage reservoir is needed to meet the water demands for the Kaloko Light Industrial Park, the Natural Energy Laboratory, and for business and residential areas along Queen Kaahumanu Highway north of Hina Lani Street. Thus, the project is needed to maintain the public health and welfare for the residents of this area of the County. The Hina Lani Street reservoir and transmission waterline project will be a public facility to be used by a public agency for public purposes.

1.3 Project Location and Conditions

1.3.1 Project Location

The Hinalani Street 1.0-MG reservoir project site is located in Kaloko, North Kona District of Hawaii about 6.1 miles north and east of Kailua-Kona within lands owned by the County of Hawaii. The reservoir project site, Tax Map Key: 7-3-009:049, is located

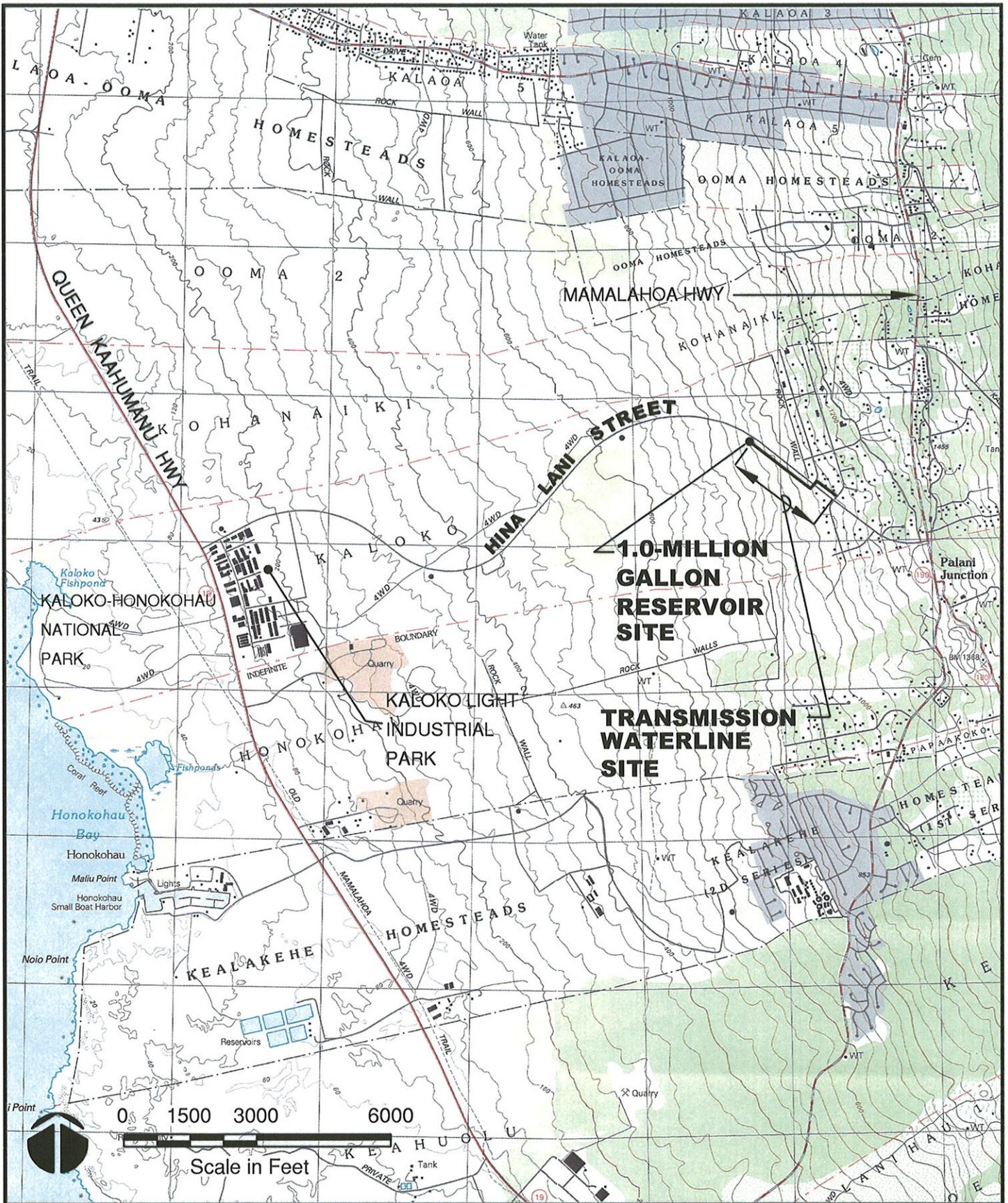
at elevation 940 to 914 feet mean sea level (msl) on the south side of Hina Lani Street about 2.5 miles east (mauka) of the intersection of Queen Kaahumanu Highway, State Route 19, and Hina Lani Street, and about 0.95 miles west of the Mamalahoa Highway and Hina Lani Street intersection and about 0.5 miles west, or makai, of the Kona Heavens subdivision.

The lands surrounding the reservoir project site are privately owned and currently undeveloped. Kaloko Light Industrial Park occupies the area near the intersection of Queen Kaahumanu Highway and Hina Lani Street and contains a number of light industrial/commercial uses including the Costco membership and Home Depot stores. Expansion of the Kaloko Light Industrial Park has begun to the east or mauka of the existing industrial park. The U.S. Department of the Interior National Park Service Kaloko-Honokohau National Historical Park occupies the lands makai of Queen Kaahumanu Highway and Kaloko Industrial Park.

The 24-inch transmission waterline will be about 2,775 feet long and will be constructed within the County-owned right-of-way and outside of the travel way of Hina Lani Street. Starting from the reservoir, the transmission waterline will be located on the south side of Hina Lani Street for about 1,475 feet, or about 100 feet west of Anni Street, then will cross to the north side of Hina Lani Street and extend for about 1,300 feet until Halolani Street where it will connect to an existing transmission waterline. 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.

In addition to the reservoir and transmission line sites, on-site improvements will be made at three other existing DWS reservoir sites located within the vicinity of the Hinalani reservoir site, Kaloko Water Tank No. 2, Kaloko Mauka Reservoir, and Palani No. 4 Reservoir. Figure 1.6 shows the reservoir site map.

The on-site improvements would connect these three sites with the DWS Supervisory Control and Data Acquisition (SCADA) system which electronically provides remote monitoring and control of the water level in the reservoirs. See Figure 1.6.



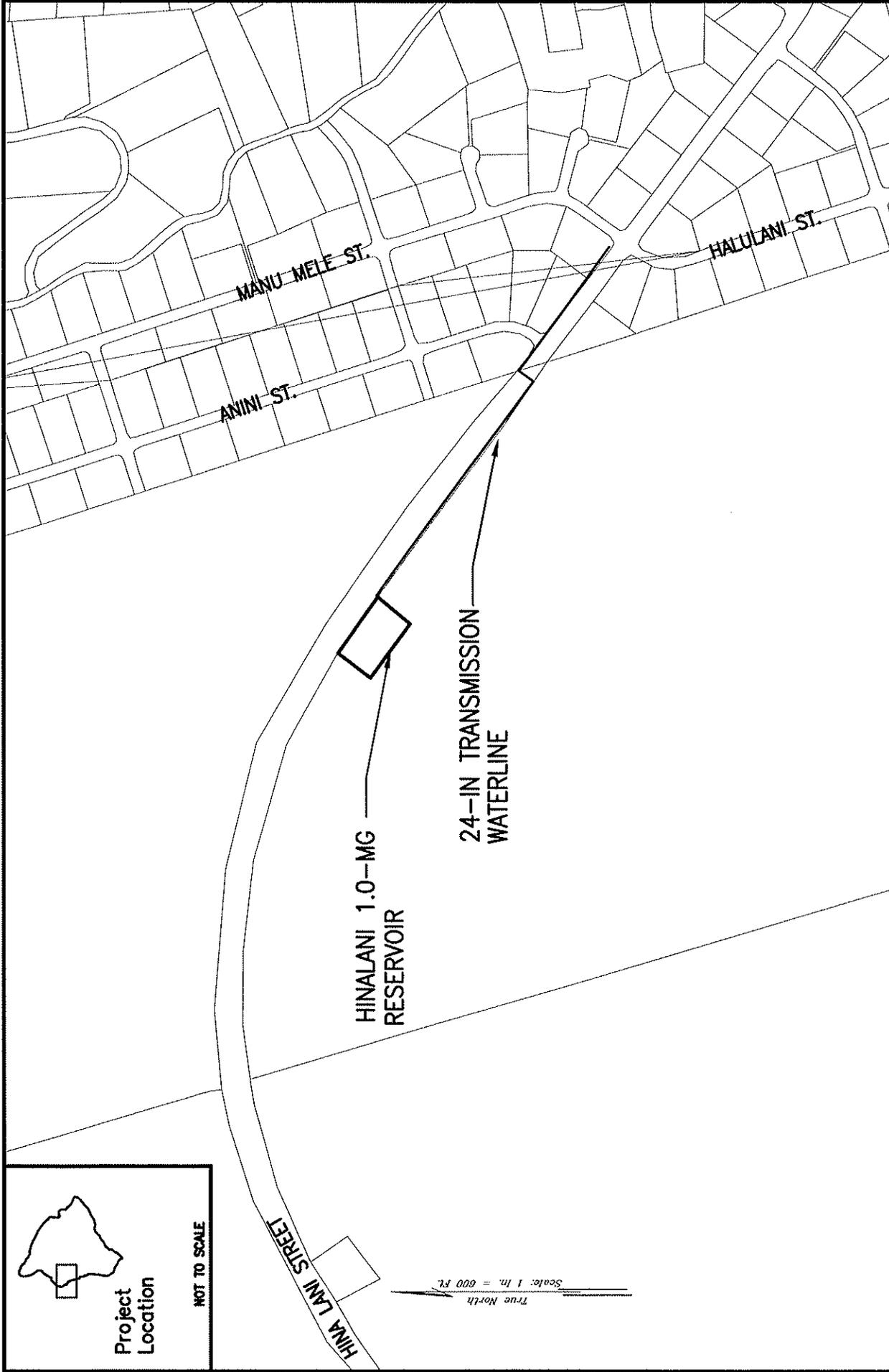
HINALANI STREET 1.0-MILLION GALLON RESERVOIR AND TRANSMISSION WATERLINE

Figure No.

PROJECT LOCATION MAP

1.1





HINALANI STREET 1.0-MILLION GALLON RESERVOIR AND TRANSMISSION WATERLINE; JOB NO 2003-824

Figure No.

1.2

PROJECT SITE MAP

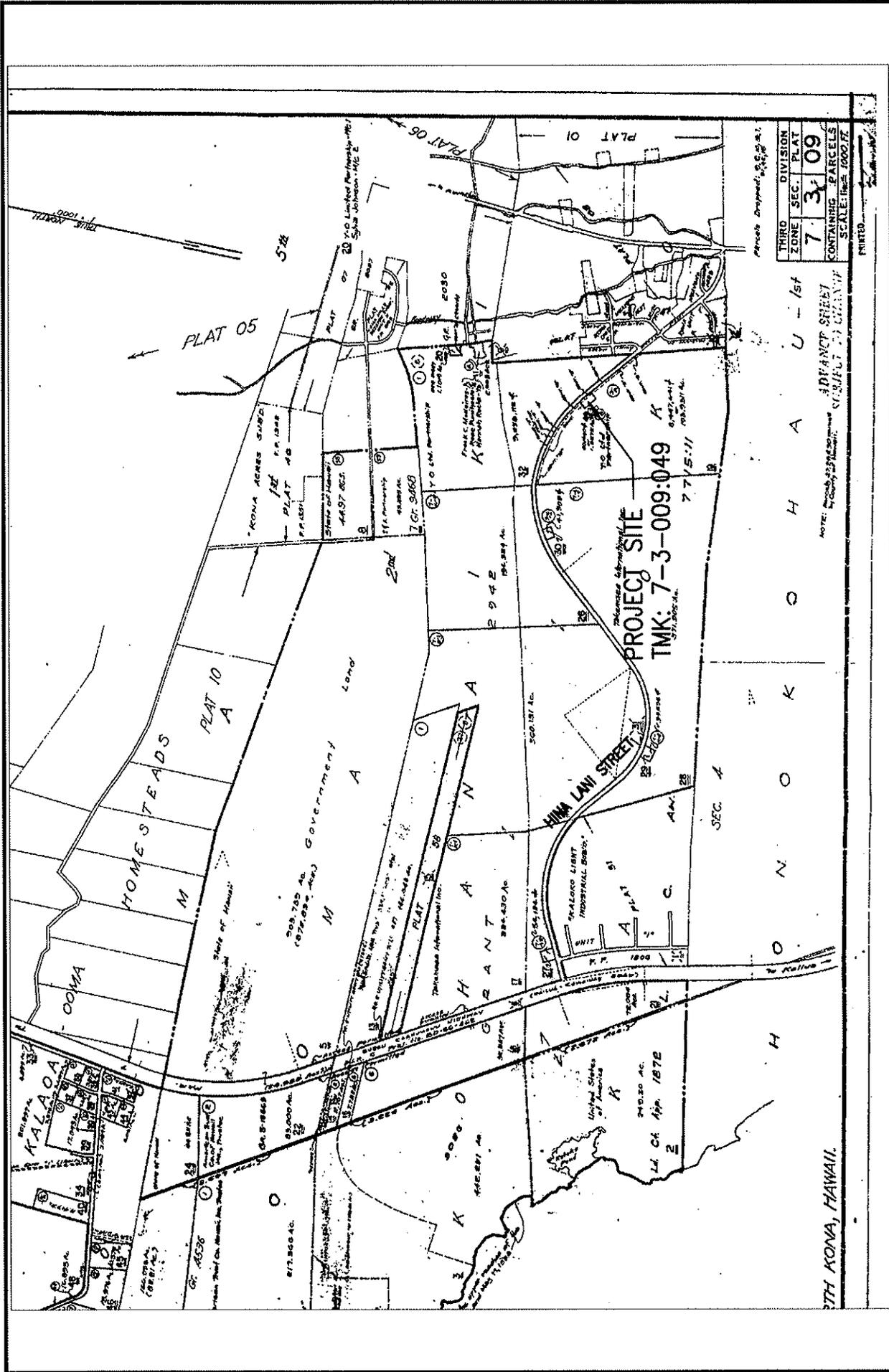


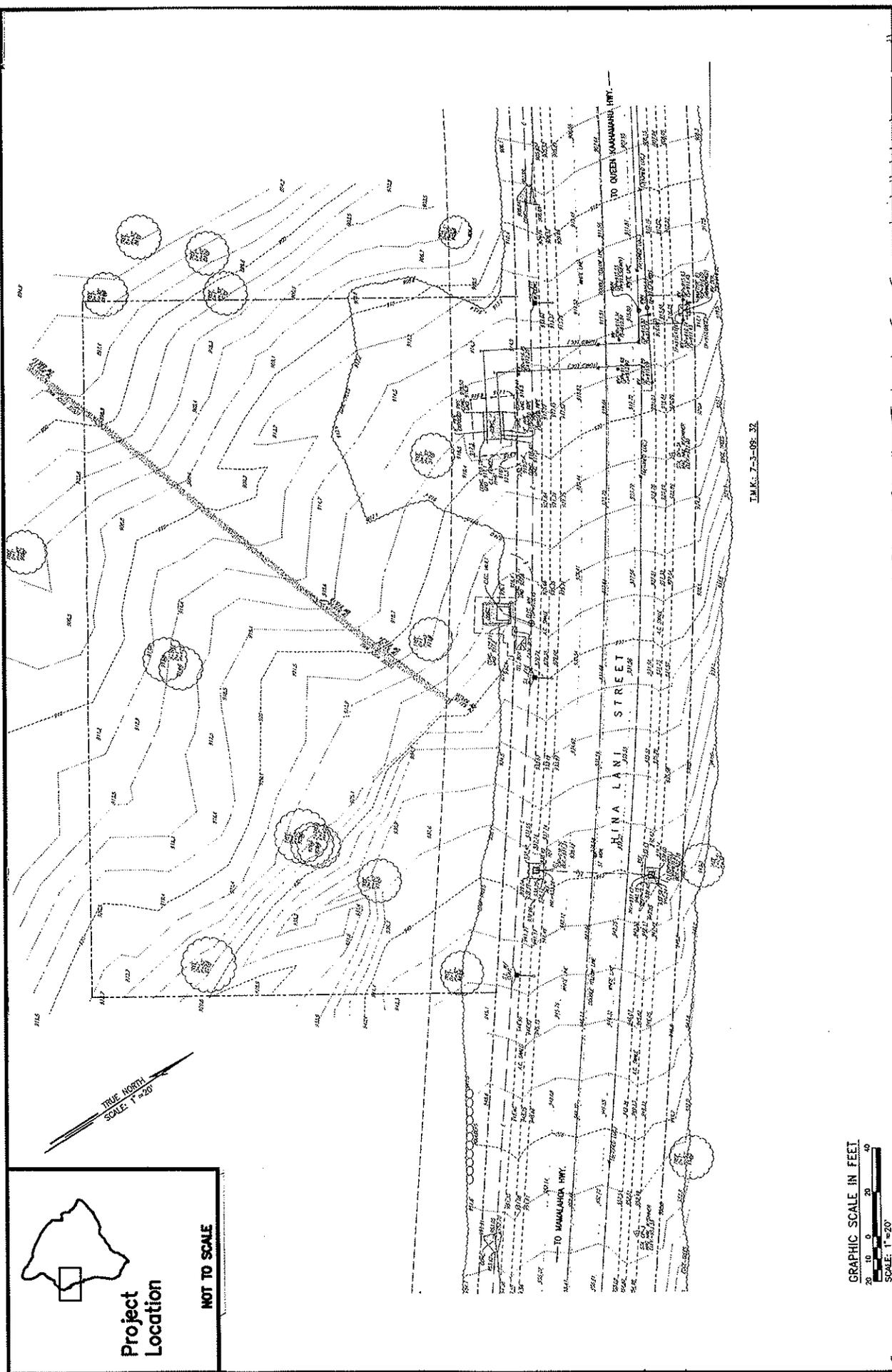
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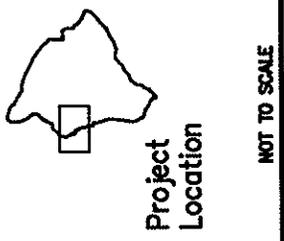
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TAX MAP KEY





T.M.K. 7-3-08-32



HINALANI STREET 1.0-MILLION GALLON RESERVOIR AND TRANSMISSION WATERLINE; JOB NO 2003-824

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1.4

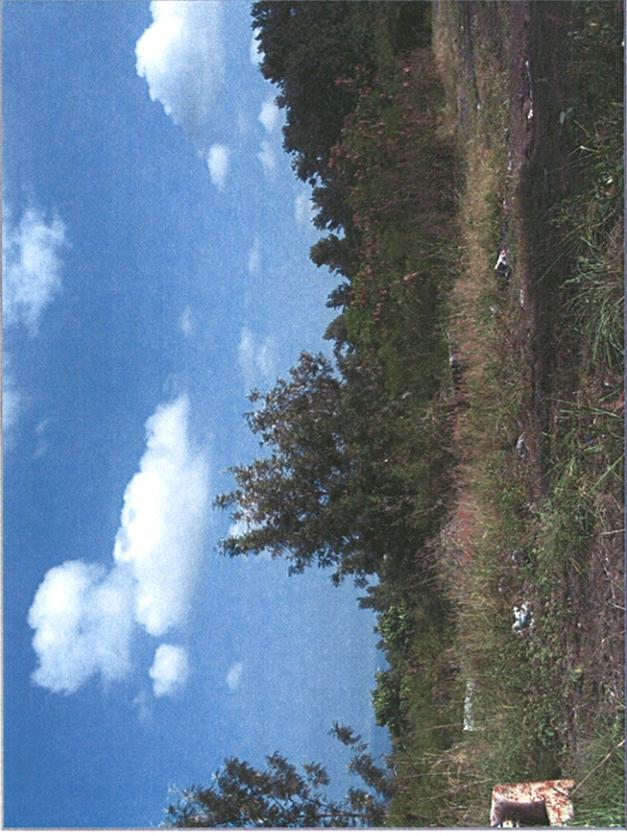
PROJECT SITE TOPOGRAPHIC MAP



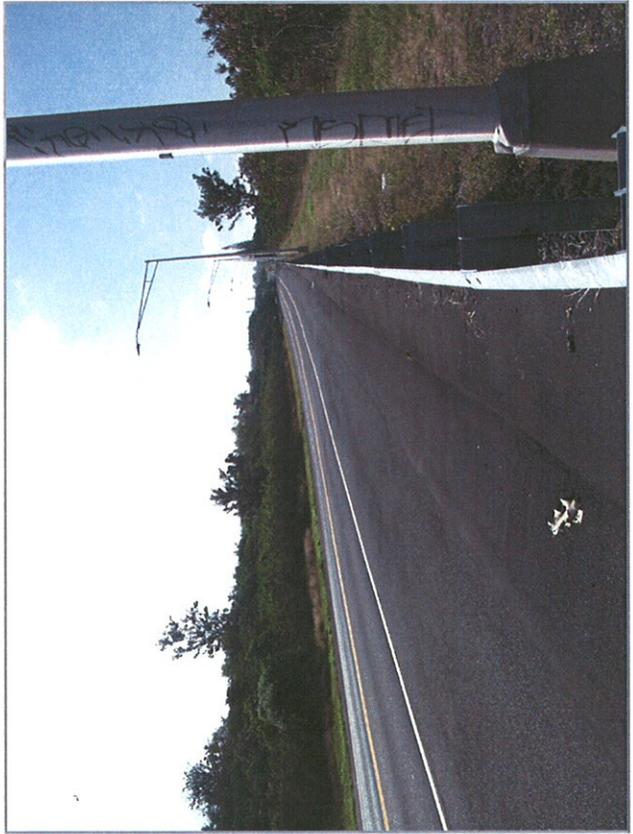
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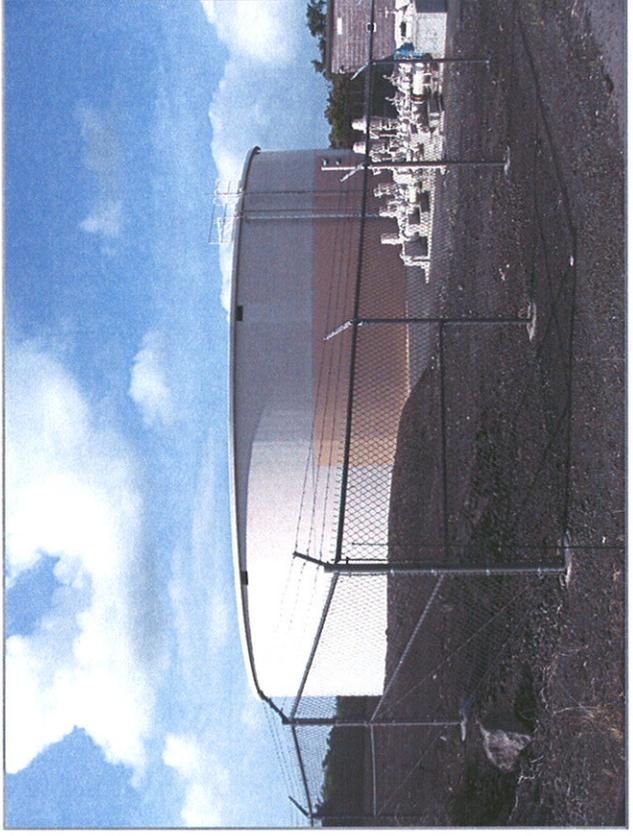
Interior view of reservoir project site



Interior view of reservoir project site

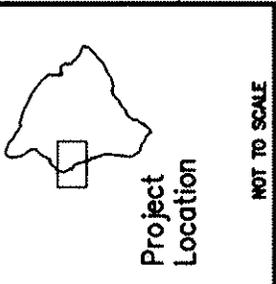
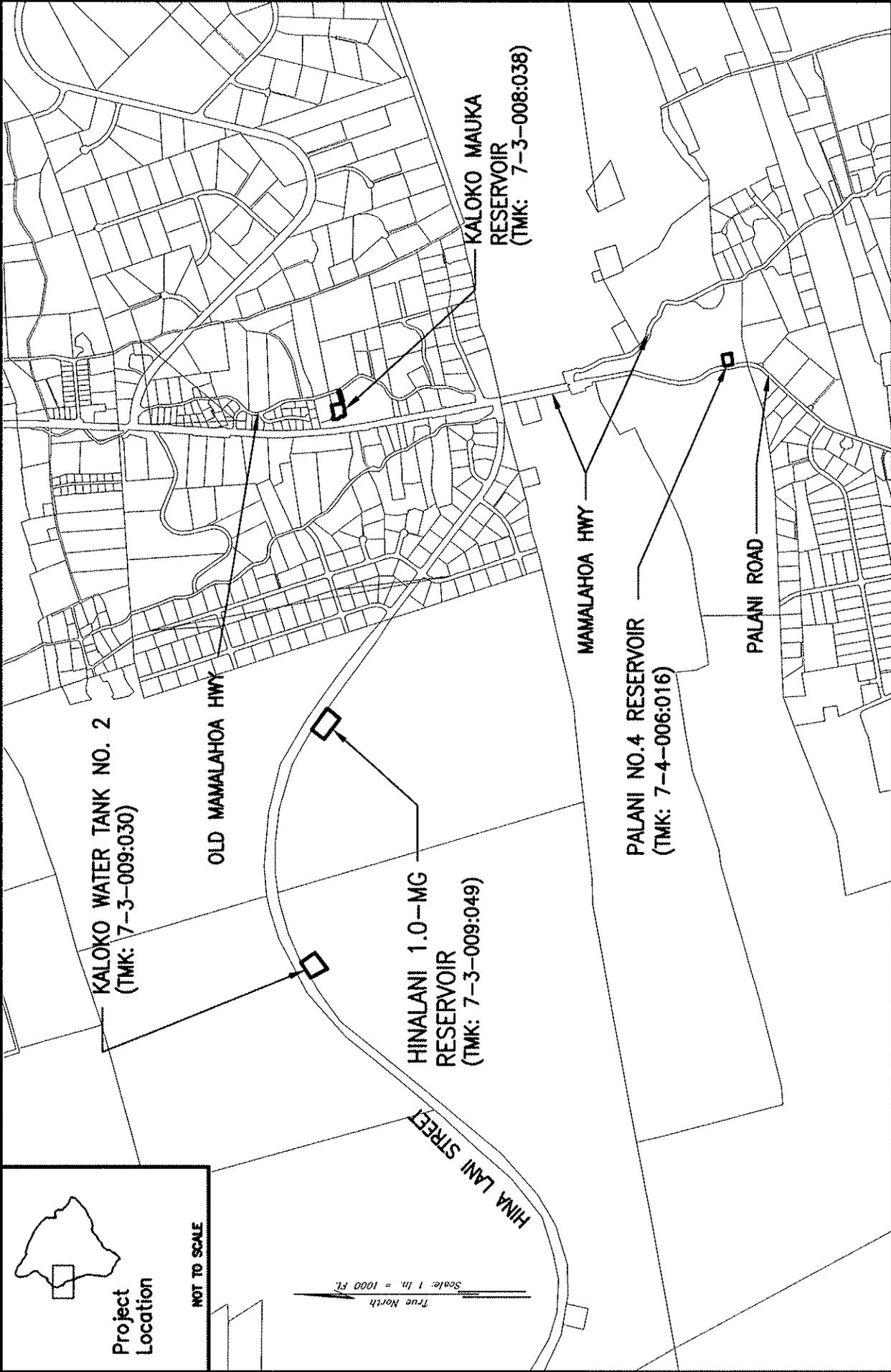


View of Hina Lani Street transmission line project site



Existing Kaloko Water Tank No. 2

Figure 5 Project Site Photographs



HINALANI STREET 1.0-MILLION GALLON RESERVOIR AND TRANSMISSION WATERLINE; JOB NO 2003-824 Figure No.

RESERVOIR LOCATION MAP



1.3.2 Existing Project Site Conditions

The Hinalani Street reservoir project site is located within Tax Map Key: 7-3-009:049, a parcel of about 1.39 acres, 60,440 square feet, owned by the County of Hawaii DWS. The project site slopes from east to west and lies at elevation of about 940 to 914 feet mean sea level (msl) within a parcel which has not been previously developed, although it was probably cleared by chain dragging at one time. A portion of a stone wall about 100 feet long is located on the western portion of the project site. The stone wall extends to the west-southwest out of the parcel. The wall has been described, mapped, and photographed and no further work or preservation is recommended for the wall. See Figure 1.4. Section 2.10 contains further discussion of the stone wall.

1.3.3 Other Project Site Data

The Hinalani reservoir project site is designated Urban by the State Land Use Commission and has a zoning designation of R-15, Residential, by the County of Hawaii. County of Hawaii Code Chapter 25, Zoning, Section 25-4-11 public uses are permitted uses in any County of Hawaii zoning district, provided the Planning Department Director has issued plan approval for such use. The transmission waterline will be located within the County-owned right-of-way of Hina Lani Street, a public road.

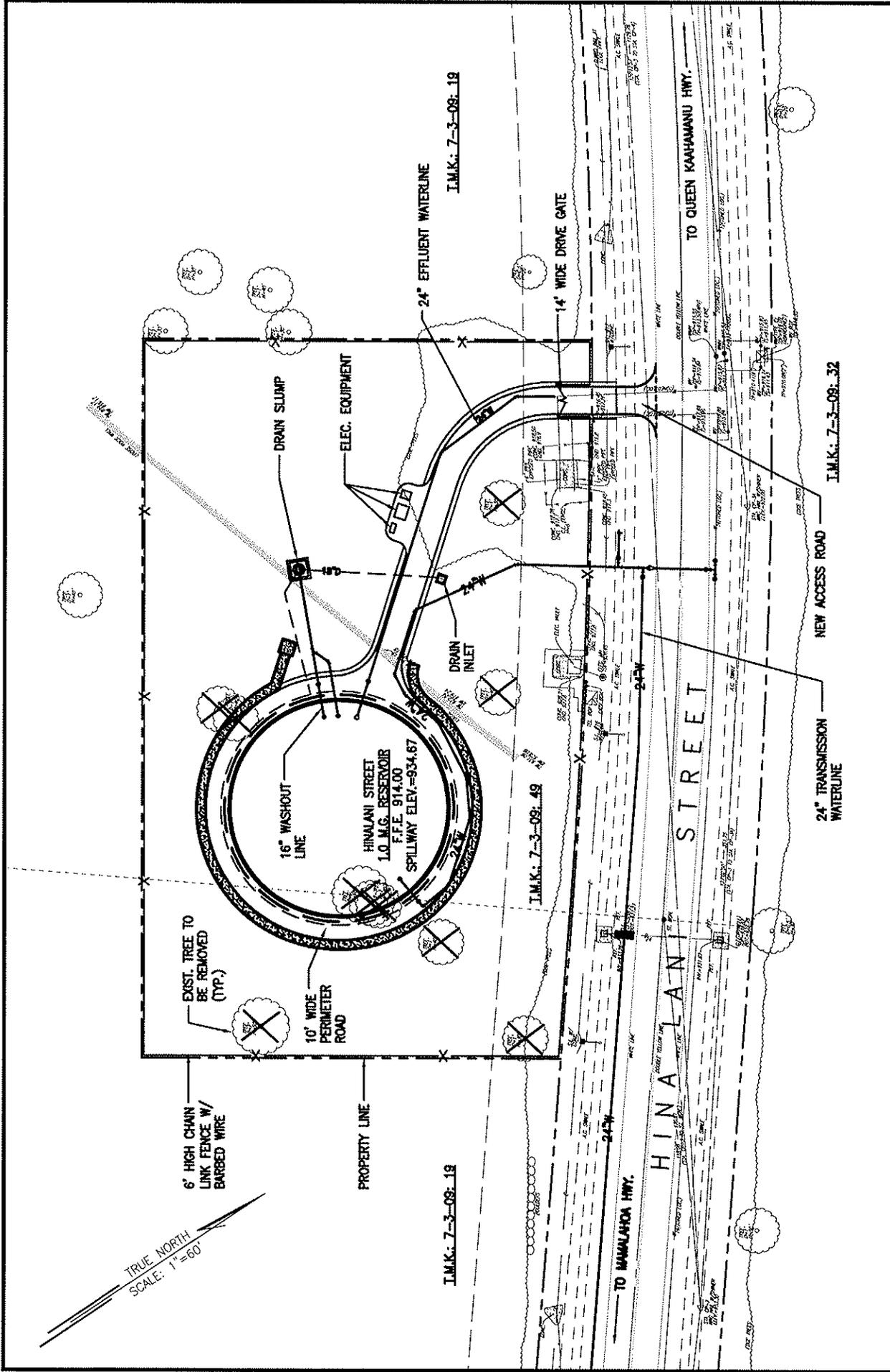
The project site is not located within the County of Hawaii Special Management Area (SMA). Similarly, none of the other reservoir sites are located within the County SMA.

1.4 Project Description

1.4.1 Project Site Plan

The rectangular-shaped project site is approximately 180 feet wide and 315 feet long. A 6 foot high security fence will be constructed along all four sides of the project site. A 20-foot wide by approximately 200-foot long asphalt access road will be used to connect the reservoir to Hina Lani Street. The entire project site will be cleared and graded to accommodate the required improvements. Figure 1.7 shows the site plan.

The reservoir will be constructed of cast-in-place prestressed concrete and will be approximately 96 feet in diameter and about 20 feet high and will look similar to the



HINALANI STREET 1.0-MILLION GALLON RESERVOIR AND TRANSMISSION WATERLINE; JOB NO 2003-824

Figure No.

1.7

HINALANI STREET RESERVOIR SITE PLAN



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three other DWS reservoirs already constructed at lower elevations on Hina Lani Street. In addition, an electrical cabinet, pad for a transformer, and electrical metering board will be located near the reservoir. The other improvements include underground piping for the influent and effluent lines into and out of the tank. The project site will also include one drainage sump to contain surface runoff.

The reservoir will be cast-in-place prestressed concrete and will have an exterior radius of 48 feet and interior radius of 47 feet and will include total of 16 columns constructed in a 20-foot square pattern (20 feet on center) to provide structural stability for the reservoir roof. The columns will be 18 inches square. In addition, the reservoir will have seismic cables along footing of the wall. This wall design has been used by the DWS for other reservoirs on Hawaii, including for several tanks which did not show any damage from the October 2007 earthquake.

In addition, an electrical cabinet, pad for a transformer, and electrical metering board will be located near the reservoir. The other improvements include underground piping for the influent and effluent lines into and out of the tank. The project site will also include one drainage sump to contain surface runoff.

The reservoir project site slopes from roughly east to west with the elevation on the east at about 940 feet mean sea level (msl) and the elevation on the west at about 910 feet msl. To accommodate the DWS North Kona Water System, the reservoir floor will be at elevation 914 feet msl.

The grading plan shows a cut of about 24 feet will be made on the eastern portion of the site to create a pad for the reservoir. The cut will be sloped so that a retaining wall will not be needed on the east side to the reservoir. The cut material not used on the reservoir project site will be disposed off-site at an approved location for the material.

The area around the reservoir would be sloped to the drainage sump to collect surface storm runoff. The drainage sump would be about 8 feet wide and 7 feet deep, with a grated cover on top. The drainage sump would also be used to dispose wash out water from the reservoir. County of Hawaii requires all runoff be disposed on-site and not be directed toward any adjacent properties. See Appendix A.

Upon completion, the reservoir, security fence, and other improvements would look similar to the other DWS reservoirs located on Hina Lani Street. The reservoir would be painted a light brown color to blend with the surrounding terrain and vegetation near the project site. Thus, the visual appearance of the reservoir would not contrast with the surrounding natural conditions. See Figure 1.5.

An open trench will be dug for placement of the 2,775-foot long transmission line. The trench will require a saw cut of the existing pavement on Hina Lani Street and excavation of a trench to a depth of about 5.5 feet below the surrounding grade. The trench would provide a minimum cover of 3.0 feet over the 24-inch transmission line.

1.4.2 Water Treatment

The Hinalani Street reservoir will not include facilities to add chemicals to the water. Thus, no water treatment chemicals or other materials will be handled or stored at the project site.

1.5 Project Operation

No DWS personnel will be assigned to daily operation of the Hinalani reservoir and transmission line. However, DWS personnel will to conduct periodic visual inspections of the project site and occasional walk-through visits to conduct tests and to perform maintenance service on the inlet controls and to clean the area surrounding the Reservoir.

1.6 Other Reservoir Sites

The other three reservoir sites have been fully developed by the DWS. Each site contains a reservoir, buildings, related above and below ground piping, electrical improvements, and security fencing. The reservoirs are identified as follows:

1. Kaloko Water Tank No. 2, TMK: 7-3-009:030, located on Hina Lani Street;
2. Kaloko Mauka Reservoir, TMK: 7-3-008:038, adjacent to Old Mamalahoa Highway; and
3. Palani No. 4 Reservoir, TMK: 7-4-006:016, on Palani Road.

The proposed improvements would connect these three sites with the DWS Supervisory Control and Data Acquisition (SCADA) system which provides remote monitoring and control of the water level in the reservoirs. The improvement would consist of adding a small, about 24 inches high, Yagi-type antenna to the railing on top edge of the tank or by adding a 2-inch pipe post to the top of the control building to support the antenna. No other improvements or ground disturbance would occur at the sites.

1.7 Preliminary Cost Estimate

The budgeted construction cost for the Hinalani reservoir and transmission line is approximately \$2.7 million which will be funded by DWS. The Hinalani Street reservoir and transmission waterline will not use funds from the State of Hawaii Department of Health Drinking Water State Revolving Fund (DWSRF) program.

1.8 Project Schedule

Construction is expected to start in third quarter of 2008 and should require about nine (9) months to complete. The facility should be in operation by the second quarter of 2009.

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 western slope of Hualalai, a dormant shield-type of volcano that last erupted in 1800-1801 along its northwest rift zone. The Hualalai Volcano represents the major geologic feature of the area near the project site.

The western slopes of Hualalai Volcano consist predominantly of alkalic olivine basalt flows from the northwest rift zone. The basalt flows are typically thin-bedded, dip 10 to 15 percent, and average 4 to 5 feet in thickness on the upper slopes. The flows consist of both Pahoehoe and Aa types and belong to the prehistoric member (Holocene age of the Hualalai volcanic series).

In January 2005, a geotechnical investigation was completed at the project site. The investigation consisted of three borings which extended to depths of about 36.5 to 42 feet below the existing ground surface. The results of the geotechnical investigation show the project site is underlain by a dense basalt formation near the ground surface extending down to the maximum depth explored. The dense basalt formations were generally medium hard to very hard and relatively unweathered to moderately weathered. In addition, numerous voids, some up to 15 inches in height, were encountered during the borings.

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 1997 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 Kaimu extremely stony peat, 6 to 20 percent slope. A profile of this soil shows a surface layer of very dark extremely stony peat about 3 inches thick and underlain by fragmental Aa lava.

The soil capability subclass rating is VIIs, indicating that the soils are not suitable for cultivation. The soil permeability is rapid, runoff is slow, and the erosion hazard is slight.

2.1.2 Impacts and Mitigation Measures

The Hinalani reservoir will be designed and constructed to meet the requirements of the latest version of the UBC. This will ensure that the reservoir can meet the seismic loadings established for Zone 4. In addition, the exterior radius of the reservoir will be 48 feet and the interior radius 47 feet which will provide a 1-foot thick wall. As previously discussed, the reservoir will be constructed on cast-in-place prestressed concrete and will include total of 16 columns constructed in a 20-foot square pattern (20 feet on center) to provide structural stability for the reservoir roof. The columns will be 18 inches square. In addition, the reservoir will have seismic cables along footing of the wall. This wall design has been used by the DWS for other reservoirs on Hawaii, including for several tanks which did not show any damage from the October 2007 earthquake. This design will ensure that the geological conditions at the project site do not adversely affect the reservoir and related facilities.

The project site will require grading and cutting to construct a level site for floor of the reservoir and for placement of a continuous ring footing of the reservoir. The grading will disturb surface and subsurface soils and displace the soils with an on-grade slab foundation and the wall footing for the reservoir. However, this disturbance will be confined to a depth of approximately 2 feet below the surrounding grade at its deepest

and will not adversely affect the geology and soils of the project site and surrounding area.

Construction of the 2,775-foot long transmission line will also require excavation of a trench with a depth of about 5.5 feet below the surrounding grade. (The trench would provide a minimum cover of 3.0 feet over the 24-inch transmission line.) This subsurface trenching will not adversely affect the geology and soils of the surrounding area.

2.2 Water Resources and Flood Hazard

2.2.1 Existing Environment

The project site is located on the western slope Hualalai at an elevation of about 940 to 910 feet mean sea level (msl). The US Department of the Interior Geological Survey (USGS) topographic map shows there are no surface water resources on the project site or in the vicinity.

The Federal Emergency Management Flood Insurance Rate Map (FIRM) Community Panel Number 155166INDOA (Index) dated April 2, 2004 (Revised) shows a FIRM has not been printed for the area which includes the project site. Thus, the project site is identified as in Zone X defined as: "area determined to be outside of the 500-year flood plain." This would indicate the project site is not located within the flood hazard area of a 500-year flood plain. Thus, the project site is not subject to flooding. See Appendix A.

The project site is located above the line designated as Underwater Injection Control (UIC) by the State of Hawaii Department of Health. The drain sump to contain surface runoff is designed to be about 5 feet deep and 5 feet in diameter with 6-inch diameter radiating perforated pipes. The drain sump would not be subject to the regulations and permit requirements set forth in Title 11 Hawaii Administrative Rules, Department of Health, Chapter 23 Underground Injection Control.

2.2.2 Impacts and Mitigation Measures

There are no surface water sources on the project site. The 1.39-acre project site would be cleared and graded to construct the reservoir, related facilities, and access driveway.

The site plan shows drain sump will be constructed within the project site to contain surface runoff from the reservoir and a portion of the access road. The drain sump will contain surface flows within the project site. Gravel will be placed on the open portions of the project site. This will allow infiltration of rainfall which will help ensure surface flows will be contained on the project site. Based on these measures, there will be no discharges from the project site directed to adjacent parcels, waters of the US, or waters of the State of Hawaii.

Temporary erosion control measures will be used at the reservoir project site during construction to prevent runoff to nearby areas, including to the adjacent parcels. These mitigation measures will include placement of a silt fence around the graded area to prevent surface runoff into adjacent areas. The silt fence will contain surface flows within the reservoir project site during the construction period. In addition, a temporary stabilized construction ingress/egress pad consisting of crushed rock will be used to remove soil and mud from the tires of equipment and vehicles as they leave the reservoir project site.

Temporary erosion control measures will also be used during construction of the waterline to control runoff into the existing drywells located along Hina Lani Street. Gravel backfill, concrete blocks and wire screen or filter fabric placed over the existing drywell inlets will be used to remove silt and debris from runoff in the area of the open trench construction of the waterline.

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 surrounding the project site are not classified in the ALISH maps.

2.3.2 Impacts and Mitigation Measures

The project site occupies an area of about 1.39 acres currently vacant and undeveloped. Removal of this "other agricultural land" from vacant and undeveloped would not adversely affect the total land available for agricultural uses in this area of Hawaii.

2.4 Hazardous Waste

2.4.1 Existing Environment

The project site has not been previously developed, although it was probably cleared by chain dragging. No structures, buildings, facilities, or underground storage tanks (USTs) which might contain hazardous materials have been constructed on the project site.

2.4.2 Impacts and Mitigation Measures

Once operational, no chemicals will be added on the project site for treatment of the water. As a result, the reservoir project site will not contain materials classified as hazardous. Thus, there should be no adverse effects from hazardous materials at the project site and to nearby adjacent areas.

2.5 Biological Resources

2.5.1 Existing Environment

Flora

In November 2004, a 100 percent visual survey of the project site was conducted by a botanist to determine existing conditions. The botanical survey found the vegetation of the project site is largely dominated by introduced invasive weeds, although a few native plant species representing a remnant of the original native forest still remain on the project site. At one time, the vegetation of the western slopes of Hualalai was native Hawaiian "Dry Forest", supporting a diverse mix of native trees and shrubs. However, the existing vegetation on the project site has been highly altered from a pristine condition which must have existed at one time in the past. Appendix B contains the botanical survey report.

The botanical survey found most of the project site is covered with *Leucaena leucocephala* (haole koa - introduced), which has formed a closed canopy. Scattered trees of *Grevillea robusta* (silk oak - introduced) emerge above the *Leucaena* canopy. In some parts of the project site, such as the (illegal) dump area, a dense growth of *Hyptis pectinata* (*Hyptis*) occurs instead of the closed canopy of *Leucaena*.

One plant species found during the survey, *Bidens micrantha* ssp. *ctenophylla* (ko'oko'olau), represents a remnant of the original dry forest vegetation. A colony of about six individuals was found in the northwest corner of the project site completely engulfed in *Hyptis pectinata*. The *Bidens* plants are apparently being out-competed by the other vegetation.

Bidens micrantha ssp. *ctenophylla* has been designated as a "Candidate" species for listing under the Endangered Species Act by the U. S. Fish and Wildlife Service (USFWS). Under USFWS policy, the "Candidate" species list is an informal listing of species that may or may not, at some future time, be formally proposed for listing. Species with this designation have no legal standing unless they have been formally proposed for listing as Endangered or Threatened. *Bidens micrantha* ssp. *ctenophylla*, although on the "Candidate" list, has not been formally proposed for listing.

Since *Bidens micrantha* ssp. *ctenophylla* requires no further planning consideration and yet is an uncommon native Hawaiian plant, the seeds were salvaged from the plants on the project site. The seeds were gathered and then given to the Big Island Native Plant Society. The society accepted the seeds and stated it was their intention to grow the plants, if possible.

Fauna

In November 2004, a biological survey of the project site was conducted on the 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 in the immediate vicinity of the project site. See Appendix C contains avian and terrestrial mammalian survey.

The biological survey found that the vegetation on the project site is dominated almost to the exclusion of native species by alien plants. The bulk of the project site is covered with an almost impenetrable forest of *koa haole*, silk oak, and Christmasberry.

Two alien mammalian species were detected during the course of this survey. Several dogs (*Canis f. familiaris*) were heard barking from outside the project site. Pig (*Sus s. scrofa*) sign and rooting was encountered along the north edge of the reservoir site.

Hawaii's sole endemic terrestrial mammalian species, the endangered Hawaiian hoary bat, was not detected during this survey. Both of the alien species recorded during this survey are deleterious to avian and floristic components of the remaining native ecosystems present on the Island. See Appendix C.

A total of 12 avian species representing 9 separate families were recorded during station counts. All of the species detected are alien to the Hawaiian Islands. No species currently listed as endangered, threatened or proposed for listing under either the Federal or the State of Hawaii's endangered species programs was detected on the site.

Avian diversity was relatively low, densities were also low, with the exception of four species; Yellow-fronted Canary (*Serinus mozambicus*), Java Sparrow (*Padda oryzivora*), Japanese White-eye (*Zosterops japonicus*), and Leiothrix (*Leiothrix lutea*), which

accounted for 61% of the total number of all birds recorded during station counts. The most common avian species recorded was the Yellow-fronted Canary, which accounted for 14% of the total number of individual birds recorded. An average of 61 birds were detected per station count.

2.5.2 Impacts and Mitigation Measures

Flora

Construction of the reservoir will require removal of the surface vegetation from the project site and grading it to construct the reservoir, related facilities, and access driveway. Once graded and prepared, the foundation for the reservoir 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 2,775-foot long transmission line will be constructed in the previously paved portion of Hina Lani Street which would not involve removal of vegetation.

The reservoir project site is heavily disturbed and mostly covered in invasive weeds and some native Hawaiian plants. Construction of the reservoir, related facilities, and access driveway will not adversely impact any unique or sensitive vegetation or habitats. No plants listed as endangered, threatened, or proposed for listing by USFWS or the State of Hawaii were found in the project site.

The few native plants present in the project area are very common and are present in abundance throughout west Hawaii. *Bidens micrantha* ssp. *ctenophylla*, although considered rare, has no legal status, and is common in the general vicinity of the project site. Thus, construction of the reservoir, related facilities, and access driveway will have no significant adverse effect on the botanical resources of this area of Hawaii.

Fauna

A one-time survey cannot 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.

Notwithstanding the above considerations, the findings of the mammalian survey are consistent with other surveys conducted in the North Kona District within the recent past. It is likely that Hawaiian hoary bats use resources within the general of the project site at least occasionally, as they have been seen in areas both *mauka* and *makai* of both the reservoir and water transmission easement on a seasonal basis. See Appendix C.

No exterior lighting is proposed in conjunction with the reservoir or the water transmission line so it is extremely unlikely that the development of these proposed water supply facilities will result in impacts, either good or bad to either Hawaiian Petrels or Newell's Shearwaters.

The development of the proposed reservoir and water transmission line is unlikely to result in adverse impacts to any avian or mammalian species currently listed as endangered, threatened or proposed for listing under either the federal or the State of Hawaii's endangered species programs.

2.6 Traffic

2.6.1 Existing Environment

The project site is located between Queen Kaahumanu Highway, State Route 19, and Mamalahoa Highway (Hawaii Belt Road), State Route 190. Hina Lani Street, a County roadway, serves as a two-lane, two-way connector road between the two State highways under the control of the State of Hawaii Department of Transportation (DOT). In the vicinity of Hina Lani Street, Queen Kaahumanu Highway is a two-way, two-lane, undivided highway with a posted speed limit of 35 miles per hour (mph). Mamalahoa Highway in the vicinity of Hina Lani Street is a two-way, two-lane, undivided highway with a posted speed limit of 35 mph. Near the project site, Hina Lani Street has a posted speed limit 45 mph.

In 2000, traffic counts were conducted at the Queen Kaahumanu Highway and Hina Lani Street intersection and at the Mamalahoa Highway and Hina Lani Street intersection in conjunction with development of Kaloko Industrial Park, Phases III and IV. The study showed, at the Hina Lani Street intersection, Queen Kaahumanu Highway carried 635 vehicles northbound and 579 vehicles southbound during the AM peak

7:15am to 8:15am. Traffic volumes were higher in the PM peak, 3:30pm to 4:30pm, with 809 vehicles northbound and 979 vehicles southbound.

At the Hina Lani Street intersection, Mamalahoa Highway carried 433 vehicles northbound and 945 vehicles southbound in the AM peak.

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 9-month construction period. This should not create an adverse affect to traffic on Hina Lani Street as volumes on this roadway are relatively low.

No personnel will be assigned on a daily basis to the Hina Lani reservoir site. DWS will to conduct periodic visual inspections of the project site and occasional walk-through visits. This level of activity will not create an adverse affect to traffic on Hina Lani Street, to other nearby streets, and to the State highways.

The State DOT has indicated the Reservoir project should not have an impact to the State highway facilities. See Appendix A.

2.7 Air Quality

2.7.1 Existing Environment

The project site is located in the North Kona District, an area characterized by a relatively low level of residential and commercial development and some light industrial facilities. A low level of development generally indicates an absence of stationary and mobile sources of emissions which could affect ambient air quality. The Hawaii Electric Light Co. (HELCO) Keahole generating plant located about 3.5 miles north and west of the project site is the only stationary industrial source of emissions located along the Kona coast.

Vehicle traffic along Hina Lani Street and other nearby streets and highways would be the primary source of mobile emissions near the project site.

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 1.39 acres (60,440 square feet) which will mean a relatively small area of disturbance. The Contract Specifications will 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 reservoir project site will only involve DWS 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.

2.8 Noise

2.8.1 Existing Environment

The project site is located about 2.5 miles east (mauka) of the intersection of Queen Kaahumanu Highway and Hina Lani Street and about 0.95 miles west of the Mamalahoa Highway and Hina Lani Street intersection. The area surrounding the project site is generally undeveloped. As a result, there is an absence of stationary noise sources.

The main noise source would be vehicle traffic on Hina Lani Street which serves as a two-lane, two-way connector road between the two State highways. Since vehicle traffic on Hina Lani in the vicinity of the project site is relatively light, noise generated by vehicle traffic should not be significant.

2.8.2 Impacts and Mitigation Measures

Construction activities such as grading, excavating for footings and foundations, and for underground piping and the transmission main will create noise. The equipment used for these activities typically include pick ups trucks, excavators, backhoes, concrete delivery trucks, water tank trucks, hydraulic cranes, and forklifts. Noise generated by this will be short-term during the period of construction which will be during the daytime hours. Once construction has been completed, construction noise impacts will no longer occur.

The County of Hawaii zoning designation for the project site is Residential (R-15). 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 55dBA for daytime and 45dBA for nighttime for zoning district Class a, areas equivalent to lands zoned residential. The maximum permissible sound level shall apply in a manner deemed appropriate by Director of the Department of Health.

Once construction has been completed, noise will be generated by the vehicles used by DWS, contractor personnel, and others who would be visiting the project site. This level of activity will not create significant adverse noise impacts to adjacent or surrounding properties.

The Hinalani Reservoir will not include a pump station or other equipment which could be considered a noise source.

2.9 Archaeological and Cultural Resources

2.9.1 Existing Environment

In November 2004, an archaeological field survey was conducted on the project site. The field survey was conducted as part of an archaeological inventory survey to meet the requirements of the State of Hawaii Department of Land and Natural Resources (DLNR) Historic Preservation Division (SHPD).

The archaeological field survey consisted of a 100 percent surface examination of the project site through a series of northwest by southwest oriented transects. No subsurface testing was undertaken as part of the archaeological survey. A previous archaeological study conducted on the project site indicated that the majority of the site had been mechanically altered, possibly by chain dragging. Appendix D contains the archaeological inventory survey report.

The field survey encountered a single archaeological site, a stone wall oriented in a west-southwest direction and continued beyond the southern boundary of the project site for an undetermined distance. The wall is constructed of stacked subangular basalt cobbles and small boulders, with faced sides and a core-filled interior of small cobbles and ranges in width from 38 to 43 inches at the bottom and 27 to 32 inches at the top. The stone wall varies in height from 32 to 38 inches within the project site. No cultural remains were identified during the survey. See Appendix D.

The wall site identified on the project site during the archaeological field survey conforms to the historic ranch related site/feature types expected in the Lower Upland Zone based on previous archaeological and historic research completed on the area of the project site. The archaeological field survey did identify temporary habitation sites or trails, which are traditional Hawaiian site/feature types expected in the Lower Upland Zone. The wall site on the project site was likely constructed in the late 1800s to early 1900s as the focus of land use shifted from agricultural to large scale ranching.

2.9.2 Impacts and Mitigation Measures

The wall site identified during the field survey was assessed for significance based on the criteria outlined in the DLNR Rules Governing Procedures Governing for Historic

Preservation Review. According to these rules, a site must possess integrity of location, design, setting, materials, workmanship, feeling, and association and must meet one or more of five criterion (“a” to “e”).

Based on the DLNR guidelines, the wall site is assessed as solely significant under Criterion “d”, have yielded, or likely to yield, information important for research on prehistory or history. This site has yielded information important for understanding historic land use in the area of the project site. The mapping, written description, and photography of the wall site adequately documents it and no further work or preservation is recommended. Based on the results of the archaeological field survey, construction of the Hinalani Reservoir should have no adverse impacts to historic sites. This conclusion will require concurrence from the SHPD.

2.10 Cultural Impact Assessment

2.10.1 Existing Environment

As previously discussed, the wall site identified on the project site during the archaeological field survey was likely constructed in the late 1800s to early 1900s as the focus of land use shifted from agricultural to large scale ranching. Use of the project site as part of large-scale ranching activities in the general area most likely would have precluded culturally significant practices from the project site.

2.10.2 Impacts and Mitigation Measures

The project site is part of the large-scale ranching activities which occurred in this area of the Kona coast. Based the mostly likely absence of cultural practices on the project site, construction of the Hinalani reservoir would not create adverse impacts to cultural practices in this area.

2.11 Infrastructure

2.11.1 Water

Existing Conditions

The project site is currently served by the County of Hawaii Department of Water Supply system.

Impacts and Mitigation Measures

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

2.11.2 Sewer

Existing Conditions

The 1.0-MG reservoir project site is not served by the County of Hawaii sewer system. No toilet facilities will be constructed on the project site. Thus, the Hinalani Reservoir will not require wastewater services from the County of Hawaii or use an on-site system for treatment or disposal of wastewater.

Impacts and Mitigation Measures

The Hinalani Reservoir will not require County of Hawaii wastewater collection, treatment, or effluent disposal services. Thus, the Hinalani Reservoir 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 Kona area. HELCO provides existing electrical service to the project site via 12,470 volts, 3-phase underground power lines located on the south side of Hina Lani Street.

Impacts and Mitigation Measures

Electrical service will be extended into the project site through an underground line which will be connected to the existing underground line on Hina Lani Street. The 240/120 volts, 1-phase electrical service is required to provide power for the SCADA system. The usage of electrical will be about 140 kilowatt per month. This level of usage will not create an adverse affect to the HELCO system, as the existing system has the capacity to accommodate the new loads. Similarly, there will be no adverse affect to the electrical system at the other reservoir sites, as the usage of power will also be about the same as the Hinalani Reservoir.

2.12 Visual Considerations

2.12.1 Existing Conditions

The Hinalani Reservoir project site is located within North Kona District which consists of the vast expanse of the Kona landscape, the area's most striking feature. The remnant of the Hualalai volcano dominates the views of the North Kona area. The steep slopes provide a backdrop for f the views to and from the most areas of North Kona.

Queen Kaahumanu Highway provides the main source of public views in the North Kona area. Views of the project site, which is located about 2.5 miles east of Queen Kaahumanu Highway, can only be intermittently seen when gaps occur in the intervening vegetation and surrounding terrain. The posted speed limit along Queen Kaahumanu Highway varies from 35 to 45 miles per hour in the vicinity Hina Lani Street which means only glimpses of the project site can be seen when traveling along the

Highway. Thus, unless the vehicle is stopped, there are limited opportunities to view the project site when traveling in either direction along Queen Kaahumanu Highway.

2.12.2 Impacts and Mitigation Measures

The Hinalani Reservoir will be located on the south side of Hina Lani Street about 2.5 miles east of the Hina Lani Street and Queen Kaahumanu intersection. Public views of the Hinalani Reservoir will be confined to short stretches along Queen Kaahumanu Highway when the 20-foot high reservoir will be visible through gaps in the vegetation and surrounding terrain.

The visual impact of the Hinalani Reservoir will be mitigated since the structure will initially be painted a light brown color which will be a similar shade to the vegetation in the surrounding area during most times of the year. At a distance, this color will not contrast sharply with the surrounding background conditions. Figure 1.5 shows an existing reservoir on Hina Lani Street.

The improvements at the other reservoir sites would consist of adding a small, about 24 inches high, Yagi-type antenna to the railing on top edge of the tank or by adding a 2-inch pipe post to the top of the control building to support the antenna. These improvements should not affect the visual quality at these sites.

3. RELATIONSHIP to PLANS, POLICIES and CONTROLS

3.1 Hawaii State Plan

The Hawaii State Plan, adopted in 1978 and revised in 1988, now set forth as Chapter 226, Hawaii Revised Statutes, Hawaii State Planning Act, states, among a number of purposes, that the plan shall serve as a guide for the future long-range development of the State; identify the goals, objectives, policies, and priorities for the State; provide a basis for determining priorities and allocating limited resources. The Hinalani Reservoir 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 Hinalani Reservoir will involve construction of new facilities at a new site. The Hinalani Reservoir 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 226-16 Objectives and policies for facility systems – water

(a) Planning for the State's facility systems with regard to water shall be directed towards achievement of the objective of the provision of water to adequately accommodate domestic, agricultural, commercial, industrial, recreational, and other needs within resource capabilities.

(b) To achieve the facility systems water objective, it shall be the policy of this State to:

(4) Assist in improving the quality, efficiency, service, and storage capabilities of waster systems for domestic and agricultural use.

The Hinalani Reservoir will provide additional potable water storage capacity for the DWS system which serves portions of the North Kona area. The additional storage capacity will be consistent with the objective of providing water to adequately

accommodate domestic, agricultural, commercial, industrial, recreational, and other needs for the North Kona area.

In addition, the Hinalani Reservoir will allow use of water from higher elevation wells that would improve the overall quality and taste of the water. Thus, the Hinalani Reservoir will be consistent with the policy of improving the quality and storage capabilities of the water systems for domestic and agricultural use.

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 Hinalani Reservoir project site has been designed to account for the existing topographic conditions on the project site to minimize excavation or grading. The site plan shows a cutting and grading will occur on only about one-half of the total project site.

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 Hinalani Reservoir project site is located in the Urban District classification.

The transmission waterline will be located within the County-owned right-of-way of Hinalani Street, a public road.

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 05 25

which became effective on February 9, 2005 and repeals the previous plan adopted on November 14, 1989.

The General Plan included an assessment of the General Plan elements relative to new data, laws, and methods of analysis. Each study element was then analyzed and evaluated in relation to all other elements, County and district goals, and the land use pattern. A total of 21 study elements are set forth in the General Plan.

The utilities water element includes policies for the water systems in the County. The applicable policies of the utilities water element are set forth below.

- *Water system improvements shall correlate with the County's desired land use development pattern*
- *All water systems shall be designed and built to Department of water Supply standards.*

The Hinalani Reservoir will involve construction of a new storage facility which is needed to provide adequate water storage to meet the water demands of the Kona area and to improve the quality of the water. The reservoir and transmission line will be designed to meet the DWS standards for their facilities. Thus, the Hinalani Reservoir will be consistent with the utilities water element of the County General Plan.

The courses of action for the utilities water element for North Kona in the General Plan are:

- Continue to evaluate growth conditions to coordinate improvements as required to the existing water system in accordance with the North Kona Water System Master Plan.

The Hinalani Reservoir and transmission main are needed to meet the growth conditions of the North Kona area. The reservoir will provide needed storage to meet the growth of residential, business, and commercial users of the North Kona area. Thus, the Hinalani Reservoir project will be consistent with the courses of action for utilities water set forth in the General Plan.

3.2.3 County of Hawaii Zoning

The County of Hawaii zoning designation for the project site is R-15, Residential. The Hinalani Reservoir will be a public facility used for public purposes. County of Hawaii Code Chapter 25, Zoning, Section 25-4-11, sets forth that public uses are permitted uses in any County of Hawaii zoning district, provided the Planning Department Director has issued plan approval for such use. The transmission waterline will be located within the County-owned right-of-way of Hina Lani Street, a public road.

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 Hinalani Reservoir 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 not construct the reservoir and transmission main. This would result in lack of adequate water storage for the Kona area and would not improve the quality of the water provided to the DWS customers. DWS would have to rely on use of a number of smaller tanks for storage and the existing wells and the Kahaluu Shaft as sources for the water. Although there would be no disturbance to the project site, use of the smaller storage tanks and reliance on the Kahaluu Shaft as the sources would not be in the public interest, particularly when the areas north of the project site are expected to need water with continued development of residential, commercial, and resort uses. This area will need adequate storage and high quality water to meet their needs. Based on these considerations, the No Action alternative is not considered a feasible alternative.

4.2 Other Sites

Other sites within the vicinity of the Hinalani Reservoir project site were considered as alternatives to the Hina Lani Street project site. Existing DWS-owned sites in the vicinity of Hina Lani Street already contain reservoirs which occupy most of the space available at each location. Placement of a 1.0-million gallon reservoir on these DWS-owned sites would not be possible without acquisition of additional, which in most cases is not available. Thus, use of other DWS-owned sites for construction of a 1.0-million gallon reservoir is not considered a feasible alternative.

Lacking space at existing DWS sites, acquisition of additional undeveloped land at other sites could be considered. However, acquisition of additional land would be expected to take 2 to 3 years or more and could involve considerable expense to the DWS, given the cost of land on the Kona coast. Based on these considerations, acquisition of a new site for a reservoir 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 expected to be determined for the Hinalani Reservoir 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.

The transmission waterline will be located within the County-owned right-of-way of Hinalani Street, a public road, which has previously been developed. Based on this, construction of the waterline will not result in adverse impacts.

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

The Hinalani Reservoir project site does not provide habitat for Federal or State of Hawaii listed or candidate threatened or endangered species of flora or fauna. Thus, construction at the Hinalani Reservoir 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 Hinalani Reservoir should have no adverse impacts to historic sites. The State of Hawaii Department of Land and Natural Resources Historic Preservation Division (SHPD) will need to concur that "no historic properties will be affected" by construction of the Hinalani Reservoir. See Appendix D.

Historically, the project site was part of the large-scale ranching activities which occurred in this area of the Kona coast. Based on the mostly likely absence of cultural practices on the project site, construction of the Hinalani Reservoir is not expected to have loss or destruction of any natural or cultural resources.

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

The Hinalani Reservoir project site will use lands which are currently undeveloped and vacant on any uses. The Hinalani Reservoir project site will occupy an area of 1.39 acres which is a minor portion of the undeveloped land in the North Kona area. Thus, the Hinalani Reservoir 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 Hinalani Reservoir project will not involve actions or activities which would adversely affect natural resources of the project site. The Hinalani Reservoir project will be consistent with the guidelines of Chapter 344, HRS, as it will provide a public facility to support the critical function of supplying potable water to the North Kona area of the County of Hawaii. As such, the Hinalani Reservoir 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 Hinalani Reservoir will be a public facility to be used for public purposes. The Hinalani Reservoir is an integral part of the infrastructure needed to maintain the health and welfare of the community. The Hinalani Reservoir will not have an adverse effect to the economic or social welfare of the community.

5) *Substantially affect public health;*

An efficient and well-maintained potable water system is needed to protect the public health of the residents and visitors of the County of Hawaii. The Hinalani Reservoir will serve as the facility for the DWS to conduct its mandated public functions. Thus, the Hinalani Reservoir 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 Hinalani Reservoir will be a public facility which will be used by the County of Hawaii DWS to support its assigned mission. No DWS or contractor personnel will be assigned to daily operation of the Hinalani Reservoir. DWS and contractor personnel will visit the project site to conduct tests and to perform maintenance service. The personnel are expected to be residents of the County of Hawaii. Thus, construction of the Hinalani Reservoir will not create secondary impacts, such as population changes or effects on public facilities.

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

The Hinalani Reservoir 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 Hinalani Reservoir 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 Hinalani Reservoir should have no adverse impacts to historic sites. It is expected that the State of Hawaii Department of Land and Natural Resources Historic Preservation Division (SHPD) will conclude that "no historic properties will be affected" by construction of the Hinalani Reservoir. See Appendix D.

The project site was part of the large-scale ranching activities which occurred in this area of the Kona coast. Based the mostly likely absence of cultural practices on the project site, construction of the Hinalani Reservoir is not expected to have loss or destruction of any natural or cultural resources.

Based on the above findings, the Hinalani Reservoir 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 Hinalani Reservoir does not involve a commitment to further actions to other County of Hawaii related projects in Hawaii. As a result, the Hinalani Reservoir will not have a cumulative effect upon the environment or involve a commitment by the DWS to larger actions in the County of Hawaii.

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

The Hinalani Reservoir project site does not contain Federal or State listed or candidate threatened or endangered species of flora or fauna. Thus, the Hinalani Reservoir project site will not affect a threatened or endangered species.

10) *Detrimentially 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 Hinalani Reservoir project site. Once operational, the Hinalani Reservoir 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;*

The Federal Emergency Management Flood Insurance Rate Map (FIRM) Community Panel Number 155166INDOA (Index) dated April 2, 2004 (Revised) shows a FIRM has not been printed for the area which includes the project site. Thus, the project site is identified as in Zone X defined as: "area determined to be outside of the 500-year flood plain." This would indicate the project site is not located within the flood hazard area of a 500-year flood plain. The Hinalani Reservoir project site is not located in an area subject to flood hazards, a hazardous floodplain or a tsunami zone. In addition, the Hinalani Reservoir project site is not located within the County of Hawaii Special Management Area or within the coastal shoreline area. Thus, the 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 Hinalani Reservoir will be located on the south side of Hina Lani Street about 2.5 miles east of the Hina Lani Street and Queen Kaahumanu intersection. Public views of the Hinalani Reservoir will be confined to short stretches along Queen Kaahumanu

Highway when the 20-foot high reservoir will be visible through gaps in the vegetation and surrounding terrain.

The visual impact of the Hinalani Reservoir will be mitigated since the structure will initially be painted a light brown color which will be a similar shade to the vegetation in the surrounding area during most times of the year. At a distance, this color will not contrast sharply with the surrounding background conditions.

13) *Require substantial energy consumption.*

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

Based on these findings and the assessment of potential impacts from the Hinalani Reservoir project site, a Finding of No Significant Impact (FONSI) is anticipated.

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 Dept of the Army Corps of Engineers

US Fish and Wildlife Service

US Dept of the Interior National Park Service

State of Hawaii Department of Land and Natural Resources/ Historic Preservation Division

State of Hawaii Department of Health

State of Hawaii Department of Transportation

County of Hawaii Department Environmental Management

County of Hawaii Department of Parks and Recreation

County of Hawaii Department of Research and Development

County of Hawaii Planning Department

County of Hawaii Department of Public Works

Hawaii Electric Light Company

6.2 Agencies and Organizations Consulted on the Draft EA

The following is a list of agencies and organizations to be consulted during the preparation of the Draft Environmental Assessment.

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 the Interior National Park Service, Kaloko Honokoahu

National Historical Park

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 Planning Office
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
Kailua-Kona Public Library

County of Hawaii Agencies

County of Hawaii Civil Defense
County of Hawaii Department of Environmental Management
County of Hawaii 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

Officials

Senator Paul Whalen
Representative Cindy Evans
Council Member Angel Pilago

Public Utilities

Hawaii Electric Light Company

Organizations

Kona Kohala Chamber of Commerce

7. REFERENCES

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

County of Hawaii General Plan, Ordinance 5 25. County of Hawaii Planning Department. February 9, 2005.

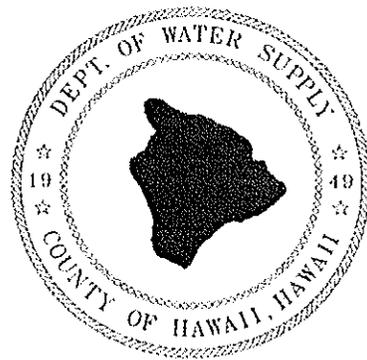
Federal Emergency Management Flood Insurance Rate Map (FIRM) Community Panel Number 155166INDOA. April 2, 2004 (Revised).

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

Chapter 226, Hawaii Revised Statutes. The Hawaii State Plan. Volume 4, 2001 Replacement.

Title 11 Hawaii Administrative Rules State of Hawaii Department of Health Chapter 46 Community Noise Control. September 23, 1996.

US Department of Agriculture Soil Conservation Service. *Soil Survey of Island of Hawaii, State of Hawaii.* December 1973.



APPENDIX A



DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, HONOLULU
BUILDING 223
FORT SHAFTER, HAWAII 96858-5440

REPLY TO
ATTENTION OF: CEPORHEC-T

February 14, 2005

Civil Works Technical Branch

Mr. John L. Sakaguchi
Wilson Okamoto Corporation
1907 S. Beretania Street
Honolulu, Hawaii 96826

Dear Mr. Sakaguchi:

Thank you for the opportunity to review and comment on the Project Summary for the Hinalani Street Reservoir and Transmission Waterline Project, North Kona, Hawaii (TMK 7-3-9: 49). 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 is not required for the project.
- b. According to the Flood Insurance Rate Map (FIRM) Index dated 2 April 2004, FIRMs have not been printed for the study area. The site is designated Zone X (unshaded - areas outside of the 500-year floodplain).

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

7097-01
DECEIVED
FEB 15 2005
WILSON OKAMOTO CORPORATION

cc: DWS, VIA
FAX

7097-01
2/24/05
BT
FW

7097-01
February 24, 2005

Mr. James Pennaz, PE, Chief
Civil Works Technical Branch
Department of the Army
US Army Engineer District, Honolulu
Building 223
Fort Shafter, Hawaii 96858-5440

Subject: Draft Environmental Assessment (EA), Pre-Assessment Consultation;
Hinalani Street 1.0-Million Gallon (MG) Reservoir and Transmission
Waterline; DWS Job No. 2003-824
TMK: 7-3-009:049, Kalo, North Kona, Hawaii
Response to Comment

Dear Mr. Pennaz:

Thank you for your letter dated February 14, 2005. The Draft EA will note a Department of the Army permit will not be required for the project. The Draft EA will also note that a Flood Insurance Rate Map (FIRM) has not been printed for the area of the project site and that the project site is designated Zone X (outside the 500-year floodplain).

We would appreciate your participation in the Draft EA process.

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

Sincerely,

John L. Sakaguchi
John L. Sakaguchi, AICP, Senior Planner

cc: G. Yorita, DWS

LINDA LINGLE
GOVERNOR



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

February 28, 2005

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

Dear Mr. Sakaguchi:

Subject: Hina Lani Street 1.0 Million Gallon Reservoir & Transmission Line
Draft Environmental Assessment Pre-Assessment Consultation
DWS Job No. 2003-824

In reply to your request for our comments on the subject water supply project, this is to advise you that the project should not have an impact on our State highway facilities.

We appreciate your early notification about the project and for the opportunity to provide our comments.

Very truly yours,

RODNEY K. HARAGA
Director of Transportation

JS

7097-01

RODNEY K. HARAGA
DIRECTOR

Deputy Directors
BRUCE Y. MATSUI
BARRY FUKUNAGA
BRENON T. MORIKAWA
BRIAN H. BERGUCHI

IN REPLY REFER TO:

STP 8.1610

cc: DWS, VIA

RECEIVED
MAR 09 2005

WILSON OKAMOTO CORPORATION

7097-01

March 10, 2005

Mr. Rodney K. Haraga, Director of Transportation
Department of Transportation
State of Hawaii
869 Punchbowl Street
Honolulu, Hawaii 96813

Subject: Draft Environmental Assessment (EA), Pre-Assessment Consultation;
Hinalani Street 1.0-Million Gallon (MG) Reservoir and Transmission
Waterline; DWS Job No. 2003-824
TMK: 7-3-009-049, Kaloko, North Kona, Hawaii
Response to Comment

Dear Mr. Haraga:

Thank you for your letter dated February 28, 2005 (STP 8.1610). The Draft EA will note the Department of Transportation had no comment.

We would appreciate your participation in the Draft EA process.

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

JLS/ry

cc: G. Yorita, DWS

PETER T. YOUNG
CHAIRMAN
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

YVONNE Y. ZU
DEPUTY DIRECTOR - WATER
ADVANCED RESOURCES
DIVISION OF CONSERVATION
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
ENGINEERING AND ENFORCEMENT
HISTORIC PRESERVATION
MAHOOLAWE ISLAND RESERVE COMMISSION
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February 16, 2005

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PETER T. YOUNG
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BOARD OF LAND AND NATURAL RESOURCES
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YVONNE Y. ZU
DEPUTY DIRECTOR - WATER
ADVANCED RESOURCES
DIVISION OF CONSERVATION
COMMISSION ON WATER RESOURCE MANAGEMENT
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LAND DIVISION
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HONOLULU, HAWAII 96809
February 16, 2005

LD-NRV
DWS JOB NO. 2003-824
Wilson Okamoto Corporation
John L. Sakaguchi, AICP
1907 South Beretania Street, Suite 400
Honolulu, Hawaii 96826
Dear Mr. Sakaguchi:

Subject: Pre-Assessment Consultation for the Preparation of a Draft Environmental Assessment for Hinalani Street 1.0-Million Gallon Reservoir and Transmission Line, North Kona, Island of Hawaii, Hawaii - TMK: 3-7-3-009: 049 - BWS Job NO. 2003-824

Thank you for the opportunity to review and comment on the subject matter.

A copy of your letter and map dated January 31, 2004, pertaining to the subject matter was distributed or made available to the following Department of Land and Natural Resources' Divisions for their review and comment:

- Division of Forestry and Wildlife
- Division of State Parks
- Engineering Division
- Commission on Water Resource Management
- Office of Conservation and Coastal Lands
- Land-Hawaii District Land Office

Enclosed please find a copy of the Engineering Division and Commission on Water Resource Management comments.

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

Should you have any questions, please feel free to contact Nicholas A. Vaccaro of the Land Division Support Services Branch at 1-808-587-0384.

Very truly yours,
Warren F. Wegesend Jr.
WARREN F. WEGESEND JR.
Administrator

C: HDLO

LD-NRV
DWS JOB NO. 2003-824
Wilson Okamoto Corporation
John L. Sakaguchi, AICP
1907 South Beretania Street, Suite 400
Honolulu, Hawaii 96826
Dear Mr. Sakaguchi:

Subject: Pre-Assessment Consultation for the Preparation of a Draft Environmental Assessment for Hinalani Street 1.0-Million Gallon Reservoir and Transmission Line, North Kona, Island of Hawaii, Hawaii - TMK: 3-7-3-009: 049 - BWS Job NO. 2003-824

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- Land-Hawaii District Land Office

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Should you have any questions, please feel free to contact Nicholas A. Vaccaro of the Land Division Support Services Branch at 1-808-587-0384.

Very truly yours,
Warren F. Wegesend Jr.
WARREN F. WEGESEND JR.
Administrator

C: HDLO

LD-NRV
DWS JOB NO. 2003-824
Wilson Okamoto Corporation
John L. Sakaguchi, AICP
1907 South Beretania Street, Suite 400
Honolulu, Hawaii 96826
Dear Mr. Sakaguchi:

Subject: Pre-Assessment Consultation for Preparation of a Draft Environmental Assessment (DEA)
Project: Hinalani Street 1.0-Million Gallon Reservoir and Transmission Line, North Kona, Hawaii
Authority: County of Hawaii Department of Water Supply
Consultant: Wilson Okamoto Corporation (946-2277)
TMK: (3) 7-3-009: 049

Warren F. Wegesend Jr.
Administrator

Enclosed please find a copy of the Engineering Division and Commission on Water Resource Management comments.

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

Should you have any questions, please feel free to contact Nicholas A. Vaccaro of the Land Division Support Services Branch at 1-808-587-0384.

Very truly yours,
Warren F. Wegesend Jr.
WARREN F. WEGESEND JR.
Administrator

C: HDLO

LD-NRV
DWS JOB NO. 2003-824
Wilson Okamoto Corporation
John L. Sakaguchi, AICP
1907 South Beretania Street, Suite 400
Honolulu, Hawaii 96826
Dear Mr. Sakaguchi:

Subject: Pre-Assessment Consultation for Preparation of a Draft Environmental Assessment (DEA)
Project: Hinalani Street 1.0-Million Gallon Reservoir and Transmission Line, North Kona, Hawaii
Authority: County of Hawaii Department of Water Supply
Consultant: Wilson Okamoto Corporation (946-2277)
TMK: (3) 7-3-009: 049

Warren F. Wegesend Jr.
Administrator

C: HDLO

LD-NRV
DWS JOB NO. 2003-824
Wilson Okamoto Corporation
John L. Sakaguchi, AICP
1907 South Beretania Street, Suite 400
Honolulu, Hawaii 96826
Dear Mr. Sakaguchi:

Subject: Pre-Assessment Consultation for Preparation of a Draft Environmental Assessment (DEA)
Project: Hinalani Street 1.0-Million Gallon Reservoir and Transmission Line, North Kona, Hawaii
Authority: County of Hawaii Department of Water Supply
Consultant: Wilson Okamoto Corporation (946-2277)
TMK: (3) 7-3-009: 049

Warren F. Wegesend Jr.
Administrator

Enclosed please find a copy of the Engineering Division and Commission on Water Resource Management comments.

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

Should you have any questions, please feel free to contact Nicholas A. Vaccaro of the Land Division Support Services Branch at 1-808-587-0384.

Very truly yours,
Warren F. Wegesend Jr.
WARREN F. WEGESEND JR.
Administrator

C: HDLO

LD-NRV
DWS JOB NO. 2003-824
Wilson Okamoto Corporation
John L. Sakaguchi, AICP
1907 South Beretania Street, Suite 400
Honolulu, Hawaii 96826
Dear Mr. Sakaguchi:

Subject: Pre-Assessment Consultation for Preparation of a Draft Environmental Assessment (DEA)
Project: Hinalani Street 1.0-Million Gallon Reservoir and Transmission Line, North Kona, Hawaii
Authority: County of Hawaii Department of Water Supply
Consultant: Wilson Okamoto Corporation (946-2277)
TMK: (3) 7-3-009: 049

Warren F. Wegesend Jr.
Administrator



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT
HONOLULU, HAWAII 96839

PETER T. YOUNG
Secretary
MEREDITH J. CHING
CLAYTON W. DELA CRUZ
JAMES A. FRAZIER
CHRISTOPHER R. O.
LAWRENCE H. KAKEI, J.D.
STEPHANIE A. WAHLEN
YVONNE Y. IZU
Deputy Director

February 4, 2005

Mr. John Sakaguchi
Wilson Okamoto Corporation
1907 S. Beretania St., Suite 400
Honolulu, HI 96826

Dear Mr. Sakaguchi:

SUBJECT: Draft EA, Hinalani Street Reservoir and Transmission Waterline

FILE NO.: 7087-01

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 Engineering 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.

Mr. John Sakaguchi
Page 2
February 4, 2005

- 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.
- OTHER:

If there are any questions, please contact Ryan Imata at 587-0255.

Sincerely,

YVONNE Y. IZU
Deputy Director

RL:ss

46574

PETER T. YOUNG
 BOARD OF LAND AND NATURAL RESOURCES
 COMMISSION ON WATER RESOURCE MANAGEMENT

YVONNE Y. IZU
 DEPUTY DIRECTOR - WATER

AGRICULTURE
 BOATING AND OCEAN RECREATION
 COMMISSION ON LAND AND NATURAL RESOURCES
 CONSERVATION AND COASTAL LANDS
 FORESTRY AND WILDLIFE
 HAWAIIAN ISLAND RESERVE COMMISSION
 MARINE RECREATION
 NATURAL RESOURCES
 PLANNING AND DEVELOPMENT
 SURVEILLANCE AND ENFORCEMENT

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

February 3, 2005

Ref.: HINALANIRESERVOIR.CMT
 DWS Job No. 2003-824

MEMORANDUM:

TO: XXX Division of Forestry and Wildlife
 ✓ XXX Division of State Parks
 XXX Engineering Division
 XXX Commission on Water Resource Management
 XXX Office of Conservation and Coastal Lands
 XXX Land-Hawaii District Land Office

FROM: Warren F. Wegesend Jr., Administrator
 Land Division

SUBJECT: Pre-Assessment Consultation for Preparation of a Draft Environmental Assessment (DEA)
 Project: Hinalani Street 1.0-Million Gallon Reservoir and Transmission Line, North Kona, Hawaii
 Authority: County of Hawaii Department of Water Supply
 Consultant: Wilson Okamoto Corporation (946-2277)
 TMR: (3) 7-3-009: 049

Please review the attached (project summary) letter with map dated January 31, 2005, pertaining to the subject matter and submit your comments (if any) on Division letterhead signed and dated by the suspense date.

If you have any questions, please contact Nicholas A. Vaccaro at 587-0384.

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

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

Division: State Parks Signed: [Signature]

Date: 2/4/05 Name: David S. Quinn

7097-01
 February 24, 2005

Ms. Yvonne Y. Izu, Deputy Director
 Commission on Water Resource Management
 Department of Land and Natural Resources
 State of Hawaii
 Post Office Box 621
 Honolulu, Hawaii 96809

Subject: Draft Environmental Assessment (EA), Pre-Assessment Consultation; Hinalani Street 1.0-Million Gallon (MG) Reservoir and Transmission Waterline, DWS Job No. 2003-824
 TMK: 7-3-009:049, Kaloko, North Kona, Hawaii
 Response to Comment

Dear Ms. Izu:

Thank you for your letter dated February 4, 2005. The Hinalani Street 1.0-Million Gallon (MG) Reservoir and Transmission Waterline project is being developed by the County of Hawaii, Department of Water Supply. As such, it is being incorporated into the County's Water Master Plan.

We would appreciate your participation in the Draft EA process.

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

Sincerely,

[Signature]

John L. Sakaguchi, AICP, Senior Planner

cc: G. Yorita, DWS

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LINDA LINGLE
GOVERNOR OF HAWAII



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STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

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HONOLULU, HAWAII 96809

February 3, 2005

PETER T. YOUNG
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

YVONNEY Y. ZU
DEPUTY DIRECTOR-WATER

AGRICULTURAL RESOURCES
BOATING AND OCEAN RECREATION
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
CONSERVATION AND EMPLOYMENT
ENGINEERING
FORESTRY AND WILDLIFE
KAWAHAU ISLAND RESERVE COMMISSION
STATE PARKS

Ref.: HINALANIRESERVOIR.CMT
DWS Job No. 2003-824

Suspense Date: 2/14/05
LD/NAV

MEMORANDUM:

TO: XXX Division of Forestry and Wildlife
XXX Division of State Parks
XXX Engineering Division
XXX Commission on Water Resource Management
XXX Office of Conservation and Coastal Lands
XXX Land-Hawaii District Land Office

FROM: Warren F. Wegesend Jr. Administrator
Land Division

SUBJECT: Pre-Assessment Consultation for Preparation of a Draft Environmental Assessment (DEA)
Project: Hinalani Street 1.0-Million Gallon Reservoir and Transmission Line, North Kona, Hawaii
Authority: County of Hawaii Department of Water Supply
Consultant: Wilson Okamoto Corporation (946-2277)
TMK: (3) 7-3-009: 049

Please review the attached (project summary) letter with map dated January 31, 2005, pertaining to the subject matter and submit your comments (if any) on Division letterhead signed and dated by the suspense date.

If you have any questions, please contact Nicholas A. Vaccaro at 587-0384.

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

We have no comments. () Comments attached.

Division: _____

Signed: Paul J. Conry

Date: FEB - 7 2005

Name: PAUL J. CONRY, ADMINISTRATOR
DIVISION OF FORESTRY AND WILDLIFE

LINDA LINGLE
GOVERNOR OF HAWAII



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LAND DIVISION

2005 FEB - 4 A 11:56



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

February 3, 2005

PETER T. YOUNG
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

YVONNEY Y. ZU
DEPUTY DIRECTOR-WATER

AGRICULTURAL RESOURCES
BOATING AND OCEAN RECREATION
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
CONSERVATION AND EMPLOYMENT
ENGINEERING
FORESTRY AND WILDLIFE
KAWAHAU ISLAND RESERVE COMMISSION
STATE PARKS

Ref.: HINALANIRESERVOIR.CMT
DWS Job No. 2003-824

Suspense Date: 2/14/05
LD/NAV

MEMORANDUM:

TO: XXX Division of Forestry and Wildlife
XXX Division of State Parks
XXX Engineering Division
XXX Commission on Water Resource Management
XXX Office of Conservation and Coastal Lands
XXX Land-Hawaii District Land Office

FROM: Warren F. Wegesend Jr. Administrator
Land Division

SUBJECT: Pre-Assessment Consultation for Preparation of a Draft Environmental Assessment (DEA)
Project: Hinalani Street 1.0-Million Gallon Reservoir and Transmission Line, North Kona, Hawaii
Authority: County of Hawaii Department of Water Supply
Consultant: Wilson Okamoto Corporation (946-2277)
TMK: (3) 7-3-009: 049

Please review the attached (project summary) letter with map dated January 31, 2005, pertaining to the subject matter and submit your comments (if any) on Division letterhead signed and dated by the suspense date.

If you have any questions, please contact Nicholas A. Vaccaro at 587-0384.

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

We have no comments. () Comments attached.

Division: Land

Signed: [Signature]

Date: 2/1/05

Name: Nicholas A. Vaccaro



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2005 FEB 11 A 10:52

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

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HONOLULU, HAWAII 96809

PETER T. YOUNG
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

YVONNEY EZU
DEPUTY DIRECTOR-WATER

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
ENGINEERING
FORESTRY AND WILDLIFE
LAND DIVISION
MAHOLAWE SANDS RESERVE COMMISSION
STATE OF HAWAII

DEPARTMENT OF LAND AND NATURAL RESOURCES
ENGINEERING DIVISION

REF.: HINALANRESERVOIR.CMT
DWS Job No. 2003-824
Hawaii-304

COMMENTS

- () We confirm that the project site, according to the Flood Insurance Rate Map (FIRM), is located in Zone _____.
- (X) Please take note that the project site, according to the Flood Insurance Rate Map (FIRM), is located in Zone X. The Flood Insurance Program does not have any regulations for development within Zone X.
- () Please note that the correct Flood Zone Designation for the project site according to the Flood Insurance Rate Map (FIRM) is _____.
- () Please note that the project must comply with the rules and regulations of the National Flood Insurance Program (NFIP) presented in Title 44 of the Code of Federal Regulations (44CFR), whenever development within a Special Flood Hazard Area is undertaken. If there are any questions, please contact the State NFIP Coordinator, Ms. Carol Tyau-Bearm, of the Department of Land and Natural Resources, Engineering Division at (808) 587-0267.

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

- () Mr. Robert Sumamoto at (808) 523-4254 or Mr. Mario Su Li at (808) 523-4247 of the City and County of Honolulu, Department of Planning and Permitting.
- () Mr. Kelly Gomes at (808) 961-8327 (Hilo) or Mr. Kiran Emler at (808) 327-5330 (Kona) of the County of Hawaii, Department of Public Works.
- () Mr. Francis Cerizo at (808) 270-7771 of the County of Maui, Department of Planning.
- () Mr. Mario Antonio at (808) 241-6620 of the County of Kauai, Department of Public Works.

The applicant should include project water demands and infrastructure required to meet water demands. Please note that the implementation of any State-sponsored projects requiring water service from the Honolulu Board of Water Supply system must first obtain water allocation credits from the Engineering Division before it can receive a building permit and/or water meter. The applicant should provide the water demands and calculations to the Engineering Division so it can be included in the State Water Projects Plan Update.

- () Additional comments: _____
- () Other: _____

Should you have any questions, please call Mr. Andrew Monden of the Planning Branch at 587-0229.

Signed: Eric T. Hiran
ERIC T. HIRANO, CHIEF ENGINEER

Date: 2/11/05

05 FEB 03 PM 03:49 BUREAU ENGINE

Suspense Date: 2/14/05
LD/NAV

Ref.: HINALANRESERVOIR.CMT
DWS Job No. 2003-824

MEMORANDUM:

TO: XXX Division of Forestry and Wildlife
 XXX Division of State Parks
 ✓ XXX Engineering Division
 XXX Commission on Water Resource Management
 XXX Office of Conservation and Coastal Lands
 XXX Land-Hawaii District Land Office

FROM: Warren F. Wegesend Jr. WFW Administrator
Land Division

SUBJECT: Pre-Assessment Consultation for Preparation of a Draft Environmental Assessment (DEA)
 Project: Hinalani Street 1.0-Million Gallon Reservoir and Transmission Line, North Kona, Hawaii
 Authority: County of Hawaii Department of Water Supply
 Consultant: Wilson Okamoto Corporation (946-2277)
 TMK: (3) 7-3-009: 049

Please review the attached (project summary) letter with map dated January 31, 2005, pertaining to the subject matter and submit your comments (if any) on Division letterhead signed and dated by the suspense date.

If you have any questions, please contact Nicholas A. Vaccaro at 587-0384.

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

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

Division: Engineering

Date: 2/11/05

Signed: Eric T. Hiran

Name: ERIC T. HIRANO, CHIEF ENGINEER

7097-01
February 24, 2005

Mr. Eric T. Hirano, Chief Engineer
Engineering Division
Department of Land and Natural Resources
State of Hawaii
Post Office Box 621
Honolulu, Hawaii 96809

Subject: Draft Environmental Assessment (EA), Pre-Assessment Consultation;
Hinalani Street 1.0-Million Gallon (MG) Reservoir and Transmission
Waterline; DWS Job No. 2003-824
TMK: 7-3-009-049, Kaloko, North Kona, Hawaii
Response to Comment

Dear: Mr. Hirano:

Thank you for your letter dated February 3, 2005. The Draft EA will note the project site is located Zone X in the Flood Insurance Rate Map (FIRM) and that there are not regulations for development within Zone X.

We would appreciate your participation in the Draft EA process.

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

cc: G. Yonita, DWS

LINDA LINGLE
GOVERNOR OF HAWAII



STATE OF HAWAII
DEPARTMENT OF HEALTH
P.O. Box 3378
HONOLULU, HAWAII 96807-3378

July 1, 2004

To: Persons Requesting Department of Health
Comments on Land Use Documents

From: June F. Harrigan-Lum, Manager
Environmental Planning Office

Our land use review coordinator position will be vacant beginning July 1, 2004. We will be filling this position as soon as possible. In the meantime, starting July 1, 2004, the Environmental Planning Office (EPO) will not be accepting any land use documents for coordinated replies.

If you would like to request to have staff in a specific branch or office to comment on your proposal, you are welcome to contact the staff directly. If a document has already been received by EPO and you wish to have us send it to a specific branch, you may call 586-4337 and ask for the clerical staff to send it to the appropriate branch. Please describe the document and the date of your cover letter.

You may call the above number and check with the clerical staff to see when coordinated responses from this office will resume.

Thank you for your cooperation and patience in this matter.

Enclosure

C: DDEH

7097-01 33

RECEIVED
FEB 07 2005

WILSON OKAMOTO CORPORATION

CHRISTOPHER L. FUKUNAGA, M.D.
DIRECTOR OF HEALTH

2/9/05
EPO
2/9/05

cc: DWS VIA
FAX 2/9/05

Harry Kim
Mayor



County of Hawai'i
DEPARTMENT OF PUBLIC WORKS
Aupuni Center
101 Pauahi Street, Suite 7 • Hilo, Hawai'i 96720-4224
(809) 961-8321 • Fax (808) 961-8630

February 16, 2005

John L. Sakaguchi, AICP Senior Planner
Wilson Okamoto Corporation
1907 S. Beretania Street, Suite 400
Honolulu, HI 96826

Subject: Draft Environmental Assessment, Pre- Assessment Consultation
Hina Lani Street 1.0 Million Gallon (MG) Reservoir and Transmission
Waterline DWS Job No. 2003-824
TMK: 7-3-009-049 Kaloko, North Kona, HI

We received your request for comments on the proposed project and they are as follows:

1. All development generated runoff shall be disposed of on-site and shall not be directed toward any adjacent properties.
2. The applicant shall be informed that if they include drywells in the subject development, an Underground Injection Control (UIC) permit may be required from the Department of Health, State of Hawaii.
3. All earthwork and grading shall conform to Chapter 10, Erosion and Sediment Control, of the Hawaii County Code.
4. The applicant shall comply with chapter 11-55, Water Pollution Control, Hawaii Administrative Rules, Department of Health, which requires an NPDES permit for certain construction activity.

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


Galen M. Kuba, Division Chief
Engineering Division

KE

c: ENG-HILO/KONA

County of Hawai'i is an Equal Opportunity Provider and Employer.

7097-01
March 10, 2005

Mr. Galen M. Kuba, Division Chief
Engineering Division
Department of Public Works
County of Hawaii
101 Pauahi Street, Suite 7
Hilo, Hawaii 96720-4224

Subject: Draft Environmental Assessment (EA), Pre-Assessment Consultation;
Hinalani Street 1.0-Million Gallon (MG) Reservoir and Transmission
Waterline; DWS Job No. 2003-824
TMK: 7-3-009-049, Kaloko, North Kona, Hawaii
Response to Comment

Dear Mr. Kuba:

Thank you for your letter dated February 16, 2005. The Draft EA will note:

1. All runoff from the project site must be contained on-site and not directed to adjacent properties.
2. Drywells, if used, must comply with the requirements related to Underground Injection Control (UIC).
3. All earthwork must comply with County of Hawaii Code, Chapter 10, Erosion and Sediment Control.
4. A National Pollutant Discharge Elimination System (NPDES) permit may be required for construction at the project site.

We would appreciate your participation in the Draft EA process.

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

JLS/ry

cc: G. Yorita, DWS

7097-01
BTW
C. McClure
Director
2/24/05
FILE 584
RECEIVED
FEB 22 2005
WILSON OKAMOTO CORPORATION

cc: DWS, VIA
FAX

RECEIVED
UN MAR 01 2005
WILSON OKAMOTO CORPORATION
7097-01
3/2/05



County of Hawaii

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

25 Aupuni Street, Room 210 • Hilo, Hawaii 96720-4252
(808) 961-8083 • Fax (808) 961-8086

Barbara Bell
Director

Nelson Ho
Deputy Director

cc: DWS, V/A
FAX

7097-01
March 10, 2005

Ms. Barbara Bell, Director
Department of Environmental Management
County of Hawaii
25 Aupuni Street, Room 210
Hilo, Hawaii 96720-4252

February 28, 2005

Mr. John L. Sakaguchi, AICP
Senior Planner
Wilson Okamoto Corporation
1907 S. Beretania St., Suite 400
Honolulu, HI 96826

Re: Draft Environmental Assessment, Pre-Assessment Consultation;
Hinalani Street 1.0-Million Gallon (MG) Reservoir and Transmission
Waterline; DWS Job No. 2003-824
TMK: 7-3-009:049, Kaloko, North Kona, Hawaii

Dear Sakaguchi,

We have no comments at this time regarding the proposed project.

Thank you for allowing us the opportunity to offer input on this project and if we can be of further assistance, please don't hesitate to contact us.

Barbara Bell

Barbara Bell
DIRECTOR

Subject: Draft Environmental Assessment (EA), Pre-Assessment Consultation;
Hinalani Street 1.0-Million Gallon (MG) Reservoir and Transmission
Waterline; DWS Job No. 2003-824
TMK: 7-3-009:049, Kaloko, North Kona, Hawaii
Response to Comment

Dear Ms. Bell:

Thank you for your letter dated February 28, 2005. The Draft EA will note the Department of Environmental Management had no comment.

We would appreciate your participation in the Draft EA process.

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

Sincerely,

John L. Sakaguchi

John L. Sakaguchi, AICP, Senior Planner

JLS/ry

cc: G. Yorita, DWS

6611A

Harry Kim
Mayor



County of Hawaii
PLANNING DEPARTMENT

101 Puuahi Street, Suite 3 • Hilo, Hawaii 96720-3043
(808) 961-8288 • Fax (808) 961-8742

February 23, 2005

Mr. John L. Sakaguchi, AICP
Wilson Okamoto Corporation
1907 S. Beretania St., Suite 400
Honolulu, Hawaii 96826

7097-01 JS
3/2/05
Christopher J. Yuen
Director /BT

Roy R. Takemoto
Deputy Director

cc: DWS, VIA
FAX

RECEIVED
FEB 28 2005

WILSON OKAMOTO CORPORATION

John L. Sakaguchi, AICP
Wilson Okamoto Corporation
Page 2
February 23, 2005

Should you have questions, please feel welcome to contact Larry Brown or Esther Imamura of my staff at 961-8288.

Sincerely,

CHRISTOPHER J. YUEN
Planning Director

LMB:cd

F:\P\PE\60\Larry\EA-BIS Comments\Sakaguchi.DWS@Hilo\am\Street.doc

Dear Mr. Sakaguchi:

Subject: Draft Environmental Assessment, Pre-Assessment Comments
Applicants: County of Hawaii Department of Water Supply
Land Owners: County of Hawaii Department of Water Supply
Project: Hinalani Street 1.0-Million Gallon Reservoir & Transmission Waterline, DWS Job No. 2003-824

Tax Map Key: 7-3-009;049

We are in receipt of your letter, dated January 31, 2005, requesting our comments on the proposed project in connection with your preparation of a Draft Environmental Assessment (DEA). Thank for the opportunity to comment on this project.

As stated in your letter, the subject 1.3875-acre parcel is zoned Single-Family Residential (RS-15) by the County of Hawaii and is situated in the State Land Use Urban district. The property is in an area designated for urban expansion by the General Plan Land Use Pattern Allocation Guide (LUPAG) map and is not in the Special Management Area (SMA).

Pursuant to §25-4-11(b), Hawaii County Code (the Zoning Code), any substation used by a public utility for the purpose of furnishing water shall be a permitted use in any district provided that the use is not hazardous or dangerous to the surrounding area and the Director has issued Plan Approval for the use. Therefore, Plan Approval for the proposed reservoir construction shall be secured prior to the issuance of any building permits.

7097-01
March 10, 2005

Mr. Christopher J. Yuen, Planning Director
Planning Department
County of Hawaii
101 Pauahi Street, Suite 3
Hilo, Hawaii 96720-3043

Subject: Draft Environmental Assessment (EA), Pre-Assessment Consultation;
Himalani Street 1.0-Million Gallon (MG) Reservoir and Transmission
Waterline; DWS Job No. 2003-824
TMK: 7-3-009:049, Kaloko, North Kona, Hawaii
Response to Comment

Dear Mr. Yuen:

Thank you for your letter dated February 23, 2005. The Draft EA will note that any substation used by a public utility for the purpose of furnishing water is a permitted use the Hawaii County Code Chapter 25 Zoning, § 25-4-11(b), provide a Plan Approval has been issued by the Planning Department. As such, a Plan Approval application will be submitted to the Planning Department prior to application of the building permit.

We would appreciate your participation in the Draft EA process.

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

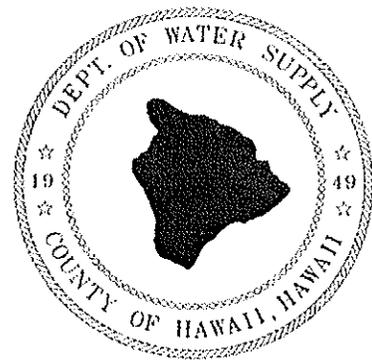
Sincerely,



John L. Sakaguchi, ACP, Senior Planner

JLS/ry

cc: G. Yorita, DWS



APPENDIX B

7097-01

cc: DWS

Botanical Survey Hina Lani St. Reservoir Site

County of Hawaii
Department of Water Supply
Job No. 2003-824

Prepared for

Wilson Okamoto Corporation
1907 S. Beretania St. Honolulu, Hawaii 96826

Prepared by

Palmer & Associates Consulting
Post Office Box 637, Pahoa, Hawaii 96778

January 2005

Proposed Project

The Department of Water Supply, County of Hawaii, is proposing to construct a one million gallon (1 MG) water tank at a 1.39 acre site (lot 5-B of file plan 2092) on Hina Lani Street in North Kona on Hawaii Island (project site). A botanical survey of the site was conducted on November 11, 2004. This document reports the results of that survey.

According to the proposed plan, the entire site would be completely changed from its existing condition. The site would be grubbed, graded, surfaced, and almost completely occupied by the proposed water tank.

Botanical Survey

A 100% visual survey of the entire project site was conducted by a botanist (Rex Palmer, Ph.D.) on November 11, 2004. A complete list of vascular plant species encountered on the project site is given at the end of this report. Flowering plant nomenclature follows Wagner, et al (1999). Fern nomenclature follows Palmer (2003).

The vegetation of the project site is largely dominated by introduced invasive weeds, although a few native plant species are present that represent a remnant of the original native forest (see species list). In pristine times the vegetation of the western slopes of Hualalai was native Hawaiian 'Dry Forest' (Gagne and Cuddihy 1990, Carlquist 1980), supporting a diverse mix of native trees and shrubs. The vegetation of the project site, however, has been highly altered from its pristine condition. Most of the site is covered with *Leucaena leucocephala* (haole koa - introduced), forming a closed canopy. Scattered trees of *Grevillea robusta* (silk oak - introduced) emerge here and there above the *Leucaena* canopy. In some parts of the project site, such as the (illegal) dump area, a dense growth of *Hyptis pectinata* (*Hyptis*) occurs instead of the closed canopy of *Leucaena*.

One plant species that represents a remnant of the original dry forest vegetation found during the survey is *Bidens micrantha* ssp. *ctenophylla* (ko'oko'olau). A colony of about six individuals was found in the northwest corner of the project site completely engulfed in *Hyptis pectinata*. The *Bidens* plants are apparently being out-competed.

Bidens micrantha ssp. *ctenophylla* has been designated as a "Candidate" for listing under the Endangered Species Act by the U. S. Fish and Wildlife Service (USFWS). Under USFWS policy the "Candidate" species list is an informal listing of species that may or may not, at some future time, be formally proposed for listing. Species with this designation have no legal standing unless they have been formally proposed for listing as Endangered or Threatened. *Bidens micrantha* ssp. *ctenophylla*, although on the "Candidate" list, has not been formally proposed for listing.

Since *Bidens micrantha* ssp. *ctenophylla* requires no further planning consideration and yet is an uncommon native Hawaiian plant, a decision was made to salvage seeds from the plants on the project site. Seeds were gathered and turned over to the Big Island Native Plant Society. Mr. David Paul of the society accepted the seeds and stated his intention of growing the plants if possible.

Conclusions and Recommendations

The proposed project site is heavily disturbed and mostly covered in invasive weeds and is not pristine native vegetation, although some native Hawaiian plants are present. The proposed project will not impact any unique or sensitive vegetation or habitats. No plants designated as Endangered, Threatened, Proposed, or Species of Concern by USFWS were found in the project area. The few native plants that are present in the project area are very common and are present in abundance throughout west Hawaii. *Bidens micrantha* ssp. *ctenophylla*, although considered rare, has no legal status, and is common in the general vicinity of the project area. We therefore conclude that the proposed project will have no significant effect on Botanical resources.

References

- Carlquist, Sherwin. 1980. Hawaii A Natural History. Pacific Tropical Botanical Garden, Lawai, Kauai, Hawaii.
- Gagne, Wayne C. 1990. Vegetation. in Wagner, W. L., D. R. Herbst, , and S. H. Sohmer, Manual of the Flowering Plants of Hawaii. Vols. 1 & 2. University of Hawaii Press, Honolulu.
- Palmer, Daniel D. 2003. Hawai'i's Ferns and Fern Allies. University of Hawaii Press, Honolulu.
- Wagner, W. L., D. R. Herbst, and S. H. Sohmer. 1999. Manual of the Flowering Plants of Hawaii. Vols. 1 & 2. University of Hawaii Press, Honolulu.

**Vascular Plant Species
Found On
DWS Hina Lani St. Reservoir Site**

<u>FAMILY</u>	<u>Genus/Species</u>	<u>Common Name</u>	<u>Dist.*</u>
Pteridophytes			
POLYPODIACEAE		Common Fern Family	
	<i>Phymatosorus grossus</i> (Langsd. & Fisch.) Brownlie	laua'e	A
Dicotyledons			
ANACARDIACEAE		Mango Family	
	<i>Schinus terebinthifolius</i> Raddi	Christmas berry	A
APOCYNACEAE		Dogbane Family	
	<i>Cascabela thevetia</i> (L.) Lippold	be-still tree	A
ASTERACEAE		Sunflower Family	
	<i>Bidens micrantha</i> subsp. <i>ctenophylla</i> (Sherff) Nagata & Ganders	ko'oko'olau	E
	<i>Emelia fosbergii</i> Nicolson	Flora's paintbrush	A
	<i>Pluchea symphytifolia</i> (Mill.) Gillis	sourbush	A
CONVOLVULACEAE		Morning Glory Family	
	<i>Ipomoea obscura</i> (L.) Ker-Gawl.	little morning glory	A
CRASSULACEAE		Orpine Family	
	<i>Kalanchoe pinnata</i> (Lam.) Pers.	air plant	A

CUCURBITACEAE	Cucumber Family	
<i>Coccinia grandis</i> (L.) Voigt	ivy gourd	A
<i>Momordica charantia</i> L.	bitter melon	A
EBENACEAE	Ebony Family	
<i>Diospyros sandwicensis</i> (A. DC) Fosb.	lama	E
EUPHORBIACEAE	Poinsetta Family	
<i>Aleurites moluccana</i> (L.) Willd.	kukui	P
<i>Ricinus communis</i> L.	castor bean	A
FABACEAE	Bean Family	
<i>Chamaecrista nictitans</i> (L.) Moench	partridge pea	A
<i>Crotalaria pallida</i> Aiton	rattlepod	A
<i>Desmodium intortum</i> (Mill.) Urb.	beggarweed	A
<i>Desmodium tortuosum</i> (Sw.) DC	beggarweed	A
<i>Indigofera suffruticosa</i> Mill.	indigo	A
<i>Leucaena leucocephala</i> (Lam.) deWit	haole koa	A
<i>Macroptilium atropurpureum</i> (DC) Urb.	cow pea	A
<i>Mimosa pudica</i> L.	sleepy grass	A
<i>Senna gaudichaudii</i> (Hook. & Arnott) Irwin & Barneby	kolomona	I
LAMIACEAE	Mint Family	
<i>Hyptis pectinata</i> (L.) Poit.	comb hyptis	A
MALVACEAE	Hibiscus Family	
<i>Sida rhombifolia</i> L.	false 'ilima	A

MENISPERMACEAE	Moonseed Family	
<i>Cocculus trilobus</i> (Thunb.) DC	huehue	I
MYRTACEAE	Myrtle Family	
<i>Psidium cattleianum</i> Sabine	strawberry guava	A
PASSIFLORACEAE	Passion Flower Family	
<i>Passiflora edulis</i> Sims	passion fruit	A
PHYTOLACCACEAE	Pokeweed Family	
<i>Rivina humilis</i> L.	coral berry	A
PORTULACACEAE	Portulaca Family	
<i>Talinum triangulare</i> (Jacq.) Willd.	jewels of Opar	A
PROTEACEAE	Protea Family	
<i>Grevillea robusta</i> A. Cunn. ex R. Br.	silk oak	A
RUBIACEAE	Coffee Family	
<i>Canthium odoratum</i> (G. Forster) Seem.	alaha'e	I
SAPINDACEAE	Soapberry Family	
<i>Dodonaea viscosa</i> Jacq.	'a'ali'i	I
STERCULIACEAE	Cacao Family	
<i>Waltheria indica</i> L.	'uhaloa	I
TILIACEAE	Linden Family	
<i>Triumfetta semitriloba</i> Jacq.	Sacramento bur	A

VERBENACEAE

Verbena Family

<i>Stachytarpheta jamaicensis</i> (L.) Vahl	Jamaica vervain	A
<i>Stachytarpheta urticifolia</i> (Salisb.) Sims	false vervain	A

Monocotyledons

ARECACEAE

Palm Family

<i>Livistona chinensis</i> (Jacq.) R. Br. ex Mart.	Chinese fan palm	A
--	------------------	---

LILIACEAE

Lily Family

<i>Aloe arborescens</i> Mill.	aloe	A
-------------------------------	------	---

POACEAE

Grass Family

<i>Eleusine indica</i> (L.) Gaertn.	wiregrass	A
<i>Oplismenus hirtellus</i> (L.) P. Beauv.	basketgrass	A
<i>Panicum maximum</i> Jacq.	Guinea grass	A
<i>Pennisetum setaceum</i> (Forssk.) Chiov.	fountain grass	A
<i>Rhynchelytrum repens</i> (Willd.) Hubb.	natal redtop	A

*Distribution:

A = Alien, introduced

I = Indigenous, native but also found elsewhere

E = Endemic, found only in Hawaii

P = Polynesian introduction



DEPARTMENT OF WATER SUPPLY • COUNTY OF HAWAII

345 KEKŌDANAŌ'A STREET, SUITE 20 • HILO, HAWAII 96720

TELEPHONE (808) 961-8050 • FAX (808) 961-8857

January 20, 2005

7097-01

2/3/05

Mr. David Paul
Big Island Native Plant Society
P.O. Box 2081
Keaau, HI 94749

**HINALANI STREET 1.0-M.G. RESERVOIR AND TRANSMISSION WATERLINE
DEPARTMENT OF WATER SUPPLY JOB NO. 2003-824
BIDENS MICRANTHA SEEDS**

As you are aware, our botanical consultant for the Hina Lani Reservoir and transmission line project, Rex Palmer, Ph.D., found a small colony of *Bidens micrantha* ssp. *ctenophylla* on the northwest corner of the Hina Lani reservoir project site. The plants are totally engulfed in invasive introduced weeds and probably have little chance of surviving much longer at the project site.

We understand *Bidens micrantha* are considered to be a rare species, that might be proposed for listing as endangered in the future by the U.S. Fish & Wildlife Service. Based on these findings, we have directed that the seeds from the plants be collected and are offering the enclosed seeds to the Big Island Native Plant Society for further use.

We appreciate your consideration in this matter and look forward to your successful use of the seeds.

If you have any questions, please call Mr. Gerald Yorita of our staff at (808) 961-8070, extension 250.

Sincerely yours,



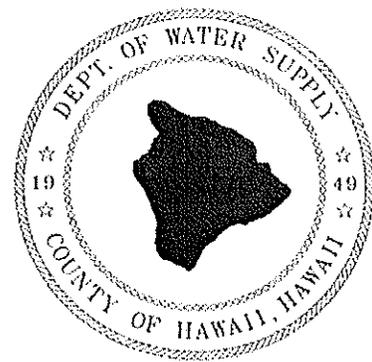
Milton D. Pavao, P.E.
Manager

GY:sco

Enc.

copy - Wilson Okamoto Corporation
Mr. Rex Palmer

... *Water brings progress...*



APPENDIX C

56 (7097-01)

12/21/04

cc: DWS, 12/21/04

A Survey of Avian and Terrestrial Mammalian
Species for the Hina Lani Reservoir and
Transmission Line Project, North Kona District,
Island of Hawai'i.

Prepared by:

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

Prepared for:

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

December 2004

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Introduction

The County of Hawai'i, Department of Water Supply is proposing to construct a 1-million gallon reservoir and a 3,400-foot long water transmission line in the Kaloko, *ahupua`a*, North Kona District, Island of Hawai'i (Figure 1, USGS 1996). This report summarizes the findings of an ornithological and mammalian survey of both the 1.3875-acre parcel of land identified as TMK: 7-3-009:0049, on which the County proposed to construct the reservoir, as well as the water transmission line easement which extends some 3,400-feet upslope (*mauka*) from the reservoir site. Fieldwork was conducted on November 28th and 29th 2004.

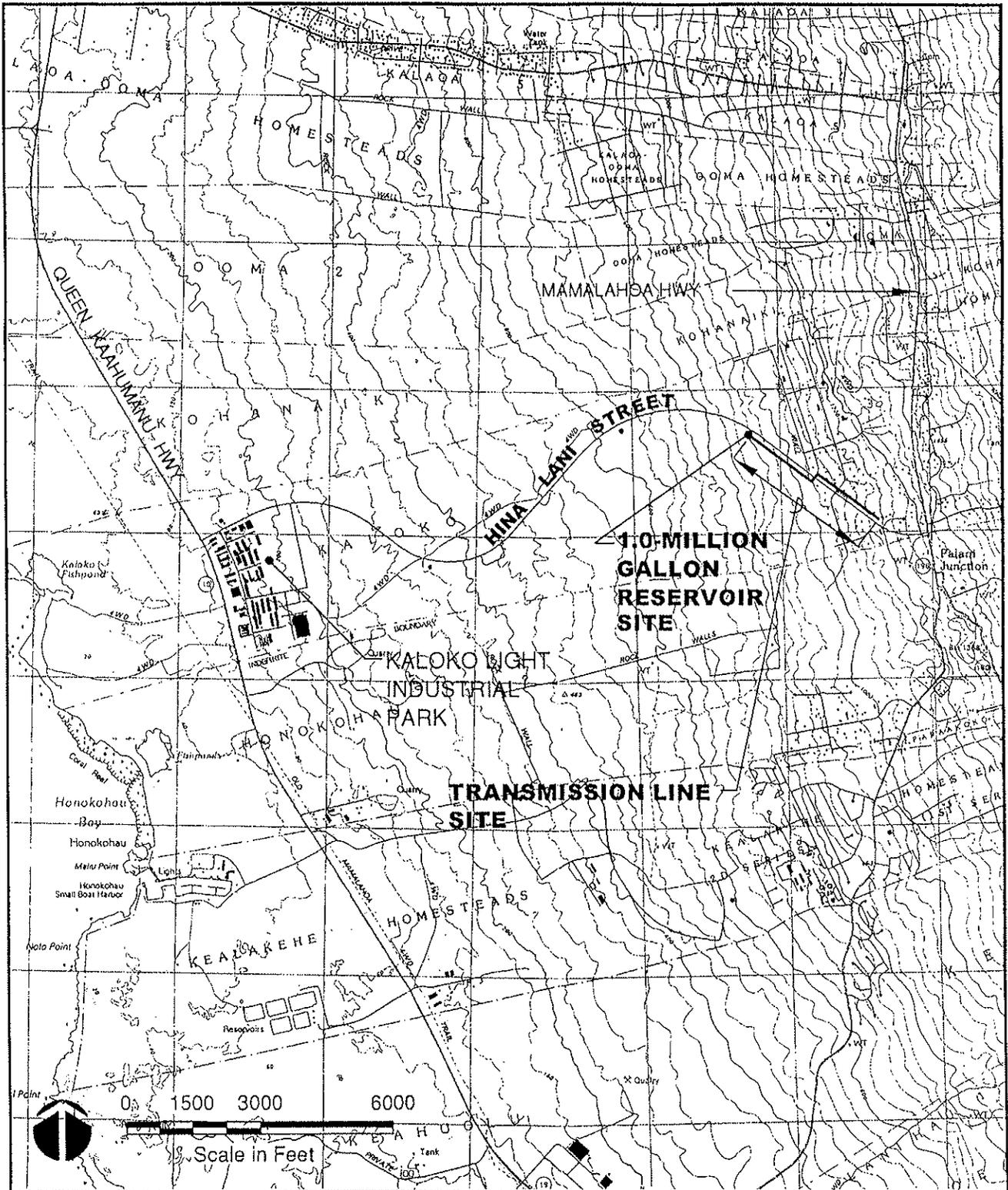
The primary purpose of the survey was to determine if there were any avian or mammalian species currently listed as endangered, threatened or proposed for listing under either the federal or the State of Hawai'i's endangered species programs on, or in the immediate vicinity of the subject property. Federal and State of Hawai'i listed species status follows species identified in the following referenced documents (DLNR, 1998, Federal Register, 1999a, 1999b, 2001, 2002, 2004).

Avian phylogenetic order and nomenclature follows *The American Ornithologists' Union Checklist of North American Birds 7th Edition* (American Ornithologists' Union 1998), and the 42nd through the 45th supplements to *Check-list of North American Birds* (American Ornithologists' Union 2000; Banks et al. 2002, 2003, 2004). 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).

Hawaiian and scientific names are italicized in the text. A glossary of technical terms and acronyms used in the document, which may be unfamiliar to the reader, are included at the end of the narrative text on (Page 12).

General Site Description

The reservoir site is located on the south side of Hina Lani Street, approximately 2.5 miles *mauka* of the intersection of Hina Lani Street and Queen Ka'ahumanu Highway (State Route 19) {Figure 1}. The 3,400-foot long water transmission line will be located within the paved shoulder of Hina Lani Street. Starting at the reservoir the transmission line will be on the south side of the road until the intersection of Anini Street, at which point the line will cross to the north side of the Hina Lani Street and proceed *mauka*, on that side of the road, crossing Manu Mele Street, until terminating at Hikimoe Street (Figure 1).



HINA LANI STREET 1.0-MILLION GALLON RESERVOIR AND TRANSMISSION LINE

Figure No.



PROJECT LOCATION
MAP

00-00

The 1.3875-acre reservoir site is relatively flat, gently sloping from a maximum elevation of ~ 950-feet above mean sea level (MSL), down to ~ 900-feet MSL (Figure 2, USGS 1996). The terrain is composed predominately of a'a lava flows disgorged from Hualālai during the Holocene age, between 1,500 and 3,000 years ago (Wolfe and Morris 1996). There is a pressure reducing valve (PRV) assembly located within a cyclone fence on the north side of the site, and an electrical transformer in a utility box located *mauka* of the PRV site (Figure 2). The transformer will remain after construction of the reservoir, and will be used to bring power to the facility. The PRV will be removed and replaced with a monitoring system as part of the new construction.

The water transmission line easement extends *mauka* from the reservoir at ~ 950-feet MSL and ends at ~ 1160-feet ASL at the intersection of Hina Lani Street and Hikome Street. The entire waterline route is within the existing paved shoulder of Hina Lani Street.

The vegetation present on the reservoir site is dominated almost to the exclusion of native species by alien plants. The bulk of this habitat is covered with an almost impenetrable *koa haole* (*Leucaena leucocephala*), silk oak (*Grevillea robusta*) and Christmasberry (*Schinus terebinthifolius*) forest. The under-story is made up of a mix of alien grasses and weedy species typical of highly disturbed areas at this altitude in North Kona.

Mammalian Survey Methods

With the exception of the endangered Hawaiian hoary bat (*Lasiurus cinereus semotus*), or 'ōpe'ape'a as it is known locally, all terrestrial mammals currently found on the Island of Hawai'i are alien species. Most are ubiquitous. No trapping program was proposed or undertaken to quantify the use of the property by alien mammalian species. The survey of mammals was limited to visual and auditory detection, coupled with visual observation of scat, tracks, and other animal sign. A running tally was kept of all vertebrate species observed and heard within the project area. Visual and electronic scans, using a Broadband AnaBat II[®] ultrasonic bat detector were made for bats during crepuscular periods on the evening of November 28th and on the morning of November 29th, 2004.

Avian Survey Methods

Reservoir Site

Two avian count stations were located on the reservoir site. One in the center of the eastern boundary and the second in the center of the western boundary of the site. Eight-minute variable circular plot counts were made at each station. Field observations were made with the aid of Leitz 10 X 42 binoculars and by listening for vocalizations. Counts were concentrated between 07:30 a.m. and 9:30 a.m., the peak of daily bird activity.

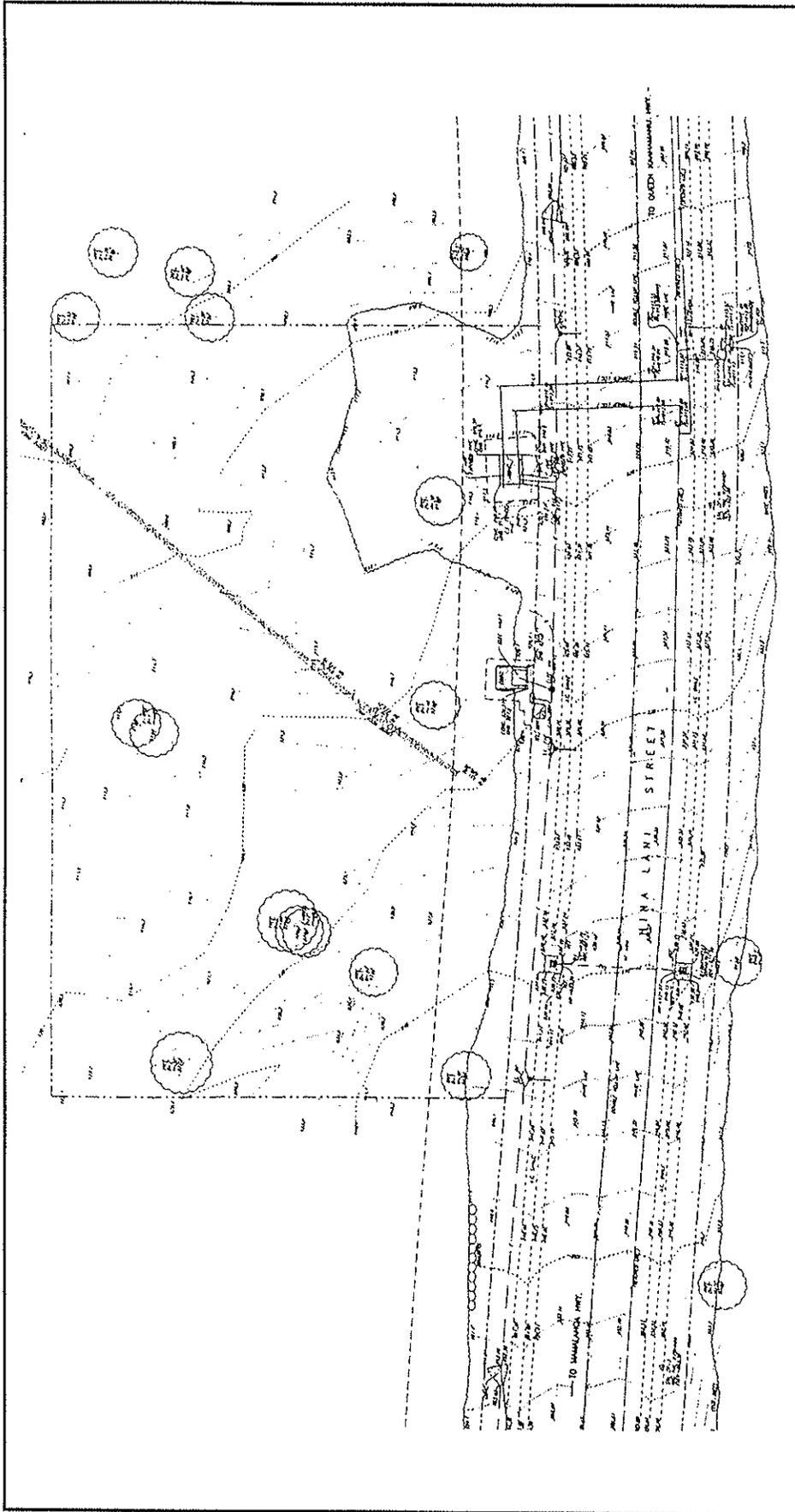




Figure 2
Hina Lani Reservoir Site
TMK: 7-3-009:0049

Scale

 Feet

Source
 Wilson Okamoto Corporation

An additional two hours were spent within the project area on the evening of November 28th and on the morning of November 29th, 2004, in an attempt to detect nocturnally flying seabirds and owls over-flying the project area. Time not spent counting was used to search the project area for species and habitats that were not detected during count sessions.

Water Transmission Line Easement

The approximately 3,400-foot easement is located within the paved shoulder of Hina Lani Street, which is a heavily used roadway. There is no vegetation nor other suitable wildlife habitat within this easement. We drove the length of the easement to verify that there was no wildlife habitat present within it – no further avian or mammalian surveys were conducted within the easement.

Mammalian Survey Results

Two alien mammalian species were detected during the course of this survey. Several dogs (*Canis f. familiaris*) were heard barking from outside the project site. Pig (*Sus s. scrofa*) sign and rooting was encountered along the north edge of the reservoir site.

Hawai'i's sole endemic terrestrial mammalian species, the endangered Hawaiian hoary bat, was not detected during this survey. Both 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 12 avian species representing 9 separate families were recorded during station counts (Table 1). All of the species detected are alien to the Hawaiian Islands. No species currently listed as endangered, threatened or proposed for listing under either the federal or the State of Hawai'i's endangered species programs was detected on the site (DLNR 1998, Federal Register 1999a, 1999b, 2001, 2002, 2004).

Avian diversity was relatively low, densities were also low, with the exception of four species; Yellow-fronted Canary (*Serinus mozambicus*), Java Sparrow (*Padda oryzivora*), Japanese White-eye (*Zosterops japonicus*), and Leiothrix (*Leiothrix lutea*), which accounted for 61% of the total number of all birds recorded during station counts. The most common avian species recorded was the Yellow-fronted Canary, which accounted for 14% of the total number of individual birds recorded. An average of 61 birds were detected per station count.

Table 1

Avian Species Detected Within the Hina Lani Street Reservoir Site

<i>Common Name</i>	<i>Scientific Name</i>	<i>ST</i>	<i>RA</i>
PIGEONS & DOVES - Columbidae			
Spotted Dove	<i>Streptopelia chinensis</i>	A	2.5
Zebra Dove	<i>Geopelia striata</i>	A	4.0
BABBLERS - Timaliidae			
Red-billed Leiothrix	<i>Leiothrix lutea</i>	A	7.0
SILVEREYES - Zosteropidae			
Japanese White-Eye	<i>Zosterops japonicus</i>	A	8.5
MOCKINGBIRDS & TRASHERS -Mimidae			
Northern Mockingbird	<i>Mimus polyglottus</i>	A	0.5
STARLINGS - Sturnidae			
Common Myna	<i>Acridotheres tristis</i>	A	2.5
EMBERIZIDS - Emberizidae			
Yellow-billed Cardinal	<i>Paroaria capitata</i>	A	3.0
SALTATORS, CARDINALS & ALLIES – Cardinalidae			
Northern Cardinal	<i>Cardinalis cardinalis</i>	A	3.5
CARDULINE FINCHES & ALLIES - Fringillidae			
House Finch	<i>Carpodacus mexicanus frontalis</i>	A	4.5
Yellow-fronted Canary	<i>Serinus mozambicus</i>	A	12.5
WAXBILLS & ALLIES – Estrildidae			
African Silverbill	<i>Lonchura cantans</i>	A	3.5
Java Sparrow	<i>Padda oryzivora</i>	A	9.5

KEY TO TABLE 1

- ST Status
A Alien Species
RA Relative Abundance: Number of birds detected divided by the number of count stations (2)

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.

The findings of the mammalian survey are consistent with other surveys conducted in the North Kona District within the recent past (David 1999, 2000a, 2000b, 2000c, 2000d, 2001, 2003, 2004). It is likely that Hawaiian hoary bats use resources within the general

project area at least occasionally, as they have been seen in areas both *mauka* and *makai* of both the reservoir and water transmission easement on a seasonal basis (Jacobs 1994, R. David unpublished field notes 1985-2004).

It should be noted that current survey techniques available for gathering information on the distribution, abundance and usage of resources within a given area by Hawaiian hoary bats are inadequate and/or time and cost prohibitive. Data gathered by these methods only indicate whether bats are present or not in any given area. The two main methods currently being used to monitor lasiurine bats are; heterodyne echolocation detector surveys and mist netting. Scientists currently have no understanding of detection probabilities associated with either method (Carter et al., 2000). It may be impossible to standardize detection probabilities among surveyors, studies, or over time (O'Shea and Bogen, 2000). The inability to estimate detection probability, limits the usefulness of data collected using un-calibrated indices produced by either mist netting or echolocation surveys.

Unlike nocturnally flying seabirds, which often collide with man-made structures, bats are uniquely adapted to avoid collision with obstacles, man-made or natural. They navigate and locate their prey primarily by using ultrasonic echolocation, which is sensitive enough to allow them to locate and capture small volant insects at night.

Although no live 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 resources within the general project area. Without conducting a trapping program, it is difficult to assess the population densities of these often hard-to-see mammals. All of these introduced rodents are deleterious to native ecosystems and the native faunal species that are dependant on them.

The relatively low diversity of avian species detected during this survey was in keeping with the results of several other surveys conducted in the North Kona District in recent years (David 1999, 2000a, 2000b, 2000c, 2000d, 2001, 2003, 2004). The habitat currently found within the project area and within the alien dominated lowland areas in North Kona is not conducive to supporting native forest birds, with the possible exception of Hawaiian Hawks. There is no suitable foraging or nesting habitat for Hawaiian Hawks within the reservoir site. There are no wetland features within the study area, thus no endemic waterbirds were expected, nor were any recorded.

Although not detected during this survey it is possible that small numbers of the endangered endemic Hawaiian Petrel (*Pterodroma sandwichensis*), or *ua'u*, and the threatened Newell's Shearwater (*Puffinus auricularis newelli*), or *'a'o*, over fly the project

area between the months of May and November (Banko 1980a, 1980b, Day et al. 2003, Harrison 1990).

Hawaiian Petrels were formerly common on the Island of Hawai‘i (Wilson and Evans 1890–1899). This pelagic seabird reportedly nested in large numbers on the slopes of Mauna Loa and in the saddle area between Mauna Loa and Mauna Kea (Henshaw 1902), as well as at the mid to high elevations of Mount Hualālai. It has, within recent historic times, been reduced to relict breeding colonies located at high elevations on Mauna Loa and, possibly, Mount Hualālai (Banko 1980a, Banko et al. 2001, Cooper and David 1995, Cooper et al. 1995, Day et al. 2003, Harrison 1990, Hue et al. 2001, Simons and Hodges 1998).

Newell’s Shearwaters were formerly common on the Island of Hawai‘i (Wilson and Evans 1890–1899). This species breeds on Kaua‘i, Hawai‘i and Moloka‘i in extremely small numbers. Newell’s Shearwater populations have dropped precipitously since the 1880s (Banko 1980b, Day et al., 2003). This pelagic species nests high in the mountains in burrows excavated under thick vegetation, especially *uluhe* fern.

The primary cause of mortality in both these species is thought to be predation by alien mammalian species at the nesting colonies (Ainley et al. 2001, Cooper and Day 1995, 1998, Day and Cooper 1997, Hue et al. 2001). Collision with man-made structures is considered to be the second most significant cause of mortality of these seabird species in Hawai‘i. Nocturnally flying seabirds, especially fledglings on their way to sea in the summer and fall, can become disoriented by exterior lighting. When disoriented, seabirds often collide with manmade structures, and if they are 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 or close to either the reservoir site or the water transmission line easement for either of these pelagic seabird species.

Potential Impacts to Protected Vertebrate Species

Hawaiian Petrel and Newell’s Shearwater

No exterior lighting is proposed in conjunction with the reservoir or the water transmission line so it is extremely unlikely that the development of these proposed water supply facilities will result in impacts, either good or bad to either Hawaiian Petrels or Newell’s Shearwaters.

Conclusion

The development of the proposed reservoir and water transmission line is unlikely to result in adverse impacts to any avian or mammalian species currently listed as endangered, threatened or proposed for listing under either the federal or the State of Hawai'i's endangered species programs.

Glossary:

Ahupua'a – Traditional Hawaiian land division, usually extending from the uplands to the sea.

Alien - Introduced to Hawai'i by humans.

Crepuscular – Twilight hours.

Endemic – Native and unique to the Hawaiian Islands

Mauka – Upslope, towards the mountains

Makai – Down-slope, towards the ocean.

Volant – Flying, capable of flight - as in flying insect.

DLNR – Hawaii State Department of Land & Natural resources.

ESA - Federal Endangered Species Act of 1973, as amended.

MSL – Mean sea level.

PRV – Pressure release valve.

VCP – Variable Circular Plot, method of censusing birds.

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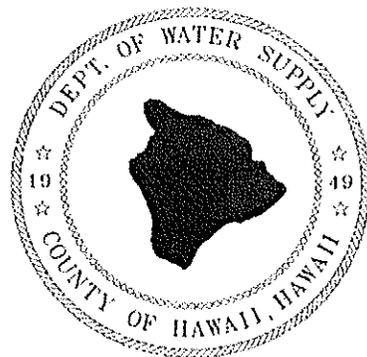
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APPENDIX D

**ARCHAEOLOGICAL INVENTORY SURVEY
HINA LANI RESERVOIR SITE,
LAND OF KALOKO, NORTH KONA DISTRICT
ISLAND OF HAWAII
(TMK: 7-3-009:49)**

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SUMMARY

At the request of Wilson Okamoto Corporation, Haun & Associates conducted an archaeological inventory survey of TMK: 7-3-009:49, a c. 1.38-acre parcel located in the Land of Kaloko, North Kona District, Island of Hawaii. The objective of the survey was to satisfy historic preservation regulatory review inventory requirements of the Department of Land and Natural Resources-State Historic Preservation Division (DLNR-SHPD), as contained within Hawaii Administrative Rules, Title 13, DLNR, Subtitle 6, State Historic Preservation Rules.

The survey of the parcel identified one site, an inland/seaward oriented historic ranch wall. The wall is assessed as significant solely for its information content. The site has been subjected to detailed recording that has adequately documented it and no further work or preservation is recommended.

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INTRODUCTION

This report presents the results of an archaeological inventory survey conducted of TMK: 7-3-009:49, a 1.38-acre parcel located in the Land of Kaloko, North Kona District, Island of Hawaii (*Figure 1*). The objective of the survey was to satisfy current historic preservation regulatory review inventory requirements of the Department of Land and Natural Resources-State Historic Preservation Division (DLNR-SHPD), as contained within Hawaii Administrative Rules, Title 13, DLNR, Subtitle 6, State Historic Preservation Rules (DLNR 2003).

The survey fieldwork was conducted November 23, 2004 by Project Supervisor Mark Donham, M.A., under the direction of Dr. Alan Haun. The field work portion of the project required one day to complete. Described in this final report are the project scope of work, field methods, and survey findings. Also included is background information relevant to the project area, and significance assessments of the identified site with recommended further treatments.

Scope of Work

Based on DLNR-SHPD rules for inventory surveys the following specific tasks were determined to constitute an appropriate scope of work for the project:

1. Conduct background review and research of existing archaeological and historical documentary literature relating to the project area and its immediate vicinity--including examination of Land Commission Awards, *ahupua'a* records, historic maps, archival materials, archaeological reports, and other historical sources;
2. Conduct a high intensity, 100% pedestrian survey coverage of the project area;
3. Conduct detailed recording of all potentially significant sites including scale plan drawings, written descriptions, and photographs, as appropriate;
4. Conduct limited subsurface testing (manual excavation) to determine site function;
5. Analyze background research and field data; and
6. Prepare and submit Final Report.

Project Area Description

The project area consists of a 1.38-acre, rectangular-shaped parcel located between 895 ft and 945 ft elevation. The parcel is bordered by Hina Lani Street to the northeast and by undeveloped land to the northwest, southwest and southeast. The vegetation within the parcel is dominated by *koa haole* (*Leucaena Leucocephala*) with scattered Silk Oak (*Grevillea robusta*) and Christmas Berry (*Schinus terrebinthifolius* Raddi.) trees with an under story comprised of lantana (*Lantana camara* L.), bitter yam (*Dioscores bulbifera* L.), air plant (*Bryophyllum pinnatum* [Lam.}), and ferns (*Nephrolepis* sp.) (*Figure 2*).

The ground surface within the project area slopes slightly to moderately to the west-southwest and is comprised of soil with scattered surface stones. The soil consists of Punaluu extremely rocky peat on 6-20 % slopes. This soil is characterized by a surface layer of dark peat over pahoehoe bedrock, with the peat evidencing a rapid permeability, a slow runoff and slight erosional hazard, suitable for pasture land (Sato et al. 1973:48). The underlying lava in this area originated from Hualalai Volcano and was deposited c. 1,500

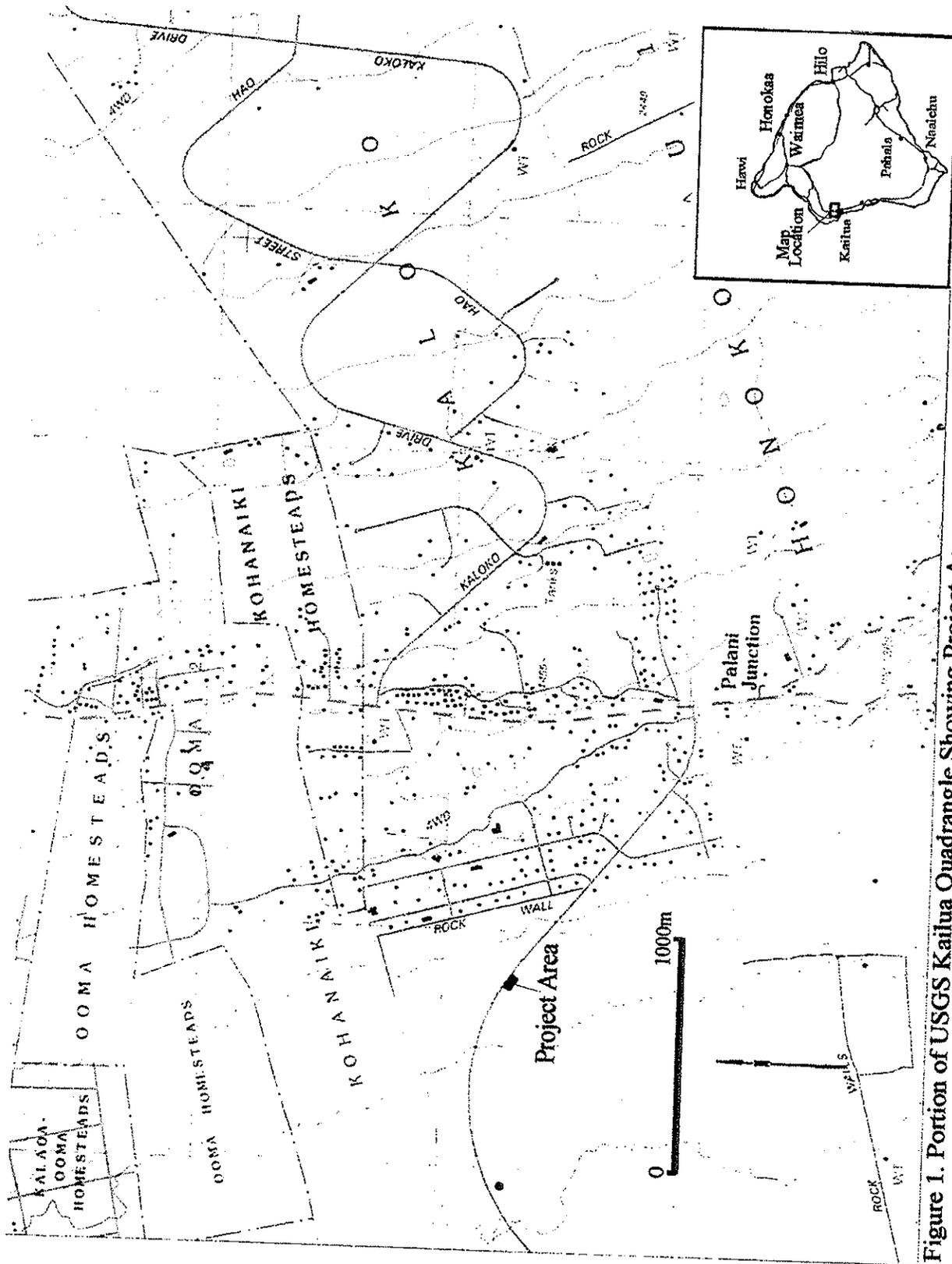


Figure 1. Portion of USGS Kailua Quadrangle Showing Project Area



Figure 2. Project Area Overview, view to west

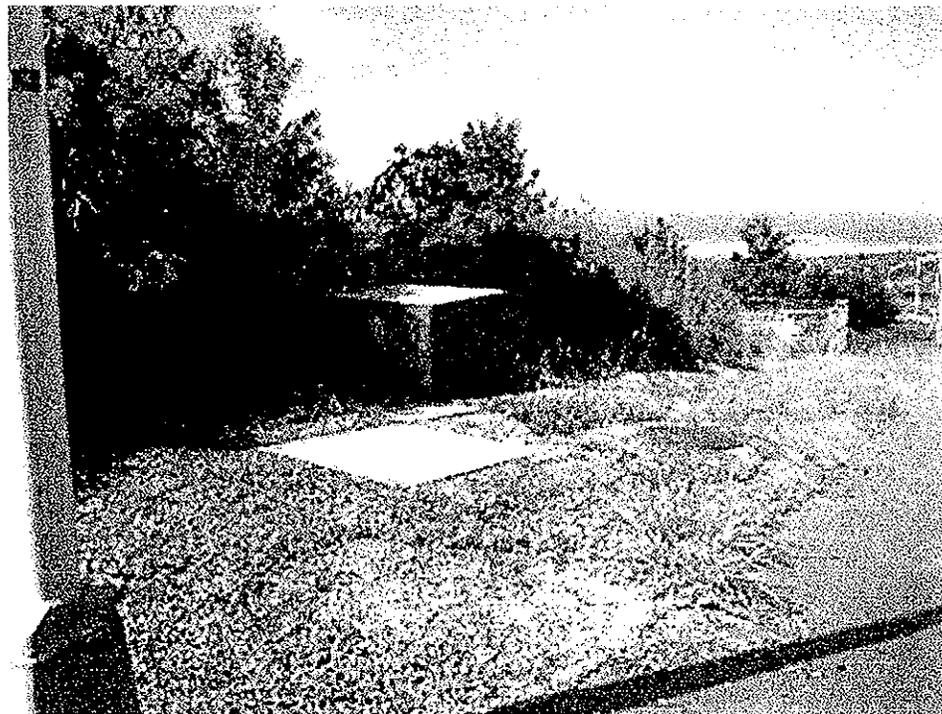


Figure 3. Project Area Overview, view to west

to 3,000 years ago (Wolfe and Morris 2001:12). Average annual rainfall in the vicinity of the project area ranges from 30 to 40 inches (Juvik and Juvik 1998:57).

Portions of the northeastern side of the project area, seaward of Hina Lani Street have been impacted by the construction of residential infrastructure components. An above ground water valve system located within a chain link fence enclosure is situated in the northeastern portion of the parcel (*Figure 3* and see *Figure 5*). An above ground electrical vault is situated 25.0 m to the southeast. Two push piles of bulldozed stones and soil were identified, one located seaward of Hina Lani Street in the eastern portion of the survey area, and one located near the center of the parcel, south of a stone wall (discussed in Findings section). A previous archaeological study conducted within the parcel (Rosendahl and Haun 1987 - discussed below) indicates that the majority of the project area had been mechanically altered, potentially by chain dragging.

Field Methods

The project area was subjected to a 100% surface examination, by an archaeologist who covered the parcel through a series of northwest by southeast oriented transects spaced at 5.0 m intervals. A single archaeological site was encountered, consisting of a stone wall (Site 24329). The extent of this wall appeared on a recently prepared survey map of the parcel provided by the client. The examination of the wall location during the project indicates that it was accurately plotted and no plan map of the wall was prepared during the present project. The wall was subjected to detailed recording, consisting of the completion of a standardized site form and photographic documentation. No subsurface testing was undertaken.

ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

Historical Documentary Research

Most of the following derives from the extensive research by Kelly (1971) done in conjunction with the Kaloko Ahupua'a research of Cordy et al. (1991). Kaloko lies within an area of lava-covered land north of Kailua called Kekaha, which "describes a dry, sun-baked land" (1971:2). Kaloko is well known for its large fishpond for which the *ahupua'a* is named. The pond is a *loko kuapa* type (Summers 1964) formed by the construction of a wall, aligned with the adjacent shorelines, across the mouth of a small bay.

The fishpond at Kaloko is mentioned in a story told by Kamakau (1961) of a spy sent to Hawaii by the ruling chief of Maui. The spy reported seeing the fishpond upon his return to Maui. Kelly (1971:22) believes this occurred between the late 1600s and early 1700s depending upon the generation span used in calculating chiefly genealogies.

A late 1600s reference to Kaloko comes from Fornander (1969) and Kamakau (1964). The twins, Kameeiamoku and Kamanwa, are said to have carried the bones of the ruling chief of Maui, Kahekili, to a cave at Kaloko. Kamakau (1961) reported the subsequent burial of Kamehameha's bones in the same cave by Kameeiamoku's son Hoapili and Keopulani. King David Kalakaua reportedly later removed the bones; however, this account conflicts with informant information and other documents, which suggest the bones were not removed (Kelly 1971:23-25).

Ellis reported the observations of the Reverends Thurston and Bishop during a walk along the coast north from Kailua in 1823. They described houses along the coast built on lava and small gardens in the lava where sweet potatoes, watermelon, and tobacco were grown.

During The Great Mahele, the grandson of Kamehameha I, Lot Kamehameha, selected Kaloko as his property. Kelly (171:5) cites correspondence indicating that Kaloko was Lot Kamehameha's most valuable property because of the fishpond, and that fish from the pond were sold in the market in Kailua town in 1860.

According to Kelly (1971:6-8), there were at least 14 claims for *kuleana* in Kaloko, of which 12 were awarded. The awarded claims were all situated inland between 1,100 ft and 1,800 ft elevation. The Waiihona 'Aina database (Waiihona 'Aina Corp. 2000) lists 24 claims within Kaloko, of which 13 were awarded. The apparent discrepancy between the database and Kelly apparently results from the large number of unawarded claims not located by Kelly. Cordy et al. (1991:414) lists 13 awarded claims and five claims that were not awarded. All, except two of the claim testimonies that also claimed house lots, were for cultivated plots. Crops mentioned in the testimonies include sweet potatoes and taro.

Kelly (1971:12) cites missionary and later census data that documents a decline in the population of North Kona in the 1800s. The Hawaiian Kingdom Directory for 1880-1881 lists a blacksmith and a coffee planter in upland Kaloko along the government road (Kelly 1971:13). A map by J.S. Emerson in 1888 shows a house inland of the fishpond (Kelly 1971:14).

In 1906, Kaloko was sold to John A. Maguire and subsequently became part of Huehue Ranch (Cordy et al. 1991). Kelly (1971) describes the succession of caretakers of the Kaloko fishpond from the early 1900s until the early 1960s when the pond fell into disrepair.

Previous Archaeological Research

More than 20 archaeological projects have been conducted within Kaloko. The following summary is in chronological order for areas inland of the Queen Kaahumanu Highway. The summary concludes with the coastal area seaward of the highway and the important *ahupua'a*-wide research of Cordy et al. (1991). The location of the previous projects is depicted in *Figure 4*. Soehren (1979) conducted a reconnaissance survey of a proposed access road that corresponds to today's Hina Lani Street. The survey did not identify any sites. Soehren (1980a) conducted a reconnaissance survey of a 90-acre parcel situated on the inland side of the Queen Kaahumanu Highway between 80 ft and 160 ft elevation (TMK: 3-7-3-09:Por.1). Today, the area is occupied by the Kaloko Light Industrial Park, which borders the project area to the west. The survey did not identify any sites. A single waterworn pebble was found that was believed to be a possible slingstone. Soehren noted the potential presence of lava tubes and burials.

Rosendahl and Haun (1987) conducted a reconnaissance survey of three c. one-acre potential water tank sites situated at 350 ft, 630 ft, and 920 ft elevation along Hina Lani Street. The current project area consists of the water tank site located at the c. 920 ft elevation previously examined by Rosendahl and Haun (1987), designated as Tank Site 2. Only one site, a historic ranch wall (Site T-101), was identified during the survey of these three parcels. T-101 was situated in Tank Site 2 and was relocated during the present project. According to Rosendahl and Haun's site map (1987:4) the wall extended to the southwest out of the project area, and was also visible inland of Hina Lani Street, where it extended upslope to the northeast

Barrera (1985, 1988) conducted survey and excavations within a 409-acre parcel, which spanned Kaloko and Kohanaiki Ahupua'a between approximately 800 ft to 1,000 ft elevation in the Kaloko Mauka Subdivision, encompassing the current project area. Hammatt (1980) and Barrera (1983) previously conducted reconnaissance surveys of the parcel. Much of the area was mechanically altered. The 1985 survey identified 58 sites with 92 features and one site, a portion of the late 1800s Kohanaiki Homesteads, with an undetermined number of features. In 1988, Barrera conducted excavations at 22 previously identified sites and added 84 site designations for features within the homesteads area. Most of the sites were situated in Kohanaiki.

The majority of the features were agricultural mounds (c. 100), platforms, terraces, and walls. Several of the walls were interpreted as possible field boundaries. Approximately 25 features were probable temporary habitations including lava blisters, C-shapes, and terraces. A 9.5 m by 11.3 m enclosure (Site 10736, Barrera 1988) was interpreted to be a men's house based upon its construction, isolation, and presence of branch coral, human remains, and artifacts. Alternatively, these characteristics could indicate a *heiau* function, which is perhaps more likely because the structure is isolated from other habitation features. Excavations at the habitation sites produced small amounts of artifacts and food remains. Forty-six volcanic glass hydration rind age determinations ranged from the late 1400s to the mid-1700s.

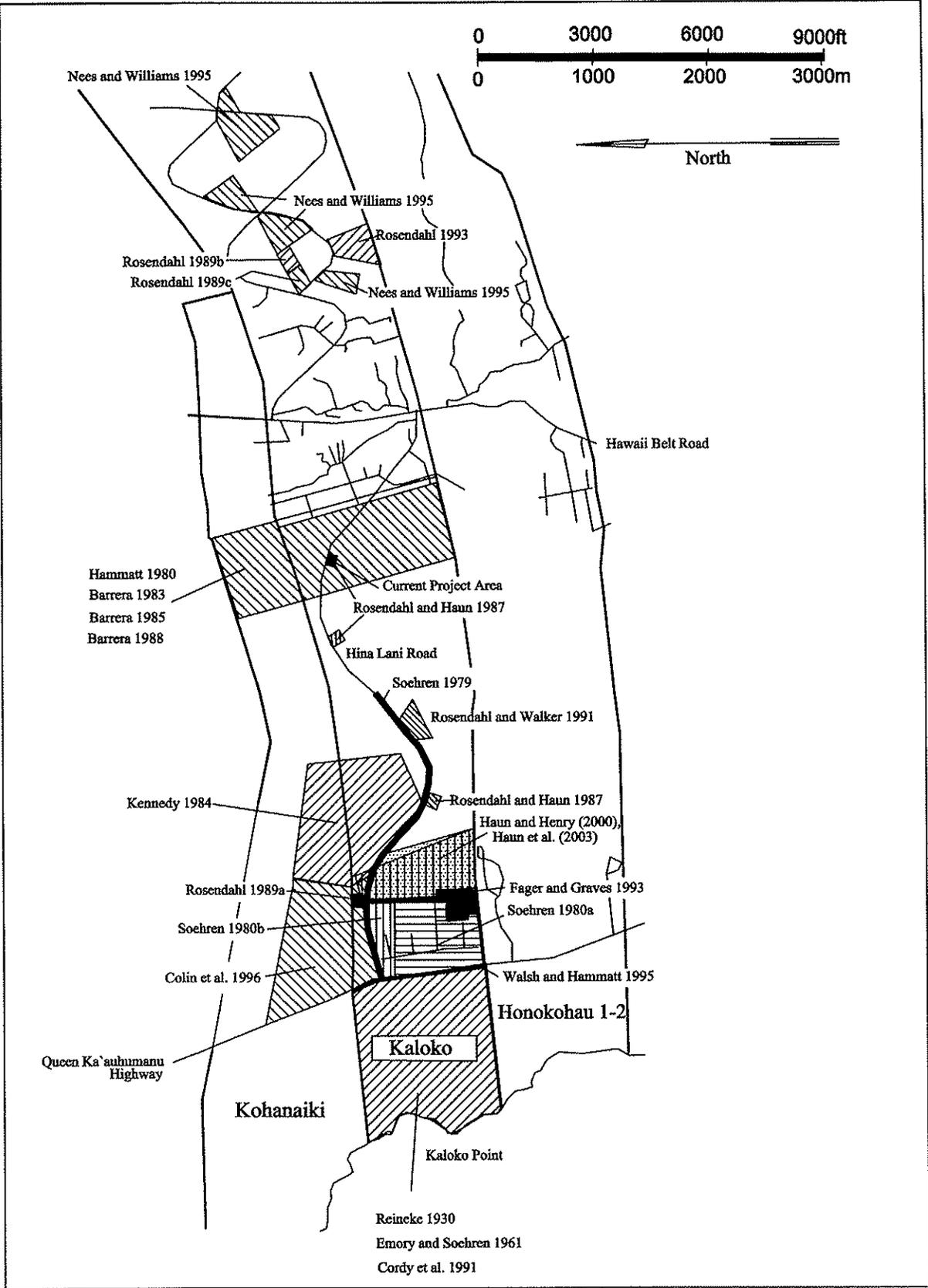


Figure 4. Previous Archaeological Work

Soehren (1980b) conducted a reconnaissance survey of a large parcel of unstated area situated on the inland and north sides of the parcel he previously surveyed (Soehren 1980a). The area includes the present project area. Soehren identified a steppingstone trail marked by at least two cairns on a narrow finger of a'a lava. The trail was situated approximately 1,000 ft inland of the Queen Kaahumanu Highway and appeared to extend toward Honokohau to the southwest and Hue to the northeast. Two similar trail segments, 50 ft apart, on a'a lava were identified approximately 500 ft inland of the first trail. A possible burial in the a'a was observed near the north end of the upper trail.

Soehren identified a lava tube crossed by a fence marking the inland boundary of the project area. On the seaward side of the fence he noted a pile of discarded corrugated metal roofing in the depression at one tube entrance. On the north side of the fence he identified overhangs with cleared areas and marine shell. He also noted water dripping in the tube and suggested it was used for temporary habitation, possibly refuge, and as a water source. This site corresponds with Site 22016 recorded by Haun and Henry (2000; discussed below). A second lava tube containing marine shell, which corresponds with Site 22017, was encountered approximately 400 ft south of the first tube. Soehren noted the potential presence of additional lava tubes and burials.

Kennedy (1983, 1984) conducted reconnaissance and intensive archaeological surveys of an approximately 200-acre parcel in Kaloko and Kohanaiki between 250 ft and 500 ft elevation (TMK: 3-7-3-09:Por. 17). The area is situated immediately inland of the present project area on the east side of Hina Lani Street and north of the former Huehue Ranch Road, which extends east to west through the southern portion of the current project area. The survey identified approximately 39 sites, most situated in Kaloko, with 79 features including 45 cave entrances, 13 platforms, 9 *ahu*, five enclosures, four walls, 2 trails and 2 petroglyph panels. The petroglyphs included traditional forms and letters, possibly names. A probable historic ranch wall followed the *ahupua'a* boundary between Kaloko and Kohanaiki. The only described trail was a 90 m long inland-seaward segment of a curbstone-lined trail averaging 2.5 m in width classified as a historic Type "B" trail based on Apple (1965).

Kennedy's exact site count is unclear because no tabular listing of sites is provided. The petroglyphs and several platforms were situated within caves. A number of the caves, which contained over 200 chambers, had multiple entrances. Cordy et al.'s (1991:340) review of the report and its site interpretations concluded that a total of 16 sites were identified. Excavations were conducted in three caves. The excavations recovered fishing gear, *kukui* nutshell, fishbone, a possible canoe gunwale fragment, a cache of possible *konane* game stones, an adze, abraders, bone picks, marine shell, and basalt and volcanic glass flakes. A radiocarbon sample produced an uncorrected, uncalibrated age of 1790[±]50 years. Four surface features suspected to be burials were dismantled with negative results.

Most of the caves were interpreted to be temporary habitations. One cave may have been a water source. Most of the *ahu*, or cairns, appeared to mark trail routes or cave locations. One cave excavation produced 12 human teeth thought to be from the same individual, a young adult, indicating a probable burial function in addition to habitation.

Rosendahl and Walker (1991) conducted a helicopter survey of a 20-acre, a'a lava flow-covered parcel situated on the south side of Hina Lani Street between 400 ft and 480 ft elevation (TMK: 3-7-3-09:Por.17). The survey identified one site, a trail extending north-south marked by two cairns

Rosendahl (1993) conducted an archaeological field inspection of a 23-acre parcel (TMK: 3-7-3-24:5) situated between 2,000 ft and 2,200 ft elevation. Much of the parcel was disturbed previously by mechanical clearing. Four sites were identified. The sites consist of an agricultural mound, a temporary habitation cave containing two small enclosures, and a historic ranch wall and corral. No portable remains were observed at the sites. Rosendahl (1989b, 1989c) conducted field inspections of two nearby small parcels. One lacked cultural remains and the other (1989b) contained a terrace, an alignment, a modified outcrop and a cairn.

Fager and Graves (1993) conducted an archaeological inventory survey of a 15-acre parcel situated between 150 ft to 230 ft elevation. The project area borders and slightly overlaps the seaward bound-

ary of the current project area. The survey identified 17 sites with 60 features. Agricultural features comprised nearly 77% of the total feature count. Agricultural features consisted of terraces, modified outcrops, enclosures, excavated depressions, and mounds. Three temporary habitation sites were recorded. These sites consisted of three caves and a historically occupied walled terrace.

The Fager and Graves survey also identified several historic ranch walls, cairns interpreted to be markers, a trail segment, and pahoehoe excavations interpreted to be quarry sites. Excavations were conducted in two cave sites. The excavations yielded marine shell, goat and pig bone, *kukui* nutshell, and charcoal. A radiocarbon sample produced four potential age ranges spanning the 1500s to late 1800s. Two walls, Sites 15335 and 15336, extend into the southwest corner of the present project area. Both walls were interpreted by Fager and Graves to be historic ranch walls; however, the latter wall is probably part of a garden enclosure because it is not core-filled and is very low.

Rosendahl (1989a) conducted a survey for an additional one-acre parcel situated on the north side of the intersection of Hina Lani Street and Kamanu Street. The survey identified a steppingstone trail segment on a lava designated Site 13493, which was subsequently relocated by Colin et al. (1996). Colin, Devereux, and Hammatt (1996) conducted an archaeological inventory survey of a 244-acre parcel (TMK: 3-7-4-09:17, Por. 2) situated between 90 ft and 340 ft elevation in the *ahupua'a* of Kaloko and Kohanaiki. The area is bounded to the west by Queen Kaahumanu Highway and the south by Hina Lani Street. The majority of the parcel is situated in Kohanaiki. The survey identified 55 sites with 90 features including cairns (2 features), agricultural features (9), trail segments (20), enclosures (9), walls (3), possible burials (9), a scoria quarry, and temporary habitation features (34). Eight sites were tested. The authors report that two radiocarbon dates were processed; however, no results are presented in the report.

The agricultural features consisted of excavated planting areas and enclosures on pahoehoe lava. The possible burials consisted of a lava tube with possible human bone fragments and eight filled crevices, none of which were tested. Temporary habitations, defined based on Cordy et al. (1991), primarily consisted of modified lava tumuli (12), pavements (7), and terraces (4). The categories wall, alignment, mound, enclosure, C-shape, rockshelter, platform, and modified depression were each represented by one or two examples. All of the excavations were conducted in habitation features yielding low to moderate amounts of marine shell, *kukui* nutshell and sea urchin. Rare remains consisted of fish bone, pig bone, and unidentified bone. Thirteen artifacts were recovered, primarily volcanic glass flakes from a single cave.

Walsh and Hammatt (1995) conducted an inventory survey of a 300 ft-wide strip of land paralleling Queen Kaahumanu Highway between Kona International Airport and Palani Road. In Kaloko, the survey identified an enclosure, a pahoehoe excavation, a wall, a trail, and a modified outcrop complex.

Nees and Williams (1995) conducted a survey of five parcels totaling 110 acres between 2,100 ft and 2,900 ft elevation in the Kaloko Mauka Subdivision (TMK: 3-7-3-24:010, 3-7-3-25:016). Small portions of two parcels were previously surveyed by Cordy et al. (1991), who identified formal fields between 900 ft and 2300 ft elevation. The survey identified a wall, a possible pigpen, a modified outcrop, a possible burial mound, an area of mounds, an area of terracing, and a culturally modified lava tube containing a burial. No excavations were conducted. The authors conclude that above 2,100 ft elevation in Kaloko, agricultural features are isolated and scattered in areas best suited to agriculture.

Haun and Henry (2000) conducted an inventory survey of a 102 acre parcel situated between 170 and 300 ft elevation immediately inland of the Kaloko Industrial Park. The survey documented 45 sites with 81 component features. The feature types recorded include 22 modified outcrops, 12 terraces, ten caves, nine mounds, seven pahoehoe excavations, six cairns, five walls, three trails, three enclosures, two concentrations of marine shell, one cupboard and one series of grinding slicks. Functionally, the 81 features include the following: agriculture (42), temporary habitation (14), resource procurement (7), marker (n=6), garden boundary (4), livestock control (3), transportation (3), tool manufacture (1) and storage (1).

Subsequent data recovery (Haun et al. 2003) was conducted at eight sites identified by Haun and Henry (2000). All eight of the sites were interpreted as temporary habitations and consisted of two open-air concentrations of marine shell and lava tubes. Radiocarbon age determination results document that three

were potentially utilized as early as A.D. 1445-1480. One site was occupied on probably more than one occasion between A.D. 1530 and the late 1700s. One site was utilized in the late A.D. 1600s to early 1800s and another site probably dates to the mid A.D. 1700s to early 1800s.

Artifacts, midden debris, and minor structural modifications indicate a variety of on-site and off-site activities. Marine resources indicate that the people using the area were in direct contact with the coastal region. Evidence of animal husbandry is inferred from domesticated pig bones in the faunal assemblages from several of the sites. Goat bones indicate that historic period deposits are preserved at three sites. On-site activities include fresh water collection, feature and fire construction, food preparation and consumption, and stone and bone tool use and manufacture. Inferred off-site activities include marine food procurement, animal husbandry, and procurement of stone for construction and raw material for tools.

Cordy, Tainter, Renger, and Hitchcock (1991) describe their *ahupua'a*-wide study conducted in the early 1970s and summarize the work of Reinecke (1930) and Emory and Soehren (1961) in the coastal portion of Kaloko. The study included a survey of the entire *ahupua'a* seaward of the Queen Kaahumanu Highway and sample areas inland of the highway. Excavations were conducted at 20 sites near the coast, 11 sites between 30 m and 244 m elevation, and five upland sites above 610 m elevation.

Cordy et al. utilized four environmental zones to characterize settlement patterns: (a) the Coastal Zone from sea level to 15 ft elevation, (b) the Middle Zone from 15 ft to 800-900 ft elevation, (c) the Lower Upland Zone from 900 ft to 1500 ft elevation, and (d) the Upland-Forest Zone between 1,500 and 6,000 ft elevation. Their settlement pattern model has been largely confirmed by the subsequent studies described above.

Based on their data, the authors believe the *ahupua'a* was permanently settled between AD 900 and 1200. Most of the sites were presumed to have been occupied in late prehistory in the 1600s and 1700s and this period is used to generate the settlement pattern model. Many sites also had a historic component. A *heiau*, coastal trail, *ahupua'a* boundary shrine, and permanent habitation sites, including the residence of at least one chief and four men's houses, were clustered next to the shoreline and around the fishpond. Temporary habitation sites were also present in the coastal zone. Branch trails linked habitation sites with subsistence sites and water sources along the coast. Subsistence sites included the fishpond at the coast and animal enclosures and agricultural complexes in the lower portion of the middle zone. A series of *maukamakai* trails extend from the coast inland. Burials were concentrated in a cemetery in the lower middle zone and individual burials were present at two coastal sites.

Inland of the lower Middle Zone adjacent to the Coastal Zone, sites were widely scattered and primarily consisted of trails leading to the uplands associated with markers (cairns) and temporary habitations, primarily in lava tubes. Settlement pattern data for the Upland Zone were derived from historic records. In the early to mid-1800s, the zone was used for agriculture and scattered habitations. This pattern is assumed to have prevailed in late prehistory as well. By the 1870s and 1880s, residential sites were more common and agricultural use continued as a small community developed near the upper road. This coincided with the near abandonment of the coastal habitations. In the late 1800s to early 1900s, the focus of land use shifted to large-scale ranching.

The Upland-Forest Zone was characterized by an extensive field system consisting of formal walled fields from 900 ft elevation up to approximately 2,300 ft, which was believed to be the lower limit of the late prehistoric forest edge. The major field boundary walls were perpendicular to the coast. Other agricultural features included terraces, depressions, mounds, and probable piggens. Temporary habitation sites were scattered among the fields and at least one small shrine was present. Below 900 ft and above 2,300 ft elevation agricultural features were present, but were scattered and informal. By the mid-1800s, the forest edge was reported to be at the 1,700 ft elevation, leading the author's to conclude that much of the area was abandoned coincident with depopulation between European Contact and the 1850s.

PROJECT EXPECTATIONS

The project area is situated within the lower Upland Zone, just inland of the interior portion of the Middle Zone as defined by Cordy et al. (1991). Prehistoric use of the project area is potentially represented by scattered temporary habitation sites associated with trails, and potentially, a few scattered agricultural features. Chronologically, sites may have been used as early as the 900-1200s, with the most extensive period of use occurring between the 1600s and early historic period. The temporary habitation sites would predominately be in caves. The trails would be associated with marker cairns and used by coastal residents to reach the inland fields and forest resources.

The same pattern is expected during the mid- to late 1800s; however the focus of permanent habitation likely shifted inland. Thus, people were transiting through the area to obtain marine resources from the coast. By the late 1800s to early 1900s, sites associated with cattle ranching are expected. Other potential sites include transportation infrastructure such as vehicle roads. Ranching activity, which continued until at least the mid-1900s, would be evidenced by stone walls and corrals, and later wire fencing.

FINDINGS

The project area was subjected to a previous archaeological examination by Rosendahl and Haun (1987) during which time a single site comprised of a stone wall was identified. This wall was designated Site T-101 by Rosendahl and Haun (1987) but was not assigned a State Inventory of Historic Places site number. This prior study indicated that the wall extended to the west-southwest out of the parcel and undetermined distance, and that it also continued inland of Hina Lani Street to the east-northeast.

The examination of the project area during the current study resulted in the relocation of the Site T-101 wall. This wall was assigned State site number 50-10-28-24329 during the present project. The wall is constructed of stacked subangular basalt cobbles and small boulders, with faced sides and a core-filled interior of small cobbles (*Figures 6 and 7*). The wall ranges in width at the base from 1.05 to 1.2 m and at the top from 0.75 to 0.95 m. The wall varies in height from 0.9 to 1.2 m. No cultural remains were identified.

As indicated by Rosendahl and Haun (1987) the wall originates outside the project area to the west-southwest. The wall enters the parcel at c. 898 ft elevation and extends to the east-northeast a distance of 30.0 m where it has been impacted by bulldozer disturbance. This disturbance is evidenced by a 6.5 m wide break in the wall and a push pile of boulders, cobbles and soil located 3.0 m to the south of the wall. The wall continues to the east-northeast on the inland side of the disturbed area for 28.5 m where it has been destroyed by road construction and/or maintenance activity. Rosendahl and Haun (1987) indicate that the wall continued inland of Hina Lani Street but this was not determined during the present project. The portion of Site 24329 within the project area is altered and in fair condition.

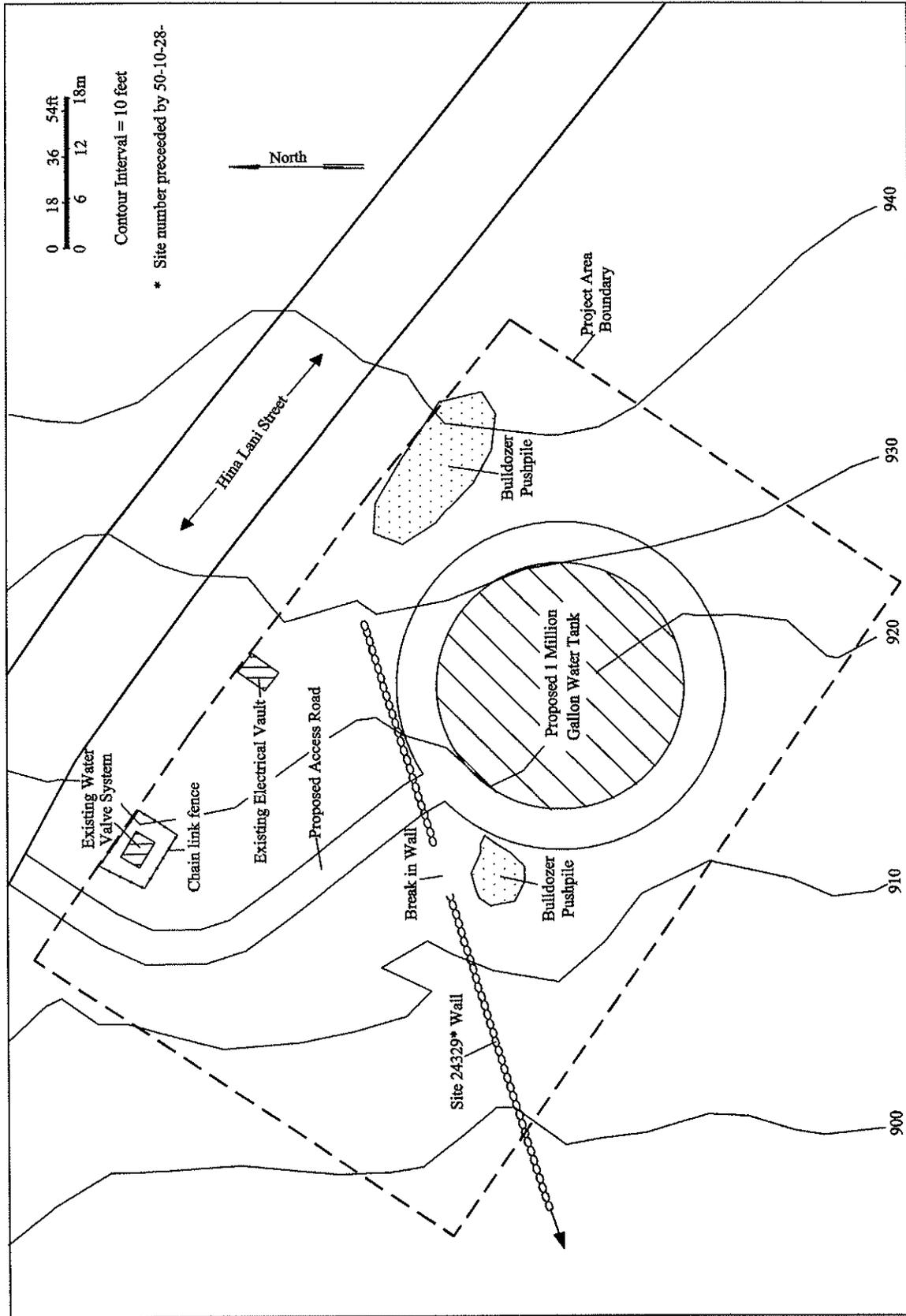


Figure 5. Site Location Map



Figure 6. Site 24329 Wall, view to southeast



Figure 7. Site 24329 Wall, view to southwest

CONCLUSION

Discussion

The site identified during the project conforms to the historic ranch related site/feature types expected in the Lower Upland Zone based on previous archaeological work and historic documentary research. No temporary habitation sites or trails were identified, which are traditional Hawaiian site/feature types expected in the Lower Upland Zone (Cordy et al. 1991). The absence of such sites may be the result of the extensive ground surface disturbance that has occurred within the parcel. The Site 24329 wall was likely constructed in the late 1800s to early 1900s as the focus of land use shifted from agricultural to large-scale ranching.

Significance Assessments and Recommended Treatments

Pursuant to DLNR (1998) Chapter 275-6 (d), the initial significance assessments provided herein are not final until concurrence from the DLNR has been obtained. The site relocated during the survey is assessed for significance based on the criteria outlined in the Rules Governing Procedures for Historic Preservation Review (DLNR 1998:Chap 275). According to these rules, a site must possess integrity of location, design, setting, materials, workmanship, feeling, and association and shall meet one or more of the following criteria:

1. Criterion "a". Be associated with events that have made an important contribution to the broad patterns of our history;
2. Criterion "b". Be associated with the lives of persons important in our past;
3. 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;
4. Criterion "d". Have yielded, or is likely to yield, information important for research on prehistory or history; and
5. Criterion "e". Have an important traditional cultural value to the native Hawaiian people or to another ethnic group of the state due to associations with traditional cultural practices once carried out, or still carried out, at the property or due to associations with traditional beliefs, events or oral accounts--these associations being important to the group's history and cultural identity.

Based on the above criteria, Site 24329 is assessed as solely significant under Criterion "d". This site has yielded information important for understanding historic land use in project area. The mapping, written description, and photography of the site adequately documents it and no further work or preservation is recommended.

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