

JOHN WAIHII
GOVERNOR OF HAWAII

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c: Roy Doi, Board of Water Supply

93 MAY 28
STATE OF HAWAII

DEPARTMENT OF LAND AND NATURAL RESOURCES
STATE HISTORIC PRESERVATION DIVISION
33 SOUTH KING STREET, 6TH FLOOR
HONOLULU, HAWAII 96813

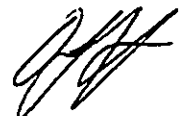
May 25, 1993

KEITH MILE, CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
DEPUTIES
JOHN P. KEPPELER II
DONA L. HANA'IKE
AQUACULTURE DEVELOPMENT PROGRAM
AQUATIC RESOURCES CONSERVATION AND ENVIRONMENTAL AFFAIRS CONSERVATION AND RESOURCES ENFORCEMENT CONVEYANCES
FORESTRY AND WILDLIFE HISTORIC PRESERVATION DIVISION
LAND MANAGEMENT
STATE PARKS
WATER AND LAND DEVELOPMENT

MEMORANDUM

**LOG NO: 8443
DOC NO: 9305TD46**

TO: Brian J.J. Choy, Director
Office of Environmental Quality Control

FROM: Don Hibbard, Administrator
Historic Preservation Division 

SUBJECT: **Negative Declaration for Board of Water Supply, City and County of Honolulu, Kalihi-Uka Exploratory Well III (OEQC Bulletin X[9]:11) Kalihi, Kona, O'ahu
TMK: 1-4-20: 39**

HISTORIC PRESERVATION PROGRAM CONCERNS

We responded to the Draft Environmental Assessment for this project with a request for more information because we could not determine that the proposed project would have "no effect" on historic sites with the information at hand. We have not received the information that we requested and are concerned that a Negative Declaration for this project will permit the project to proceed without complying with the historic preservation review, which is required by law (Chapter 6E) in this case. A copy of our previous comments follows:

The DEA includes a short report of an archaeological surface survey of parcel 1-4-18: 06, which is not the location of the proposed project, and an archaeological monitoring report that describes the fill underneath a small portion of Kalihi road near the location of the proposed project. The DEA does not include an archaeological report for the proposed project parcel, and since our records show that this parcel has not been inventoried for historic sites we have no information on the presence or absence of surface and subsurface historic sites at the project parcel. Thus we have insufficient information to agree with the conclusion in the DEA that "since no artifacts or features were found in the vicinity, no further archaeological investigation is warranted."

MAY 25 1993

Brian Choy
Page 2

Historic records indicate that Kalihi Valley was intensively cultivated and thickly settled in traditional times. A review of our records shows that agricultural and religious structures have been found close to the project parcel. Extensive remains of irrigated agricultural fields are located across the stream and it is believed that an agricultural heiau was located nearby, although this has not been reidentified in many years and might be destroyed.

Since the proposed project will grade a 5,000 square foot area, and since this work would have an "adverse effect" on any historic sites that might be present at the parcel, we believe that the historic preservation review process should be completed for this project. The initial step in this review is an inventory survey of the project parcel to identify any surface or subsurface historic sites.

If you have any questions please call Tom Dye at 587-0014.

TD:bek

1993-05-08-0A-FA- Kalihiki Uka III Exploratory Well MAY - 8 1993

FINAL
ENVIRONMENTAL ASSESSMENT
FOR

KALIHU UKA III EXPLORATORY WELL

TMK: 1-4-20:39

KALIHU, OAHU, HAWAII



Prepared by

Honolulu Board of Water Supply

April 1993


**FINAL
ENVIRONMENTAL ASSESSMENT
FOR KALIHI UKA III EXPLORATORY WELL**

AT KALIHI, OAHU, HAWAII

Tax Map Key: 1-4-20: 39

Proposing Agency:

**BOARD OF WATER SUPPLY
City and County of Honolulu
630 South Beretania Street
Honolulu, Hawaii 96843
Contact: Roy Doi
Tel. 527-5235**


**FOR KAZU HAYASHIDA
Manager and Chief Engineer**

**APR 23 1993
Date**

Board Members:

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Prepared by:

**BOARD OF WATER SUPPLY
City and County of Honolulu
630 South Beretania Street
Honolulu, Hawaii 96843**

April 1993

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CHAPTER 1

INTRODUCTION

Chapter 343, Hawaii Revised Statutes (HRS), requires that proposed actions be assessed to determine potential adverse environmental impacts, and that these impacts be documented. Chapter 200 of Title 11, State of Hawaii Department of Health Environmental Impact Statement Rule, sets forth the requirements for documentation of the environmental impacts. (Ref. 1 and 2)

This Environmental Assessment (EA) has been prepared to meet the requirements of Chapter 343 HRS and Chapter 200 of Title 11 by documenting the environmental effects from the development of the Kalihi Uka III Exploratory Well project proposed by the City and County of Honolulu Board of Water Supply (BWS). Agency and public consultation on this project is documented in Appendix C.

Kalihi Valley II Exploratory Well was drilled in 1991 on parcel 18, Tax Map Key 1-4-18, which is part of the Honolulu Watershed Forest Reserve, owned by BWS. After testing of this well, it was determined that the yield was insufficient to justify development of a production well. Accordingly, this well was abandoned and sealed and the new Kalihi Uka III Exploratory Well has been selected as a potential source of potable water in the Kalihi area.

The environmental impacts from construction and operation of this well have been previously examined in the Final Regional Environmental Impact Statement (EIS) for Development of Wells, Reservoirs, Transmission Lines and Appurtenances at Honolulu, Hawaii (accepted September 1986). Relevant portions of the EIS are incorporated by reference in this EA.

CHAPTER 2

PROJECT DESCRIPTION

2.1 INTRODUCTION

The BWS is responsible for the management, control and operation of the municipal water system for certain areas of Oahu. The BWS' previous choice, Kalihi Valley II Exploratory Well, proved to be unsuitable for a production well. Therefore, Kalihi Uka III Exploratory Well, located on parcel 39, Tax Map Key 1-4-20, has been selected as the next exploratory well. The BWS will conduct drilling and testing to determine the feasibility of the well for eventual production of potable water.

2.2 PROJECT LOCATION

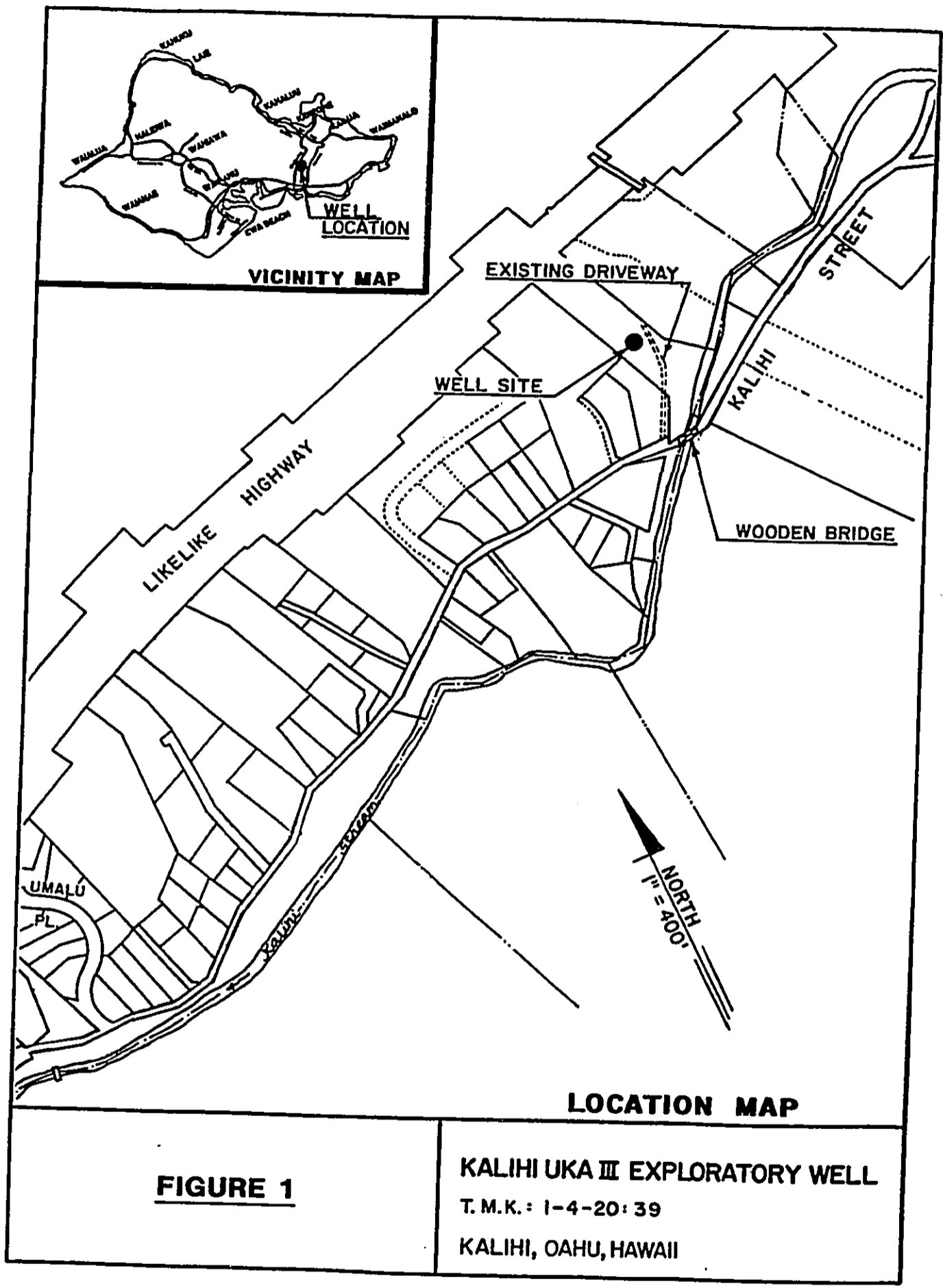
Kalihi is located in Honolulu at the Ewa edge of the primary downtown commercial district. The Kalihi Uka III Exploratory Well site is about 150-200 feet above Kalihi Stream, just below Likelike Highway, within a boot shaped lot, in the mauka end of the residential area. Access to the site is via Kalihi Street which abuts the property, near the wooden bridge over Kalihi Stream and over an unimproved road. Figure 1 shows the project location.

Since the well site is already accessible by an existing unimproved road, a separate BWS access road for equipment and supplies used in the exploratory drilling and testing will not be required.

2.3 PROJECT FEATURES

The following table describes the features of this exploratory well site.

| <u>Item</u> | <u>Kalihi Uka III Exploratory Well</u> |
|------------------------------------|--|
| Tax Map Key (TMK) | 1-4-20: 39 |
| Total parcel area (acres) | 2.068 |
| Flood Insurance Rate Map (FIRM) | Flood Zone D Areas of undetermined, but possible, flood hazard |



| | |
|--|----------------|
| State Land Use District | Urban |
| State Water Management Area | Honolulu |
| City And County of Honolulu Development Plan Public Facilities Map (DPPFM) | Not designated |
| City and County of Honolulu Development Plan | Residential |
| City and County of Honolulu Zoning | (R-10) |
| Approximate depth to aquifer | 350-400 Feet |
| Estimated yield of production well | 0.25 MGD |
| Type of Aquifer | Perched |
| Land Owner | BWS |
| Nearest Access | Kalihi Street |

2.4 PROJECT CONSTRUCTION

An area of about 5,000 square feet will be cleared and graded at the project site to accommodate well drilling and support equipment and necessary supplies. All excess material from the clearing and grading of the project site will be disposed at an approved location. Once the area has been cleared, a temporary fence may be erected to secure the project site.

Clearing and grading operations will be restricted to hours from 7:30 AM to 3:30 PM on weekdays to minimize disturbance. No activities will occur on the project during weekends and holidays.

Once the site has been cleared and secured, a truck or trailer-mounted well drilling rig and other support equipment will be brought to the project site for the exploratory drilling operation. The truck engine or a self-contained engine will be used to provide power for the well drilling rig. A single well hole about 16 inches in diameter will be drilled at the project site to reach the groundwater source.

One of two existing types of drilling methods, either cable tool or rotary, will be used. The cable tool drilling method is performed by repeatedly raising and

dropping a heavy drill bit until the desired depth has been reached.

All waste material from the cable tool drilling operation is bailed from the hole and collected in a pit constructed on the project site or discharged on the surface. In either case, the waste material will be disposed of in an approved manner. The waste material generated from this drilling method does not contain any contaminants. Depending on the depth and lava formations encountered, the well drilling may require up to a maximum of six months to complete.

If the rotary method is used, a drill bit rotating at moderate speed will bore the well while drilling fluid is pumped down the drill stem to the bit at the bottom of the hole. The drilling fluid, bentonite, a fine clay material, is then forced back up the hole carrying drill cuttings to the surface where they are removed from the drilling mud by a screen. The mud is then collected in a mud tank mounted on the side of the drilling rig. The collected mud is recirculated from the mud tank and is not considered a hazardous material. No surface runoff of the drilling mud will be permitted. When the drilling is complete, the drilling mud will be taken away from the project site and disposed in a approved manner. Some drilling contractors use air and foam to lift cuttings rather than drilling mud for the entire operation.

Once the water table is reached, instead of drilling fluid, an air compressor will be used to pump air or an air foam mixture to the drill bit. This will ensure that drilling mud does not enter the aquifer. This rotary drill method of drilling may require three to four weeks to complete.

Upon completion of the drilling operation, a 10 inch diameter steel casing will be grouted into the drilled hole and a pump will be installed.

2.5 PUMP TEST

Two types of pump tests will be conducted after the drilling operation is completed. The initial test, a step-drawdown or yield-drawdown test, involves pumping water from the well at various pumping rates to estimate the specific capacity (number of gallons withdrawn per foot of drawdown) of the well. The drawdown will be measured for each pumping rate. Once the drawdown has stabilized, the pumping rate will be changed and a new drawdown measured. A step-drawdown test may last up to five hours, and will be performed from about 9:00 AM to 2:00 PM on a weekday.

After the step-drawdown test has been completed, a five-day sustained pumping test will be undertaken. The well will be pumped 5 hours the first day, and 8 hours per day for the next four days. This test is designed to determine the sustainable capacity of the well, monitor water quality, and to measure aquifer parameters by monitoring BWS Well No.2250-01, located about one mile

northeast, or upstream, of the well site. (The sustainable capacity of a well is the rate at which the well can be continuously pumped without adversely affecting nearby existing wells or water quality.)

In addition to monitoring the nearby well, Kalihi Stream will be monitored to identify adverse effects from the pumping. The BWS has contracted the U. S. Department of Interior Geological Survey (USGS) to conduct this monitoring during the test period. USGS Gage No. 2290, located about 1,400 feet downstream of the well site, will be used for this monitoring.

Water pumped during the pump test will be collected and tested for organic compounds as required by the U. S. Environmental Protection Agency (EPA); heavy metals, minerals, hazardous materials, coliform and standard plate count for bacteria. The tests are performed by the BWS and, in some cases, by the State of Hawaii Department of Health. The water pumped during the five-day test will be disposed into Kalihi Stream.

Upon completion of the five-day pumping test, the well driller will then remove the pump, cap the well, and clean the area, removing all excess materials and wastewater withdrawn during test pumping. The well will be capped after testing to prevent misuse of the well such as for disposal of hazardous wastes, sewage, or household garbage. According to the U. S. Environmental Protection Agency Underground Injection Control Section, unplugged or improperly abandoned water wells can easily become receptacles for the disposal of waste which may contaminate the groundwater aquifer.

2.6 PROJECT SCHEDULE

The project schedule will depend upon approval of required permits and other necessary licenses. For planning purposes, the BWS estimates the exploratory well drilling at Kalihi Uka will occur within the Fiscal Year 1992-93.

2.7 PROJECT COST

The estimated cost of the project is \$190,000.

CHAPTER 3

AFFECTED ENVIRONMENT

3.1 PHYSICAL ENVIRONMENT

3.1.1 Geology

The island of Oahu is composed of the remnants of two elongated shield volcanoes, the Waianae and Koolau ranges, which are connected by the Schofield plateau. The Koolau volcano is the younger of the two and emerged east, sending lava flows westward to overlap and bank against the Waianae flank. In later periods, changes in sea level and the deposition of sediments contributed to the building of flat coastal plains.

Kalihi Valley is the product of extensive weathering and erosion on the Leeward side of the Koolau Shield Volcano. Koolau basalt makes up the valley walls. Dense vesicular jointed a'a flows of the later Kalihi basalt of the Honolulu Volcanic Series were deposited down the middle of Kalihi Valley, about 10 to 300 feet thick. In places, the Kalihi basalt has been incised by Kalihi Stream. (Ref. 3)

3.1.2 Soils

Soil at the Kalihi well site is classified by the U. S. Department of Agriculture Soil Conservation Service as Lolekaa silty clay, 15 to 25 percent slope. The Lolekaa series are well-drained soils most often found on side slopes of terraces and along drainage ways. These soils develop from old, gravelly colluvium and alluvium. Soil runoff of Lolekaa silty clay is medium, and the erosion hazard is moderate. (Ref. 4)

3.1.3 Climate and Air Quality

The average rainfall in the State is 73 inches per year. Due to its higher elevation, rain gage measurements (State Key No. 776.00) taken in upper Kalihi Valley indicate the site receives a mean annual rainfall of approximately 140 inches. There is little variation in rainfall on a month to month basis. Tropical storms occasionally bring heavy rains while the rest is orographic or come from Kona storms, approaching from the southeast. (Ref. 5)

January is the coldest month, averaging 72 degrees Fahrenheit, and August is the warmest, averaging 78 degrees Fahrenheit. Average relative humidity is 72 percent in the mornings and 57 percent in the afternoons. (Ref. 6)

Air quality on most areas of Oahu is generally affected by vehicular traffic,

stationary sources, and prevailing tradewinds. High volumes of vehicular traffic pass within 250 feet of the well site but trees and undergrowth provide a dense barrier against air currents. This factor, coupled with the freshening effects of normal tradewind conditions, produces relatively good air quality at the well site.

3.1.4 Hydrology

3.1.4.1 Surface Water

There are no surface water sources, flood plains, or wetlands on the well site. However, Kalihi Stream has its source above the well site and runs just below the lot, adjacent to the site. This stream is continuous flowing and is designated "Construct-Alter" by the State of Hawaii Department of Health.

According to the State of Hawaii Department of Land and Natural Resources, the stream supports three species of endemic stream fishes (*Awaous stamineus*, *Stenogobius hawaiiensis*, and *Eleotris sandwicensis*) and two species of endemic freshwater crustaceans (*Macrobrachium grandimanus* and *Atyoida bisulcata*).

Stream flow data is compiled by the USGS at specific points along some individual streams. Kalihi Stream is one of those gaged by the USGS (Gage 2290) within the Honolulu District. The data obtained on the Kalihi Stream gage, located about 1,400 feet downstream of the well site, is summarized in Table 1. (Ref. 6 & Ref. 7)

The well site is included in the Federal Emergency Management Agency Flood Insurance Rate Map. It is designated as Flood Zone D, an area of undetermined, but possible, flood hazard. (Ref. 6)

3.1.4.2 Groundwater

The Koolau basalt, the principal aquifer in the Honolulu District, underlies a layer of Kalihi basalt and alluvium in the area of the well site. Recharge is transmitted and stored in open spaces within lava tubes, vesicles, clinkers, inter-flow zones, and cooling cracks. Infiltrated rain water can also be perched atop layers of impermeable material such as dense lava flows, solidified ash, or clay-rich sediments. This is the nature of perched water located below the Kalihi Uka III Exploratory Well site. (Ref. 6)

The closest existing groundwater source to the well site is BWS Well No.2250-01, an artesian well, located about 0.75 miles to the northeast (upstream). The latest records show water withdrawals of 0.1 MGD at this well. (Ref. 8) Water from this source is used by the BWS system.

There are a series of BWS water tunnels (Nos. 2249-01 to 04), constructed during the 1930's, located about 1.25 miles northeast or upstream of the well site. Water recovered from these tunnels is moving through the Kalihi basalt and alluvium toward the floor of the valley. Although the latest water use records indicate flows of about 0.27 MGD from these tunnels, they are no longer used by the BWS as a source of drinking water. (Ref. 9)

TABLE 1
STREAM FLOW DATA for KALIHI STREAM

USGS GAGE NO. 2290

ELEVATION: 464 FEET

| YEAR ENDING | NO. DAYS MEASURED | MEDIAN MONTHLY MEAN DISCHARGE* | LOWEST MONTHLY MEAN DISCHARGE* | LOWEST RECORDED DISCHARGE* |
|--------------------|--------------------------|---------------------------------------|---------------------------------------|-----------------------------------|
| 9/88 | 365 | 2.81 | 0.93 | 0.50 |
| 9/87 | N/A | ----- | ----- | ----- |
| 9/86 | 365 | 3.17 | 0.52 | 0.26 |
| 9/85 | 365 | 1.13 | 0.19 | 0.15 |
| 9/84 | 365 | 0.94 | 0.19 | 0.15 |
| 9/83 | N/A | ----- | ----- | ----- |
| 9/82 | 365 | 4.52 | 2.71 | 1.42 |
| 9/81 | 365 | 1.34 | 0.61 | 0.32 |
| 9/80 | 365 | 6.59 | 0.50 | 0.23 |
| 9/79 | 365 | 1.52 | 0.49 | 0.28 |
| 9/78 | 365 | 0.87 | 0.22 | 0.10 |
| 9/77 | N/A | ----- | ----- | ----- |
| 9/76 | 365 | 1.57 | 0.60 | 0.23 |
| 9/75 | 365 | 1.89 | 0.27 | 0.16 |
| 9/74 | 365 | 3.36 | 0.99 | 0.28 |
| 9/73 | 365 | 1.18 | 0.42 | 0.19 |

* Million gallons per day
(Ref. 7)

N/A: Not available

3.1.5 Noise

In most areas of Oahu, including the Kalihi valley area, vehicle traffic is the primary source of noise. At the well site, noise sources consist of birds, wind, running water from Kalihi Stream, and the distant sounds of traffic on Likelike Highway and Kalihi Street.

3.2 BIOLOGICAL ENVIRONMENT

3.2.1 Flora

A field survey of the well site was conducted in November 1992. According to this survey, the well site is densely covered with introduced bamboo. Two indigenous taxa, hau and kamani trees also appear at the site as they do in many other low land sites on all the Hawaiian Islands. Other flora include occasional oak fern, sword fern, laua'e, taro vine, syngonium, palm grass, red ginger, octopus tree, wedelia, sweet potato, chinese banyan, eucalyptus robusta, strawberry guava, thimbleberry, coffee, glorybower, albizia, and cayenne vervain.

None of the species found during the survey are Federal (U. S. Department of the Interior Fish and Wildlife Service) or State of Hawaii listed, candidate threatened or endangered plant species. (Ref. 10 and 11)

3.2.2 Fauna

Although a site survey for wildlife was not undertaken, an extensive population of wildlife most likely does not occur on the site. During the field survey, no wildlife or trace of significant fauna was observed. However, the well site could conceivably provide habitat for rats, mice, mongoose, wallabies, feral pigs, feral cats, and feral dogs. None of these species are Federal or State of Hawaii listed, candidate threatened or endangered species.

3.3 SOCIAL ENVIRONMENT

3.3.1 Population

The regional population of Kalihi Valley in 1985 was 17,696, an increase of about 0.5 per cent from 1980 figure of 17,613 persons. These data compare to about 811,100 persons on Oahu in 1985, an increase of 6.7 per cent from the 1980 figure of 762,534 persons. (Ref. 12)

Within Census Tract No. 65 which encompasses the upper Kalihi valley area, the resident population in 1985 was 4,114 persons, an increase of 1.9 percent from the 1980 figure of 4,037 persons. (Ref. 12)

3.3.2 Scenic and Visual Resources

The well site is located near the end of Kalihi Street, below Likelike Highway, in the upper end of the residential area, and on vacant land owned by the BWS. The well site is mostly bamboo interspersed with a variety of mature trees and other vegetation.

The hillsides and dense vegetation of the well site provide a visual relief from the urban development along Kalihi Street and other areas of Kalihi. The hillside location and dense vegetation means that the well site will not be visible from most of the lower areas of Kalihi and from Likelike Highway.

3.3.3 Archaeological and Historical Resources

A check of the records at the Department of Land and Natural Resources Historic Sites Section by *Archaeological Consultants of Hawaii, for Kalihi Valley II Exploratory Well* project, indicated that there has been no previous study nor sites recorded makai of the Forest Reserve. (Appendix A) In addition, ERC Environmental Energy Services Company had done subsurface monitoring at the stream crossing for the Kalihi Street Installation of 16-Inch Water Main from Maka Place to Kalihi Aerator project and found no evidence of prehistoric resources in the area. (Appendix B) There is evidence that the project area has previously been impacted by the adjacent plant nursery.

3.4 LAND USE, LAND USE PLANS, POLICIES, AND CONTROLS

3.4.1 Land Use

The well site is within the State of Hawaii Land Use District designated as Urban. Public facilities are a permitted use.

3.4.2 Land Use Plans, Policies, and Controls

The Kalihi Uka III Exploratory Well does not appear on the City and County of Honolulu Development Plan Public Facilities Map (DPPFM). The exploratory well does not require an amendment to the DPPFM. However, an amendment will be required if a production well is to be constructed. Under the City and County of Honolulu Zoning Map, the project site is zoned (R-10) which permits the use of public facilities such as an exploratory well. Hence, the exploratory well project is consistent with City and County of Honolulu Land Use Plans and Policies.

The well site is within the Honolulu Water Management Area. This designation is made by the State Commission on Water Resource Management when it can be

reasonably determined that resources in an area may be threatened by existing or proposed withdrawals or diversions.

CHAPTER 4

POTENTIAL IMPACTS AND MITIGATIVE MEASURES

4.1 PHYSICAL ENVIRONMENT

4.1.1 Geology

The exploratory well will require drilling an exploratory well into the subsurface basalt rock to reach the perched water source. Once the exploratory well has been constructed and the five-day pump test completed, the well will be capped. Once capped, there will be no adverse affects to the geologic resources of the area.

4.1.2 Soils

The well site will be cleared of all existing vegetation prior to the well drilling. According to the U. S. Department of Agriculture Soil Conservation Service, soils on the well site are classified as Lolekaa silty clay, 15 to 25 percent slope (LoD). The Lolekaa series are well-drained soils most often found on side slopes of terraces and along drainage ways. These soils develop from old, gravelly colluvium and alluvium. Soil runoff of LoD is medium, and the erosion hazard is moderate. (Ref. 4) Clearing of the site may cause some erosion, but erosion control measures such as berms will be implemented.

4.1.3 Climate and Air Quality

The site clearing, well drilling and testing will take approximately six months to complete. These activities will create increased dust from clearing and grading the well site and pollutant emissions from operation of vehicles and equipment. To mitigate the effects of site clearing activities, dust control measures, such as water sprinkling, will be implemented by the contractor to reduce dust levels as necessary.

4.1.4 Hydrology

4.1.4.1 Surface Water

Kalihi Stream flows along the lower side of the lot. Partial impacts to Kalihi Stream could occur from decreased flow during the five-day test. Test pumping will occur during the dry summer months when the effect on the stream flow will be most evident. Stream flow will be monitored during development of the exploratory well. The BWS has contracted the U. S. Department of Interior Geological Survey to monitor streams and other water bodies during the test period.

If the monitoring shows stream flow in Kalihi Stream is adversely affected, appropriate mitigative measures acceptable to both the State Department of Land and Natural Resources and the U. S. Fish and Wildlife Service will be implemented. If stream flow is reduced below the "status quo" interim in-stream flow standards established by the Commission on Water Resource Management, BWS may petition the Commission to amend the interim in-stream flow standards for Kalihi Stream.

4.1.4.2 Groundwater

The groundwater resource below the Kalihi Uka III Exploratory Well site is perched and pumping from the resource may affect the existing nearby BWS well, and possibly Kalihi Stream. However, analysis of past stream flow data shows the existing BWS well has not affected flows in Kalihi Stream.

Once the well has been drilled, a five-day (5 hours on the first day, and 8 hours per day for the next four days) pump test will be undertaken to determine the specific capacity, or yield, of the well. The drawdown will be measured at each pumping rate. The test is also used to determine what effect pumping will have on other sources.

4.1.5 Noise

The increased traffic from construction vehicles will not be significant, but may cause some minor short term inconveniences to area residents for the duration of construction. Because the nearest residences border the well site, noise generated during the drilling operations will be intrusive. If the cable tool drilling method is used, noise will result from the drill bit hitting rock (like a pile driver, only much quieter) and from the operation of the diesel engine. If the rotary drilling method is used, the operation will be quieter. In either case, drilling will be restricted to the hours from 7:30 AM to 3:30 PM.

Noise permits will be required from the Noise and Radiation Branch of the Department of Health and contractors must comply with the conditions issued with the permits. Mufflers for noise control will be required for all construction equipment. All noise attenuating equipment will be maintained in proper operating condition and will be repaired or replaced as needed.

4.2 BIOLOGICAL ENVIRONMENT

4.2.1 Flora

According to the field survey, flora at the site consists mostly of bamboo and hau trees. Along the edge of the roadway, there are a number of other species. None

of the species found on the well site are Federal or State of Hawaii listed, candidate threatened or endangered species. The exploratory well will not have a significant adverse effect, loss or destruction, on the flora of this area.

4.2.2 Fauna

During the field survey, no wildlife or trace of significant fauna was observed. However, the well site could conceivably provide habitat for rats, mice, mongoose, wallabies, feral pigs, feral cats and feral dogs. None of these species are Federal or State of Hawaii listed, candidate threatened or endangered species.

4.3 SOCIAL ENVIRONMENT

4.3.1 Population

The well drilling will be contracted by the BWS to a contractor who will be responsible for all aspects of the project, including supplying a drilling crew of 2 to 4 persons. Most likely, the crew members will come from all areas of Oahu, including possibly some from the Kalihi area. However, the crew size is not significant when compared to the population of Kalihi. There will be no adverse effects to the population of Kalihi from the project.

4.3.2 Scenic and Visual Resources

The well site is not visible from Likelike Highway and does not present a significant adverse visual impact to the general populace. However, clearing of the site's dense growth and the ensuing construction activities will be very visible to the several residences which border the area. Visual impact to these residents will be unavoidable but will decrease over time.

4.3.3 Archaeological and Historic Resources

The field investigation revealed no archaeological or historic structures, remains, objects, or artifacts at the well site. There are no structures on the well site listed on the National or State of Hawaii Register of Historic Places. The lack of cultural resources and the fact that this area has previously been impacted by the adjacent plant nursery indicates there will be no significant adverse effects from the exploratory well.

If any historical sites or artifacts are discovered during construction, all work will be stopped immediately, the State Historic Preservation Office will be notified and appropriate mitigative measures will be taken. An archaeological inventory survey of the parcel will be conducted if the exploratory well test results are favorable and a permanent well pump station is developed.

4.4 LAND USE, LAND USE PLANS, POLICIES, AND CONTROLS

4.4.1 Land Use

The proposed well site is within the State of Hawaii Land Use District designated as Urban. The exploratory well will require removal of the existing vegetation for the drilling and support equipment. The road leading to the project site will be kept passable so that the Division of Forestry and Wildlife can access the area for any work required. Once the drilling has been completed and the well capped, much of the well site can be returned in time to its natural state.

4.4.2 Land Use Plans, Policies, and Controls

The Kalihi Uka III Exploratory Well does not appear on the City and County of Honolulu Development Plan Public Facilities Map (DPPFM). The exploratory well does not require an amendment to the DPPFM. In accordance with the City's Land Use Ordinance, public facilities such as the proposed water system improvements are permitted uses in all zoning designations. Thus, the exploratory well is consistent with City and County of Honolulu land use plans and policies.

CHAPTER 5

POSSIBLE ALTERNATIVES

5.1 NO ACTION

Under the no action alternative, existing pumpage would be maintained and no new water sources would be developed in the Honolulu District. However, the Honolulu District is the most heavily populated area on the island and has the highest domestic water demand. Additional water sources are required to meet present and projected demands. If new water sources are not developed within the district, then water must be transported from surrounding areas. This will result in additional transmission, storage, and pumping costs. Thus, the no action alternative is not considered a viable alternative.

5.2 DELAYED ACTION

The proposed project is currently scheduled for fiscal year 1992-93. Delay of the project would likely increase the cost once construction ultimately begins. Delaying the project would not rule out its necessity in the near future.

5.3 ALTERNATE SITES

The BWS is responsible for management, control, and operation of the municipal water system for certain areas of Oahu. As part of this responsibility, the BWS must identify well sites for exploratory drilling and eventual production of water. A number of factors are considered by the BWS in the selection of potential alternative exploratory well sites, including subsurface geologic and groundwater characteristics, depth of drilling to the water resource, nearby surface water sources, elevation of the site in relation to the distribution system, ease of access, surrounding terrain, natural and cultural resources, and environmental impacts.

BWS previous choice, Kalihi Valley II Exploratory Well was drilled in 1991. Because this well proved to be unsuitable for a production well, it was abandoned and sealed. Kalihi Uka III Exploratory Well site was selected as an alternative site which meets the determining factors established by BWS.

CHAPTER 6

DETERMINATION

6.1 FINDINGS AND REASONS SUPPORTING THE DETERMINATION

The project involves the drilling of an exploratory well and a five-day pumpage test. The area to be disturbed is small and accessible by an existing unimproved road. Upon completion of the testing, the pump will be removed and the well will be capped. Any impacts to the physical environment will be temporary and will not be significant. The dust, noise and silting which may occur during construction will be controlled through accepted construction techniques. No rare or endangered species of flora and fauna are known to inhabit the project site.

6.2 DETERMINATION

In accordance with the provisions of Chapter 343, Hawaii Revised Statutes, and the significance criteria set forth in Section 11-200-12 of Title 11 Chapter 200, Administrative Rules of the Department of Health, this assessment has determined that the project will have no significant impact on the environment, and that an Environmental Impact Statement is not required.

REFERENCES

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2. Title 11, Chapter 200, State of Hawaii Department of Health Environmental Impact Statement Rules, 1985
3. Sterns, Harold T. and Knute N. Vaksvik, Geology and Groundwater Resources of the Island of Oahu, Hawaii, Territory of Hawaii, Department of Public Lands, Division of Hydrology, Bulletin Prepared in cooperation with the U. S. Geological Survey, May 1, 1935.
4. Soils Survey of the Islands of Kauai, Oahu, Maui, Molokai, and Lanai, State of Hawaii, August 1972. U. S. Department of Agriculture, Soil Conservation Service, in cooperation with the University of Hawaii, Agricultural Experiment Station.
5. Thomas W. Giambelluca, Michael A. Nullet, and Thomas A. Shroeder, Rainfall Atlas of Hawaii, Report R76, June 1986. Water Resources Research Center. Prepared for State of Hawaii Department of Land and Natural Resources, Division of Water and Land Development.
6. Regional Environmental Impact Assessment for Development of Wells, Reservoirs, Transmission Lines and Appurtenances at Honolulu Hawaii, Board of Water Supply, City and County of Honolulu, prepared by Wilson Okamoto & Associates, September 1984.
7. Water Resource Data - Hawaii and Other Pacific Areas. Water Years 1973-1988, U. S. Geological Survey Water Data Report.
8. Lao, Chester. Geology Section, Board of Water Supply, Personal communication with John Sakaguchi, Honolulu, February 1990.
9. Oahu Water Use and Development Plan. Technical Reference Document, Prepared for the City and County of Honolulu, Department of General Planning, September 1989.
10. Title 13, Chapter 124, Hawaii Administrative Rules, Department of Land and Natural Resources, Indigenous Wildlife, Endangered and Threatened Wildlife and Plants, and Introduced Wild Birds.

11. U. S. Fish and Wildlife Service, Endangered and Threatened Wildlife and Plants, January 1, 1989.
12. U. S. Bureau of the Census, 1980 Census of Population and Housing, Census Tracts, Honolulu, Hawaii, Standard Metropolitan Area.

APPENDIX A
ARCHAEOLOGICAL SURVEY
BY
ARCHAEOLOGICAL CONSULTANTS OF HAWAII



JOSEPH KENNEDY
Archaeologist

ARCHAEOLOGICAL CONSULTANTS
of
HAWAII

59-624 Pupukea Rd.
Haleiwa, Hawaii 96712
(808) 638-7442

Mr. John Sakaguchi
Planner
Wilson Okamoto & Associates
PO Box 3530
Honolulu, Hawaii 96814

February 18, 1990

RE: Archaeological Walk-Through Examination of the Proposed Board of Water Supply Exploratory Well Site, TMK:1-4-18:06, Located in Kalihi Valley, Island of Oahu.

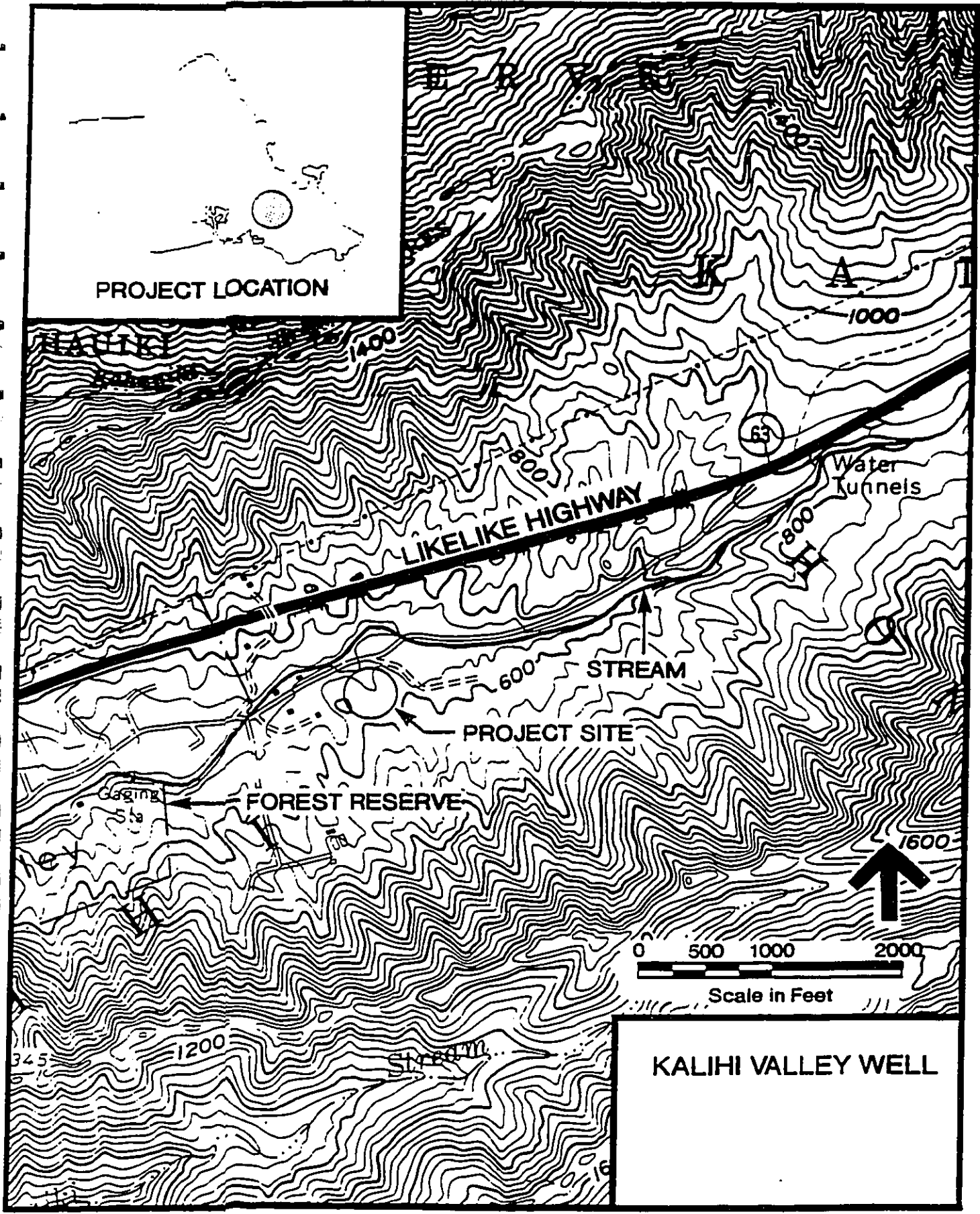
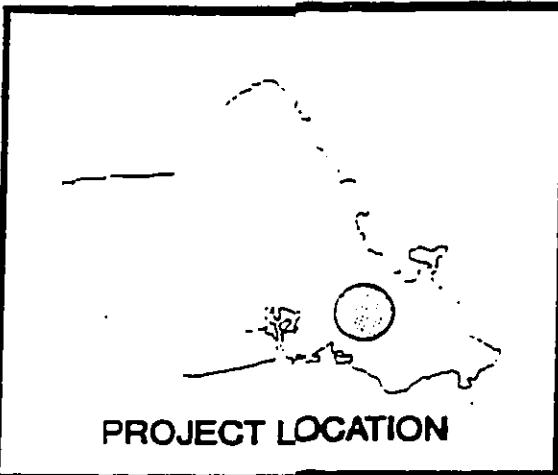
Dear Mr. Sakaguchi:

At the request of your office, Archaeological Consultants of Hawaii, Inc. has conducted a surface, walk-through examination of the property described above.

The proposed well site is located just mauka of the residential area on the Likelike Highway side of the valley. The subject property is small (10,000 square feet) and situated in the middle of a bamboo thicket. Visibility was good between the trees and it is unlikely that any features were overlooked.

A check of the records at the Department of Land and Natural Resources, Historic Sites Section, indicates that there has been no previous study of this small piece of property nor are there any previous sites recorded. Our examination failed to produce any surface indication of cultural materials.

The author is aware that a great number of sites are still located in the upper Kalihi area. These are however, located farther upstream and quite a distance from the study area. Most recently a contract archaeological firm (ERC) has been doing subsurface monitoring for Board of Water Supply stream crossings in the general area; according to a briefing presented to Wilson Okamoto & Associates dated January 27, 1990, ERC has to date, found nothing of significance.



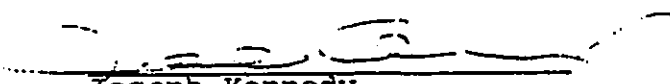
KALIHI VALLEY WELL

J. Sakaguchi
2-18-90
Page 2.

Based on the information presented above, it is our opinion that no further archaeological work is necessary at this particular location.

If there are any further questions regarding this report, please feel free to contact me.

Aloha,


Joseph Kennedy
Consulting Archaeologist

APPENDIX B

ARCHAEOLOGICAL SURVEY AND MONITORING SURVEY PROGRAM

BY

ERC ENVIRONMENTAL AND ENERGY SERVICES COMPANY

Archaeological Survey and Monitoring Program

**16-inch Water Main
Kalihi Stream Crossing #1
Kalihi Valley, Kalihi Ahupuaa, Kona District
Oahu Island, Hawaii
TMK: 1-4-14; 1-4-16; AND 1-4-20**

By:

Allan J. Schilz, M.A.

Report for:

**City and County of Honolulu
Board of Water Supply
630 South Beretania Street
Honolulu, Hawaii 96843**

Submitted By:

**ERC Environmental and Energy Services Company
900 Fort Street Mall
Suite 1550
Honolulu, Hawaii 96813**

April 1990

ABSTRACT

Under contract to the Board of Water Supply, City and County of Honolulu, ERC Environmental and Energy Services Company completed an archaeological field survey and construction monitoring program in conjunction with placement of a 16-inch water main from Maka Place to Kalihi aerator, Kalihi Valley, Oahu. An agricultural complex (Site 80-14-3980) recorded by Connolly (1980) was relocated and found to be well away from the proposed pipeline construction area, and, therefore, would not be impacted. Trenching for placement of the pipeline in the vicinity of the Kalihi Stream crossing was monitored by an archaeologist. Two earlier layers of pavement and coral/gravel fill were found beneath the present Kalihi Street pavement; no prehistoric resources were encountered during monitoring. No archaeologically significant resources were found within the area of direct or indirect impact during the field survey and none were found during monitoring.

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INTRODUCTION

The following report presents the results of an archaeological field survey and monitoring program, Kalihi Valley, Oahu, Hawaii. The Board Of Water Supply proposes to place a 16-inch water main along Kalihi Street from Maka Place to Kalihi aerator. The archaeological program was designed to avoid impacts to previously recorded cultural resources (Connolly 1980), and to mitigate potential impacts to resources discovered during trenching for placement of the pipeline. The area of primary concern was the Kalihi Stream crossing *makai* of the Honolulu Watershed Forest Reserve. The survey and monitoring program were completed by ERC Environmental and Energy Services Company (ERCE) under contract to the Board of Water Supply, City and County of Honolulu (BWS).

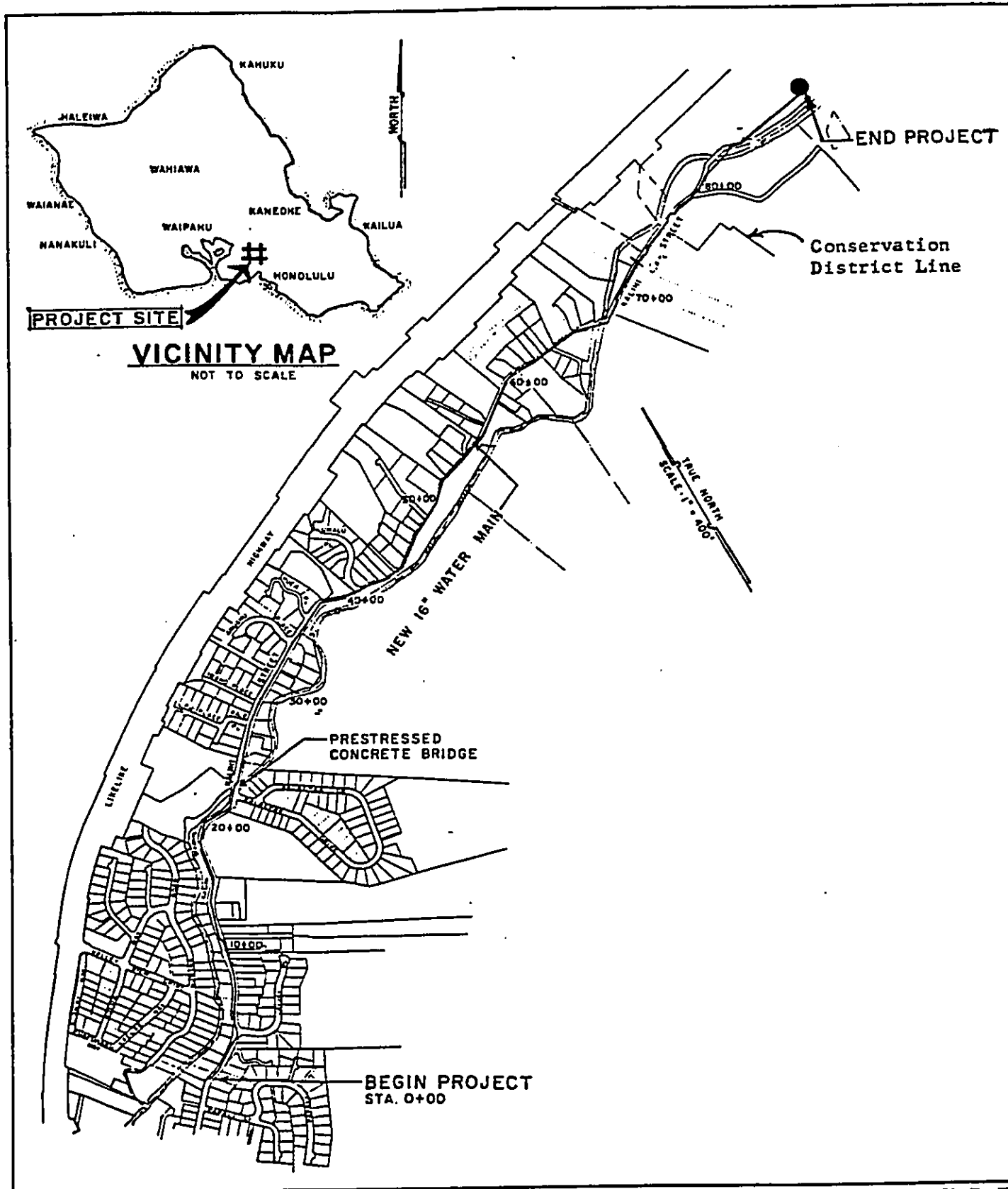
The field survey was conducted by Allan Schilz and Kanalei Shun on October 17, 1989; the monitoring program was conducted intermittently from October 26, 1989 through February 14, 1990 by Allan Schilz and Steven Dies. Monitoring in the vicinity of the Kalihi Stream crossing totalled 16.5 man-hours.

Project Location

The 16-inch main (BWS Job no. 89-96) is proposed along Kalihi Street from the Kalihi Valley 614 reservoir located within the Forest Reserve at Maka Place to Kalihi aerator *mauka* of Papali Street (FigureS 1 and 2). The area of archaeological concern is in the vicinity of the Kalihi Stream crossing *makai* of the Honolulu Watershed Forest Reserve and includes portions of the lands of Maluwai (TMK:1-4-14), Ouaua (TMK:1-4-16), and Kioi (TMK:1-4-20), Kalihi *ahupua'a*, Kona District, Oahu Island (Figures 3, 4, and 5).

Scope of Work

Connolly (1980) identified *'auwai* and terraces (Site 80-14-3980) during a survey for the proposed Kalihi Valley Park site, but did not locate or map the features. Therefore, there was concern that the current project would impact the site area. The present study consisted of two major tasks: archaeological field survey and monitoring during earth moving activities. The purpose of the field survey was to relocate the features discovered by Connolly (1980) and to mark their boundaries so that they would not be impacted by the proposed construction. Also, there was concern that additional archaeological resources may be located in the vicinity of the project.

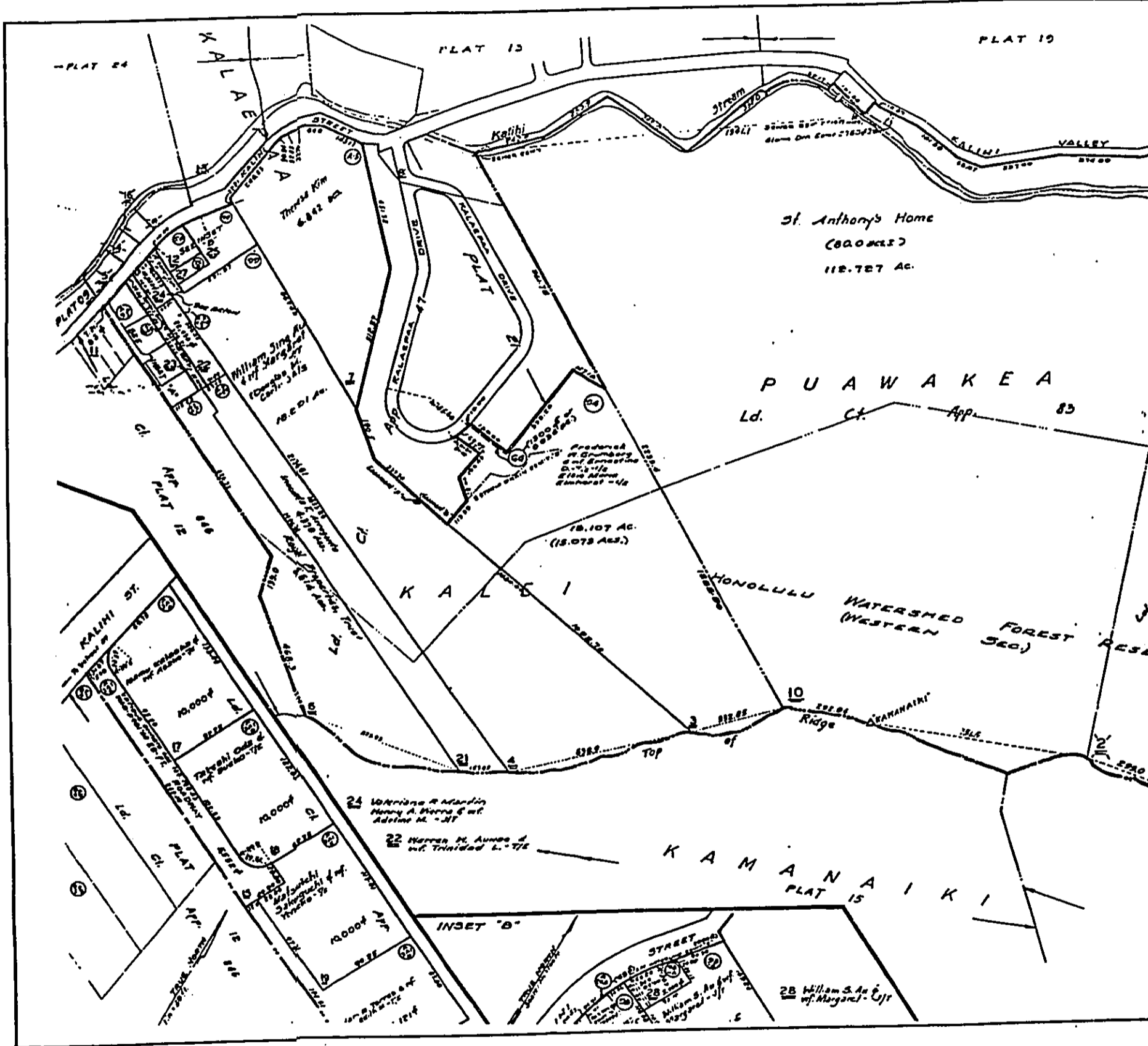



ERC
 Environmental
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Project Location

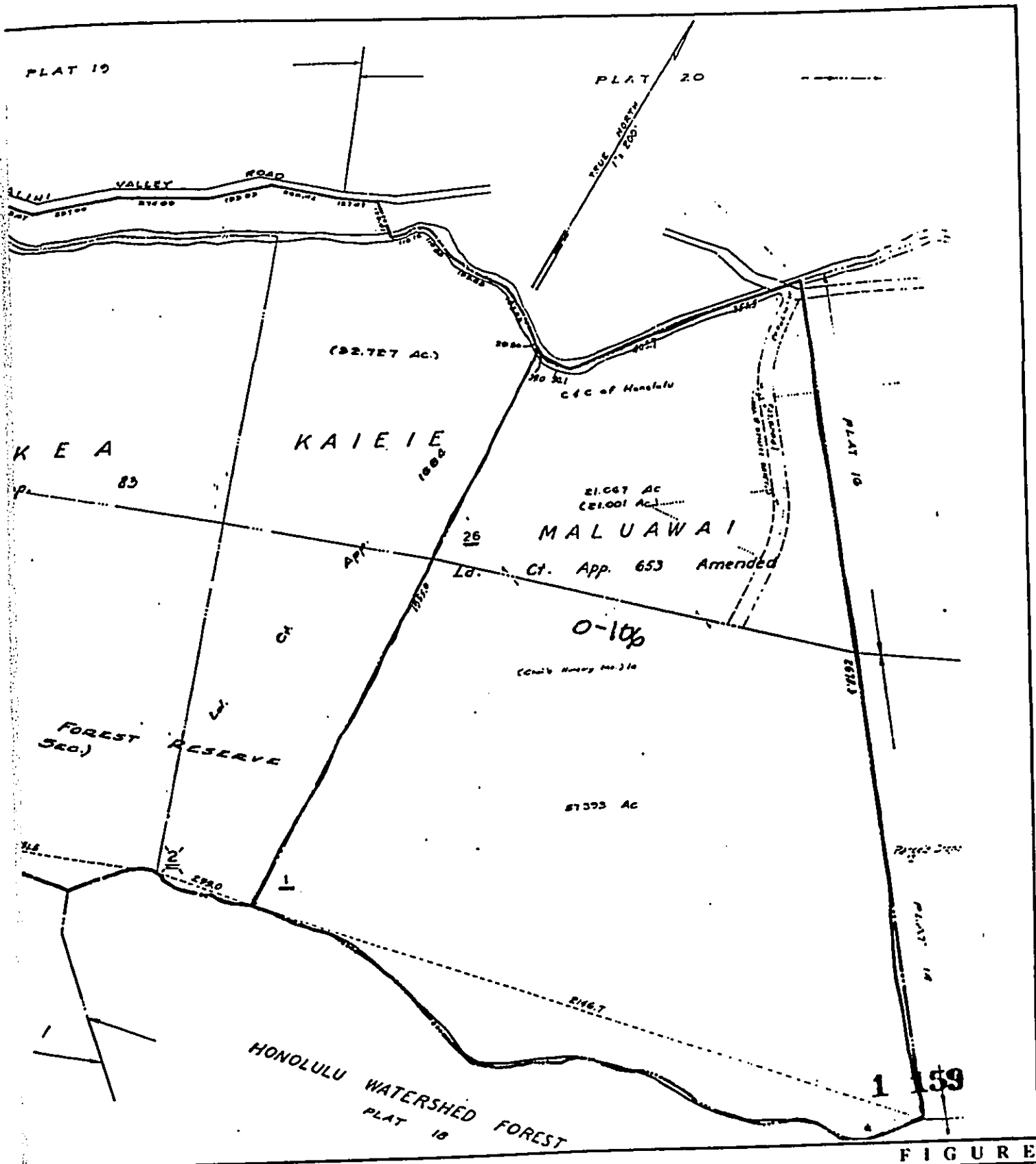
FIGURE

1



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Environmental
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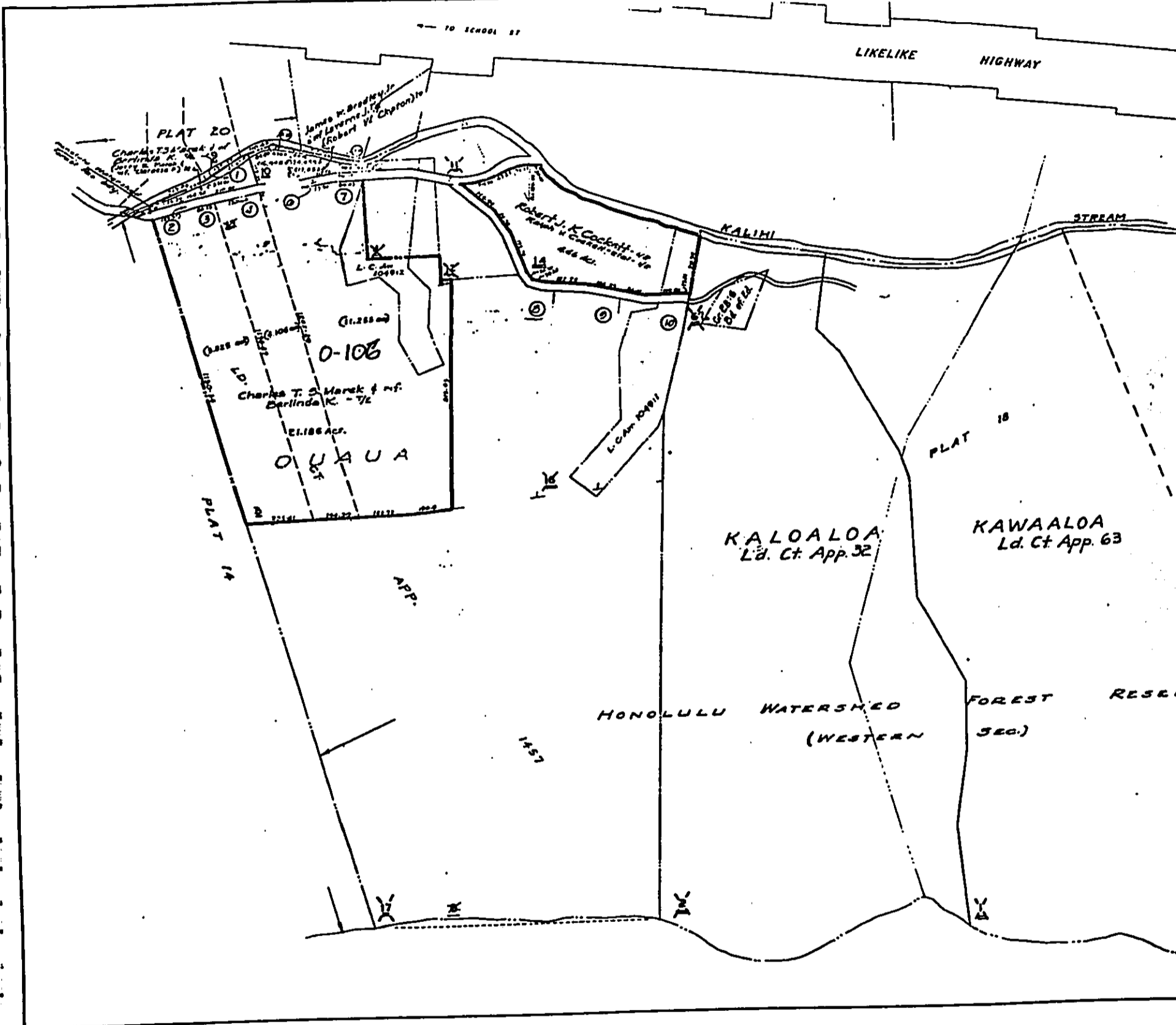
TMK:1-4-14, Kallhi-UKA, Location of Archaeological Site No

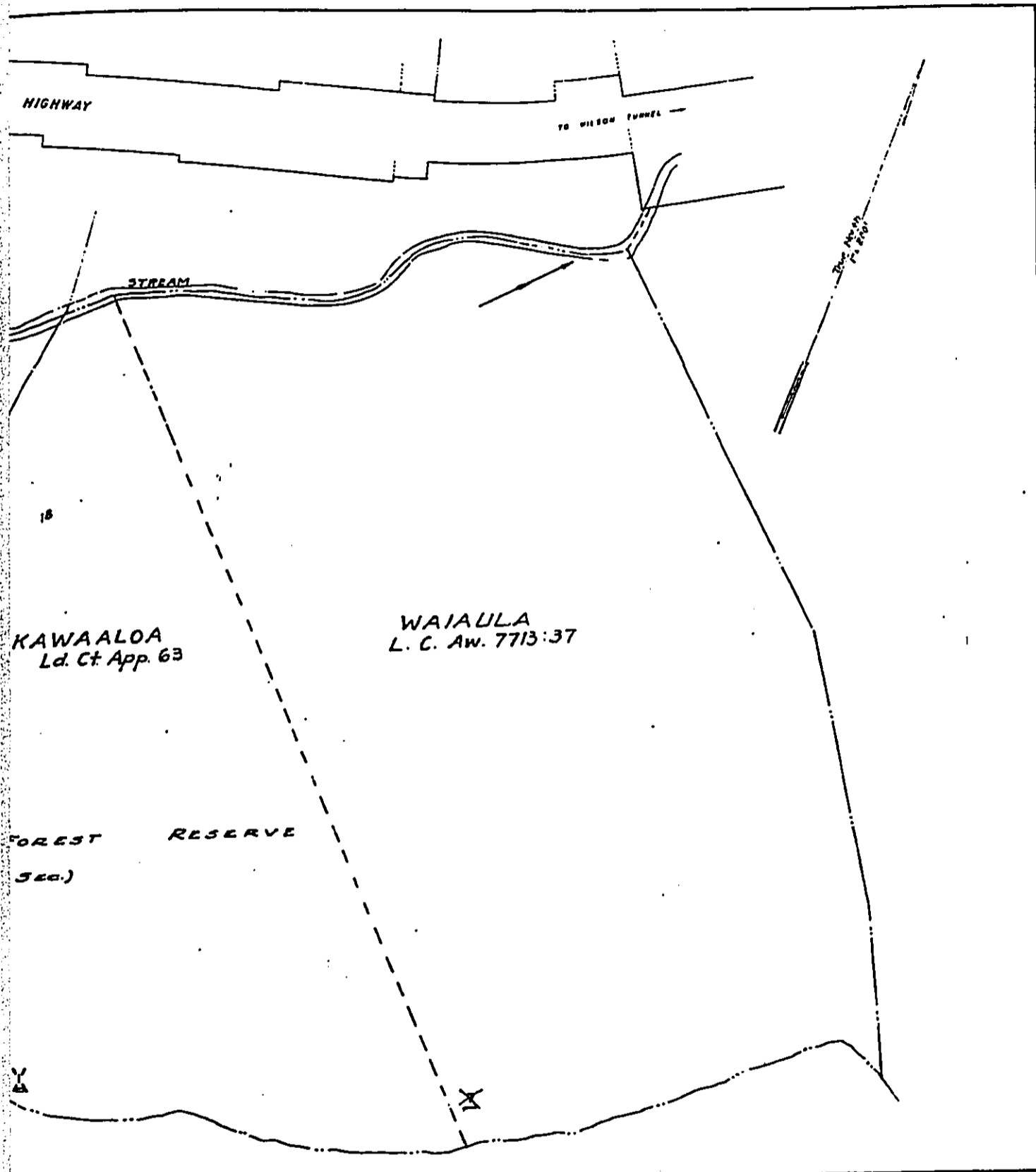


FIGURE

3

Archaeological Site No. 50-80-14-3980

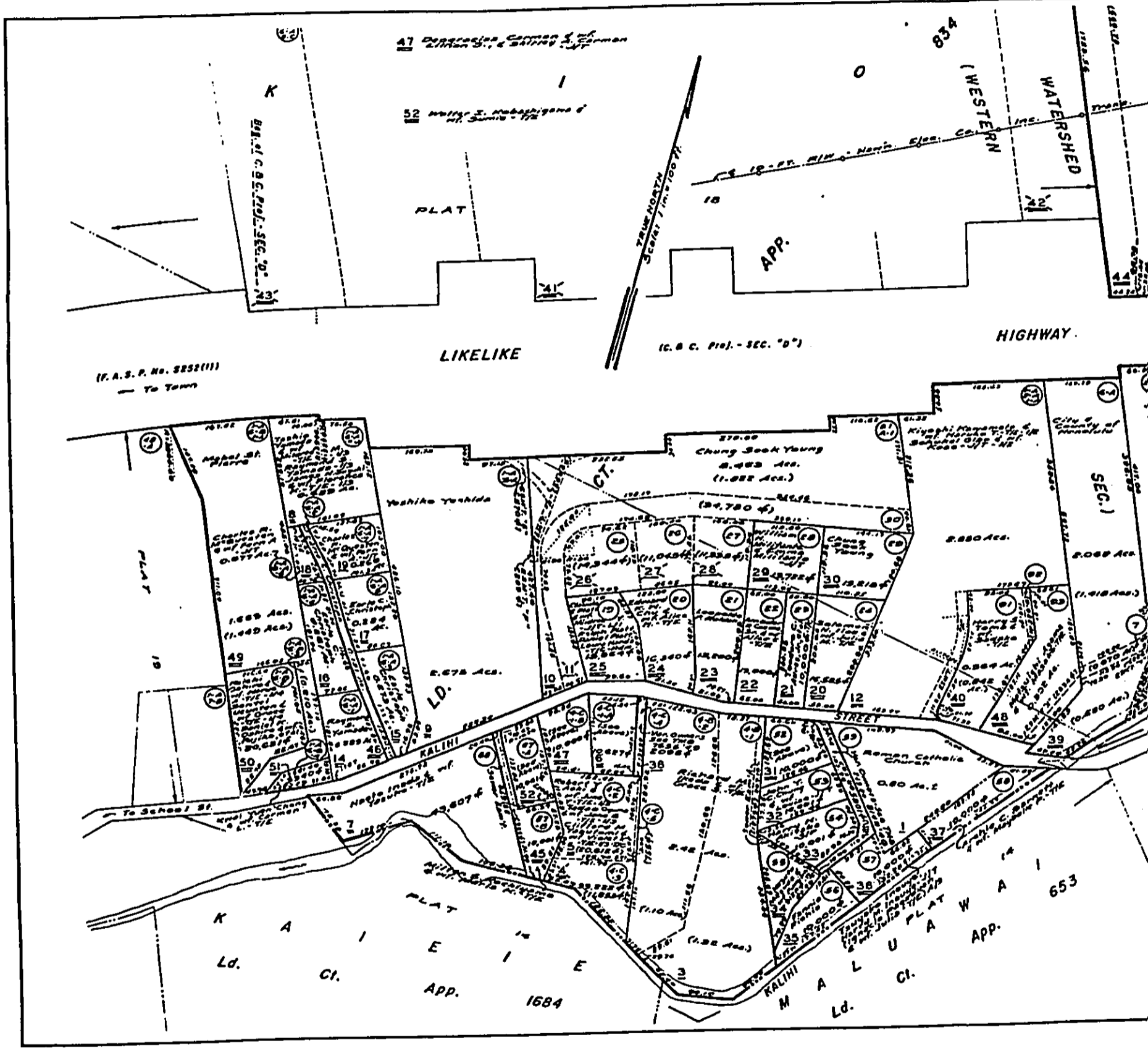




Geological Site No. 50-80-14-3980

FIGURE

4



(F. A. S. P. No. 8252(1))
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41 Deceased, German & ...
 ...

52 ...
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PLAT

LIKELIKE

APP.

(C. & C. Plat.) - SEC. "D"

WESTERN

WATERSHED

HIGHWAY

Chung Soek Young
 8,483 Ac.
 (1,022 Ac.)

Yoshiko Yoshida

Ld.

KALIHI

PLAT

APP.

1684

M A L U A

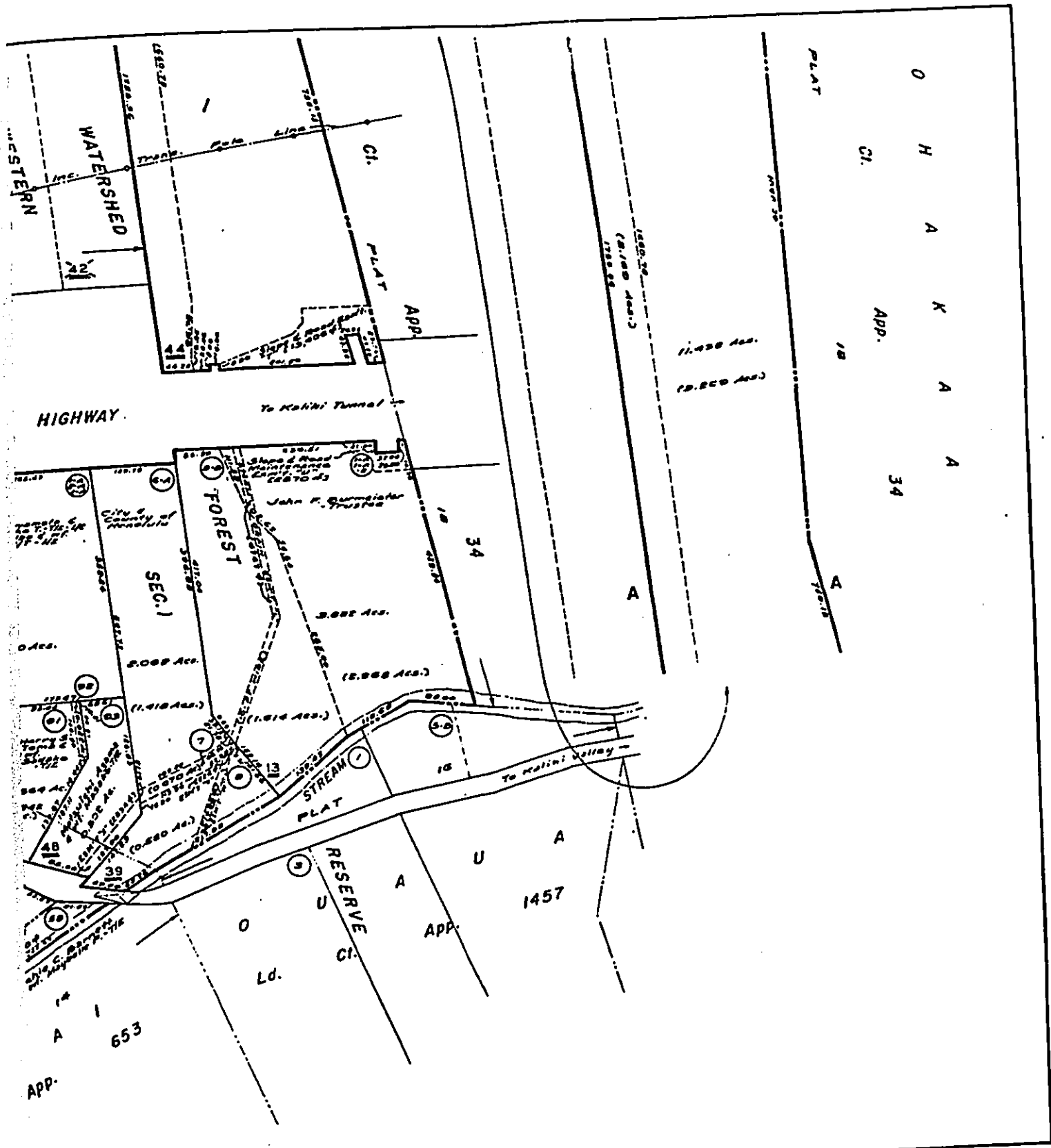
Ld.

APP.

653

ERC
 Environmental
 and Energy
 Services Co.

TMK:1-4-20, Kaili UKA



FIGURE

5

Kaili UKA

The monitoring program focused on the area around the Kalihi Stream crossing because of the proximity to known resources and the potential for buried resources.

BACKGROUND

Previous Archaeological Work

Since the mid-1970s, four archaeological studies have been completed in the general area. In 1976, William Barrera (1976a and b) completed a survey *makai* of the present project (TMK:1-4-13). Barrera recorded four sites: a collapsed terrace, a retaining wall and paved area, a low terrace wall, and an earthen terrace. In 1980, Connolly (1980) conducted a survey for the proposed Kalihi Valley Park. Connolly's survey included portions of the lands of Maluawai (TMK:1-4-14) and Ouaua (TMK:1-4-16). Connolly recorded an upland agricultural complex (Site 80-14-3980) of 20 individual features that included an *'auwai* system and terraces. Connolly recorded the site, but did not map its location. Aki Sinoto (1988) conducted a field survey for the proposed Kalihi Valley 614 reservoir. Sinoto recorded six historic features (Site 80-14-2004). Sinoto determined that these features are non-Hawaiian and historic/modern in origin (1988:4-5). Three of the features probably relate to the construction of Old Kalihi Street and the remaining three are more recent.

Land History

Kalihi was the location of Ka'ie'ie *heiau*, presumably within the *ili* of Kaieie located immediately *makai* of Maluawai (Pukui, Elbert, and Mookini 1976). According to Beckwith (1970:278-283), Ka'ie'ie *heiau* was a place of worship for Pele's sister Kapo.

The *ili* of Maluawai and Ouaua are depicted on the 1883 survey map of Kalihi Valley (Brown 1883). The 1883 map also shows that, during the Great Mahele of 1848, V. Kamamalu received a Land Commission Award (LCA) for Maluawai (LCA 7713), Kaunuohua received an LCA for Ouaua (LCA 6450:8), and A. Adams received an LCA for Kioi (LCA 803:12).

As noted in both Sinoto (1988) and Connolly (1980), Handy (1940) states that the lower Kalihi Valley was covered with extensive terraces on both sides of the stream. Handy (1940:79) further states that "...in upper Kalihi there are numerous small areas that were developed in terraces."

FIELDWORK

Field Survey

The field survey was completed on Tuesday, October 17, 1989. Initially, the survey focused on the areas adjacent to Kalihi Street and Kalihi Stream. Subsequently, the survey area was expanded toward Kamaoiki Ridge southeast of Kalihi Street and Kalihi Stream. The survey area was expanded in an attempt to relocate the agricultural complex recorded by Connolly (1980). This complex was relocated and its location mapped, but a detailed plan of the features was not made because they were well away from the area to be impacted by the proposed trenching and pipeline placement.

Monitoring

As stated above, the monitoring program focused on the Kalihi Stream crossing *makai* of the Honolulu Watershed Forest Reserve. Beginning on October 26, 1989, the progress of the trenching operations were monitored to ensure that an archaeologist was present during trenching near the Kalihi Stream crossing. The dates of the field visits to check on the trenching progress and the dates that the trenching was monitored are presented below.

| | |
|-------------|-------------------|
| Field visit | October 26, 1989 |
| Field visit | November 1, 1989 |
| Monitor | November 8, 1989 |
| Monitor | November 9, 1989 |
| Monitor | December 6, 1989 |
| Monitor | December 14, 1989 |
| Monitor | January 5, 1990 |
| Monitor | February 13, 1990 |
| Monitor | February 14, 1990 |

By the end of the day, February 14, 1990, trenching had progressed beyond the area of concern and all monitoring was ceased.

RESULTS

Field Survey

The field survey was completed by Allan Schilz and Kanalei Shun on October 17, 1989. No historic or prehistoric resources were found along Kalihi Stream or Kalihi Street. There was, however, a number of junked trucks and cars located along the dirt road leading from Kalihi Street toward Kamaikai Ridge.

The agricultural complex reported by Connolly (1980:8-9) was found approximately 200m southeast of Kalihi Street (Figures 2 and 3). The features noted include a cobble faced *'auwai* system and agricultural terraces. The total extent of the complex was not determined by Connolly (1980:8-9), nor was it determined during the present survey. It appears, however, to extend into the Forest Reserve.

Monitoring

As noted above, monitoring of trenching activities took place between October 26, 1989 and February 14, 1990. The trenching *mauka* of the stream crossing exposed two previous, asphalt-paved roads (Figure 6). Beneath the present road surface is a layer of sand, gravel, and coral fill approximately 30 to 35cm thick. This layer served as the roadbed for the modern road. Beneath the modern fill is a layer of asphalt, followed by a 15cm thick layer of coral bedding and a 25cm layer of sand, gravel, and coral fill. This represents an older surface of Kalihi Street. At a depth of 80cm below the present street surface is another sequence of asphalt-coral bedding-sand, coral, and gravel. This represents the earliest pavement of Kalihi Street. It should be noted that Kalihi Street is depicted on the 1883 Government map (Brown 1883), but it is not known whether it was paved at that time.

Beneath the earliest paved road, at a depth of 130 to 140cm, are two buried telephone cables. The trench that was excavated to bury the cables penetrated the earliest pavement, but not the two subsequent pavements. Indicating the the cables were installed after the first road was paved but before the more recent roads were paved.

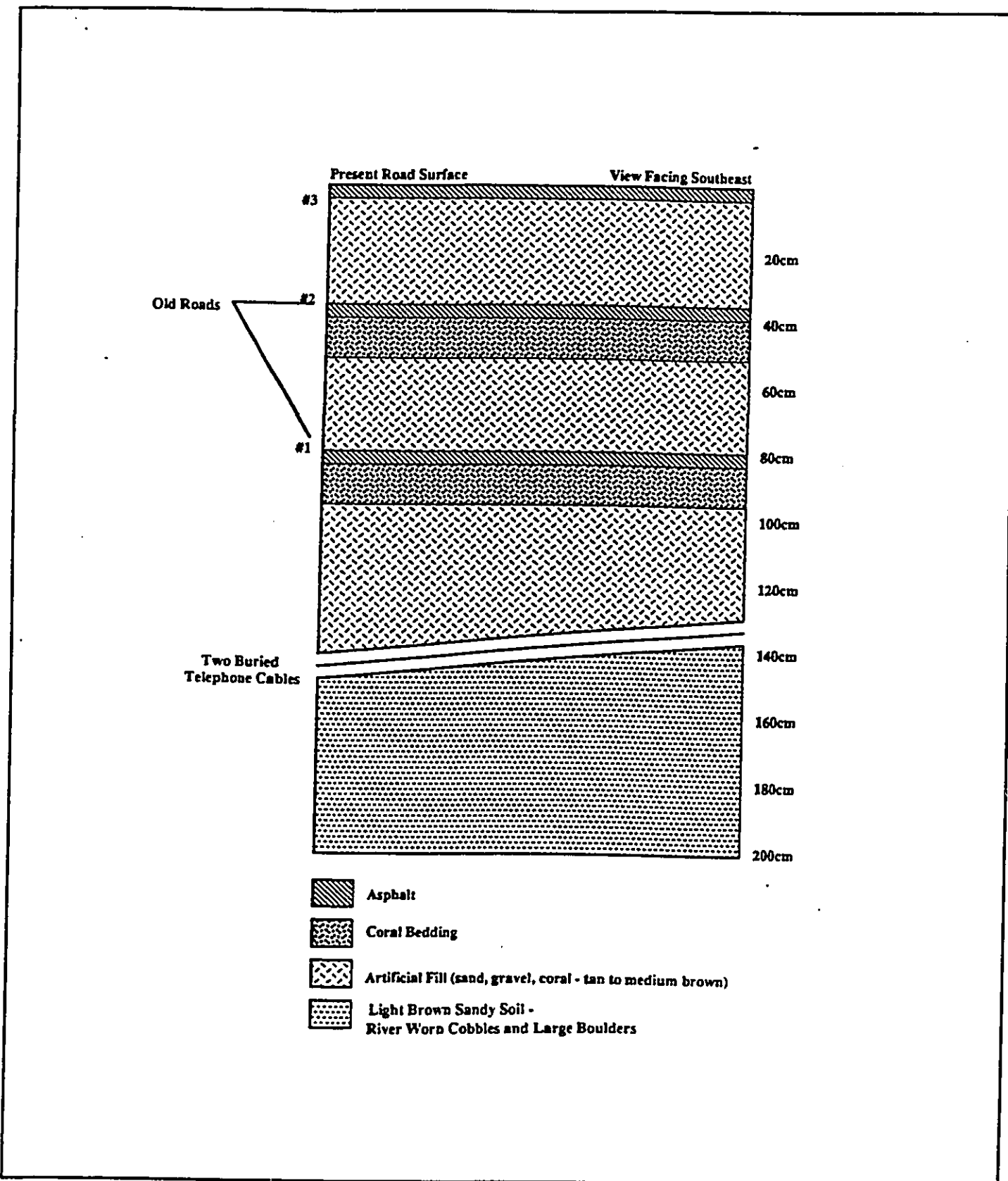
Beneath the earliest paved road and the telephone cable trench was brown to yellowish-brown silty clay of the Lolekaa series (Foote et al. 1972:84). As the trench approached Kalihi Stream, the sand content increased and cobbles and boulders from previous stream courses were encountered.

No evidence of prehistoric resources were encountered during monitoring. The upper 140cm had been disturbed and the stratum beneath the earliest roadbed and cable trench consisted, in part, of stream deposit.

RECOMMENDATIONS

No artifacts or features were found in the vicinity of the project during the field survey or the monitoring program. Therefore, no further archaeological investigations relating to the placement of the 16-inch water main along Kalihi Street are recommended.

The agricultural complex (Site 80-14-3980) recorded by Connolly (1980) has been located on the appropriate maps, but a plan map of the complex and its features has not been made. Given the extent of the complex and that little research has been conducted in upper Kalihi Valley, it is recommended that the complex be mapped and evaluated prior to any development in the area.



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1976 Place Names of Hawaii. University of Hawaii Press, Honolulu. Second edition.

Sinoto, Aki

1988 Archaeological and Botanical Survey of the Proposed Kalihi Valley 614 Reservoir Project, Kalihi, Honolulu, O'ahu Island. Part I: Archaeological Survey. Public Archaeology Section, Applied Research Group, B.P. Bishop Museum, Honolulu.

APPENDIX C
CONSULTATION

AGENCIES CONSULTED

FEDERAL AGENCIES

1. Mr. Ernest Kosaka
Environmental Coordinator
Fish and Wildlife Service
United States Department of the Interior
P. O. Box 50167
Honolulu, Hawaii 96850
2. Mr. William Meyer
District Chief
Water Resources Division
Geological Survey
United States Department of the Interior
677 Ala Moana Blvd., Suite 415
Honolulu, Hawaii 96813
3. Mr. Warren M. Lee
State Conservationist
Department of Agriculture
P.O. Box 50004
Honolulu, Hawaii 96850
4. Mr. Daniel W. McGovern
Regional Administrator
U. S. Environmental Protection Agency Region IX
75 Hawthorne Street
San Francisco, CA 94105

STATE AGENCIES

5. Dr. Bruce S. Anderson
Deputy Director for Environmental Health
Department of Health
State of Hawaii
P. O. Box 3378
Honolulu, Hawaii 96801

6. Mr. Keith Ahue
Chairperson
Department of Land and Natural Resources
State of Hawaii
P. O. Box 621
Honolulu, Hawaii 96809

7. Mr. Yukio Kitagawa
Chairperson
Department of Agriculture
State of Hawaii
1428 South King Street
Honolulu, Hawaii 96814

8. Mr. John Harrison, Ph.D.
Environmental Coordinator
University of Hawaii at Manoa
Environmental Center, Crawford 317
2550 Campus Road
Honolulu, Hawaii 96822

9. Dr. Stephen Lau
Water Resources Research Center
University of Hawaii
2540 Dole Street, Holmes Hall 283
Honolulu, Hawaii 96822

CITY AND COUNTY OF HONOLULU

10. Mr. Donald Clegg
Director
Department of Land Utilization
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

11. Mr. Robin Foster
Chief Planning Officer
Planning Department
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

12. Mr. C. Michael Street
Director and Chief Engineer
Department of Public Works
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

13. The Honorable Donna Mercado Kim
City Councilmember
City and County of Honolulu
Honolulu Hale
Honolulu, Hawaii 96813

OTHER INTERESTED GROUPS AND INDIVIDUALS

14. Kalihi Valley Neighborhood Board No. 16
P. O. Box 19063
Honolulu, Hawaii 96817

15. Mr. Art Mori, President
Life of the Land
19 Niolopa Place
Honolulu, Hawaii 96817

16. Mr. Gary Anderson, Conservation Chair
Sierra Club
P. O. Box 11070
Honolulu, Hawaii 96828

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STATE OF HAWAII
DEC 23 10 15 AM '92



STATE OF HAWAII
OFFICE OF ENVIRONMENTAL QUALITY CONTROL
530 SOUTH KING STREET
FOURTH FLOOR
HONOLULU, HAWAII 96813
TELEPHONE 808-534-5156

December 22, 1992

Mr. Kazu Hayashida
Manager and Chief Engineer
Board of Water Supply
630 South Beretania Street
Honolulu, Hawaii 96843

Attn: Mr. Bert Kuloaka

SUBJECT: KALIHI UKA III EXPLORATORY WELL, HONOLULU, OAHU

Dear Mr. Hayashida,

When submitting the Final Environmental Assessment (EA) for the above project, please include a listing of findings and reasons supporting the determination, pursuant to Title 11, Chapter 200 §11-200-10 of the Hawaii Administrative Rules. An estimated project cost should also be included.

If you have any questions, please contact Karen Mau at 596-4185. Thank you for your cooperation.

Sincerely,

Brian J. J. Choy
Director

BC:km

BOARD OF WATER SUPPLY
CITY AND COUNTY OF HONOLULU
630 SOUTH BERETANIA STREET
HONOLULU, HAWAII 96843



February 22, 1993

Mr. Brian J. J. Choy
Director
State of Hawaii
Office of Environmental Quality Control
220 South King Street, Fourth floor
Honolulu, Hawaii 96813

Dear Mr. Choy:

Subject: Your Letter of December 22, 1992 Regarding the Draft Environmental Assessment (EA) for the Proposed Kalihi Uka Exploratory Well III,
TMK: 1-4-20-39, Kalihi Street

Thank you for reviewing the Draft EA for our proposed project. We have the following response to your comments:

1. We will submit a listing of findings and reasons supporting the determination with the Final EA.
2. An estimated project cost will be included.

If you have any questions, please contact Bert Kuloaka at 527-5235.

Very truly yours,

KAZU HAYASHIDA
Manager and Chief Engineer

FRANK EASO, Mayor
WALTER D. WATSON, Jr., Chairman
WALTER H. TAMMIGANO, Vice Chairman
SISTER DAVYTHAN CHICA, D.S.F.
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READ JOHNSON
MELISSA J. LUM
C. MICHAEL SIREI
KAZU HAYASHIDA
Manager and Chief Engineer



United States Department of the Interior

930011



WATER RESOURCES DIVISION
677 Ala Moana Boulevard, Suite 415
Honolulu, Hawaii 96813

December 31, 1992

Mr. Kazu Hayashida
Manager and Chief Engineer
Board of Water Supply
City and County of Honolulu
630 South Beretania Street
Honolulu, Hawaii 96843

Dear Mr. Hayashida:

Subject: Draft Environmental Assessment (EA) for Kalihi Uka Exploratory Well III, TMK: 1-4-20: 39, Kalihi, Oahu, Hawaii

Thank you for the opportunity to review the subject Draft EA.

The only comment I might make is that it would be more desirable to continuously pump the well at a constant rate for five to seven days rather than for selected periods of time and rates over a five-day period, as specified. Continuously pumping the well would make it much easier to determine the source of water to the well.

If we can be of further help, please do not hesitate to call 541-2653.

Sincerely,

Bill Meyer
William Meyer
District Chief

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BOARD OF WATER SUPPLY
CITY AND COUNTY OF HONOLULU
630 SOUTH BERETANIA STREET
HONOLULU HAWAII 96843



March 12, 1993

Mr. William Meyer, District Chief
Water Resources Division
Geological Survey
United States Department of the Interior
677 Ala Moana Boulevard, Suite 415
Honolulu, Hawaii 96813

Dear Mr. Meyer:

Subject: Your Letter of December 31, 1992 Regarding the Draft Environmental Assessment (EA) for the Proposed Kalihi Uka Exploratory Well III, TMK: 1-4-20: 39, Kalihi Street

Thank you for reviewing the Draft EA for our proposed project.

We agree that continuous pumping would make it easier to determine the source of water to the exploratory well. However, pumping for selected periods of time over a five-day period was specified to reduce the impact of noise on nearby residences.

If you have any questions, please contact Bert Kutoka at 527-5235.

Very truly yours,

Kazu Hayashida

KAZU HAYASHIDA
Manager and Chief Engineer

FRANK E. BAY, Mayor
WALTER WATSON, JR., Chairman
LAWRENCE H. YAMASATO, Vice Chairman
SIOBHAN DAVENPORT, OSE
JOHN W. JACOBSON, JR.
REID JOHNSON
MELISSA T. LUM
C. MCDONELL, STREET
KAZU HAYASHIDA
Manager and Chief Engineer



STATE OF HAWAII
DEPARTMENT OF HEALTH
P. O. BOX 3378
HONOLULU, HAWAII 96801

JOHN C. LUTHE, M.D.
DIRECTOR OF HEALTH

IN REPLY, PLEASE REFER TO:

December 31, 1992

92-457/epo

Mr. Kazu Hayashida
Manager and Chief Engineer
City and County of Honolulu
630 South Beretania Street
Honolulu, Hawaii 96843

Dear Mr. Hayashida:

Subject: Draft Environmental Assessment (EA) for
Kalihī Uka Exploratory Well III
Kalihī, Oahu, Hawaii
TMK: 1-4-20: 39

Thank you for allowing us to review and comment on the subject project. We have no comments to offer at this time.

Very truly yours,

Bruce S. Anderson
BRUCE S. ANDERSON, Ph.D.
Deputy Director for Environmental Health

BOARD OF WATER SUPPLY

CITY AND COUNTY OF HONOLULU
630 SOUTH BERETANIA STREET
HONOLULU HAWAII 96843



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REID JOHNSON
MELISSA Y. LUM
C. MICHAEL STREIB
KAZU HAYASHIDA
Manager and Chief Engineer

March 11, 1993

Dr. Bruce S. Anderson
Deputy Director for Environmental Health
State of Hawaii
Department of Health
P. O. Box 3378
Honolulu, Hawaii 96801

Dear Dr. Anderson:

Subject: Your letter of December 31, 1992 Regarding the Draft Environmental Assessment (EA) for the Proposed Kalihī Uka Exploratory Well III, TMK: 1-4-20: 39, Kalihī Street

Thank you for reviewing the Draft EA for our proposed project.

If you have any questions, please contact Bert Kufoka at 527-5235.

Very truly yours,

Kazu Hayashida
KAZU HAYASHIDA
Manager and Chief Engineer

JOHN WARRICK
DEPARTMENT OF LAND AND NATURAL RESOURCES

23 JUL 70



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
PO BOX 21
HONOLULU HAWAII 96820

REPRODUCTION

FILE NO.: 93-343
DOC. NO.: 2042

JAN 13 1970

The Honorable Kazu Hayashida
Manager and Chief Engineer
Board of Water Supply
City and County of Honolulu
630 So. Beretania Street
Honolulu, Hawaii 96843

Dear Mr. Hayashida:

SUBJECT: Draft Environmental Assessment (EA) for the
Kalihiki Uka Exploratory Well III, TRK: 1-4-20: 39,
Kalihiki, Oahu

Thank you for giving our Department the opportunity to comment on this matter. We have reviewed the materials you submitted and have the following comments.

Brief Description:

The project involves drilling of an exploratory well adjacent to Kalihiki Stream to access perched water for possible eventual domestic use.

According to our Division of Aquatic Resources, the draft Environmental Assessment notes that there is some potential for dewatering of Kalihiki Stream if the pump becomes operational but discounts the significance of this consequence because Kalihiki Stream has little biological significance. In fact, the stream supports three of the five species of endemic stream fishes (*Awaous stamineus*, *Stenopobilia hawaiiensis*, and *Zoetis subdicensis*) and both species of endemic freshwater crustaceans (*Macrbrachium grandimanus* and *Atyoida bisulcata*). These are of considerable significance given the general degradation of stream habitats on Oahu and the associated decline of native aquatic species. We have no objection to the exploratory drilling, before the well is actually used as a water source, however, its potential for reducing flows in Kalihiki Stream needs to be evaluated. Mitigation measures such as pumping only during wet weather conditions or reservoir storage can probably be devised if the well was actually found to effect dewatering of the stream.

WILLIAM W. PAULI, CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
DEPUTY DIRECTOR
JOHN P. WARRICK II
DONALD L. WARRICK
AGRICULTURE DEVELOPMENT
ADULTIC RESOURCES
COASTAL ZONE AND WATERS
COUNCIL AND WATERS
DEPARTMENT
FORESTRY AND WILDLIFE
HAWAIIAN HISTORICAL PROGRAM
LAND AND NATURAL RESOURCES
PLANNING AND DEVELOPMENT

Mr. K. Hayashida

-2-

File No.: 93-343

According to our Historic Sites section, the EA includes a short report of an archaeological surface survey of parcel 1-4-18: 06, which is not the location of the proposed project, and an archaeological monitoring report that describes the fill underneath a small portion of Kalihiki road near the location of the proposed project. The EA does not include an archaeological report for the proposed project parcel, and since our records show that this parcel has not been inventoried for historic sites, we have no information on the presence or absence of surface and subsurface historic sites at the project parcel. Thus we have insufficient information to agree with the conclusion in the EA that "since no artifacts or features were found in the vicinity, no further archaeological investigation is warranted."

Historic records indicate that Kalihiki Valley was intensively cultivated and thickly settled in traditional times. A review of our records shows that agricultural and religious structures have been found close to the project parcel. Extensive remains of irrigated agricultural fields are located across the stream and it is believed that an agricultural heiau was located nearby, although this has not been re-identified in many years and might be destroyed.

Since the proposed project will grade a 5,000 square foot area, and since this work would have an "adverse effect" on any historic sites that might be present at the parcel, an archaeological inventory survey of the project parcel is needed to determine if significant historic sites are present. This would be the initial step needed in the Chapter 6E review process.

Our Division of Forestry and Wildlife comments that the activities planned for the project will take place where their programs could be affected. We, therefore, recommend that the road leading to the project site remain passable in case work needs to be done in the area.

In addition, although the area is quite wet, we recommend that a fire contingency plan be submitted for our approval.

Thank you for your cooperation in this matter. Please feel free to call Sam Lemos at our Office of Conservation and Environmental Affairs, at 587-0377, should you have any questions.

Very truly yours,

John P. Warrick II
JOHN P. WARRICK II

BOARD OF WATER SUPPLY

CITY AND COUNTY OF HONOLULU
830 SOUTH BERETANIA STREET
HONOLULU, HAWAII 96809



April 13, 1993

FRANK F. FASD Mayor
WALTERO WATSON, JR. Chairman
MAURICE H. YAMASATO Vice Chairman
SISTER M. DAVIDA, M.A.H.CHECK O.S.F.
JOHN W. ANDERSON, JR.
REED JOHNSON
MELISSA Y.J. LUM
C. MICHAEL STREET
KAZU HAYASHIDA
Manager and Chief Engineer

Mr. Keith Abue
Page 2
April 13, 1993

Mr. Keith Abue, Chairperson
Department of Land and Natural Resources
State of Hawaii
P.O. Box 621
Honolulu, Hawaii 96809

Dear Mr. Abue:

Subject: Your Letter of January 19, 1993 Regarding the Draft Environmental Assessment (EA) for the Proposed Kalihii Uka Exploratory Well II, TMK: 1-4-20-39, Kalihii Street

4. We will keep the road leading to the project site passable so that the Division of Forestry and Wildlife can access the area for any work required.
5. A fire contingency plan will be submitted for your approval.

If you have any questions, please contact Bert Knioka at 527-5235.

Very truly yours,

KAZU HAYASHIDA
Manager and Chief Engineer

Thank you for reviewing the Draft EA for our proposed project. We have the following response to your comments:

1. We note that you have no objection to the exploratory drilling.
2. We recognize the importance of Oahu stream habitats to native aquatic species and therefore, we will have the United States Geological Survey monitor Kalihii stream during pump testing of the proposed exploratory well. If we decide to develop the well for the production of potable water, minimum streamflow requirements will be adhered to and appropriate mitigative measures to protect stream habitats will be implemented.
3. We note your concern that the proposed project could have an adverse effect if historic sites are present at the parcel. However, we conducted an extensive surface survey of the site and found no indications of historic sites or artifacts in the area and since the project requires very little subsurface work relative to the land area involved, we concluded that there will be no significant archaeological impacts. If any historical sites or artifacts are discovered during construction, all work will be stopped immediately, the State Historic Preservation Office will be notified and appropriate mitigative measures will be taken. An archaeological inventory survey of the parcel will be conducted if the exploratory well test results are favorable and we decide to develop a permanent well pump station which will encompass a larger area and will involve more subsurface work.

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DEPARTMENT OF LAND UTILIZATION
CITY AND COUNTY OF HONOLULU

630 SOUTH BERETANA STREET
HONOLULU HAWAII 96813 • HON-933-4232



FRANK S. KAM
1991

DONALD A. CLEGG
DIRECTOR
LONNETTE B. CHYZE
PROPERTY MANAGER

92-05416(ask)

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WATER SUPPLY

JAN 5 11 56 AM '93

January 5, 1993

MEMORANDUM

TO: KAZU HAYASHIDA, MANAGER AND CHIEF ENGINEER
BOARD OF WATER SUPPLY

FROM: DONALD A. CLEGG, DIRECTOR

SUBJECT: KALHI UKA III EXPLORATORY WELL
Tax Map Key 1-4-20:39

The proposed project on the referenced tax map key has been reviewed. We find that it:

(x) Is not within the Special Management Area.

Should you have any questions, please contact the Environmental Affairs Branch at 523-4077.

Very truly yours,

DONALD A. CLEGG
Director of Land Utilization

DAC:ask
Atbws:ask

BOARD OF WATER SUPPLY

CITY AND COUNTY OF HONOLULU
630 SOUTH BERETANA STREET
HONOLULU HAWAII 96813



March 11, 1993

FRANK S. KAM
WALTER B. WILSON, JR. Chairman
MARGARET H. YAMASAKI Vice Chairman
SHERIL DAVIS Vice Board Member
JOHN W. ANDERSON, JR.
REID JOHNSON
WISSAY L. IMA
C. MICHAEL SURETT
KAZU HAYASHIDA
Manager and Chief Engineer

TO: DONALD A. CLEGG, DIRECTOR
DEPARTMENT OF LAND UTILIZATION

FROM: KAZU HAYASHIDA, MANAGER AND CHIEF ENGINEER
BOARD OF WATER SUPPLY

SUBJECT: YOUR MEMORANDUM OF JANUARY 5, 1992 REGARDING THE DRAFT
ENVIRONMENTAL ASSESSMENT (EA) FOR THE PROPOSED KALHI UKA
EXPLORATORY WELL, III. TRK. 1-4-20: 39. KALHI STREET

Thank you for reviewing the Draft EA for our proposed project. We note that the proposed project is not within the Special Management Area.

If you have any questions, please contact Bert Kubioka at 527-5235.

JT:rk
cc: K. Hayashida
B. Kubioka

93-0017

DEPARTMENT OF GENERAL PLANNING
CITY AND COUNTY OF HONOLULU
830 SOUTH KING STREET
HONOLULU HAWAII 96813

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Dec 30 3 08 PM '92



FRANK PEE
MANAGER

BENJAMIN B. LEE
CHIEF PLANNING OFFICER
DEPARTMENT OF GENERAL PLANNING

TH 12/92-3465

December 30, 1992

MEMORANDUM

TO: KAZU HAYASHIDA, MANAGER AND CHIEF ENGINEER
BOARD OF WATER SUPPLY

FROM: BENJAMIN B. LEE, CHIEF PLANNING OFFICER
DEPARTMENT OF GENERAL PLANNING

SUBJECT: DRAFT ENVIRONMENTAL ASSESSMENT (EA) FOR KALIHI UKA
EXPLORATORY WELL III. IMK: 1-4-20: 32

In response to your memorandum of December 7, 1992, we have reviewed the subject EA and offer the following comments.

1. We have no objections to the proposed project.
2. An amendment to the Primary Urban Center Development Plan Public Facilities Map (DPPFM) will not be required as mentioned in your EA since the subject project is considered minor. However, if a production well is to be constructed, a DPPFM amendment will be required in accordance with Section 24-1.2.(1)(2)(A) of the Development Plan Common Provisions.

Should you have any questions, please contact Tim Hata of our staff at 527-6070.

BENJAMIN B. LEE
Chief Planning Officer

BBL:jm

BOARD OF WATER SUPPLY

CITY AND COUNTY OF HONOLULU
630 SOUTH BEECHTANA STREET
HONOLULU HAWAII 96813

FRANK PEE
MANAGER
KAZU HAYASHIDA, CHIEF ENGINEER
BOARD OF WATER SUPPLY
630 SOUTH BEECHTANA STREET
HONOLULU HAWAII 96813
KAZU HAYASHIDA
Manager and Chief Engineer



February 22, 1993

TO: ROBIN FOSTER, CHIEF PLANNING OFFICER
PLANNING DEPARTMENT

FROM: KAZU HAYASHIDA, MANAGER AND CHIEF ENGINEER
BOARD OF WATER SUPPLY

SUBJECT: YOUR MEMORANDUM OF DECEMBER 30, 1992 REGARDING THE
DRAFT ENVIRONMENTAL ASSESSMENT (EA) FOR THE PROPOSED
KAMHLUKA EXPLORATORY WELL III. IMK: 1-4-20: 39. KAMHL STREET

Thank you for reviewing the Draft EA for our proposed project. We have the following response to your comments:

1. We note that you have no objections to the proposed project.
2. We understand that an amendment to the Primary Urban Center Development Plan Public Facilities Map (DPPFM) will not be required since the subject project is considered minor. However, if a production well is to be constructed, a DPPFM amendment will be required.

If you have any questions, please contact Bert Kulioka at 527-5235.

DEPARTMENT OF PUBLIC WORKS
CITY AND COUNTY OF HONOLULU

630 SOUTH BERETANIA STREET
HONOLULU HAWAII 96813



RECEIVED
BOARD OF WATER SUPPLY

DEC 23 1 39 PM '92

C. MICHAEL STREET
DIRECTOR AND CHIEF ENGINEER
PUBLIC WORKS DEPARTMENT

ENV-315

December 21, 1992

MEMORANDUM

TO: KAZU HAYASHIDA, MANAGER AND CHIEF ENGINEER
BOARD OF WATER SUPPLY

FROM: C. MICHAEL STREET, DIRECTOR AND CHIEF ENGINEER

SUBJECT: DRAFT ENVIRONMENTAL ASSESSMENT (DEA)
KALIHU UKA EXPLORATORY WELL III
TRK: 1-4-20:39

We have reviewed the subject DEA and have the following comments:

1. We have no objections to the proposed project.
2. If dewatering activity is anticipated during the construction and pump tests, dewatering permits will be required from the State Department of Health as well as the Department of Public Works, City and County of Honolulu.
3. The DEA should address the impact of storm water discharge associated with construction activities on water quality of the receiving water.
4. The DEA should also state what structural or non-structural best management practice (BMP) will be provided to control and reduce the discharge of pollutants as outlined in the National Pollutant Discharge Elimination System (NPDES) regulations (40 CFR Part 122, Subpart B for municipal storm sewer system).

C. Michael Street
C. MICHAEL STREET
Director and Chief Engineer

BOARD OF WATER SUPPLY

CITY AND COUNTY OF HONOLULU
630 SOUTH BERETANIA STREET
HONOLULU HAWAII 96813



March 15, 1993

FRANK FAS, Mayor
WALTER WATSON, Jr. Chairman
WALTER H. TAMASIO, Vice Chairman
SHERIDAN DAVENPORT, CHUCK OSE
JOHN W. ANDERSON, JR.
REED JOHNSON
MELISSA J. LUM
C. MICHAEL STREET
KAZU HAYASHIDA
Manager and Chief Engineer

TO: C. MICHAEL STREET, DIRECTOR AND CHIEF ENGINEER
DEPARTMENT OF PUBLIC WORKS

FROM: KAZU HAYASHIDA, MANAGER AND CHIEF ENGINEER
BOARD OF WATER SUPPLY

SUBJECT: YOUR MEMORANDUM OF DECEMBER 21, 1992 REGARDING THE
DRAFT ENVIRONMENTAL ASSESSMENT (DEA) FOR THE PROPOSED
KAMHLUKA EXPLORATORY WELL III, TRK: 1-4-20:39, KAMHI STREET

Thank you for reviewing the Draft EA for our proposed project. We have the following response to your comment:

1. We note that you have no objections to the proposed project.
2. We do not anticipate any dewatering activities because the project is located at the 570 ft. elevation.
3. The stormwater runoff that will be associated with construction activity will have little impact because the graded area is approximately 5,000 square feet. However, the contractor will incorporate measures to retain silt laden runoff on the project site by the use of swales and berms. The total project area is less than five acres, and therefore, will not require a National Pollutant Discharge Elimination System (NPDES) permit for stormwater runoff associated with construction activity.
4. A Department of Health NPDES permit to discharge effluent from well pumpage tests into Kalih Stream will be required. If the municipal storm sewer system is utilized, appropriate discharge permits will be obtained from the Department of Public Works. Best Management Practices (BMP) will be provided to prevent or reduce the pollution of State waters. The BMP's will be described in detail in the NPDES permit application.

If you have any questions, please contact Bert Kuiuoka at 527-5235.