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**DEPARTMENT OF WATER**  
COUNTY OF KAUAI  
P.O. BOX 1706  
LIHUE, HAWAII 96766-5706  
PHONE NO: (808) 245-6986 FAX NO. 245-5813

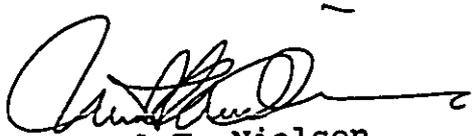
July 28, 1994

Mr. Bruce Anderson  
Interim Director  
Office of Environmental Quality Control  
220 South King Street  
Honolulu, HI 96813

Re: Final Environmental Assessment and Negative Declaration for  
Drilling and Testing of Wailua Homesteads Well No. 3

The University of Hawaii Office of Procurement and Property Management, the accepting agency for this project, has reviewed and evaluated the subject Environmental Assessment. The agency has determined that the project will not have a significant environmental impact and has issued a Negative Declaration.

Four (4) copies of the Final Environmental Assessment (and Negative Declaration) and the OEQC Bulletin Publication Form are enclosed. ] ?

  
Murl T. Nielsen  
Manager & Chief Engineer

WH:et

Enclosures

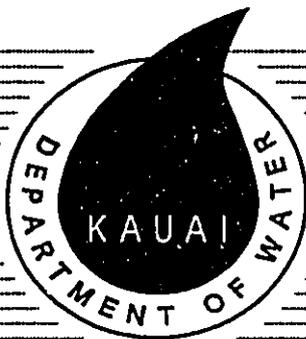
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1994-08-23- KA- FEA- Wailua Homestead Well  
No. 3 Drill & Test

AUG 23 1994

**ENVIRONMENTAL ASSESSMENT  
AND NEGATIVE DECLARATION**

CHAPTER 343  
HAWAII REVISED STATUTES (HRS)  
FOR



Department of Water  
County of Kauai

**DRILL AND TEST  
WAILUA HOMESTEADS  
WELL NO. 3**

JOB NO. 91-11



Par En, Inc.  
dba Park Engineering  
Suite 300 Kawalahao Plaza  
Honolulu, Hawaii 96813-3036  
Tel: (808) 531-1676  
Fax: (808) 536-5996

ENVIRONMENTAL ASSESSMENT  
AND  
NEGATIVE DECLARATION FOR  
DRILL AND TEST WAILUA HOMESTEADS WELL NO. 3  
WAILUA, KAUAI, HAWAII

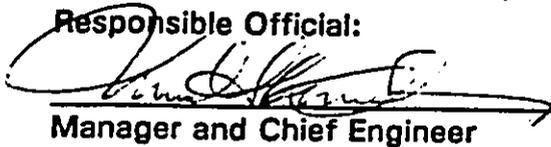
Job No. 91-11

TMK: 4-2-01: por. 9

This Environmental document prepared pursuant to Chapter 343, HRS

PROPOSING AGENCY  
DEPARTMENT OF WATER  
COUNTY OF KAUAI  
P.O. BOX 1706  
LIHUE, KAUAI, HAWAII 96766  
TELEPHONE: (808) 245-6986

Responsible Official:

  
\_\_\_\_\_  
Manager and Chief Engineer

6/3/94  
Date

PREPARED BY:  
ParEn, Inc.  
dba PARK ENGINEERING  
567 S. KING ST., #300  
HONOLULU, HI 96813-3036

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**I. SUMMARY**

**CHAPTER 343, HAWAII REVISED STATUTES (HRS)  
ENVIRONMENTAL ASSESSMENT**

**Proposing Agency:** Department of Water  
City and County of Kauai

**Project Name:** Drill and Test Wailua Homestead Well No.3  
Job No. 91-11

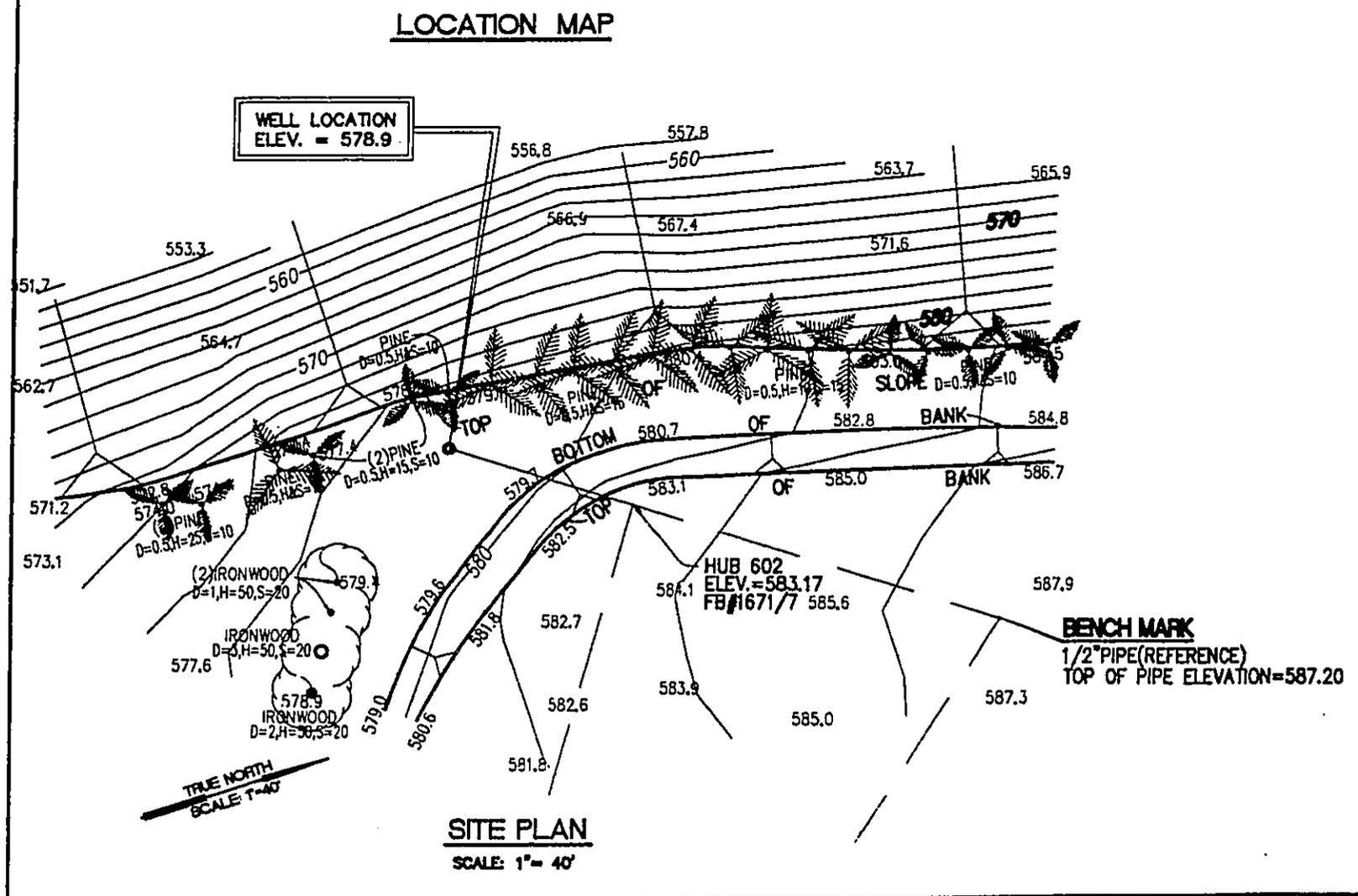
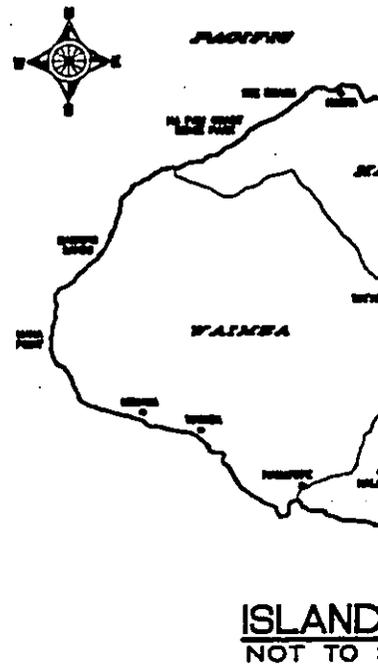
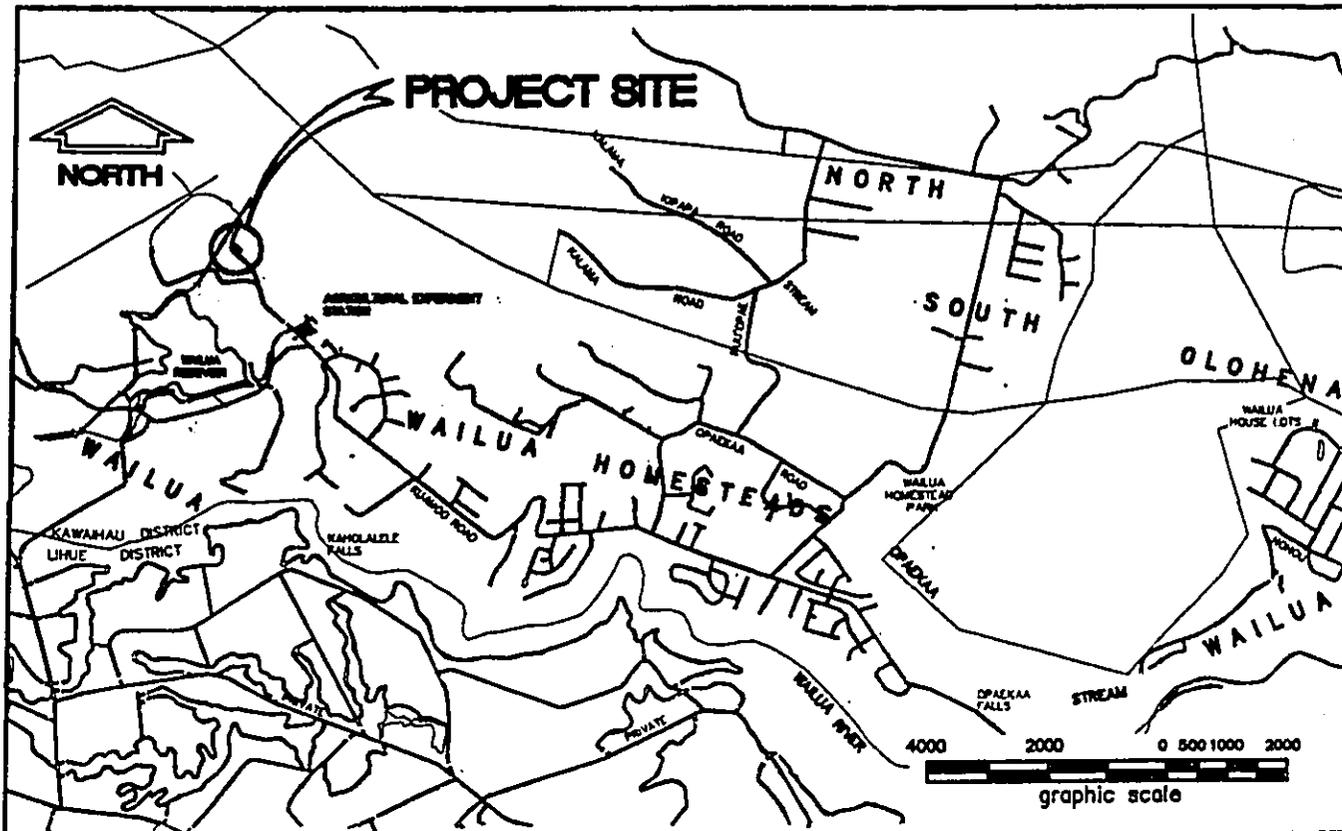
**Project Description:** The proposed project involves drilling and testing of an 18-inch diameter well approximately 600 to 700 feet deep. Work includes furnishing and installing a 12-inch well casing, and grouting and rock packing the annular space. Drilling of the well shall be done by a cable drilling rig. Water levels and geological conditions will be carefully monitored.

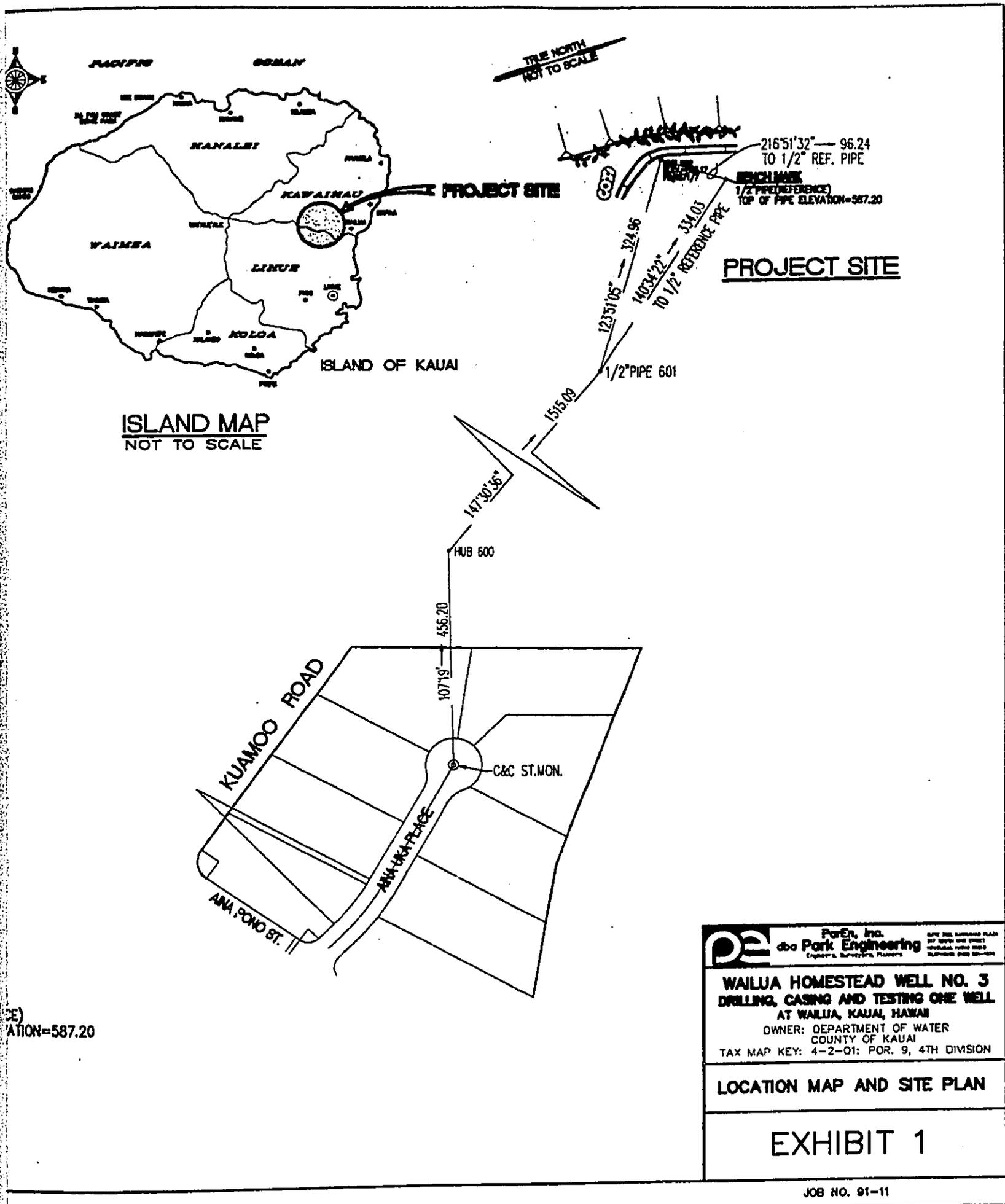
**Project Location:** Wailua, Kawaihau District, Kauai, Hawaii.  
Tax Map Key: 4-2-01: por. 9, 4th division.  
Near the northwestern end of the University of Hawaii Agricultural Experiment Station. Global Positioning System (GPS) location of site is latitude 221° 4' 24.4" N and longitude 159° 24' 7.5" W (see Exhibit 1).

**State Land Use:** Agriculture

**Permits Required:** State Department of Land and Natural Resources -  
Well Construction Permit

**Contact:** ParEn, Inc. dba Park Engineering  
567 South King Street, Suite 300  
Honolulu, Hawaii 96813- 3036  
Attention: Derrick Elfalan





## **II. PROJECT DESCRIPTION**

### **A. Technical**

The proposed project involves drilling and testing of an 18-inch diameter well approximately 600 to 700 feet deep. Work includes furnishing and installing a 12-inch well casing, and grouting and rock packing the annular space. Drilling of the well shall be done by a cable drilling rig. Water levels and geological conditions will be carefully monitored.

(See Exhibit 2)

### **B. Project Location**

Wailua, Kawaihau District, Kauai, Hawaii.

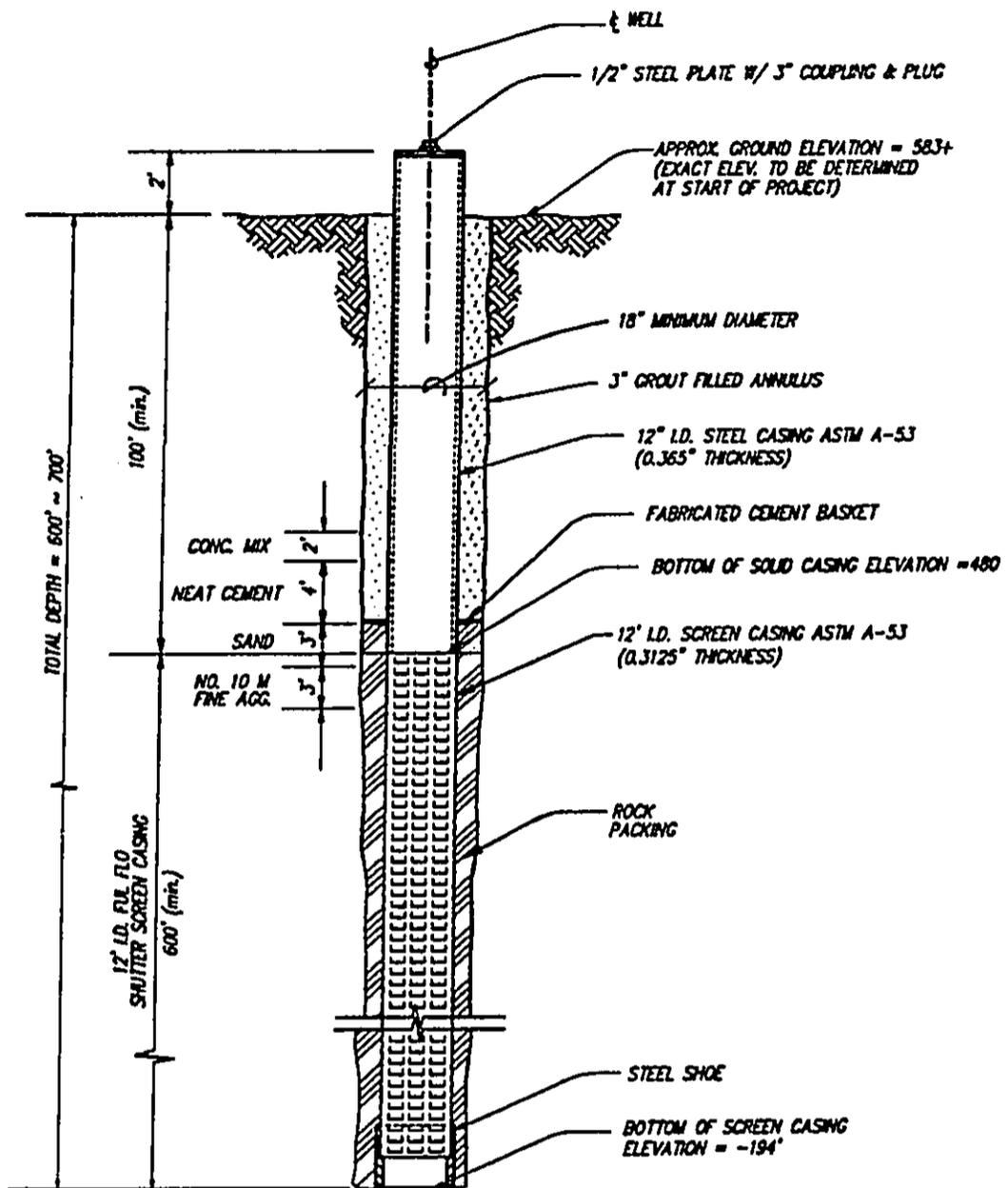
Tax Map Key: 4-2-01: por. 9, 4th division.

Near the northwestern end of the University of Hawaii Agricultural Experiment Station. The Global Positioning System (GPS) location of the site is latitude 221° 4' 24.4" N and longitude 159° 24' 7.5" W (See Exhibit 1).

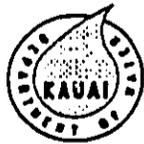
To get to the site; turn west off Kuhio Highway (Hwy. 56), north of the mouth of the Wailua River onto Kuamoo Road (Hwy. 580). Travel approximately 12 miles along Kuamoo Road, passing Opaekaa Falls, the Kamalu Road intersection, and the entrance to Kaholalele Falls to the University of Hawaii Agricultural Experiment Station. At the northwest end of the University property take the unimproved road approximately one-third of a mile to well site.

### **C. Socio-economic**

The proposed water well, in conjunction with transmission lines and treatment facilities, are necessary improvements to keep pace with the expected increase in water demand. The project site is located to minimize any adverse impact on the area's population center and will not displace any individuals, businesses or agricultural activity. No significant changes in existing income, employment, or population distribution are anticipated as a result of implementing this project. No significant inconvenience or impacts should result to nearby communities since the well site is isolated from residential areas, almost half a mile away.



**WELL DETAIL**  
NOT TO SCALE



Well Detail

DRILL AND TEST WAILUA  
HOMESTEAD WELL NO. 3  
WAILUA, KAUAI, HAWAII

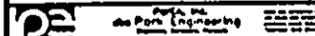


EXHIBIT 2

11-00 3/27/04 001

**D. Existing Water Demand**

The major users of Kauai's water are the sugar plantations (86%), private industry & diversified agriculture (11%) and municipal use (3%). The Kauai Department of Water (DOW) is the major supplier of potable water for nearly all residential and urbanized land uses on Kauai. The estimated well capacity of the Wailua-Kapaa municipal water system is 6.08 MGD, of which 3.37 MGD was utilized in 1991. ["Kauai Water Use and Development Plan", State of Hawaii, DLNR, Feb. 1992].

**Sustainable Yield**

Sustainable yields are pre-development estimates and shall be used as a general guide for planning purposes. The sustainable yield is an estimate of the rate of total pumpage which can be continuously withdrawn from an aquifer without affecting either the quality or quantity of the output. Of the 388 MGD of groundwater sustainable yield islandwide, an estimated 68.75 MGD was utilized in 1991. This leaves a remainder of 319.25 MGD of available groundwater supply to accomodate future demands.

The Wailua aquifer has a groundwater sustainable yield of 61.12 MGD and a surface water sustainable yield of 147.4 MGD. ["Kauai Water Use and Development Plan", State of Hawaii, DLNR, Feb. 1992].

**E. Future Water Demand on Wailua-Kapaa water system.**

The Wailua-Kapaa system presently has, and will continue to have one of the highest municipal water demands on the island. The future municipal water demand for the area is expected to nearly double from 3.37 MGD in 1991 to 5.96 MGD in 2011. Projected demands are based on population projections developed by the State Department of Business and Economic Development (DBED), and assumes no changes in the area's per capita consumption in gallons per capita day.

Long range water use projections for the Wailua-Kapaa municipal water system, at full development of all the "General Plan" lands on Kauai, show a water demand of 8.96 MGD. ["Kauai Water Use and Development Plan", State of Hawaii, DLNR, Feb. 1992].

**F. Future Water Demand on Wailua aquifer (Hydrologic System 20103).**

Twenty year water use projections show water used or withdrawn from the Wailua groundwater aquifer amounts to 2.56 MGD, or roughly 4 percent of the 61 MGD of groundwater sustainable yield. Long range water use projections show increased water use or withdrawal ranging from 2.56 MGD to 3.23 MGD.

The 20 year and long range projections for surface water used or withdrawn from the aquifer amounts to approximately 40% of the estimated 147.4 MGD of surface water sustainable yield. The estimates for surface water are approximate. ["Kauai Water Use and Development Plan", State of Hawaii, DLNR, Feb. 1992].

**III. Environmental Characteristics**

**A. Aesthetics.**

The well site is located at the edge of a clearing lined with pine trees and a few well-established ironwood trees. The topography of the area is generally hilly and rugged and overlooks a rolling plain stopping at Opaekaa Falls. The aesthetic resources in the Wailua area include the natural waterway and adjoining lands of the Wailua State Park, and the Opaekaa, Kaholalele and Wailua waterfalls.

**B. Air and Noise Pollution.**

There will be temporary impacts due to drilling operations in which an increase in noise pollution levels may occur. No changes in air quality are expected.

**C. Traffic.**

Traffic may be effected during transport of heavy equipment to and from the site. Adequate traffic controls and management will be provided with properly marked street signage to advise commuters of any change or disruption to existing traffic patterns. Mobilization and transportation of equipment will occur during non-peak traffic hours.

**D. Water Quality.**

Installation of an additional well and pump will increase the Wailua-Kapaa water system's capacity and reliability against pump failures. It will not have a significant effect on the quality of water made

available to the residents of Wailua and the surrounding areas. The major influence on water quality has been and continues to be commercial sugarcane production.

**E. Climate.**

Kauai has a relatively mild climate, characterized by uniform, comfortable temperatures and cooling tradewinds. Mean annual temperature at Lihue Airport is 74° F, located about 4.5 miles south of Wailua.

The interaction between the moist tradewinds and the island's high mountains results in extreme variation of rainfall. Average annual rainfall in the Wailua basin ranges from 50 inches near the coastline to over 450 inches at the summit. The Wailua basin has a distinct wet and dry season, with the wet season from October through April and the dry season from May through September. The median annual rainfall at the well site is approximately 90 inches.

**F. Land Uses.**

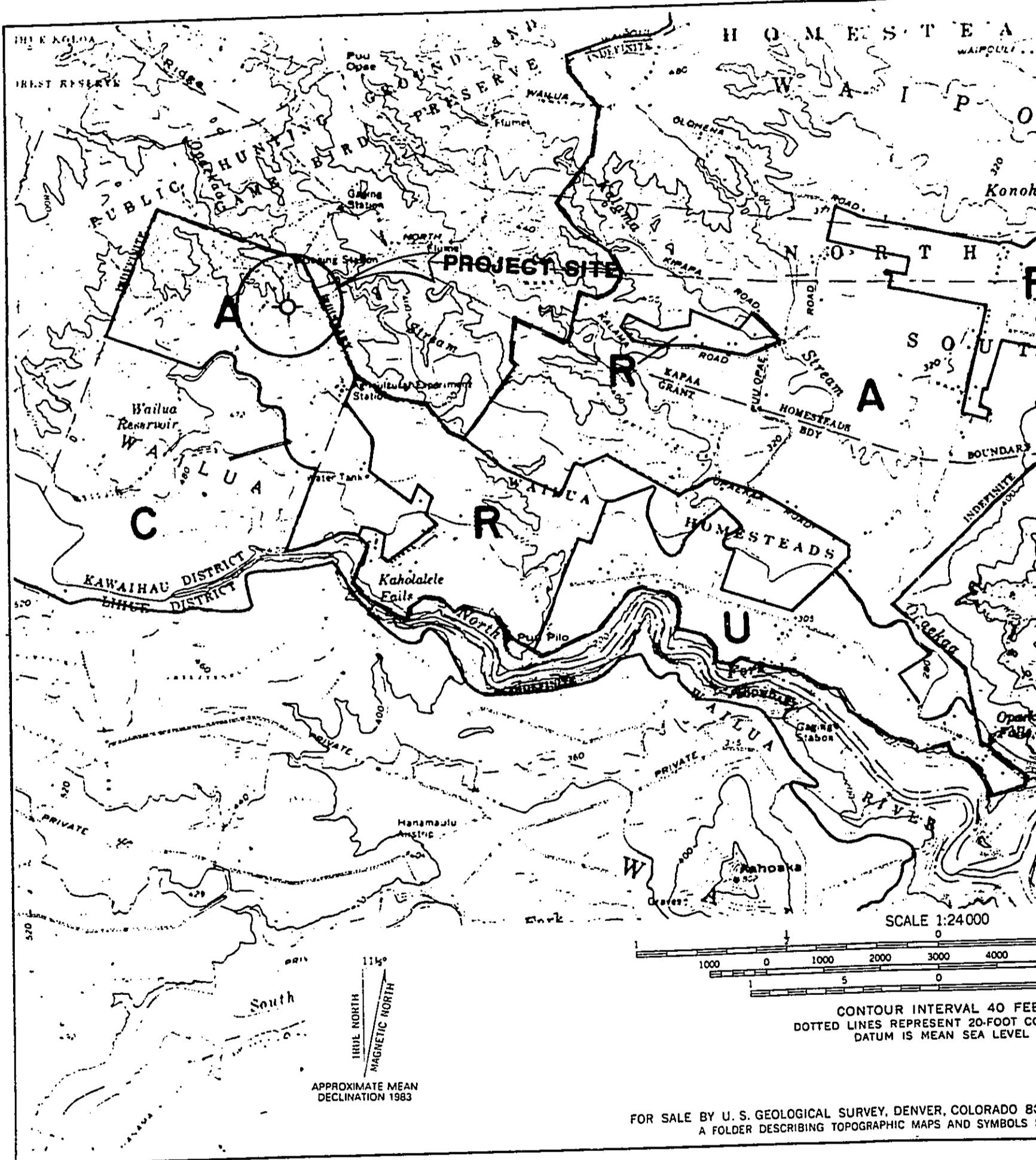
The land uses in this area include various types of agriculture and forest reserves. Single-family homes have replaced some portions of the agricultural areas, but the area maintains its distinctive rural, agricultural flavor (see Exhibit 3). The activity in the area is centered around agriculture and tourism, particularly excursion trips to the historical Opaekaa Falls.

**G. Soil.**

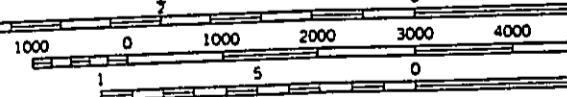
The soil at the well site is comprised mainly of soils belonging to the "Hali" soil series. (See Exhibit 4). These soils are dark to grayish brown, well-drained, generally non-stony, gravelly to moderately fine in texture on slopes ranging from 0 to 10 per cent. ["Detailed Land Classification - Island of Kauai" Land Study Bureau, December 1967]

**H. Geology.**

The well will draw from an aquifer encompassed by lavas, cinder cones and ash beds of the Koloa Volcanic Series (Qk1). These lavas are principally olivine basalt, nepheline basalt, melilite-nepheline basalt, and picrite-basalt of mimosite type. (See Exhibit 5).



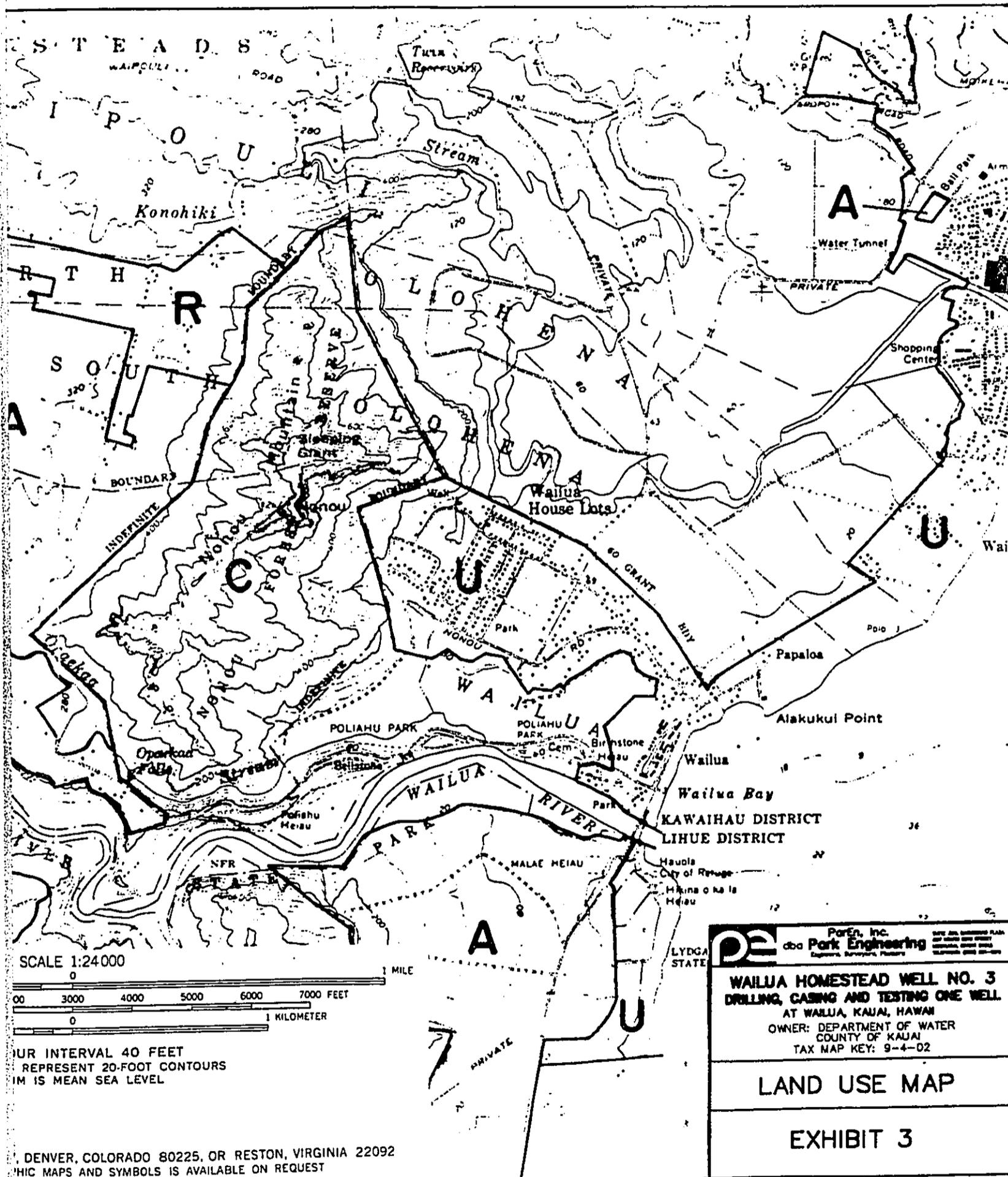
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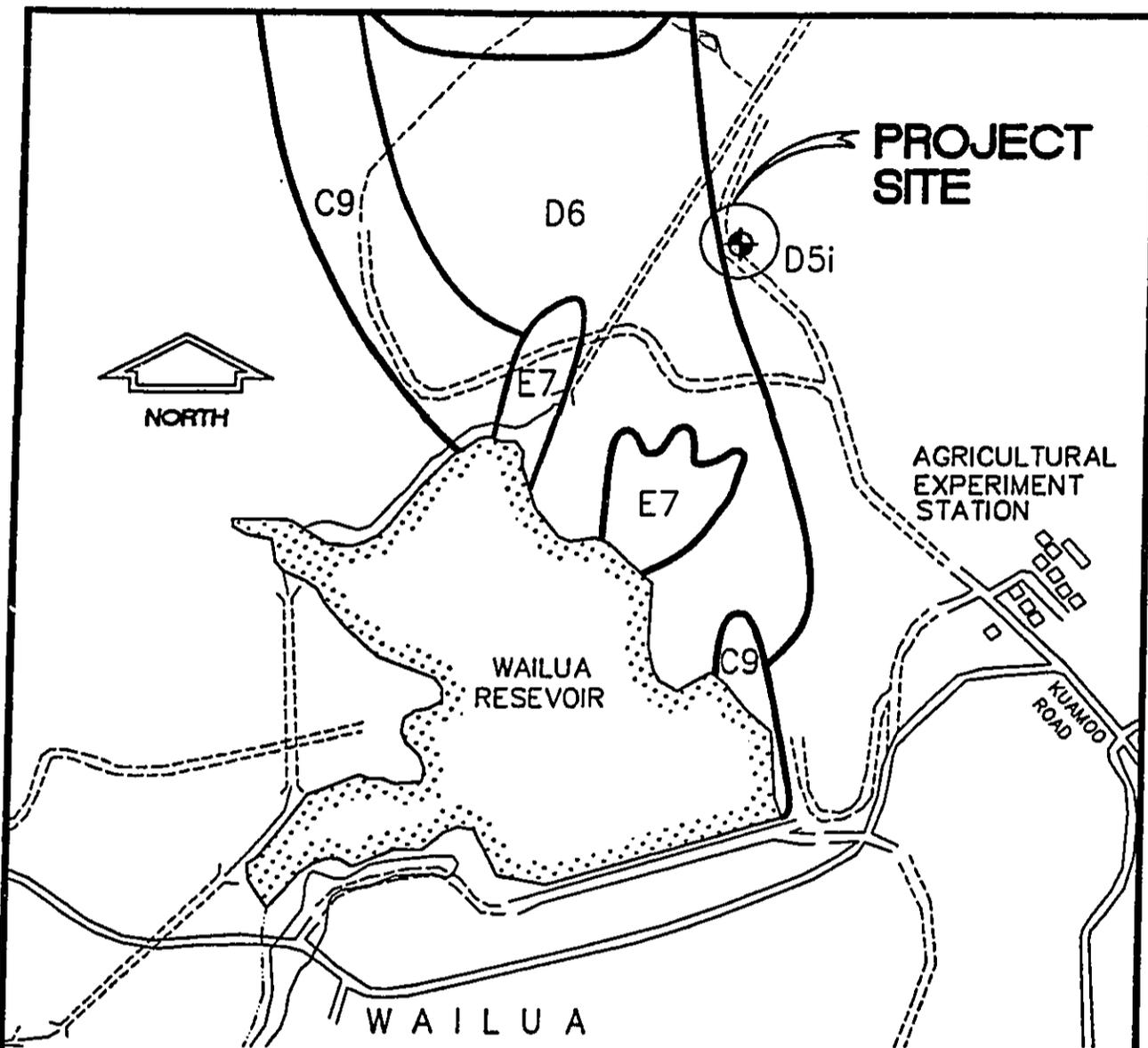


CONTOUR INTERVAL 40 FEET  
 DOTTED LINES REPRESENT 20-FOOT CONTOURS  
 DATUM IS MEAN SEA LEVEL

115°  
 TRUE NORTH  
 MAGNETIC NORTH  
 APPROXIMATE MEAN DECLINATION 1983

FOR SALE BY U. S. GEOLOGICAL SURVEY, DENVER, COLORADO BY  
 A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS





**SOIL SERIES**

D5i, D6, E7: HALII SOIL SERIES – DARK GRAYISH BROWN, WELL DRAINED, NON-STONY, GRAVELLY TO MODERATELY FINE, 0-10% SLOPE.

C9: HANAIEI SOIL SERIES: DARK GRAYISH BROWN, NON-STONY MODERATELY WELL DRAINED, MODERATELY FINE TEXTURE, 0-10% SLOPE, PREDOMINATELY 2%.

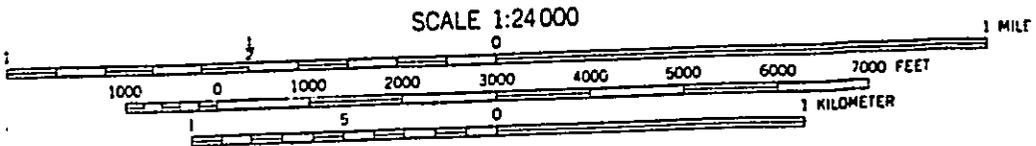
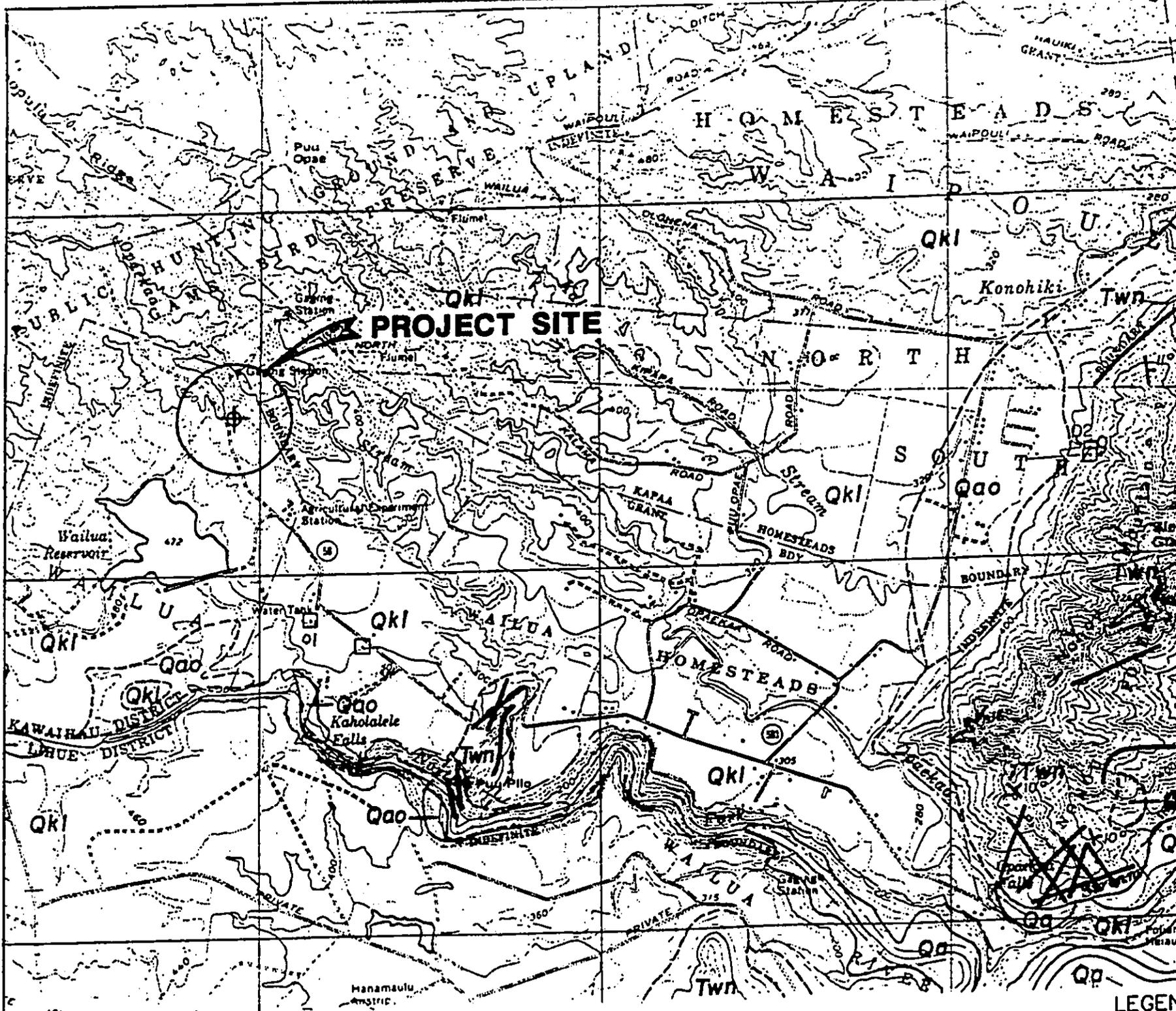


**SOILS MAP**

DRILL AND TEST WAILUA  
HOMESTEAD WELL NO. 3  
WAILUA, KAUAI, HAWAII  

 DEPARTMENT OF GEOLOGY AND LAND USE ENGINEERING  
**EXHIBIT 4**

DATE: 12/15/88

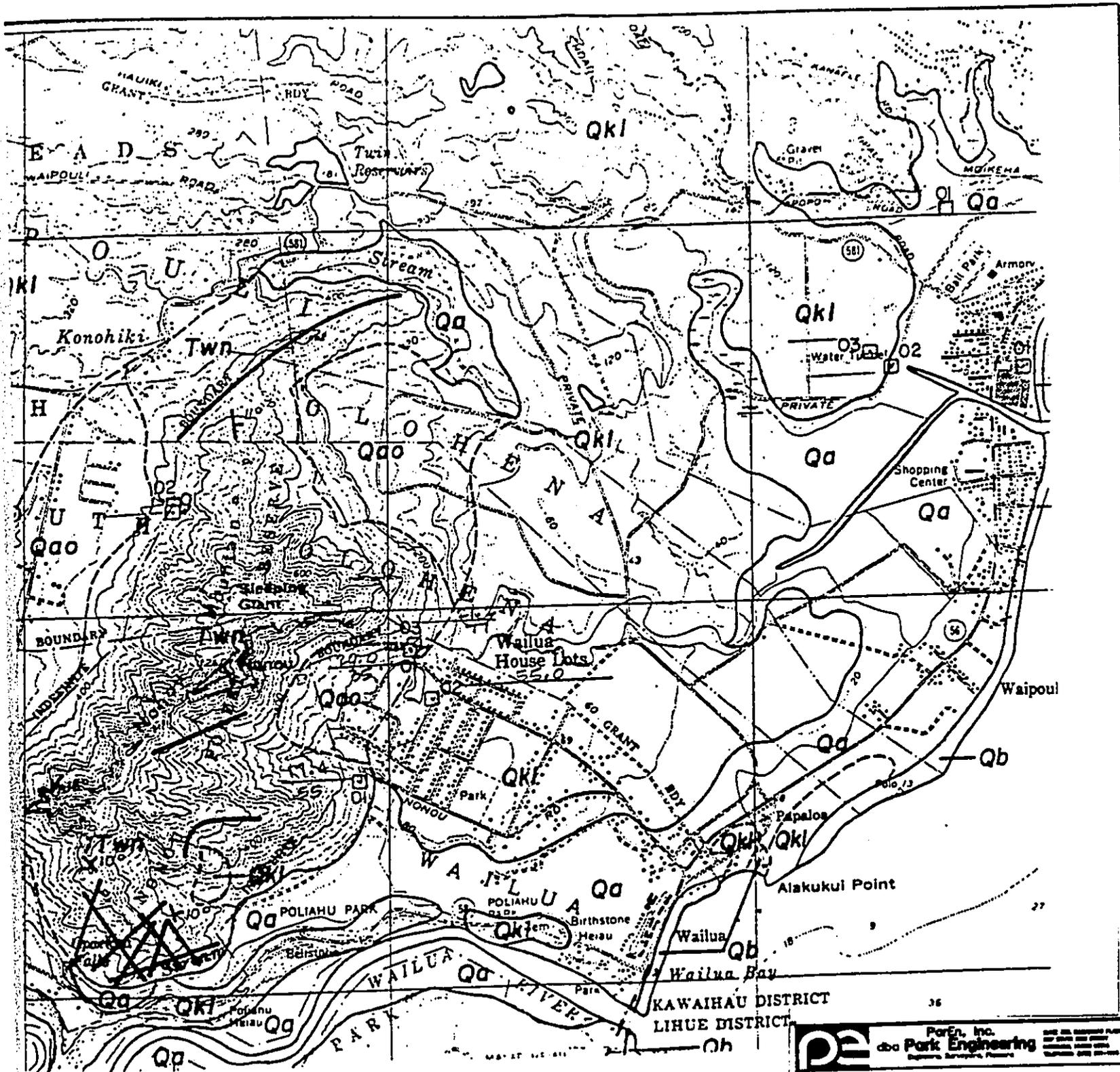


CONTOUR INTERVAL 40 FEET  
 DOTTED LINES REPRESENT 20 FOOT CONTOURS  
 DATUM IS MEAN SEA LEVEL  
 DEPTH CURVES AND SOUNDINGS IN FEET—DATUM IS MEAN LOWER LOW WATER  
 SHORELINE SHOWN REPRESENTS THE APPROXIMATE LINE OF MEAN HIGH WATER  
 THE RELATIONSHIP BETWEEN THE TWO DATUMS IS VARIABLE  
 THE AVERAGE RANGE OF TIDE IS APPROXIMATELY 1 FOOT

114°  
 TRUE NORTH  
 MAGNETIC NORTH  
 APPROXIMATE MEAN  
 DECLINATION 1983

LEGEND

Qk1  
 Qao  
 Qa  
 Qb  
 Twn  
 /  
 o  
 □



- LEGEND**
- Qki = KOLOA VOLCANIC SERIES
  - Qao = OLDER NONCALCAREOUS SEDIMENTS
  - Qa = YOUNGER NONCALCAREOUS SEDIMENTS
  - Qb = CALCAREOUS SEDIMENTS
  - Twn = WAIMEA CANYON VOLCANIC SERIES
  - = DIKE
  - o = DRILLED WELL
  - = SHAFT

1 MILE  
 2000 FEET  
 1000 FEET  
 100 FEET  
 10 FEET

ParEn, Inc.  
 dba Park Engineering  
 Engineers, Surveyors, Planners

**WAILUA HOMESTEAD WELL NO. 3  
 DRILLING, CASING AND TESTING ONE WELL  
 AT WAILUA, KAUAI, HAWAII**  
 OWNER: DEPARTMENT OF WATER  
 COUNTY OF KAUAI  
 TAX MAP KEY: 9-4-02

**GEOLOGICAL MAP**

**EXHIBIT 5**

Rocks of the Koloa Volcanic Series are named for the period of volcanic activity that occurred long after the formation of the main mass of Kauai had ended, and erosion had cut deeply into the Kauai Shield. A series of eruptions across the eastern two-thirds of the island caused voluminous landslides and mudslides. Large amounts of rock debris and soil from the steep slopes of the mountainous central upland were deposited as breccias at the foot of the steep slopes in valley heads and along the border of marginal lowlands. These breccias and conglomerates separate the deeply eroded and weathered rocks of the Waimea Canyon volcanic series from rocks of the Koloa Volcanic Series and became known as the Palikea formation. Rocks of the Koloa Volcanic Series are generally poor to moderately permeable and yield the water slowly to wells. ["Geology and Groundwater Resources of Kauai, Hawaii", MacDonald, Davis and Cox, 1960].

**I. Flora.**

Three species of endemic waterfowl; the Hawaiian Coot, Gallinule and duck are found in the adjacent Wailua River basin. All three birds are listed endangered species. Other birds observed in the Wailua river area and surrounding canefields and pasturelands include the Black crowned night heron, Cattle egret, Northern cardinal, Western meadowlark, Ring-necked pheasant, and Spotted dove.

**J. Mammals.**

Mammals in the area include dogs, cats, feral pigs, cattle, horses, rats, and mongoose. No wetlands, wildlife sanctuaries or refuges occur in the immediate project area.

**K. Aquatic Resources.**

The terminal estuary of the Wailua River supports populations of euryhaline and itinerant marine fishes and crustaceans of sport and commercial fishing value. The lower reaches of the river below Wailua and Kaholalele Falls support indigenous Hawaiian Stream fauna. The stream above the Wailua and Kaholalele Falls support Smallmouth bass and Swordtails. A major portion of the Wailua River also supports an important sport fishery based upon Smallmouth and Largemouth Bass, Bluegill, Carp, Chinese catfish and Tilapia. ["Wailua River Hydropower - Interim Survey Report" , U.S. Army Corp of Engineers, June 1983.]

**L. Fauna.**

Sugar cane occupies a large part of the area. Common plants in the area also include Panicum, Hilograss, Pangolagrass, Carpetgrass, Staghorn Fern, Honohono and Guava.

**M. Cultural and Historical Resources.**

The Wailua area was a major center for cultural and political development in ancient Hawaiian times. However there are no historic properties in the area of potential environmental impact currently listed or eligible for listing on the National Register of Historic Places. At the mouth of the Wailua River, is the Wailua Complex of Heiaus which contains four heiaus, a city of refuge, royal birthstones, and a sacrificial rock. The Wailua Complex of Heiaus is listed on the National Register of Historic Places and is also considered a National Historic Landmark.

**IV. SUMMARY OF PROPOSED MITIGATION MEASURES**

The proposed water well will not have any significant long term adverse impacts on the environment. The isolated well site location was chosen to minimize any inconvenience or impacts to nearby communities.

**Environmental Pollution Controls.** The contractor shall be responsible for conformance to Chapter 37 and 37-A of the Public Health Regulations, Department of Health, State of Hawaii. Construction operations shall be conducted to prevent discharge or accidental spillage of pollutants, solid waste and other objectional wastes into surface waters and underground water sources.

**Overpumping.** The withdrawal of water shall be closely monitored to preclude overpumping of the aquifer.

**Water quality.** The contractor shall provide an adequate cover over the top of the hole to prevent debris or other objects from entering the well when the crew is not on the site. Bentonite or other commercial drilling fluid additives shall not be used in drilling the well. The well shall be sufficiently cleaned of drill cuttings, cave-in materials and other debris before the casing is lowered to its final position.

Prior to testing the well for drawdown and sustained yield, the well shall be cleaned by bailing. The well shall be intermittently pump-surged at a rate of 500 gpm or greater during testing until it is free of drill cuttings, cave-in materials, and other loose materials. This shall continue until the pumped water shows a turbidity of less than 10 on the silica scale. The development of the well shall be considered complete and satisfactory if the well and pumped water remains free of drill cuttings, cave-in materials, and other loose materials after 30 minutes of continuous pumping at the specified rate. To preclude surface runoff from contaminating the well, the annular space between the drilled hole and the well casing shall be filled with grout. In addition, the top flange of the well casing shall be constructed about two feet above the finish ground, and a cover with a lock shall be installed.

**Landscape.** Construction activities shall be confined to the work areas defined by the plans and specifications. Care shall be exercised to preserve the existing trees and landscape in the area.

Noise pollution shall be mitigated by requiring all construction equipment to be equipped with noise abatement mufflers. The operating schedule of heavy equipment shall be planned to have the least impact upon nearby residents. Night operations shall be curtailed or eliminated when disturbances will be created.

#### **V. ALTERNATIVES CONSIDERED**

The location of the well was chosen to create the least amount of disturbance to the existing environment while satisfying the requirements for an efficient system.

The "No Action" alternative is not considered a viable one because of the increasing demands on the present water supply. Poor supply will be evidenced by low flows and pressures in service connections at higher elevations and at the ends of the distribution system. The safety of residents could also be in jeopardy if emergency fire flows are not achieved.

#### **VI. FUNDING AND PHASING**

The preliminary construction cost estimate for this project, based on 1993 prices is \$400,000. Funding for this proposed project will be provided by the Kauai County Water Department.

**VII. DETERMINATION, FINDINGS, AND REASONS SUPPORTING DETERMINATION**

After completing an assessment of the potential environmental effects of the proposed project, and consulting with government agencies, it has been determined that an Environmental Impact Statement (EIS) is not required. Therefore, this document constitutes a Notice of Negative Declaration.

Reasons supporting the Negative Declaration determination are as follows, using as the criteria, the policy, guideline and provisions of Chapters 342, 343, and 344, Hawaii Revised Statutes (HRS).

1. The proposed action will not adversely effect the physical and social environment.
2. There will be no permanent degradation of the existing ambient air quality and noise levels. Any changes to air or noise quality levels will be short term and minor in nature.
3. No residences or businesses will be disrupted by the project.
4. There are no endangered plant species or animals near the project. The project will not significantly disrupt or destroy existing ecosystems.
5. There are no known natural, historic, or archaeological sites within the well site project limits.
6. The project is compatible with the Development Plan Land Use map and the Public Facilities map for Kauai.
7. There are no adverse secondary effects on future development, population, and public facilities.

This Notice of Negative Declaration shall serve to meet the requirements of Chapter 343, HRS.

**VIII. LIST OF AGENCIES CONSULTED DURING THE PREPARATION OF THE ENVIRONMENTAL ASSESSMENT**

- A. Department of Planning  
County of Kauai  
4820 A Rice Street  
Lihue, Hawaii 96766
  
- B. Department of Business and Economic Development  
State of Hawaii  
250 South King Street  
Honolulu, Hawaii 96813
  
- C. Department of Land and Natural Resources  
State of Hawaii  
1151 Punchbowl Street  
Honolulu, Hawaii 96813
  
- D. University of Hawaii - Kauai Campus  
Hawaii Agricultural Experiment Station  
Wailua Homesteads  
Wailua, Kauai, Hawaii 96765
  
- E. Department of Health  
1250 Punchbowl Street  
Honolulu, Hawaii 96813
  
- F. University of Hawaii  
Procurement and Property Management Office  
1400 Lower Campus Road, Room 15  
Honolulu, Hawaii 96822

UNIVERSITY OF HAWAII

Procurement and Property Management Office

July 18, 1994

Mr. Cris T. Takushi  
ParEn, Inc.  
Kawaihao Plaza, Suite 300  
567 South King Street  
Honolulu, Hawaii 96813-3036

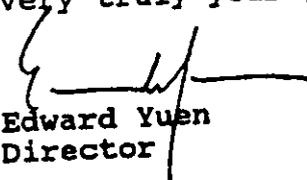
Dear Mr. Takushi:

Subject: Comments on Draft Environmental Assessment for  
Proposed Wailua Homesteads Well No. 3; Job No.  
91-11; TMK: 4-2-01:9 (por.)

The University of Hawaii has no additional comments to offer.  
However, the contractor should consult the Station Manager prior to  
the disposal of all materials from the drilling and test pumping.

Thank you for the opportunity to review and comment on this  
Project.

Very truly yours,

  
Edward Yuen  
Director

EY:TS:lnn

cc: Ruddy Wong/T. Sekioka, CTAHR

#### REFERENCES

State of Hawaii Commission on Water Resource Management, Department of Land and Natural Resources. Kauai Water Use and Development Plan.  
February 1992

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