

Water has no substitute.....Conserve it

June 30, 2006

Ms. Genevieve Salmonson  
OFFICE OF ENVIRONMENTAL  
QUALITY CONTROL  
235 S. Beretania Street, Suite 702  
Honolulu, Hawaii 96813

OFFICE OF ENVIRONMENTAL  
QUALITY CONTROL  
06 JUL 27 AM 11:54  
RECEIVED

Dear Ms. Salmonson:

Subject: Finding of No Significant Impact (FONSI) for the Following Project:  
"Pumps, Controls, Pumphouse and Pipeline for Anahola Well No. 3,  
Anahola Water System," TMK: 4-8-03:23, Anahola, Kauai, Hawaii

The Department of Water has reviewed the Environmental Assessment for the "Pumps, Controls, Pumphouse and Pipeline for Anahola Well No. 3" Project and has determined that this project will not have significant environmental effects and has issued a FONSI. Please publish this notice in the next available OEQC Environmental Notice.

We have enclosed a completed OEQC Publication Form, and four copies of the final EA. The project summary has not changed and was previously provided for the Draft EA publication.

If there are any questions, please contact Keith Fujimoto at 808-245-5449.

Sincerely,

Wynne Ushigome  
Acting Manager and Chief Engineer

KF:emi

Enclosures

COUNTY OF KAUAI

DEPARTMENT OF WATER

FINAL ENVIRONMENTAL IMPACT ASSESSMENT

FOR

ANAHOLA DEEPWELL NO. 3 (STATE WELL NO. 0818-03)  
PUMP, CONTROLS, PUMPHOUSE & PIPELINE

JOB NO. A-11

AT

ANAHOLA, KAUAI  
STATE OF HAWAII

This Environmental Document was prepared pursuant to Chapter 343,  
Hawaii Revised Statutes

PROPOSING AGENCY: Department of Water  
County of Kauai  
P.O. Box 1706  
Lihue, HI 96766

RESPONSIBLE OFFICIAL: Wynne M. Ushigome 7/21/06  
Wynne M. Ushigome Date  
Acting Manager and Chief Engineer

PREPARED BY: Akinaka & Associates, Ltd.  
3049 Ualena Street, Suite 500  
Honolulu, HI 96819-1947

OFFICE OF ENVIRONMENTAL  
QUALITY CONTROL

06 JUL 27 11:54

RECEIVED

JULY 2006

**FINAL ENVIRONMENTAL IMPACT ASSESSMENT**

**TABLE OF CONTENTS**  
**ANAHOLA WELL NO. 3 (STATE WELL NO. 0818-03)**  
**PUMP, CONTROLS, PUMPHOUSE & PIPELINE**

	<b><u>PAGE</u></b>
I. INTRODUCTION.....	I-1
A. Project Description .....	I-1
B. Project Location.....	I-1
C. Project Summary.....	I-1
II. DESCRIPTION OF THE PROPOSED PROJECT .....	II-1
A. Background and Existing Conditions .....	II-1
B. Proposed Improvements .....	II-1
C. Cost Estimate .....	II-2
III. RELATIONSHIP TO EXISTING LAND USE PLANS AND CONTROLS .....	III-1
A. State Land Use Plans .....	III-1
B. County of Kauai General Plan.....	III-1
IV. ENVIRONMENT SETTING.....	IV-1
A. Topography.....	IV-1
B. Geology.....	IV-1
C. Climate.....	IV-1
D. Hydrology .....	IV-2
E. Biology .....	IV-2
F. Air Quality.....	IV-2
G. Noise .....	IV-2
H. Archaeology .....	IV-2
I. Flood Hazard.....	IV-3
V. SOCIO-ECONOMIC SETTING.....	V-1
VI. CULTURAL ASSESSMENT .....	VI-1

VII.	PROBABLE IMPACTS OF THE PROPOSED ACTION ON THE ENVIRONMENT .....	VII-1
A.	Short Term Impacts .....	VII-1
B.	Long Term Impacts .....	VII-1
VIII.	ADVERSE IMPACTS WHICH CANNOT BE AVOIDED .....	VIII-1
IX.	ALTERNATIVES TO THE PROPOSED ACTION .....	IX-1
A.	Alternates Sites .....	IX-1
B.	No Action .....	IX-1
X.	RELATIONSHIP BETWEEN LOCAL SHORT TERM USES AND MAINTENANCE AND ENHANCEMENT OF LONG TERM PRODUCTIVITY .....	X-1
XI.	MITIGATING MEASURES TO MINIMIZE ADVERSE IMPACTS .....	XI-1
XII.	IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES .....	XII-1
XIII.	DETERMINATION .....	XIII-1
XIV.	REASONS SUPPORTING RECOMMENDED DETERMINATION .....	XIV-1
XV.	LIST OF NECESSARY APPROVALS/PERMITS .....	XV-1
XVI.	ORGANIZATIONS AND PERSON CONTACTED RESPONSE TO COMMENTS .....	XVI-1
XVII.	BIBLIOGRAPHY .....	XVII-1

## EXHIBITS

1. VICINITY MAP
2. LOCATION MAP
3. AS-BUILT WELL SECTION
4. SITE PLAN
5. STATE LAND USE PLAN
6. COUNTY OF KAUAI GENERAL PLAN
7. ANAHOLA QUADRANGLE MAP
8. PUMP SIZE AND SETTING
  - A. ORIGINAL RECOMMENDATION LETTER BY DLNR (DATED 12/17/92)
  - B. AMENDED RECOMMENDATION LETTER BY DLNR (DATED 10/28/2006)
  - C. RECOMMENDATION LETTER BY WAIMEA WATER SERVICES INC. (DATED 3/28/2006)
9. ORIGINAL NEGATIVE DECLARATION
10. WITHDRAWAL OF ENVIRONMENTAL ASSESSMENT
11. FEMA FLOOD MAP BOUNDARIES

## APPENDIX

- A. WELL PUMP TEST AND WATER QUALITY DATA

## I. INTRODUCTION

### A. Project Description

The proposed project consists of developing an existing well and constructing a deepwell pump station for the Department of Water (DOW), County of Kauai. The well is 466 feet deep, with 12-inch solid casing for the upper 290 feet and an open hole for the lower 176 feet.

The new pump and ancillary equipment will provide an additional 350 gallons per minute to the Anahola Water System. The discharge point is the existing 0.15 MG & 0.50 MG reservoirs on the site (spillway elevation = 288.0).

The project site is owned by the State Department of Hawaiian Home Lands (DHHL) and its facilities are operated by the DOW under a license agreement. This project will be the water source for DHHL planned residential subdivisions including Anahola Residential Lots, Unit 6 presently in the design stage.

### B. Project Location

The project is located in the Anahola District of Kauai approximately 14 miles north of Lihue. The project site is mauka of the Anahola town within agricultural areas. **EXHIBIT 1: VICINITY MAP** and **EXHIBIT 2: LOCATION MAP** show the project site and location

### C. Project Summary

Name:	Anahola Deepwell No. 3 (State Well No. 0818-03)
Location:	Anahola, Kauai, HI
Landowner:	State of Hawaii, Department of Hawaiian Home Lands
Applicant:	County of Kauai, Department of Water
TMK:	(4) 4-8-03:23
Land Area:	1.4 Acres
Existing Use:	Department of Water well and tank site
Proposed Use:	Same
Land Use:	State designation = Agriculture Kauai General Plan = Agriculture

A negative declaration for this project was filed by the Department of Water (DOW) on May 6, 1994 (see **EXHIBIT 9: ORIGINAL NEGATIVE DECLARATION**). When the Commission on Water Resource Management (CWRM) deferred action on the pump installation permit application on March 16, 1994, the DOW determined that it will not be proceeding with the Project and therefore will not be finalizing the Environmental Assessment for the well and so notified the OEQC on July 18, 2000 (see **EXHIBIT 10: WITHDRAWAL OF ENVIRONMENTAL ASSESSMENT**).

## II. DESCRIPTION OF PROPOSED PROJECT

### A. Background and Existing Conditions

The Anahola Water System services an area which includes the commercial, residential and public use districts in Anahola and the residential use district in Aliomanu. The service area is divided into three levels:

- (1) The Hawaiian Home Lands subdivisions which are served directly from the storage tank at elevation = 270',
- (2) The lower Anahola Valley and Beach lots through a pressure reducing valve at elevation = 128' and
- (3) The Aliomanu area from a booster pump station.

The Department of Hawaiian Home Lands constructed and maintains a separate water system for its Anahola Agricultural Subdivision which is northerly of the residential subdivisions. The system was completed in 1985 and consists of a well source and 500,000 gallon storage tank. Maintenance is contracted to a private service company.

Since the development of the Project site in 1957, source facilities for the County system consisted of the two existing deepwells (Well No. 90-A: 400 gpm pump & Well No. 90-B: 200 gpm pump). The wells are similar with 10-inch diameter casing and bowl setting of (-) 30.23. Pumps are controlled by the level in the adjacent 150,000 gallon storage tank. The proposed well, will be integrated into the existing control system.

A "Site Selection Report for Anahola Deepwell No. 3" was prepared in April 1988 for the County of Kauai, Department of Water. The selected site is in an area where successful high yield wells are proven. An exhibit in the report is a letter from the State Department of Land & Natural Resources (DLNR) that suggests drilling of the well with a casing diameter of 12-inches, pump capacity of 300 to 400 gpm and located as close as 75 feet from the existing wells.

### B. Proposed Improvements

The new well was drilled within the existing Department of Water, Anahola Tank site in 1991. The tank site (TMK: 4-8-03:23) is approximately 1.4 acres and is completely graded, grassed, and fenced. Ground elevation is 265 feet at the well. The bottom of well elevation is (-)201 feet. The 16-inch drilled well is cased with a 290 feet long 12-inch casing and cement grouted to a depth of 274 ft. below the ground. The well details is shown in **EXHIBIT 3: AS-BUILT SECTION.**

Site work is not involved in this project. The well location is within the existing facility which is a secured (chain link fence) level grassed area maintained by the Department of Water (**See EXHIBIT 4: SITE PLAN**). Access to the site will be via existing asphalt concrete roadways.

The well was tested to determine yield, drawdown, recovery, and quality of water at various rates of pumping. Results of the tests determined that the well can be developed for domestic water production. According to the Department of Land and Natural Resources recommendations a 350 gpm (gallons per minute) pump is to be installed with the pump intake set at 285' below the top of the casing. See **EXHIBITS 8A: ORIGINAL RECOMMENDATION LETTER BY DLNR (DATED 12/17/92)**, **EXHIBITS 8B: AMENDED RECOMMENDATION LETTER BY DLNR (DATED 2/10/2006)**, **EXHIBITS 8C: RECOMMENDATION LETTER BY WAIMEA WATER SERVICES INC. (DATED 3/28/2006)**. Results of the pump test can be found in **APPENDIX A: WELL PUMP TEST AND WATER QUALITY DATA**.

C. Cost Estimate

The preliminary construction cost estimate for this project is approximately \$750,000. Funding for this proposed project will be provided by the Board of Water Supply, County of Kauai.

### III. RELATIONSHIP TO EXISTING LAND USE PLANS AND CONTROLS

#### A. State Land Use Plans

The State Land Use Commission designates properties in four categories: Agriculture, Rural, Urban, and Conservation. The proposed project lies within land designated as Agriculture. (See **EXHIBIT 5: STATE LAND USE PLAN**). The water well is permissible under the rules of practice and procedure, State Land Use District Regulations, Part III Section 3-3 paragraph 7 which reads as follows:

Public, private, and quasi-public utility lines, and roadways, transformer stations, solid waste transfer station, etc., and appurtenant small buildings such as booster pumping stations, but not including offices or yards for equipment, material, vehicle storage, repair or maintenance, treatment plants and major storage tanks not ancillary to agricultural practices, or corporation yards or other like structures.

#### B. County of Kauai General Plan

The General Plan for the County of Kauai, dated March 1970, provides information on the surrounding communities and land use designations. Also provided are generalized statements regarding transportation, sewer and water systems, storm drainage, etc.

The proposed project lies within land designated as Agriculture District (See **EXHIBIT 6: COUNTY OF KAUAI GENERAL PLAN**). Under the provisions of the County Zoning Ordinance No. 164, public utilities and facilities are permissible uses in all zoning district.

#### IV. ENVIRONMENTAL SETTING

##### A. Topography

The project is located 1.1 miles above Anahola Bay. The project site is separated from the Kalalea Mountains by the Anahola Stream. Topographic information is available on the Anahola Quadrangle Map published by the U.S. Geological Survey (**See EXHIBIT 7: ANAHOLA QUADRANGLE MAP**).

The project site is an existing facility (200' x 300') at the mauka limit of the Hawaiian Home Lands residential subdivision on the flats above Anahola Valley. The existing ground elevation is 270 feet above mean sea level.

##### B. Geology

The Island of Kauai is the oldest of the major islands in the Hawaiian chain. The Kauai Volcanic shield built itself off the ocean floor approximately two to four million years ago. Rock formations belonging to this original shield are part of the Waimea Canyon Volcanic Series, a major portion of which are the thin lava flows of the Napili formation which later covered the shield mass.

The Geological and Topographical Map of the Island of Kauai which is a supplement to Bulletin 13 "Geology and Ground-water Resources of the Island of Kauai," by G.A. MacDonald, D.A. Davis and D.C. Cox shows that the well site is underlain with basalt from lava flows of the Koloa Volcanic series. Lavas of the Koloa Volcanic series are for the most part poorly to moderately permeable. Basal water occurs in the rocks where they extend below sea level.

##### C. Climate

The climate of Kauai is comfortably uniform and is characterized by the northeast tradewinds generated by regions of high pressure to the north. These winds keep the average month temperatures near sea level within the range of 69<sup>o</sup> in February to 77<sup>o</sup> in August. The mean temperature decreases about 3<sup>o</sup> for every 1,000 foot increase in elevation.

The consistent approach of the tradewinds from the Northeast distinguishes the island into windward and leeward sides. Windward Kauai receives larger amounts of rainfall as the result of the condensation of water vapor as it is forced up into the atmosphere by the mountain mass. Mount Waialeale, for example, has a mean annual rainfall of 466 inches.

Wainiha on the windward side of Kauai received 80 to 90 inches per year. Anahola tank site, located midway between the windward and leeward sections of the island has an annual rainfall of 65 inches.

D. Hydrology

The principal sources of ground water of the island of Kauai are from rocks of the Waimea Canyon volcanic series. These rocks are typically highly permeable and yield water readily to wells. The Koloa Volcanic series, in contrast, tend to be poorly to moderately permeable and offer limited yield. In the Anahola area, which is within the Koloa Volcanic series, water is obtained primarily from wells which tap basal aquifers.

E. Biology

The site was once cultivated for sugar cane by the Lihue Plantation Company. Natural vegetation at the site has been replaced by sugar cane and later by lawn grass. The surrounding area consists of introduced flora species such as sugar cane, guava, Christmas Berry, California Grass, and Hilo Grass.

No threatened or endangered birds are known to inhabit the area. Common urban birds, such as mynahs, doves, cardinals, and sparrows were observed at the project site. Wildlife inhabiting the area include stray cats, and rats which are common in open areas next to residential area.

F. Air Quality

Although no information on air quality at the project site was obtained, it is generally assumed that the air is relatively clear and low in pollution. This is because of the elevation and distance from the major urban centers.

G. Noise

Noise levels were not measured at the project site. The noise levels are basically normal residential activities of the adjacent subdivision. Highway noises from passing trucks may add to noise levels.

H. Archaeology

Due to the long history of ground disturbance for agricultural activities, it is highly unlikely that anything of archeological value remains. There are no identified historic or archaeologically significant locations at the site or immediate vicinity. However, should any unanticipated sites, artifacts or remains, such as shell, bone or charcoal deposits, be discovered during

construction, the work would be halted and the State Historic Preservation Office would be contacted.

I. Flood Hazard

Flood hazard data was not obtained for the project site. As the site was constructed on high grounds with a perimeter ditch, flooding is not expected. Flooding have not been experienced at the site through the twenty years of existence (see **EXHIBIT 11: FEMA FLOOD MAP BOUNDARIES**).

## V. SOCIO-ECONOMIC SETTING

The population of the island of Kauai as of 2000 was 58,463. The population of the Anahola census area (402-41) for this same date was 1,932. These statistics are from the 2000 U.S. Census. Population projections for the year 2010 indicate that Kauai County will increase from the present population to approximately 65,900.

The following lists the personal income per capita for several counties and also a total for the State over a 30-year period.

Year	State Total	Honolulu	Kauai	Hawaii	Maui
1969	4,548	4,752	3,799	3,593	3,679
1979	10,188	10,608	8,394	8,405	8,893
1989	20,540	21,727	17,420	15,309	18,258
1999	27,533	29,465	23,061	20,340	24,312

The Kauai economy is primarily geared around agriculture and tourism as the most dynamic industries. The pineapple and sugar industry has essentially disappeared since 1960.

In contrast to the decline in agricultural employment, employment in the services sector (dominated by tourism) grew from 9 to 28 percent of total employment since 1960. Other major sources of employment are wholesale and retail trade, 23%; government, 13%; agriculture, 7%, and manufacturing, 6%. The average unemployment rate was 6%.

## VI. CULTURAL ASSESSMENT

A cultural assessment of the Anahola area was performed by PBR Hawaii in September 2005 for the construction of Anahola Residence Lots, Unit 6. In developing the assessment, PBR investigated natural resources, known archaeological sites, legends, previous land uses and conducted interviews with several individuals knowledgeable about Anahola. The "Garden Island" newspaper (2/16/06) included a lengthy article of the Japanese-Americans in Anahola.

Prior to western contact, the Hawaiian people of Anahola lived a traditional subsistence life. Commercial sugar cultivation began in 1880 and continued until the early 1900's. The shift from a subsistence lifestyle to a commercial agriculture community impacted the Anahola Hawaiian Community. Cultural traits (canoe construction, tapa making, and carts) were lost along with traditional housing (grass houses) with the shift of lifestyles.

An Anahola Japanese community was established by first generation Japanese immigrants to farm DHHL leaselands in the early 1900's. Records show that prior to 1947, there were 70 Japanese families living in the Anahola area as farmers. In 1991, there were just 19 families in the area and that number is expected to drop as the DHHL leases expire.

The cultural assessment concludes that the landscape of Anahola has been changed by years of cultivation and the recent construction of residential projects which have impacted the area residents from a subsistence lifestyle to commercial farming and now to a suburban existence.

The project will not impact the cultural resources of the area. Should any cultural practitioners desire access to locations adjacent on in proximity of the project site, there are other points of access which can provide entry for cultural practices such as gather activities or religious rites. Development of the project site will not block or limit access to any existing cultural sites in the area.

## VII. PROBABLE IMPACTS OF THE PROPOSED ACTION ON THE ENVIRONMENT

### A. Short Term Impacts

Short term impacts of the proposed project will be minimal. Daily traffic of the construction crew through the subdivision and noise similar to the construction of a house will be the extent of construction impacts. As the traffic route consists of asphalt concrete roads, and considering the small size of the construction crew, residents should not notice any increase in traffic.

Noise from the equipment generator (if used) will approximate that of a muffled internal combustion engine vehicle. The work will be restricted to daylight hours and the noise should blend in with the normal activities. Exhaust emissions will be blown away from the populated area by the prevailing winds.

Dust and erosion from the construction efforts will be insignificant considering the volume of earth manipulated in the project. Conformance to the County's Grading and Ordinance should mitigate any adverse effects. Water discharged from the well during the testing period will be directed to the existing perimeter ditch flowing to normal drainage courses.

### B. Long Term Impacts

There are no long term on-site impacts from this well project. Improvements that are visually distinguishable will consist of the control building and well head appurtenances only.

As the projects goal is to support the DHHL Master Plan and County General Plan for the Anahola area, any residential housing or other water consuming activity supplied by this project has been reviewed and approved by the area residents.

**VIII. ADVERSE IMPACTS WHICH CANNOT BE AVOIDED**

The noise level will increase during the construction period. This effect will be of short duration, lasting only for the construction phase. The noise level can be reduced by the contractor by ensuring proper functioning of mufflers on all equipment, and conducting construction activity only during daylight hours, between 7:30 a.m. to 5:00 p.m.

**IX. ALTERNATIVES TO THE PROPOSED ACTION**

A. Alternative Site

Consideration of an alternative site would be an inefficient use of existing resources. The project site is available and a well is drilled, cased and ready for production pump installation.

B. No Action

This alternative will not allow the Department of Water to meet the Board of Water Supply's policy to supply approved developments. This alternative will not allow the Department of Hawaiian Home Lands to fulfill its mandate to provide desired housing for their beneficiaries.

**X. RELATIONSHIP BETWEEN LOCAL SHORT TERM USES AND  
MAINTENANCE AND ENHANCEMENT OF LONG TERM PRODUCTIVITY**

The short term use of the project site is the same as its long term use - supplying water for domestic consumption. The type of project is identical as those presently occupying the site-deepwells. Long term productivity should not be affected as this well will be sized and limited by the available source.

## **XI. MITIGATING MEASURES TO MINIMIZE ADVERSE IMPACTS**

The short term impacts occurring during the construction work will be minimized by applying current techniques and methods. In addition, restrictions of operational hours will minimize noise impacts to the adjoining area.

The potential social, economic and political issues brought on by increased development has been addressed during the initiation of the development.

## **XII. IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES**

The construction of the proposed project would involve the commitment of certain natural and fiscal resources. The commitment of construction materials, manpower, and energy are mostly unrenowable and irretrievable. The impacts of using these resources should, however, be weighed against the benefits to the residents of the developments served by the project.

### **XIII. DETERMINATION**

Based on the preceding paragraphs, it is anticipated that the proposed action will result in no significant adverse impacts other than those described in this assessment. The Department of Water reviewed the original environmental assessment for the "Pumps, Controls, Pumphouse and Pipeline for Anahola Well #3 and determined that the project will not have any significant impacts on the environment. Based on their determination, the Department of Water filed a negative declaration for the project on May 6, 1994 (see **EXHIBIT 9: ORIGINAL NEGATIVE DECLARATION**).

Based on the significance criteria, the potential of environmental impacts and previous activities, a "Finding of No Significant Impact" (FONSI) is recommended. As such, an Environmental Impact Statement would not be required.

#### XIV. REASONS SUPPORTING RECOMMENDED DETERMINATION

In considering the significance of potential environmental effects, the applicant has considered the sum of effects on the quality of the environment and evaluated the overall cumulative effects of the proposed action. The applicant has considered every phase of the proposed action, the expected consequences, both primary and secondary and the cumulative as well as the short- and long-term effects of the proposed action. As a result of these considerations, the applicant has determined that:

- A. The proposed action does not involve an irrevocable commitment or loss of or destruction of any natural cultural resource;

There are no natural or cultural resources associated with the project site. The site is presently used as a water well and water tank facility.

- B. The proposed action does not curtail the range of beneficial uses of the environment:

The proposed project is consistent with the DHHL Master Plan, the County's General Plan and the Board of Water Supply policy and would not curtail beneficial uses of the environment in the area. The proposed project will be compatible with the uses of the surrounding area.

- C. The proposed action is in concert with the state's long-term environmental policies, goals and guidelines as expressed in Chapter 343, HRS, and any revisions and amendments thereto, court decisions and executive orders:

The proposed project is consistent with the State Land Use Plan which is in concert with all applicable policies, goals and guidelines. No long-term environmental conflicts are foreseen.

- D. The proposed action does not substantially affect the economic, social welfare or cultural practices of the community or state:

The economic impact will be affected by the short-term, construction related activities. Upon completion of the project, economic conditions should return to the existing situation.

The proposed project is not expected to affect the lifestyle and character of the Anahola region. Cultural practices are not likely to be impacted as a real resources and access will not be altered by this project.

- E. The proposed action does not substantially affect public health:

Construction activities will be regulated to minimize noise, dust and erosion concerns. The project includes water quality testing to determine if the source is suitable for domestic purposes.

- F. The proposed action does not involve substantial secondary impacts, such as population changes or effects on public facilities:

The proposed project will not result in an increase of population in the area in itself. Allowable or projected growth are based on the State Land Use Plan, County General Plan and DHHL Master Plan.

- G. The proposed action does not involve a substantial degradation of environmental quality:

The existing physical aspects of the surrounding area will be preserved.

- H. The proposed action is individually limited and cumulatively, does not have a considerable effect upon the environment or involve a commitment for larger actions:

The proposed project is part of the cumulative development of water sources. Use is regulated by the County of Kauai, Board of Water Supply. Approval of the project does not involve a commitment for any larger action.

- I. The proposed action does not substantially affect rare, threatened or endangered species or habitats:

There are no known rare, threatened or endangered species or habitat associated with the project site.

- J. The proposed action does not detrimentally affect air or water quality or ambient noise levels:

Development of the site will not increase ambient noise levels as it conforms to existing activities.

Short-term impacts on air and water quality, as well as noise, will occur during the construction period, but will be mitigated by normal construction practices and will be regulated by the project plans and specifications.

- K. The proposed action does not affect an environmentally sensitive area such as a flood plain, tsunami zone, erosion-prone area, geologically hazardous land, estuary or coastal waters.

The proposed project is not located adjacent to the shoreline and is outside of the tsunami inundation line.

Flooding or erosion problems are not anticipated.

- L. The proposed action does not affect scenic vistas and view planes identified in county or state plans or studies.

The proposed project will be constructed to conform to County zoning and building codes. It will not affect any identified scenic vistas or view planes.

- M. The proposed action does not require substantial energy consumption.

Construction of the proposed project is not expected to require substantially more energy than other project of similar size and scale. The components of the project will be selected for energy efficiency.

**XV. LIST OF NECESSARY APPROVALS/PERMITS**

- A. County of Kauai: A use permit is required for all utility installations in agricultural and open space zoned land. These requirements are stipulated in the revised ordinances of the County of Kauai, Section 8-7.3 and Section 8-8.3.
- B. Department of Health: Approval is required when a new source of water supply is added to a public system per Chapter 20 of Title II "Potable Water Systems" of the Public Health Regulations.
- C. Building Permit:
  - Construction Plan Approval – DOW, DPW, DOH
  - Well Installation Permit - CWRM

## **XVI. ORGANIZATIONS AND PERSONS CONTACTED / RESPONSE TO COMMENTS**

A preliminary copy of the "Environmental Draft Impact Assessment for Anahola Deepwell No. 3 (State Well No. 0818-03) Pump, Controls, Pumphouse & Pipeline, Job No. 87-3" was sent to various State and County agencies in 1990. The following agencies provided information in the preparation of the revised Draft Environmental Impact Assessment on the subject project.

- A. Department of Planning  
County of Kauai  
4444 Rice Street, Suite 473  
Building "A"  
Lihue, Hawaii 96766
  
- B. County Housing Agency  
County of Kauai  
4444 Rice Street, Suite 330  
Lihue, Hawaii 96766
  
- C. Department of Hawaiian Home Lands  
State of Hawaii  
1099 Alakea Street, Suite 1230  
Honolulu, Hawaii 96813
  
- D. Department of Business and Economic Dev. & Tourism  
Energy, Resources & Tech. Division  
235 South Beretania Street, 5<sup>th</sup> Floor  
Honolulu, Hawaii 96813

The draft EA was distributed to various agencies and published in the OEQC's "The Environmental Notice" commencing a 30-day public review period.

Comments received on the draft EA and their appropriate responses are included in this chapter. Comments were received by the Department of Health – Office of Environmental Quality Control.

LINDA LINGLE  
GOVERNOR OF HAWAII



GENEVIEVE SALMONSON  
DIRECTOR

STATE OF HAWAII  
DEPARTMENT OF HEALTH  
OFFICE OF ENVIRONMENTAL QUALITY CONTROL  
235 SOUTH BERETANIA STREET  
LEIOPAPA A KAMEHAMEHA, SUITE 702  
HONOLULU, HAWAII 96813  
Telephone (808) 586-4185  
Facsimile (808) 586-4186  
Electronic Mail: [OEQC@doh.hawaii.gov](mailto:OEQC@doh.hawaii.gov)

RECEIVED  
MAY 23 2006  
OFFICE OF ENVIRONMENTAL QUALITY CONTROL

May 19, 2006

Mr. Wayne Ushigome, Acting Manager and Chief Engineer  
County of Kaua'i – Department of Water  
4398 Pua Loke Street  
Lihu'e, Hawai'i 96766

Mr. Barry Muranaka  
Akinaka and Associates, Ltd.  
3049 Ualena Street, Suite 500  
Honolulu, Hawai'i 96819

Dear Messrs. Ushigome and Muranaka:

Having reviewed the draft environmental assessment for the Anahola Well No. 3 (State Well No. 0818-03), Pump, Controls, Pumphouse and Pumpline, Tax Map Key Number (5<sup>th</sup>) 4-8-03:23, in the judicial district of Kapa'a, the Office of Environmental Quality Control submits the following comments.

1. **Water Well Guidance Documents:** Please refer to the Water Well Guidance Document found on page 65 of the Guidebook for the Hawaii State Environmental Review Process (available on the Internet at <http://www.hawaii.gov/health/oeqc/publications/guidebook.pdf>). This document will assist you in preparing an environmental assessment that will be useful in determining the significance of the proposed action as well as a tool for future decision makers as to whether to implement the action.
2. **Cumulative Impacts:** Please describe other ongoing projects in the area by consulting with the Department of Planning, the Department of Hawaiian Home Lands and the Department of Land and Natural Resources and discuss the cumulative effect the project may have on the environment.

Thank you for the opportunity to comment.

Sincerely,

GENEVIEVE SALMONSON  
Director



*Water has no substitute..... Conserve it*

July 10, 2006

Ms. Genevieve Salmonson  
OFFICE OF ENVIRONMENTAL QUALITY CONTROL  
235 S. Beretania Street, Suite 702  
Honolulu, Hawaii 96813

Dear Ms. Salmonson:

Subject: Draft Environmental Assessment (DEA) Comments for "Pumps, Controls, Pumphouse and Pipeline for Anahola Well No. 3, Anahola Water System,"  
TMK: 4-8-03:23, Anahola, Kauai, Hawaii

Thank you for your comments regarding the project. We offer the following as a response to your comments:

1. Water Well Guidance Documents: The OEQC guidebook is a very useful document, and it has been used as a valuable resource in preparing the DEA.
2. Cumulative Impacts: The Planning Department was informed during the original consultation process. The DEA was provided again for review. The Department of Hawaiian Home Lands is actively involved with this project as the water from this well is needed for their project. The Department of Land and Natural Resources through their Commission on Water Resource Management is providing agency oversight and review of the Pump Installation Permit Application.

We will be including your comments in the Final Environmental Assessment. Again, thank you for the feedback.

If there are any questions, please contact Keith Fujimoto at 808-245-5449.

Sincerely,

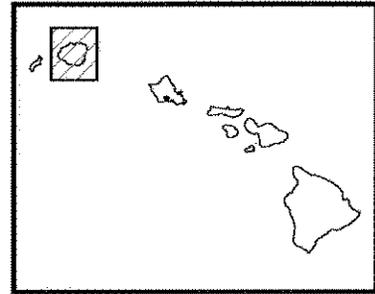
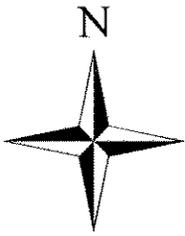
A handwritten signature in cursive script that reads "Wynne Ushigome".

Wynne Ushigome  
Acting Manager and Chief Engineer

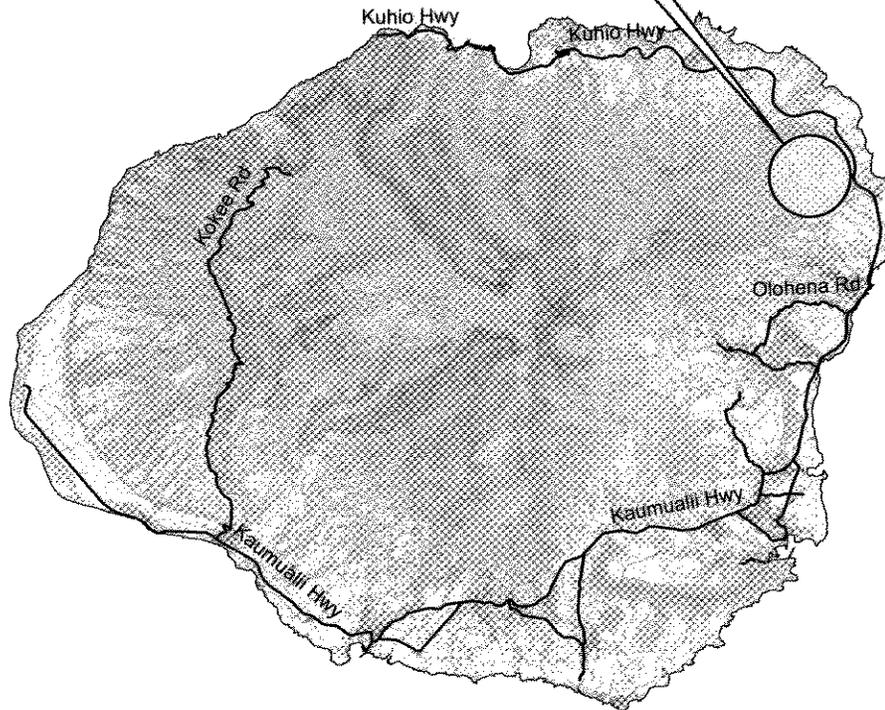
emi

## XVII. BIBLIOGRAPHY

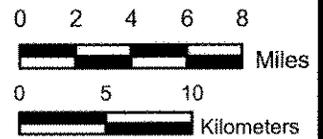
1. County of Kauai, Department of Water, A General Plan for Domestic Water/Island of Kauai, (Division of Water and Land Development, Department of Land and Natural Resources, State of Hawaii), Honolulu, February 1972.
2. County of Kauai, A General Plan for the Island of Kauai, (Eckbo, Dean, Austin & William, Inc. and Muroda, Tanaka & Itagaki, Inc.), March, 1970.
3. County of Kauai, Revised Ordinances of Kauai, 1976 and 1978 Cumulative Supplement.
4. County of Kauai, Kauai Housing Master Plan Study (Hastings, Martin, Conboy, Braig & Assoc., Ltd.) March, 1985.
5. Mac Donald, Gordon A., Dan A. Davis and Coak C. Cox, Geology and Ground-Water Resources of the Island of Kauai, Hawaii, Hawaii Division of Hydrography Bulletin 13, 1960.
6. State of Hawaii, Department of Business, Economic Development & Tourism, State of Hawaii Data Book, 2000: A Statistical Abstract, Honolulu, 2000.
7. State of Hawaii, State Land Use Commission, Rules of Practice and Procedure, October, 1975.
8. Anderson, Robert N. Gary Vieth, Benjamin Seidenstein and Blaine Bradshaw, Kauai Socioeconomic Profile, (Center for Nonmetropolitan Planning and Development, University of Hawaii), May, 1975.



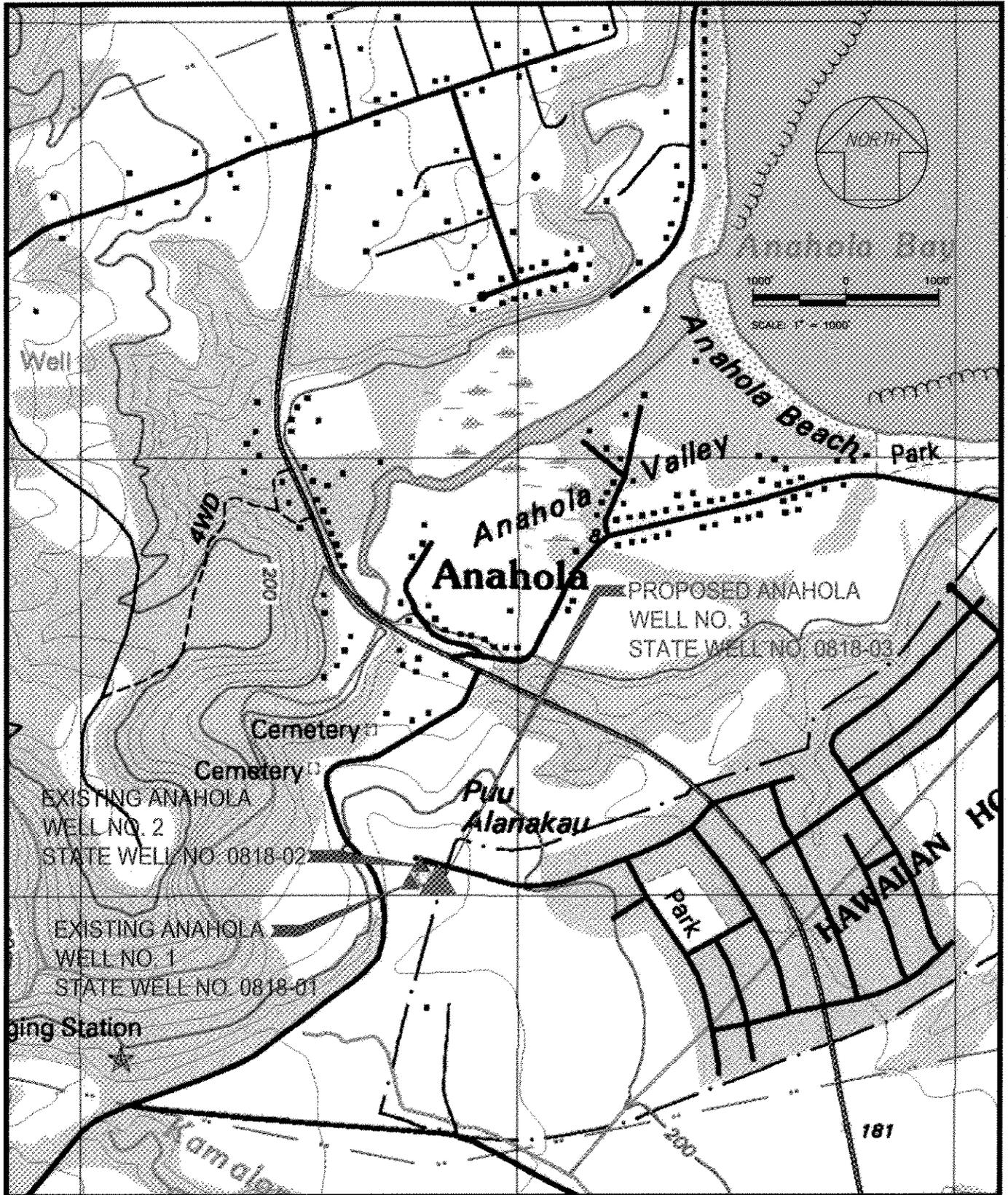
**PROJECT  
LOCATION**



**ISLAND OF KAUAI**



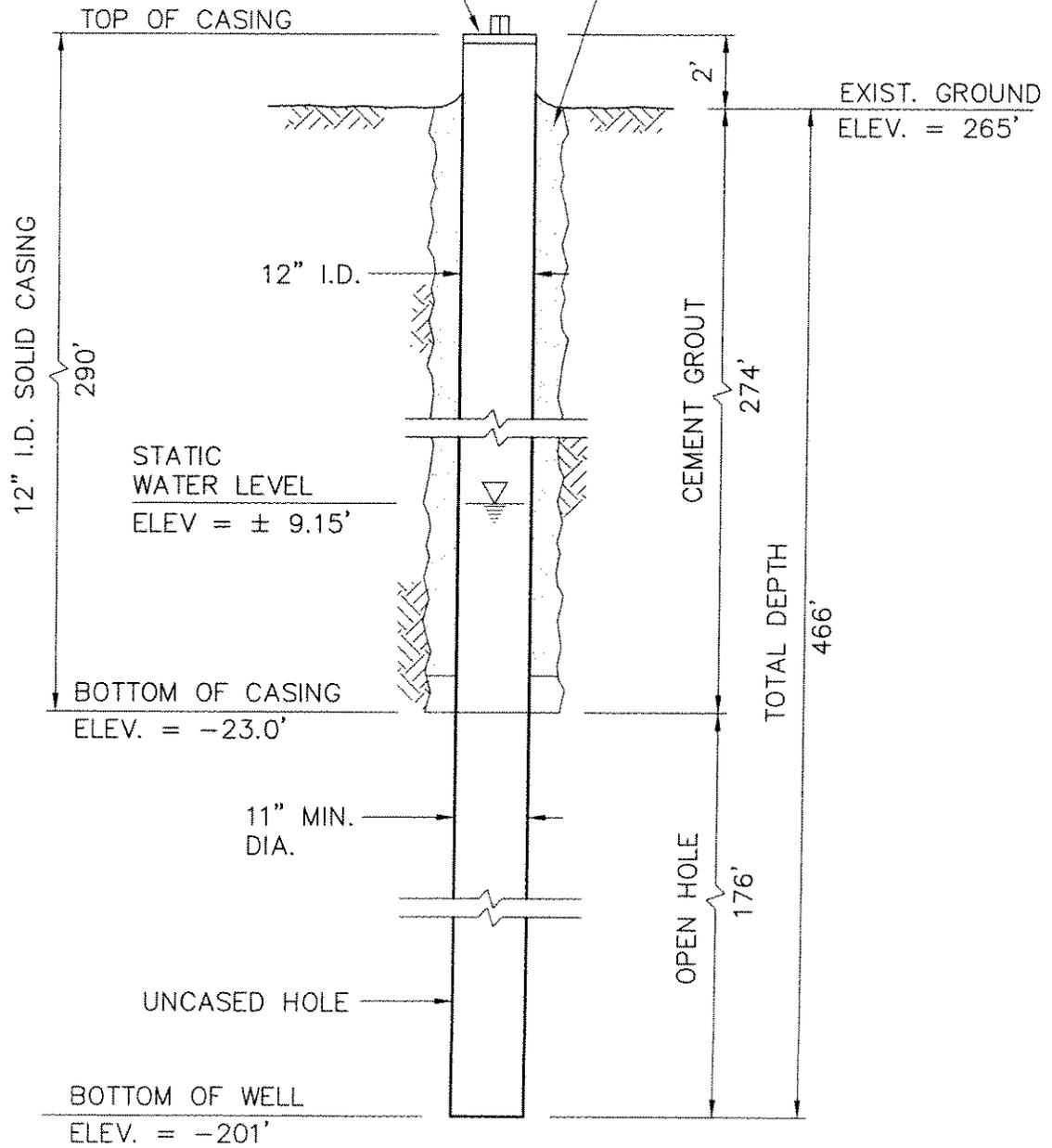
TITLE	<b>VICINITY MAP</b>	EXHIBIT <b>1</b>
PROJECT	<b>ANAHOLA WELL NO. 3 ANAHOLA, KAUAI, HAWAII</b>	DATE <b>MARCH 2006</b>



TITLE	LOCATION MAP	EXHIBIT 2
PROJECT	ANAHOLA WELL NO. 3 ANAHOLA, KAUAI, HAWAII	DATE MARCH 2006

1/2" STEEL PLATE TACK  
WELDED TO CASING WITH 3"  
COUPLING AND PLUG

1-1/2" MIN. GROUT  
FILLED ANNULUS



TITLE

**AS-BUILT WELL SECTION**

EXHIBIT

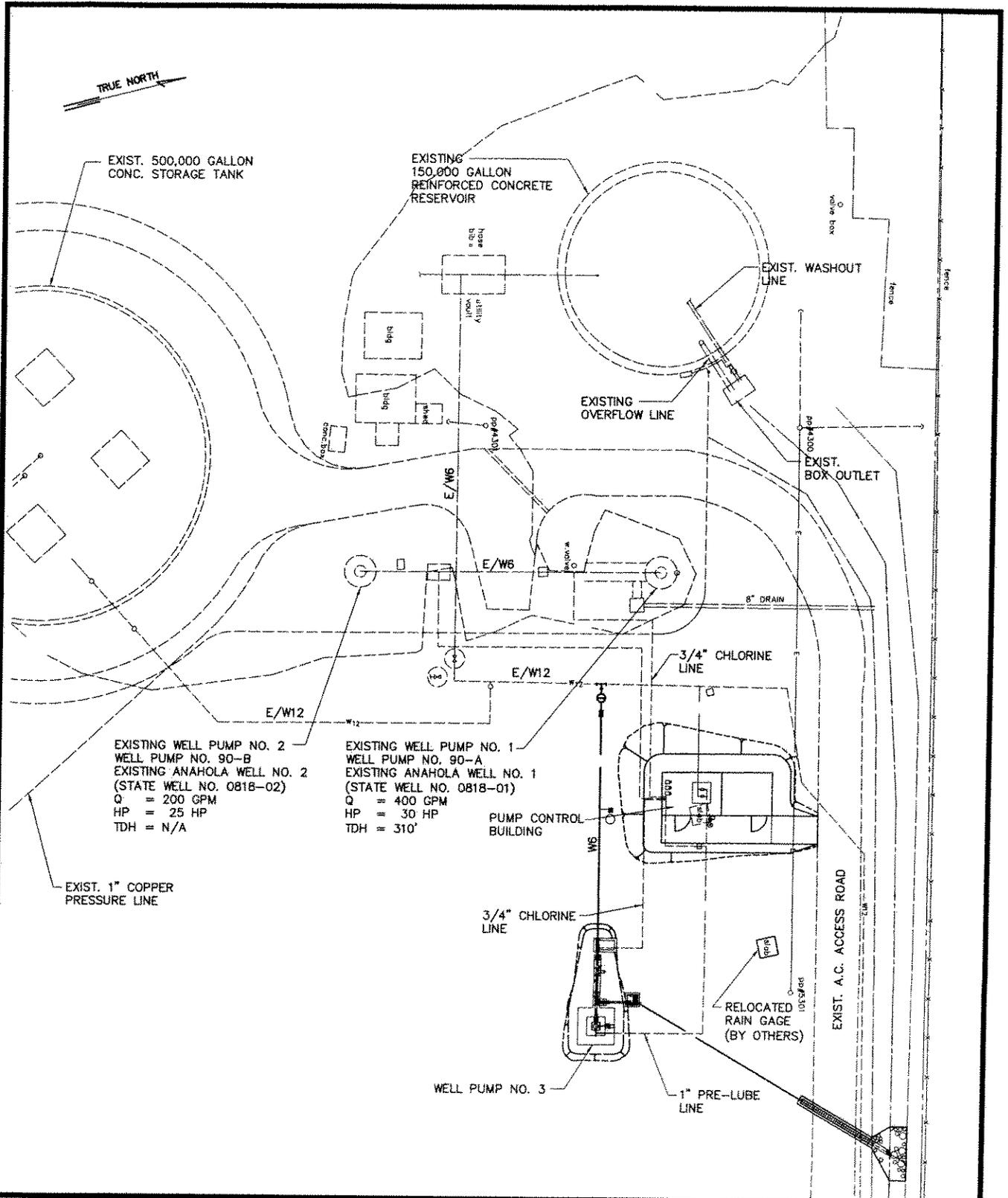
**3**

PROJECT

**ANAHOLA WELL NO. 3  
ANAHOLA, KAUAI, HAWAII**

DATE

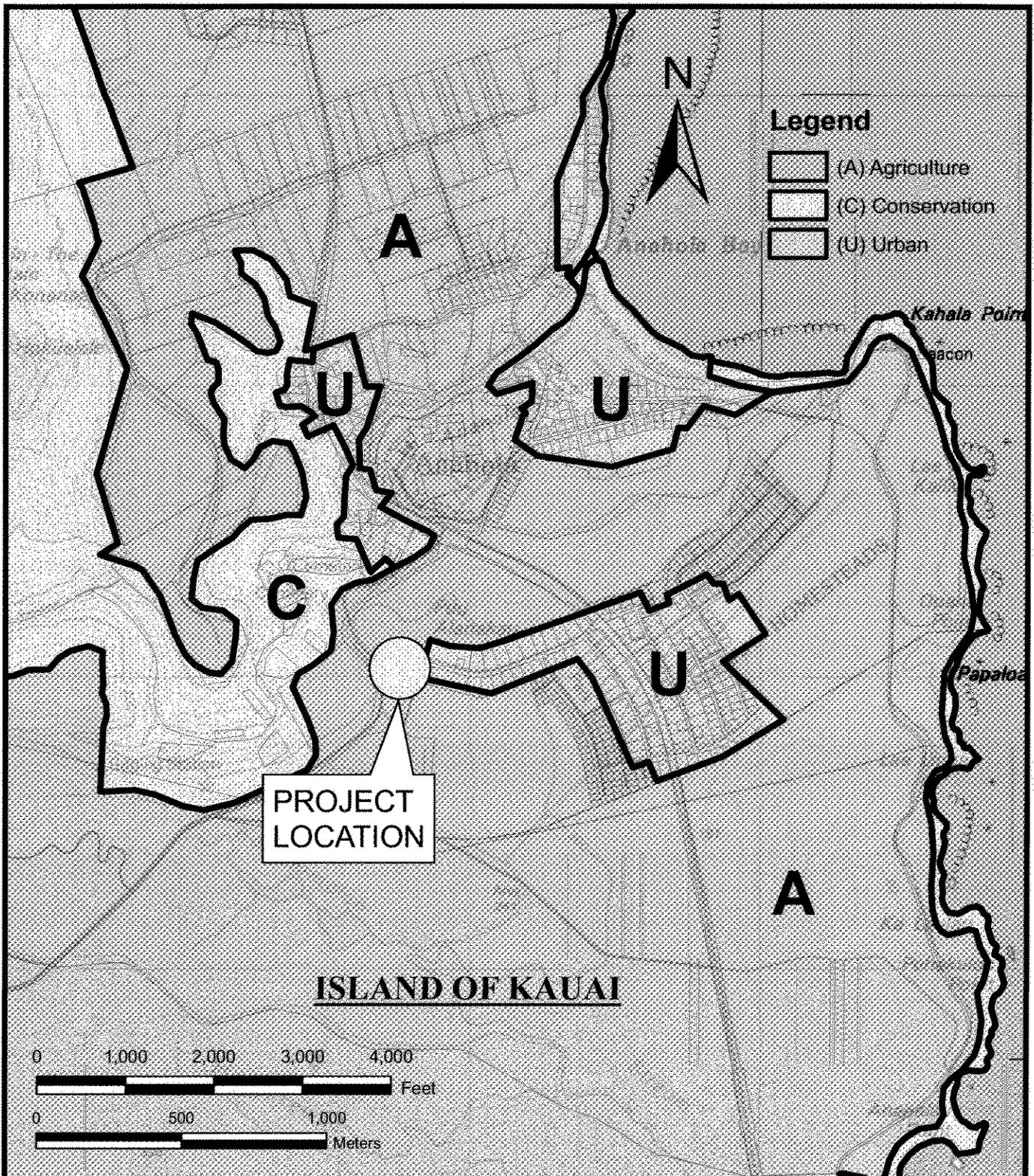
**MARCH 2006**



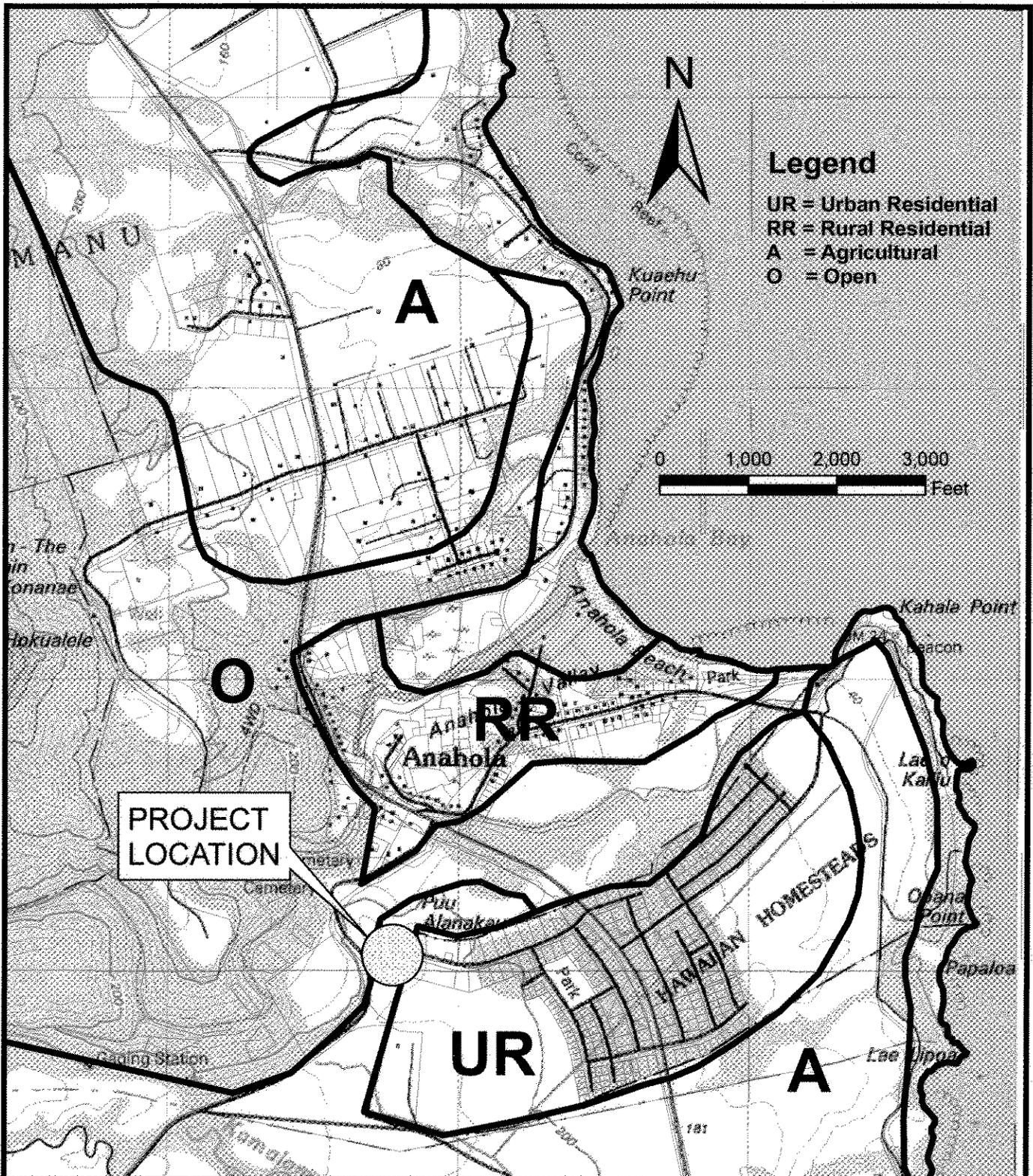
EXISTING WELL PUMP NO. 2  
 WELL PUMP NO. 90-B  
 EXISTING ANAHOLA WELL NO. 2  
 (STATE WELL NO. 0818-02)  
 Q = 200 GPM  
 HP = 25 HP  
 TDH = N/A

EXISTING WELL PUMP NO. 1  
 WELL PUMP NO. 90-A  
 EXISTING ANAHOLA WELL NO. 1  
 (STATE WELL NO. 0818-01)  
 Q = 400 GPM  
 HP = 30 HP  
 TDH = 310'

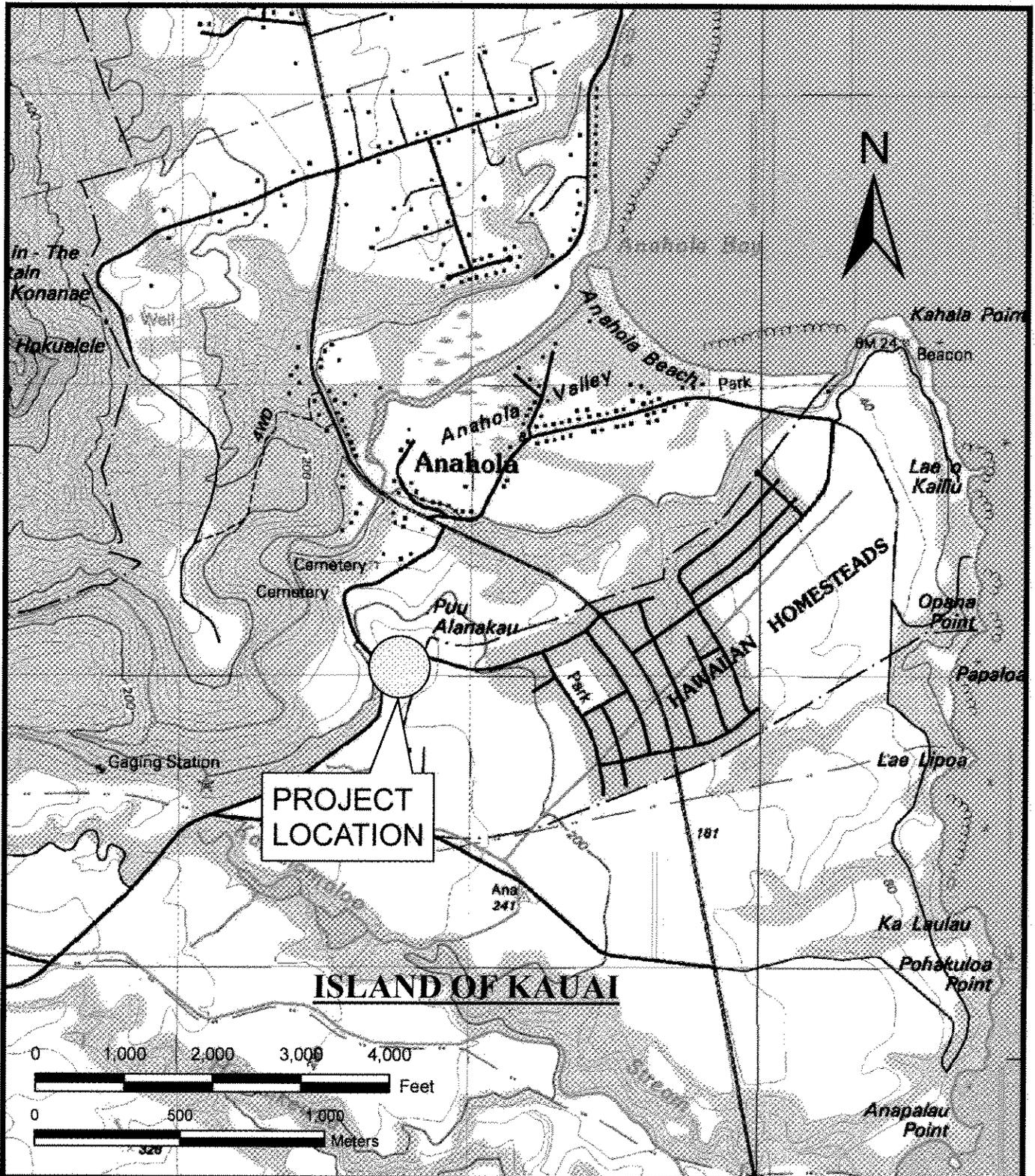
TITLE <p style="text-align: center;"><b>SITE PLAN</b></p>	EXHIBIT <p style="text-align: center;"><b>4</b></p>
PROJECT <p style="text-align: center;">ANAHOLA WELL NO. 3          ANAHOLA, KAUAI, HAWAII</p>	DATE <p style="text-align: center;"><b>MARCH 2006</b></p>



<p>TITLE</p> <p><b>STATE LAND USE PLAN</b></p>	<p>EXHIBIT</p> <p><b>5</b></p>
<p>PROJECT</p> <p><b>ANAHOLA WELL NO. 3 ANAHOLA, KAUAI, HAWAII</b></p>	<p>DATE</p> <p><b>MARCH 2006</b></p>



TITLE	COUNTY OF KAUAI GENERAL PLAN	EXHIBIT <b>6</b>
PROJECT	ANAHOLA WELL NO. 3 ANAHOLA, KAUAI, HAWAII	DATE MARCH 2006



<p>TITLE</p> <p><b>ANAHOLA QUADRANGLE MAP</b></p>	<p>EXHIBIT</p> <p><b>7</b></p>
<p>PROJECT</p> <p><b>ANAHOLA WELL NO. 3 ANAHOLA, KAUAI, HAWAII</b></p>	<p>DATE</p> <p><b>MARCH 2006</b></p>

JOHN WAIHEE  
GOVERNOR OF HAWAII



92 DEC 21 11:56

COUNTY OF KAUAI

STATE OF HAWAII  
DEPARTMENT OF LAND AND NATURAL RESOURCES  
DIVISION OF WATER AND LAND DEVELOPMENT

P. O. BOX 373  
HONOLULU, HAWAII 96809

December 17, 1992

*w/ Wayne - info you need for design -*  
WILLIAM V. PATY, CHAIRPERSON  
BOARD OF LAND AND NATURAL RESOURCES  
*Chatsen for general*  
DEPUTIES  
JOHN P. WEPPELER, II  
DONNA L. HANAIKE  
*3 - copy files Ray*  
AQUACULTURE DEVELOPMENT PROGRAM  
AQUATIC RESOURCES CONSERVATION AND ENVIRONMENTAL AFFAIRS  
CONSERVATION AND RESOURCES ENFORCEMENT  
CONVEYANCES  
FORESTRY AND WILDLIFE HISTORIC PRESERVATION PROGRAM  
LAND MANAGEMENT  
STATE PARKS  
WATER AND LAND DEVELOPMENT

Mr. Raymond H. Sato  
Manager and Chief Engineer  
Department of Water  
County of Kauai  
P. O. Box 1706  
Lihue, Hawaii 96766-5706

Dear Mr. Sato:

Pump Size and Setting for Anahola Well No. 3 (0818-03)

We recommend that a 350 gpm pump be installed in the subject well since the sustained pump test was run at 500 gpm. However, long-term effects to the aquifer, because of the total drawdown induced by all of the wells may eventually lead to increased chlorides. Pumping rate can then be lowered accordingly.

Since our records do not indicate that a bench mark has been established for this well, we recommend that the pump intake be set 285 feet below the top of the casing.

If you have any questions, please contact Glenn Bauer at 587-0263.

Sincerely,

MANABU TAGOMORI  
Manager-Chief Engineer

GB:ln

EXHIBIT 8A  
ORIGINAL PUMP SIZE & SETTING  
RECOMMENDATION BY DLNR

JOHN WAINEE  
GOVERNOR OF HAWAII



*Wayne*  
KEITH W. AHUE, Chairman  
BOARD OF LAND AND NATURAL RESOURCES

03 OCT 29 12:07

STATE OF HAWAII  
DEPARTMENT OF LAND AND NATURAL RESOURCES  
DIVISION OF WATER AND LAND DEVELOPMENT  
P. O. BOX 373  
HONOLULU, HAWAII 96809

DEPUTIES  
JOHN P. KEPPELER, II  
DONA L. HANAIKE  
AQUACULTURE DEVELOPMENT PROGRAM  
AQUATIC RESOURCES  
CONSERVATION AND ENVIRONMENTAL AFFAIRS  
CONSERVATION AND RESOURCES ENFORCEMENT  
CONVEYANCES  
FORESTRY AND WILDLIFE  
HISTORIC PRESERVATION PROGRAM  
LAND MANAGEMENT  
STATE PARKS  
WATER AND LAND DEVELOPMENT

October 28, 1993

Mr. Jeremiah M. Kaluna  
Acting Manager and Chief Engineer  
Department of Water  
County of Kauai  
P O. Box 1706  
Lihue, Hawaii 96766-5706

Dear Mr. Kaluna:

Pump Size and Setting for Anahola Well No. 3 (0818-01)

After reviewing our files, we note that this well is permitted for a 200 gpm pump. Installation of this pump capacity should not affect the basal aquifer. The pump intake should be set at 288 feet below top of casing.

The Anahola source is a basal aquifer, and therefore, in hydraulic connection with underlying saline water. Running the pumps in a lag sequence will limit the initial drawdown stresses imposed on the aquifer. The performance of this well is not as good as Anahola Well No. 2 (0919-03). A lag sequence starting with existing well 1, then 2, keeping well no. 3 for peaking and standby. This sequence should minimize the aquifer drawdown and oscillation of the transition zone.

If you have any questions, please contact Glenn Bauer at 587-0263.

Sincerely,

MANABU TAGOMORI  
Manager-Chief Engineer

GB:ln

EXHIBIT 8B  
AMENDED PUMP SIZE SETTING  
RECOMMENDATION BY DLNR



P.O. Box 326, Kamuela, HI 96743  
Phone (808) 885-5941 Fax (808) 885-7851  
e-mail [wajono@interpac.net](mailto:wajono@interpac.net)

March 28, 2006

Mr. Sheldon Yamasato  
President  
Akinaka and Associates, Ltd  
2049 Ualena St. Suite 500  
Honolulu, Hawaii 96819

Subject: Anahola well # 3 – pump setting and rate

As per our discussions and review of the well field observations we made in 1995,  
I recommend that the pump intake be set at a depth of between elevation -15' and -20'.

A pumping rate of 350 gpm is acceptable. It is noted that there is interference in evidence  
between the wells, however, it does not appear to be excessive. This assumes that the  
combined average pumping rate will not exceed 600 gpm

Please do not hesitate to call me if you have any further requests.

Sincerely,

A handwritten signature in black ink, appearing to read "Stephen P. Bowles". The signature is fluid and cursive.

Stephen P. Bowles

EXHIBIT 8C  
PUMP SIZING & SETTING RECOMMENDATION  
BY WAIMEA WATER SERVICES INC.

Mgt. Files

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

May 6, 1994

Mr. Brian J. J. Choy, Director  
OFFICE OF ENVIRONMENTAL QUALITY CONTROL  
220 S. King Street, 4th Floor  
Honolulu, HI 96813

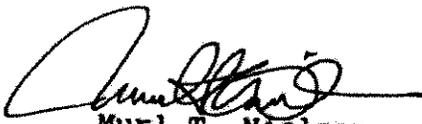
Job No. 87-3

Re: Negative Declaration for "Pumps, Controls, Pumphouse and Pipeline for Anahola Well No. 3, Anahola Water System", TMK: 4-8-03:23, Anahola, Kauai, Hawaii

The Department of Water has reviewed the environmental assessment for the "Pumps, Controls, Pumphouse and Pipeline for Anahola Well No. 3" Project and has determined that the project will not have any significant impacts on this environment. Based on our determination, we are filing a negative declaration for the subject project.

Enclosed are four(4) copies of the environmental assessment.

Please contact Wayne Hinazumi at 245-6986 if you have any questions. Thank you.



Muri T. Nielsen  
Manager and Chief Engineer

WH:rm  
Enclosures

EXHIBIT 9  
ORIGINAL NEGATIVE DECLARATION

**DEPARTMENT OF WATER**  
County of Kauai

**MAILED**  
JUL 19 2000

*"Water has no Substitute - Conserve It!"*

July 18, 2000

Ms. Nancy Heinrich  
State of Hawaii  
Office of Environmental Quality Control  
235 South Beretania Street, Suite  
Honolulu, HI 96813

Dear Ms. Heinrich:

Subject: Anahola Well No. 3 (State Well No. 0818-03), Pump, Controls,  
Pumphouse & Pipeline

The Commission on Water Resource Management (CWRM), at its meeting on March 16, 1994, deferred action on the application for a pump installation permit for Anahola Well No. 3.

It does not appear that CWRM will be issuing a pump installation permit for this project in the foreseeable future.

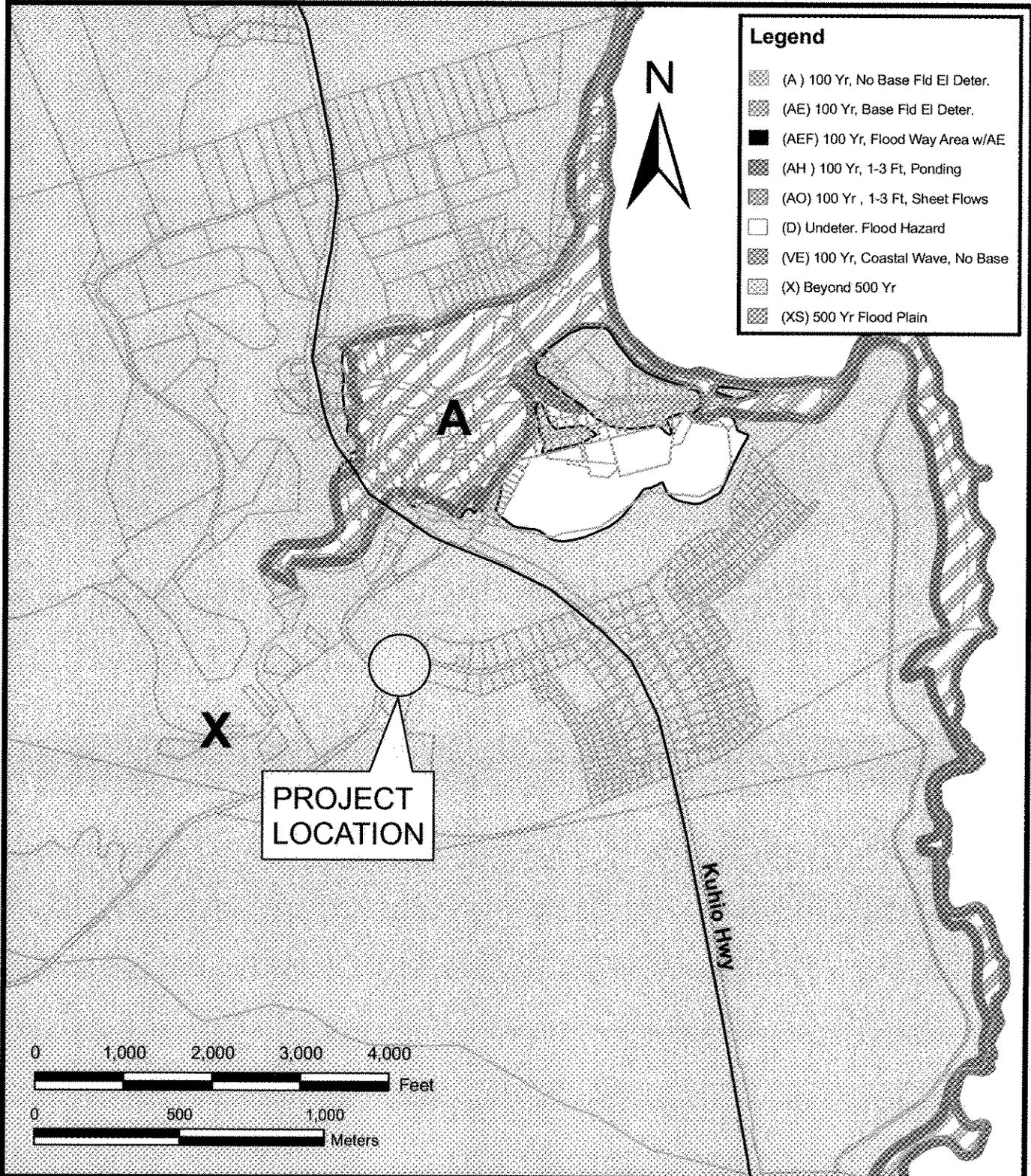
As such, the County of Kauai, Department of Water has determined that it will not be proceeding with the project and therefore, will not be finalizing the subject Environmental Assessment for the well.

Sincerely,

  
for Ernest Y.W. Lau  
Manager & Chief Engineer

WH/san  
D:\san\docs\sp\wayne\Anahola\_Well\_#3

**EXHIBIT 10  
WITHDRAWAL OF  
ENVIRONMENTAL ASSESSMENT**



Legend	
	(A) 100 Yr, No Base Fld El Deter.
	(AE) 100 Yr, Base Fld El Deter.
	(AEF) 100 Yr, Flood Way Area w/AE
	(AH) 100 Yr, 1-3 Ft, Ponding
	(AO) 100 Yr, 1-3 Ft, Sheet Flows
	(D) Undeter. Flood Hazard
	(VE) 100 Yr, Coastal Wave, No Base
	(X) Beyond 500 Yr
	(XS) 500 Yr Flood Plain

TITLE

**FEMA FLOOD MAP BOUNDARIES**

EXHIBIT

**11**

PROJECT

**ANAHOLA WELL NO. 3  
ANAHOLA, KAUAI, HAWAII**

DATE

**MARCH 2006**

**APPENDIX A**

**WELL PUMP TEST AND WATER QUALITY DATA**

93 MAR 9 AM 11:53

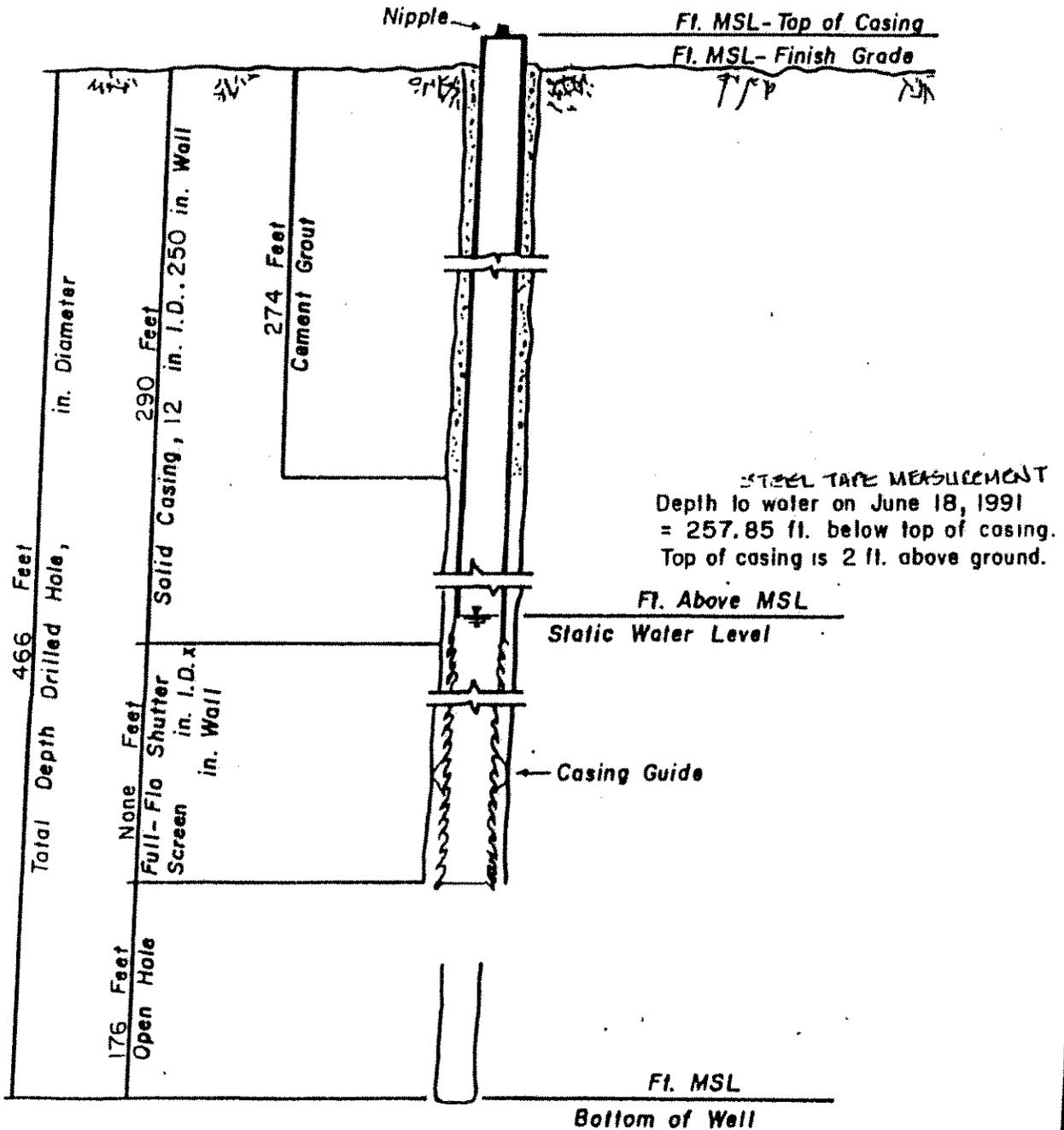
# ANAHOLA WELL 0818-03

COUNTY OF HAWAII

## AS BUILT SECTION

Drilled: June 1991

Driller: Paul Fransen Drilling Co.



NOT TO SCALE

Job No. 17-KW-C

PUMPING TEST RECORD  
for

ANAHOLA  
(name)

Well DS. 0-03  
(No.)

KAWAI Island 17-KW-C Project or Job No. 19

Date & Time	Sample No.	Pumping rate (gpm)	Airline (feet)	Drawdown (feet)	Chlorides (ppm)	Temp. (°F)	Cond. (mmhos 25°C)
JUNE	24	1991					Well 0818-01
							DTW D.D
1205		393	8.5	10.3			
1215		396	8.4	10.4			266.9 3.4
1230		400	7.7	11.1			267.0 3.5
1245		393	7.8	11.0			267.0 3.5
1300		391	7.9	10.9			267.1 3.6
1315		415	7.7	11.1			267.1 3.6
1330		406	7.9	10.9			267.15 3.65
1345		407	6.9	11.9			267.15 3.65
1400	2	400	7.1	11.7	24		267.15 3.65
		- ADJUST TO		500	GPM -		
1410		524	2.1	16.7			
1415		529	2.3	16.5			268.2 4.7
1430		508	3.15	15.65			268.0 4.5
1500		509	3.05	15.75			268.05 4.55
1530		505	3.05	15.75			268.05 4.55
1600					ADJUST VALVE		
1615		504	3.05	15.75			
1630		508	3.05	15.75			268.05 4.55
1700	3	500	3.20	15.60	23		267.96 4.46
1800		511	2.7	16.1	ADJUST RATE		268.12 4.62
1900	4	511	2.5	16.3			268.16 4.66
2000		508	2.7	16.1			268.26 4.76
2100	5	503	2.85	15.95	22		268.26 4.76
2200		502	2.9	15.9			268.26 4.76
2300		503	2.8	16.0			268.26 4.76
2400		500	3.0	15.8			268.26 4.76

PUMPING TEST RECORD  
for

ANAHOLO  
(name)

Well 0818-03  
(No.)

KAWAI Island 17-KW-C Project or Job No. 19

Date & Time	Sample No.	Pumping rate (gpm)	Airline Drawdown		Chlorides (ppm)	Temp. (°F)	Cond. (mmhos 25°C)	
			(feet)	(feet)				
JUNE 24	1991						Well 0818-01	
							DTW D.D	
1205		393	8.5	10.3				
1215		396	8.4	10.4			266.9	3.4
1230		400	7.7	11.1			267.0	3.5
1245		393	7.8	11.0			267.0	3.5
1300		391	7.9	10.9			267.1	3.6
1315		415	7.7	11.1			267.1	3.6
1330		406	7.9	10.9			267.15	3.65
1345		407	6.9	11.9			267.15	3.65
1400	2	400	7.1	11.7	24		267.15	3.65
		- ADJUST TO 500 GPM -						
1410		524	2.1	16.7				
1415		529	2.3	16.5			268.2	4.7
1430		508	3.15	15.65			268.0	4.5
1500		509	3.05	15.75			268.05	4.55
1530		505	3.05	15.75			268.05	4.55
1600					ADJUST VALVE			
1615		504	3.05	15.75				
1630		508	3.05	15.75			268.05	4.55
1700	3	500	3.20	15.60	23		267.96	4.46
1800		511	2.7	16.1	ADJUST RATE		268.12	4.62
1900	4	511	2.5	16.3			268.16	4.66
2000		508	2.7	16.1			268.26	4.76
2100	5	503	2.85	15.95	22		268.26	4.76
2200		502	2.9	15.9			268.26	4.76
2300		503	2.8	16.0			268.26	4.76
2400		500	3.0	15.8			268.26	4.76

PUMPING TEST RECORD  
for

ANAHOLA  
(name)

Well 081x-03  
(No.)

KAWAI Island 17-KW-C Project or Job No. 19

Date & Time	Sample No.	Pumping rate (gpm)	Airline Drawdown		Chlorides (ppm)	Temp. (°F)	Cond. (mmhos 25°C)	
			(feet)	(feet)			DTW	D.D.
JUNE	25	1991					WELL 0818-01	
							DTW	D.D.
0100	7	502	2.8	16.0			268.26	4.76
0200		508	3.0	15.8			267.96	4.46
0300	8	506	2.95	15.85			266.4	2.9
0400		506	2.9	15.9			266.4	2.9
0500	9	508	3.0	15.8			266.4	2.9
0600		503	3.5	15.3			266.4	2.9
0700	10	511	3.99	14.81				
0800		499	3.95	14.85		24.0	268.25	4.75
0900	11	499	4.1	14.7	22		268.58	5.08
1000		498	3.75	15.05	ADJUST		268.62	5.12
1100					ADJUST			
1200		506	2.3	16.5				
ENGINE ERRATIC - CANNOT MAINTAIN CONSTANT PUMPING RATE.								
STOP PUMPING - RECOVERY								
							METER	READING
LAPSED TIME MINUTES							4417	4200
01		0	17.2	1.6				
03			17.2	1.6				
05			17.4	1.4			264.79	1.29
10			17.8	1.0			264.44	.94
15			18.0	.8			264.25	.75
20			18.1	.7			264.15	.65
25			18.2	.6			264.07	.57
30			18.25	.55			264.02	.52
40			18.35	.45			263.81	.41
50			18.40	.40			263.87	.37
60			18.45	.35			263.81	.31
75			18.50	.30			263.75	.25
90			18.53	.27			263.70	.20

PUMPING TEST RECORD  
for

ANAHOLA  
(name)

Well 0818-03  
(No.)

KAUAI Island 17-KW-C Project or Job No. 19

Date & Time	Sample No.	Pumping rate (gpm)	Airline (feet)	Drawdown (feet)	Chlorides (ppm)	Temp. (°F)	Cond. (mmhos 25°C)	
JUNE 25	1991						WELL 0818-01	
			RECOVERY - CONT				DTW 0.0	
105			18.59	.21			263.65	.15
120			18.62	.18			263.62	.12
135			18.65	.15			263.58	.08
150			18.68	.12				
165			18.70	.10				
180			18.75	.05			263.44	.06
195			18.78	.02				
210			18.80	0				
1535	CHANGE FUEL FILTERS ON DIESEL ENGINE AND USE NEW FUEL.							
1545			18.80				METER READING	
1600	- START PUMPING - ADJUST TO 500 GPM. 44174200							
1615	500		4.05	14.75				
	FLOWMETER BROKEN							
	REPAIR METER							
1645	499		5.50	13.3			267.15	4.25
1700	506		5.35	13.45	METER READING 44196800		268.0	4.50
1730	498		5.35	13.45		24.0	267.87	4.37
1800	1 484		5.95	12.85	ADJUST		267.81	4.31
1830	495		5.35	13.45			267.70	4.20
1900	494		5.35	13.45			268.03	4.53
2000	495		5.30	13.50			268.0	4.50
2100	494		5.35	13.45			268.09	4.59
2200	2 495		5.25	13.55	21		268.16	4.66
2300	498		6.35	12.45	ADJUST		266.65	3.15
2400	501		6.30	12.50			266.55	3.06

PUMPING TEST RECORD  
for

ANAHOLA

Well 0818-03

(name)

(No.)

KAWAI

Island

17-KW-C

Project or Job No.

19

Date & Time	Sample No.	Pumping rate (gpm)	Airline (feet)	Drawdown (feet)	Chlorides (ppm)	Temp. (°F)	Cond. (mmhos 25°C)	
JUNE 26		1991					0818-01	
							MW D.D.	
0100		498	6.40	12.40			266.69	3.19
0200	3	499	6.40	12.40	21		266.57	3.07
0300		500	6.50	12.30			266.54	3.04
0400		497	6.60	12.20			266.49	2.99
0500		498	6.30	12.50			266.47	2.97
0600	4	497	6.30	12.50			266.20	2.70
0700		504	6.10	12.70			266.23	2.73
0800		495	4.95	13.85			268.33	4.83
0900		496	4.70	14.10			268.43	4.93
1000	5	499	4.55	14.25	21		268.48	4.98
1100		505	4.20	14.60			268.56	5.06
1200		497	4.50	14.30		74.0	268.47	4.97
1300		493	4.80	14.0			268.4	4.9
1400	6	493	4.65	14.15			268.32	4.82
1545		495	4.85	13.95			268.18	4.68
1600		500	4.75	14.05			268.16	4.66
1700		491	5.05	13.75			268.10	4.60
1800	7	500	4.80	14.0	170 RES ADJUST	-	268.16	4.66
1900		496	4.85	13.95			268.19	4.69
2000		500	4.75	13.85			268.23	4.73
2100		497	4.90	13.90			268.18	4.68
2200	8	498	4.90	13.90	21		268.21	4.71
2300		501	4.70	14.10	ADJUST		268.25	4.75
2400		499	4.75	14.05			268.27	4.77
JUNE 27		1991						
0100		502	4.60	14.20			268.29	4.79
0200	9	500	4.50	14.30			268.30	4.78
0300		502	6.30	12.50			266.60	3.10

PUMPING TEST RECORD  
for

ANAHOLO

Well 0816-03

(name)

(No.)

Kauai Island 17-KW-C Project or Job No. 19

Date & Time	Sample No.	Pumping rate (gpm)	Airline Drawdown		Chlorides (ppm)	Temp. (°F)	Cond. (mmhos 25°C)	
			(feet)	(feet)				
JUNE	27	1991					WELL 0816-01	
							DTW	D.O.
0400		500	6.20	12.60			268.59	3.09
0500		497	6.30	12.50			266.60	3.10
0600	10	491	6.40	12.40	22		266.50	3.0
0700		500	6.60	12.20			266.49	2.99
0800		501	6.10	12.70			266.47	2.97
0830		505	4.15	14.65	ADJUST			
0900		499	4.45	14.35			268.52	5.02
1000	11	505	4.05	14.75	21		268.54	5.04
1100		500	4.0	14.80			268.57	5.07
1200		501	4.0	14.80			268.55	5.05
1300		502	4.20	14.60			268.48	4.98
1400	12	500	4.10	14.70	ADJUST		268.39	4.89
1500		503	4.15	14.65			268.37	4.87
1600		496	4.20	14.60			268.31	4.81
1700		504	4.30	14.50			268.21	4.71
1800	13	505	4.20	14.60	21		268.24	4.74
1900		500	4.25	14.55			268.20	4.70
2000		497	4.35	14.45			268.21	4.71
2100		499	4.35	14.45			268.21	4.71
2200	14	498	4.50	14.30			268.25	4.75
2300		498	4.50	14.30			268.31	4.81
2400		501	4.40	14.40			268.33	4.83
JUNE	28	1991					268.29	4.79
0100		495	5.70	13.10				
0200	15	494	5.80	13.0	21		266.70	3.2
0300		501	5.90	12.90			266.67	3.17
0400		500	5.75	13.05			266.63	3.13
0500		505	5.80	13.0			266.76	3.26

PUMPING TEST RECORD  
for

ANA HOLA  
(name)

Well 0818-03  
(No.)

KAUAI Island 17-KW-C Project or Job No. 19

Date & Time	Sample No.	Pumping rate (gpm)	Airline (feet)	Drawdown (feet)	Chlorides (ppm)	Temp. (°F)	Cond. (mmhos 25°C)	
JUNE 28	1991						WELL 0818-01	
							D.W. D.O.	
0600	16	502	5.80	13.0			266.78	3.28
0700		498	5.85	12.95			266.57	3.07
0800		501	4.50	14.30			268.32	4.82
0900		499	4.20	14.60	ADJUST		268.40	4.90
1000	17	498	4.25	14.55	GALLON SAMPLE	74.0	268.44	4.94
1100		493	4.35	14.45			268.43	4.93
STOP PUMPING - RECOVERY							METER READINGS	
ELAPSED TIME							46169800	
1			17.20	1.60			AVE. Q = 491 GPM	
3			17.20	1.60				
5			17.40	1.40			265.0	1.50
7			17.70	1.10			264.75	1.25
10			17.75	1.05			264.57	1.07
15			17.85	.95			264.37	.87
20			18.0	.80			264.27	.77
25			18.05	.75			264.23	.73
30			18.10	.70			264.14	.64
40			18.15	.65			264.07	.57
50			18.20	.60			264.04	.54
60			18.23	.57			263.99	.49
70			18.28	.52			263.96	.46
80			18.30	.50			263.93	.43
90			18.30	.50			263.91	.41
105			18.34	.46			263.88	.38
120			18.35	.45			263.86	.36
135								
150			18.45	.35			263.80	.30
165			18.45	.35			263.77	.27
180			18.50	.30			263.74	.24

CHLORIDE TITRATION RECORD

for ANAHOLO

Well 0818-03

(No.)

KAUAI

Island

17-KW-C

Project or Job No.

19

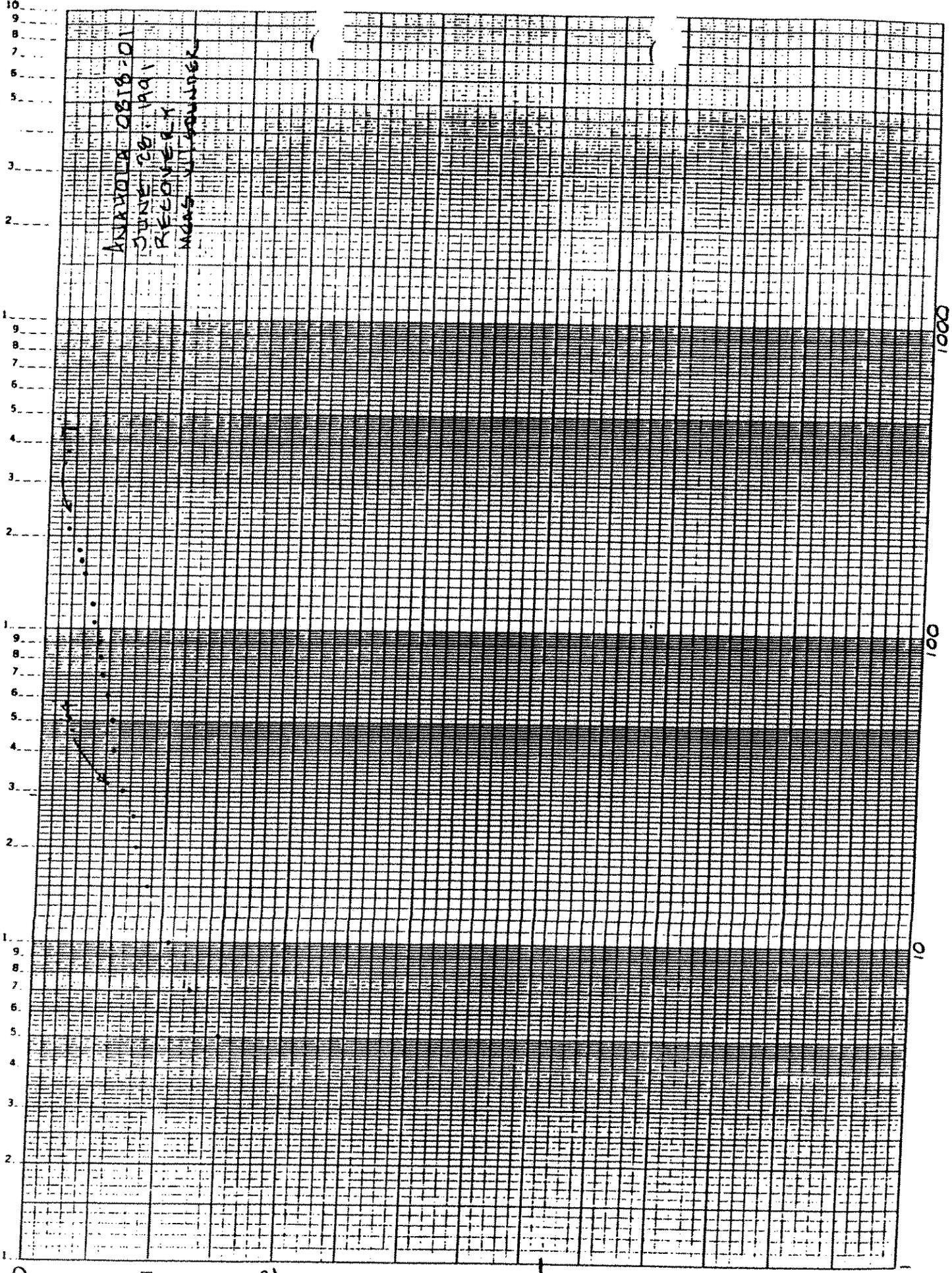
Titration conducted by

M. O'HE

Sample No.	Date Taken	Sample (ml)	Burette Rdg		AgNO <sub>3</sub> (ml)	AgNO <sub>3</sub> -.2 ml	Mult. Factor	Chlorides (ppm)
			Before	After				
JUNE 24, 1991								
Q = 200 GPM								
1	1100	50	2.0	4.7	2.7	-	10	27
Q = 400 GPM								
2	1400	50	7.1	9.5	2.4	-	10	24
Q = 500 GPM								
3	1700	50	4.8	7.1	2.3	-	10	23
5	2100	50	10.1	12.3	2.2	-	10	22
JUNE 25, 1991								
7	0100	50	7.9	10.1	2.2	-	10	22
10	0700	50	5.5	7.8	2.3	-	10	23
STOP PUMPING AFTER 26 HOURS ENGINE TROUBLE								
1	1800	50						
2	2200	50	12.0	14.1	2.1	-	10	21
JUNE 26, 1991								
3	0200	50	9.9	12.0	2.1	-	10	21
5	1000	50	7.8	9.9	2.1	-	10	21
8	2200	50	5.7	7.8	2.1	-	10	21
JUNE 27, 1991								
10	0600	50	3.5	5.7	2.2	-	10	22



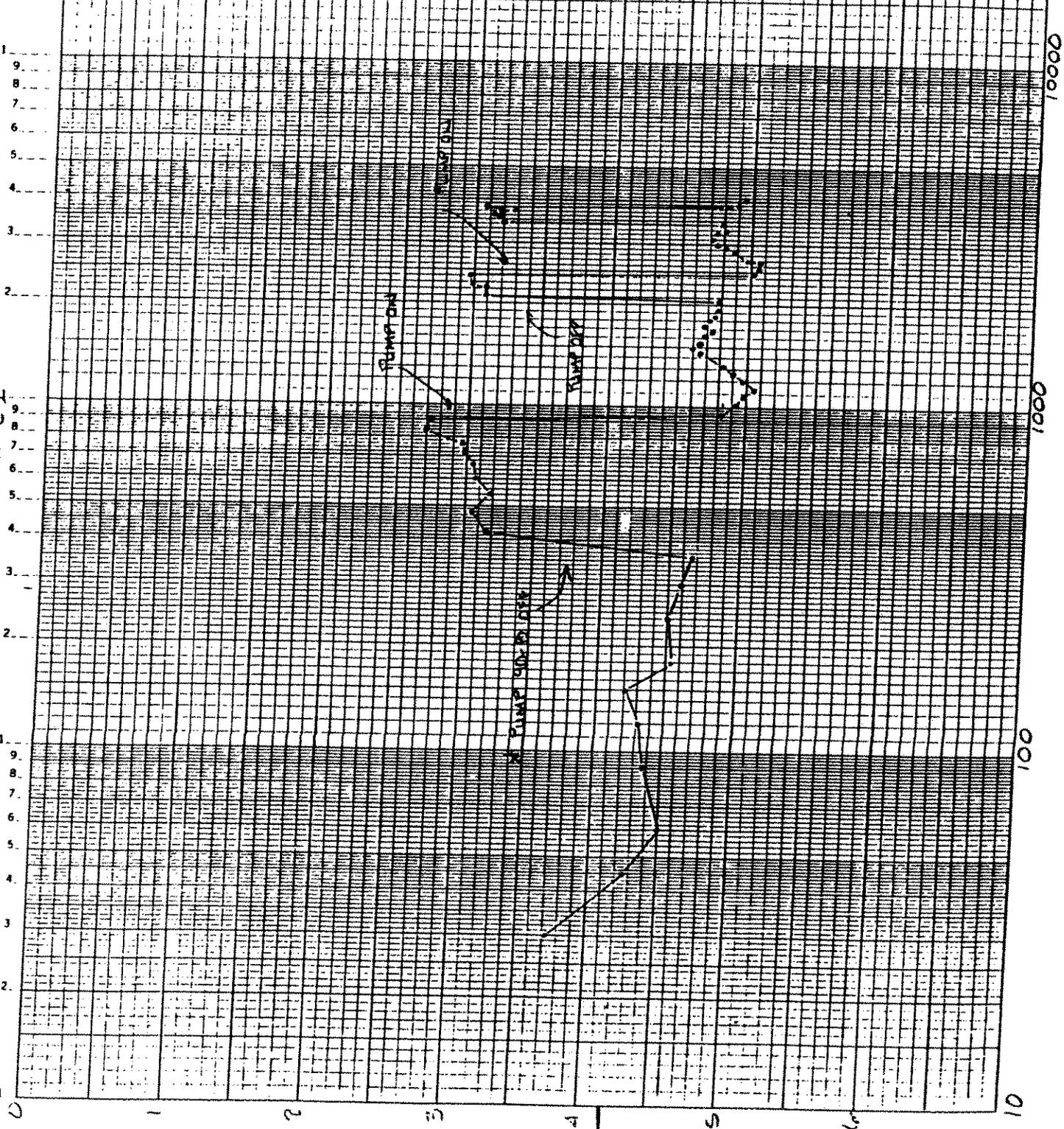
ANAYOLA 0818-01  
JUNE 26, 1941  
RECOVERED  
MAG. 11-10-1941



DEADEN IN FEET

11-10-1941

ANALOG O.B. 0-01  
 MONITOR - 60 UNITS  
 DATE 1A-58 1961  
 TIME (START) 24:30  
 \* WELL NO. 8 LOB 18-10  
 Q = 200 GPM  
 REEFER TO FROM WELL  
 O.B. 15-03



10000  
 1000  
 100  
 10

United States Department of the Interior, U.S. Geological Survey  
 Water Resources Division, National Laboratory, Arvada, Colorado

SITE ID: 220825159185301      LAB ID NO.: 2110194      PROJECT: 4.500200  
 STATION NAME: 2-0818-03, ANAHOLA WELL, ANALOLA, KAUAI      STATE: 15  
 BEGIN DATE: 06-26-1991 AT 1000      END DATE: - -      AT      COUNTY: 007  
 MEDIUM: 6      REMARKS TO LAB: COLL BY DOWRH;MAILED 07-24-91  
 SAMPLE COST: \$378.13      SCHEDULES USED: 197 1024      NO. PARAMETERS: 31

CODE	PARAMETER NAME	UNITS	VALUE	R	M	S
				E	Q	E
				H	A	T
				G		
COMPUTED 00900	HARDNESS TOTAL	(MG/L AS CAO3)	55			
NEW--> 00915	CALCIUM DISSOLVED	(MG/L AS CA)	7.9	H	D	2
NEW--> 00925	MAGNESIUM DISSOLVED	(MG/L AS MG)	8.6	H	C	2
NEW--> 00930	SODIUM DISSOLVED	(MG/L AS NA)	26	H	C	2
COMPUTED 00931	SODIUM ADSORPTION R.	(RATIO)	2			
COMPUTED 00932	SODIUM, PERCENT	PERCENT	50			
NEW--> 00935	POTASSIUM DISSOLVED	(MG/L AS K)	1.5	H	B	2
NEW--> 00940	CHLORIDE DISSOLVED	(MG/L AS CL)	19	H	J	2
NEW--> 00945	SULFATE DISSOLVED	(MG/L AS SO4)	12	H	G	2
NEW--> 00950	FLUORIDE DISSOLVED	(MG/L AS F)	0.10	H	E	2
NEW--> 00955	SILICA DISSOLVED	(MG/L AS SIO2)	29	H	C	2
NEW--> 01002	ARSENIC TOTAL	(UG/L AS AS)	1	<	H	B
NEW--> 01007	BARIUM TOTAL	(UG/L AS BA)	100	<	H	A
NEW--> 01012	BERYLLIUM TOTAL	(UG/L AS BE)	10	<	H	A
NEW--> 01027	CADMIUM TOTAL	(UG/L AS CD)	1	<	H	F
NEW--> 01034	CHROMIUM TOTAL	(UG/L AS CR)	7		H	D
NEW--> 01037	COBALT TOTAL	(UG/L AS CO)	1	<	H	F
NEW--> 01042	COPPER TOTAL	(UG/L AS CU)	2		H	F
NEW--> 01046	IRON DISSOLVED	(UG/L AS FE)	3	<	H	D
NEW--> 01051	LEAD TOTAL	(UG/L AS PB)	3		H	F
NEW--> 01055	MANGANESE TOTAL	(UG/L AS MN)	10	<	H	A
NEW--> 01056	MANGANESE DISSOLVED	(UG/L AS MN)	1	<	H	C
NEW--> 01062	MOLYBDENUM TOTAL	(UG/L AS MO)	1	<	H	A
NEW--> 01067	NICKEL TOTAL	(UG/L AS NI)	6		H	F
NEW--> 01077	SILVER TOTAL	(UG/L AS AG)	1	<	H	F
NEW--> 01092	ZINC TOTAL	(UG/L AS ZN)	10	<	H	A
NEW--> 01105	ALUMINUM TOTAL	UG/L AS AL	10	<	H	C
NEW--> 01132	LITHIUM TOTAL	(UG/L AS LI)	10	<	H	A
NEW--> 01147	SELENIUM TOTAL	(UG/L AS SE)	1	<	H	A
COMPUTED 70301	DISSOLVED SOLIDS SUM	MG/L	147			
NEW--> 71900	MERCURY, TOT.REC.	UG/L AS HG	0.10	<	H	B
NEW--> 90095	SPECIFIC CONDUCTANCE	MICROSIEMENS/CM	229		H	A
NEW--> 90410	ALKALINITY	MG/L AS CACO3	72		H	A

\*\*\*\* NO RECORD COULD BE LOCATED IN THE QWFILE FOR THIS TRANSACTION  
 -- ALL DATA HAVE BEEN REJECTED - NO SITEFILE ENTRY FOR USGS 220825159185301

CATIONS	(MG/L)	(MEQ/L)	ANIONS	(MG/L)	(MEQ/L)
CALCIUM, DISS. MG/L	7.901	0.395	CHLORIDE, DISS. MG/L	19.000	0.536
MAGNESIUM, DISS. MG/L	8.601	0.708	SULFATE, DISS. MG/L	12.000	0.250
SODIUM, DISS. MG/L	26.000	1.132	FLUORIDE, DISS. MG/L	0.101	0.006
POTASSIUM, DISS. MG/L	1.500	0.039	ALKALINITY, FET, LAB	72.000	1.439
TOTAL	2.272		TOTAL	2.230	

PERCENT DIFFERENCE = 0.93



**BREWER**  
**ENVIRONMENTAL**  
**INDUSTRIES, INC.**  
A C BREWER COMPANY

LABORATORY ANALYSIS  
 REPORT  
 07 JUL 91 P 2: 48

DEPARTMENT OF WATER SUPPLY  
 P.O. Box 1708  
 Lihue, Hawaii 96766

Environmental Services Division  
 JOB NO: 4417  
 Date: 07/15/91  
 ATTN: Keith Fujimoto

Date Sampled/Time: 062591/0907-20  
 Sampled By: Morenzo  
 Sample Location: Anahola Well 3  
 (0818-03)

Date Received: 062691  
 Time Received: 0700

Analysis Date: 070591

UNREGULATED COMPOUNDS  
 METHOD: 502.2

RESULT  
 ug/L

DETECTION  
 LIMIT-ug/L

UNREGULATED COMPOUNDS METHOD: 502.2	RESULT ug/L	DETECTION LIMIT-ug/L
Chloromethane	ND	1.0
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Methylene Chloride	ND	0.6
trans-1,2-Dichloroethene	ND	1.0
1,1-Dichloroethane	ND	1.0
2,2-Dichloropropane	ND	2.0
cis-1,2-Dichloroethene	ND	1.0
Chloroform	ND	0.6
1,1-Dichloropropene	ND	1.0
1,2-Dichloropropane	ND	1.0
Bromodichloromethane	ND	1.0
Dibromomethane	ND	1.0
trans-1,3-Dichloropropene	ND	1.0
Toluene	ND	1.0
cis-Dichloropropene	ND	1.0
1,1,2-Trichloroethane	ND	1.0
Tetrachloroethene	ND	0.3
1,3-Dichloropropane	ND	1.0
Dibromochloromethane	ND	1.0
Chlorobenzene	ND	1.0
Ethyl benzene	ND	1.0
1,1,1,2-Tetrachloroethane	ND	1.0
m-Xylene	ND	1.0
p-Xylene	ND	1.0
o-Xylene	ND	1.0
Styrene	ND	1.0
Bromoform	ND	2.0
1,1,2,2-Tetrachloroethane	ND	1.0
1,2,3-Trichloropropane	ND	1.0
Bromobenzene	ND	1.0
2-Chlorotoluene	ND	1.0
4-Chlorotoluene	ND	1.0
1,3-Dichlorobenzene	ND	1.0
1,2-Dichlorobenzene	ND	1.0

ND = NOT DETECTED

BREWER ENVIRONMENTAL INDUSTRIES, INC.  
 PO BOX 552  
 PAPAHOE HI 96761  
 PHONE (808) 964-5322  
 FAX (808) 964-5309

1

*Jama Malachuk-Brown*

LABORATORY ANALYSIS  
REPORT

DEPARTMENT OF WATER SUPPLY  
P.O. Box 1706  
Lihue, Hawaii 96766

JOB NO: 4417  
Date: 07/15/91

Date Sampled/Time: 062591/0907-20 Date Received: 062691  
Sampled By: Morenzo Time Received: 0700  
Sample Location: Anahola Well 3

Analysis Date: 7/05/91

REGULATED COMPOUNDS METHOD: 502.2	RESULT ug/L	DETECTION LIMIT ug/L
Vinyl Chloride	ND	1.0
1,1-Dichloroethylene	ND	1.0
1,1,1-Trichloroethane	ND	1.0
Carbon Tetrachloride	ND	0.5
Benzene	ND	1.0
1,2-Dichloroethane	ND	1.0
Trichloroethylene	ND	0.5
p-Dichlorobenzene	ND	1.0

Analysis Date: 07/05/91

UNREGULATED COMPOUNDS-(list 3) METHOD: 524	RESULT ug/L	DETECTION LIMIT ug/L
Bromochloromethane	ND	1.0
1,2,4-Trichlorobenzene	ND	1.0
Hexachlorobutadiene	ND	1.0
Naphthalene	ND	1.0
1,2,3-Trichlorobenzene	ND	1.0

Analysis Date: 07/05/91

REGULATED COMPOUND METHOD: 504	RESULT ug/L	DETECTION LIMIT ug/L
Ethylene Dibromide	ND	1.0
1,2-Dibromo-3-Chloropropane	ND	1.0

ND = NOT DETECTED

*Jana Malcolm-Brown*

LABORATORY ANALYSIS  
REPORT

DEPARTMENT OF WATER SUPPLY  
P.O. Box 1706  
Lihue, Hawaii 96766

JOB NO: 4417  
Date: 07/15/91

Date Sampled/Time: 062591/0907-20  
Sampled By: Morenzo  
Sample Location: Anahola Well 3

Date Received: 062691  
Time Received: 0700

Analysis Date: 07/05/91

PESTICIDES / HERBICIDES METHOD: 505 / 515.1	RESULT ug/L	DETECTION LIMIT ug/L	MCL ug/L
Endrin	ND	0.20	0.2
Lindane	ND	0.02	4.0
Methoxychlor	ND	0.17	100
Toxaphene	ND	0.17	5.0
2,4-D	ND	5.0	100
2,4,5-TP (Silvex)	ND	5.0	10

Analysis Date: 07/05/91

TRIHALOMETHANES METHOD: 524	RESULT ug/L	DETECTION LIMIT ug/L	MCL ug/L
TOTAL	ND	5.0	100
Chloroform	ND	0.6	
Bromoform	ND	2.0	
Chlorodibromomethane	ND	1.0	
Dichlorobromomethane	ND	1.0	

ND = NOT DETECTED

*Jana Malcolm-Brown*

LABORATORY ANALYSIS  
REPORT

DEPARTMENT OF WATER SUPPLY  
P.O. Box 1706  
Lihue, Hawaii 96766

JOB NO: 4417  
DATE: 07/15/91

Date Sampled/Time: 062591/0907-20 Date Received: 062691  
Sampled By: Morenzo Time Received: 0700  
Sample Location: Anahola Well 3

Analysis Date: 07/08/91

INORGANIC CONSTITUENTS	RESULT mg/L	DETECTION LIMIT mg/L	MCL mg/L
Arsenic	ND	0.01	0.05
Selenium	ND	0.01	0.01
Mercury	ND	0.0002	0.002
Cadmium	ND	0.01	0.010
Lead	ND	0.01	0.05
Chromium	ND	0.01	0.05
Barium	ND	0.01	1.0
Silver	ND	0.01	0.05
Lithium	ND	0.10	
Boron	ND	0.03	
Silica	12.0	0.10	
Sodium	31.0	0.10	
Vanadium	0.02	0.01	
Nickel	ND	0.01	
Nitrate (as N)	ND	0.1	10
Fluoride	0.2	0.1	
Chloride	20.0	0.1	250
Total Dissolved Solids	193	5.0	500

ADDITIONAL CONSTITUENTS OF INTEREST:

Calcium	6.4	0.10
Magnesium	7.1	0.10
Potassium	2.2	0.10

ND = NOT DETECTED

*Jane Malcolm-Zuer*