

ALAN M. ARAKAWA
Mayor



GEORGE Y. TENGAN
Director

JEFFREY T. PEARSON, P.E.
Deputy Director

DEPARTMENT OF WATER SUPPLY

COUNTY OF MAUI

200 SOUTH HIGH STREET

WAILUKU, MAUI, HAWAII 96793-2155

www.mauiwater.org

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OFFICE OF ENVIRONMENTAL
QUALITY CONTROL

November 20, 2003

Office of Environmental Quality Control
Genevieve Salmonson, Director
235 S. Beretania Street, Suite 702
Honolulu, Hawaii 96813

Dear Ms. Salmonson:

**SUBJECT: Finding of No Significant Impact (FONSI) for
Iao Tank Exploratory Well
Wailuku, Maui, Hawaii
TMK: (2) 3 - 5 - 01 : 021**

The Department of Water Supply, County of Maui, has reviewed the comments received during the 30-day public comment period which began on September 23, 2003. The Department has determined that this project will not have significant environmental effects and has issued a FONSI. Please publish this notice in the November 25, 2003, OEQC Environmental Notice.

We are enclosing a completed OEQC Publication Form and four copies of the final EA. Please feel free to contact me or Herb Kogasaka, Civil Engineer, Department of Water Supply, at (808) 270-7835 should you have any other questions on the matter.

Sincerely,

A handwritten signature in black ink, appearing to read "George Y. Tengan".

George Y. Tengan
Director

cc: Carl Takumi, C. Takumi Engineering

"By Water All Things Find Life"

Printed on recycled paper



DEC 8 2003

FILE COPY

2003-12-08-MA-FEA-

CHAPTER 343, Hawaii Revised Statutes (HRS)

FINAL ENVIRONMENTAL ASSESSMENT

For

(IAO TANK EXPLORATORY WELL)

WAILUKU, MAUI, HAWAII

TMK: (2) 3-5-01: 021

Prepared for:
Department of Water Supply
200 South High Street
Wailuku, Hawaii 96793

Prepared by:
C. Takumi Engineering, Inc.
18 Central Avenue
Wailuku, Hawaii 96793

November 2003

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CHAPTER 343, Hawaii Revised Statutes (HRS)
FINAL ENVIRONMENTAL ASSESSMENT
FINDING OF NO SIGNIFICANT IMPACT (FONSI)
FOR
IAO EXPLORATORY WELL
WAILUKU, MAUI, HAWAII
TMK: (2) 3-5-01: 021

I. SUMMARY

**A. IDENTIFICATION OF THE PROPOSING/APPROVING
AUTHORITY AND CONSULTANT**

Proposing Agency/Accepting Authority:

Department of Water Supply
200 South High Street
Wailuku, Hawaii 96793

Consultant:

C. Takumi Engineering, Inc.
18 Central Avenue
Wailuku, Hawaii 96793

B. PROJECT DESCRIPTION

The Maui Department of Water Supply (DWS) is proposing the construction of an exploratory well in Wailuku, Maui, Hawaii (TMK (2) 3-5-01: 021, see attachments). The proposed well site is located south of Iao Stream, within a County of Maui Reservoir Lot.

The project will involve the drilling, casing and testing of an exploratory well. The well will be constructed to the basal aquifer casing. The annular space will be grouted from just above the water table to ground surface to prevent surface or high level water seepage from entering the well. Water encountered above the basal lens during the drilling of the well will be grouted before continuing with the drilling operation. Well pump testing to determine the quantity of water available consists of a pump step test and a pump continuous test. A sample during the continuous pump test will determine water quality. The anticipated test pumping range is 300 gallons per minute to 1,600 gallons per minute.

Upon completion of the well testing, the well will be capped, the data obtained will be analyzed, and the Department of Water Supply will then decide whether to

continue with the development of the well. The data will also help confirm the estimated sustainable yield of the aquifer.

C. BACKGROUND INFORMATION

The Iao Aquifer System is the primary source of water for the Wailuku Water System. The Commission on Water Resources has determined the sustainable yield of the aquifer to be 20 mgd. Withdrawal is concentrated at the Department of Water Supply Mokuahau, Waihee and Waiehu Heights Well Fields and Wailuku Shaft 33. Both Kepaniwai Well and Iao Tunnel also contribute to the Wailuku Water System. Due to centralized pumping, localized up coning is occurring, increasing the salinity. To distribute the pumping more evenly over the aquifer, new locations for water sources are being examined.

Wailuku Shaft 33 is not owned by DWS and is extremely difficult to access. Wailuku Shaft 33 water system was intended to be a temporary method for distributing the pumping more evenly over the aquifer until a more permanent water source could be developed. The access limitations make standard maintenance and repairs at Wailuku Shaft 33 difficult and costly. The DWS is working toward replacing the water source produced by Wailuku Shaft 33. Data gathered from the proposed exploratory well would be used to determine if the site could replace Wailuku Shaft 33.

D. LOCATION

The proposed well is located in Wailuku, Maui, Hawaii, TMK (2) 3-5-01: 021. This parcel south of Iao Stream and west of Honoapiilani Highway is at approximate elevation 507 feet mean sea level (MSL), within Lot 21 of the County of Maui, Reservoir Lot. The lot is approximately 1.326 acres. Tax Map Key (2) 3-5-01 is attached with the well location shown.

E. LAND USE DESIGNATION:

State land Use:	Agricultural
County community Plan:	Agricultural
County Zoning:	Agricultural

F. PRE-CONSULTATION AGENCIES CONSULTED:

Department of Planning, County of Maui
Department of Public Works and Environmental Management, County of Maui
Wailuku Main Street Association
Commission on Water Resources Management, State of Hawaii

II. PROJECT DESCRIPTION:

A. DESCRIPTION OF PROPOSED ACTION

The proposed project involves the exploratory drilling and pump testing of Iao Tank Exploratory Well located approximately south of Iao Stream and west of Honoapiilani Highway at approximate elevation 507 feet mean sea level (MSL). The excess dirt and material from drilling will be spread out evenly around the site. The anticipated construction time to drill and test the well is 6 months. The following guideline will be used in the drilling and testing of the well:

- (1) Drill 12-inch diameter minimum pilot hole to a depth of approximately 100 feet mean sea level (MSL) or into the Wailuku Series basalt. Deepen hole in 10 foot increments or more if preliminary tests show well does not extend into the Wailuku basalt.
- (2) Enlarge hole to 26-inches diameter, approximately 550 ft below ground surface.
- (3) Install 20-inch screen or perforated casing from bottom of hole at -42 feet MSL to +8 feet MSL. Bottom of casing shall be set in a three foot thick concrete plug.
- (4) Install approximately 20-inch diameter blank casing from +8 feet MSL to approximately 2 feet above ground surface at elevation 509 feet. Install double (2) cement baskets at about 25 feet MSL.
- (5) Fill annular space with 5 feet of pea gravel from 25 feet MSL to 30 feet MSL and 5 feet of sand from 30-feet MSL to 35-feet MSL.
- (6) Grout annular space from top of sand at elevation 35 feet MSL to ground level at elevation 507 feet MSL.
- (7) Based on pump test results, drill through concrete plug with 16-inch open hole.
- (8) Conduct pump test and test water quality.
- (9) Cap well, clean-up and demobilize.

The two types of pump tests that will be conducted are: (1) Step-Drawdown Test and (2) Constant-Rate Test. The step pump test should be complete within 8 hours, and the constant-rate test is anticipated to run for 96 hours. Water samples will be taken throughout the pump tests to determine chloride content (salinity). A water quality sample will also be taken toward the end of the continuous rate test to compare with State of Hawaii's Safe Drinking Water Standards. The water from the well tests will be discharged to an existing on-site drop inlet which is part of the site drainage system. Pertinent equipment will then be removed after all tests have been conducted. The well will then be capped until the water quality data is analyzed. After analysis of the pump test and water quality data, the Department of Water Supply shall determine the feasibility of developing the well as a source for water. The project will not require the construction of a road since access to the site already exists.

B. CONSTRUCTION COST AND IMPLEMENTATION

Construction for the proposed project is anticipated to begin in the last quarter of 2003 and will be funded solely by the County of Maui. The estimated project cost is approximately \$475,000.

Description	Quantity	Units	Unit cost	Total Cost
Site Preparation & Mobilization			Lump Sum	\$48,250
Drill 12-inch Pilot Hole	607	Lin. Ft.	\$150	\$91,050
Drill/Ream 18-inch Hole	57	Lin. Ft.	\$180	\$10,260
Drill/Ream 26-inch Hole	550	Lin. Ft.	\$200	\$110,000
Furnish & Install 20-inch Solid Steel Casing	501	Lin. Ft.	\$80	\$40,080
Furnish & Install 20-inch Perforated Casing	50	Lin. Ft.	\$100	\$5,000
Grout Annular Space	472	Lin. Ft.	\$50	\$23,600
Install Test Pump			Lump Sum	\$30,000
Pump Test Well	104	Hrs.	\$250	\$26,000
Subtotal				\$384,240
Contingencies				\$90,760
Total Estimated Construction Cost				\$475,000

III. DESCRIPTION OF THE EXISTING ENVIRONMENTAL SETTING, IMPACTS AND MITIGATION MEASURES

A. PHYSICAL ENVIRONMENT

1. Existing Land Uses

The location of the proposed well is within a County of Maui Reservoir Lot. Currently a 3 million gallon reservoir as well as other water supply improvements are already located on the parcel. The land is zoned as agricultural land. Exploratory Wells are permitted uses within agricultural lands. Once capped, the well is not anticipated to have a significant impact upon existing land uses.

2. Surrounding Land Uses

The surrounding lands are zoned agriculture, project district and single family residential. Presently the lands adjacent to the project location are in fallow. There is also a small transformer lot adjacent to the project site that is owned by the Maui Electric Company.

3. Climate

The climate at the project site is generally warm with moderate rainfall. Mean temperature ranges from approximately 65° to 85° F. Annual rainfall is typically 20 to 40 inches per year. The proposed project will not effect the existing climate conditions.

4. Topography

The proposed Iao Exploratory Well is approximately 507 feet above mean sea level (MSL). The slope at the well site is relatively flat due to grading previously done by the County of Maui. The well site does not show any significant topographical constraints.

5. Soils

The area is comprised of Wailuku Silty Clay 3%-5% slope (WvB). WvB soil consists of smooth alluvial fans. The surface (approximately 48 inches) is dark reddish-brown silty clay with a subangular blocky structure. The surface soil is slightly acid to medium acid. The substratum is gravely and cobbly alluvium, which is slightly acid. The runoff is slow, and the erosion hazard is slight. The proposed project is contained in a small area, approximately 50 feet by 50 feet, and should not have any significant effect upon existing soils.

6. Flood Hazard

The proposed location for the Iao Exploratory Well is in an area of minimal flood hazard as determined by the Flood Insurance Map for the area. The proposed project will have no effect on the existing flood areas.

7. Hydrology

The proposed well will be drilled to the basal aquifer lens. The basal aquifer lens is at or near sea level. Any significant seepage that is encountered during the drilling operation will be sealed off by grouting before drilling continues. After the casing is installed, the annular space around the casing shall be grouted from just above the water level to the top of the well to keep surface and high level ground water from seeping into basal aquifer. Grouting the annular space should also mitigate any impacts to stream flow in the area.

8. Flora and Fauna

The proposed well site is covered with various weeds and grass. There are shrubs and trees surrounding the site. The surrounding area will not be affected by the well. The proposed site has been previously cleared and graded and there is no known rare, endangered or threatened plant growth within the site. There is a large Monkey Pod Tree on the site. The tree has about a 5 foot diameter and about a 90 foot canopy.

Mammals common to this area include dogs, cats, mongoose and rodents. Avifauna that are typically found in the region are mynas, sparrows, cardinals, doves, and finches. There are no known endangered or threatened wildlife species within the project site.

9. Air Quality

The air quality at the site is considered good. Automobile emissions coming from nearby streets are the main contributors of airborne pollutants. The short-term drilling-related activities may create dust, which will cause an impact on the air quality. Dust control and wind blown emissions will be kept to a minimum through regular watering and sprinkling. Site work, such as clearing and grubbing could generate air-borne particles. Also, the temporary pump used to test the water may be diesel operated and may cause a short-term impact on the quality of the air.

10. Noise Characteristics

In order to minimize the impact of surrounding noise conditions, the drilling activities shall be limited to daylight working hours. This is to adhere to the State Department of Health's noise regulations for drilling equipment and out of respect for property owners that live nearby. Upon completion of the well, noise level will not be affected since the well will be capped and no noise generating equipment will remain.

B. CULTURAL RESOURCES

1. Historic Evidence of Cultural Activities

The project site is located within a 1.326 acre County of Maui, Reservoir Lot. Current tax maps show no record of land commission awards (LCA's) on the project site. The presence of LCAs is one indicator of native Hawaiian activities or presence in the mid to later half of the nineteenth century.

2. Archaeological Resources

The area has been impacted by previous grading and excavation during the construction of the reservoir. If any artifacts are found during the construction of

the well, work will be stopped. The State Historic Preservation Division will then be contacted for further appropriate measures.

C. SOCIO-ECONOMIC ENVIRONMENT

Population and Economy

The population of the County of Maui has exhibited relatively strong growth over the past decade. In 2000, the population was estimated to be 128,241, with a 28% increase over the 1990 population of 100,504. Growth of the County is expected to continue at a similar rate.

The Wailuku-Kahului region is the island's center of commerce, including the airport, harbor, and a wide range of commercial, service, professional, and governmental activities. The large agricultural tract of lands that encompass the region, mainly owned by Hawaiian Commercial & Sugar Company are also a vital part of the region's economy.

The Central Maui Water System services both the residential and commercial areas of Central Maui, including Paia and South Maui, which are expected to grow. The growth rate of these regions continues to place additional stress on the Iao Aquifer System. The addition of a new exploratory well will not change pumpage from the Iao Aquifer System. The exploratory well will be used only for data and will not significantly affect the population or economy of Maui. The economic impacts that are expected from the proposed project are short-term well construction activities that increase construction and construction-related employment.

D. PUBLIC SERVICES

1. Recreational Facilities

There are no County or State recreational facilities adjacent to the proposed site. A Forest Reserve is located about 0.5 miles west of the site, and Iao Valley State Park is located approximately 1.5 miles west of the project location. The well is located on County of Maui land. The proposed project will not affect any of the existing recreational facilities.

2. Police and Fire Protection

The Wailuku Station is the headquarters for Maui County's Police Department. They patrol the Iao Valley area. The proposed project should not affect the Police Department unless an emergency occurs.

The Wailuku Fire Station offers fire prevention, suppression and protection for the Iao Valley area. The station is located in Wailuku Town. The proposed project should not affect Fire Department unless an emergency occurs.

3. Health Care

Maui Memorial Hospital is the nearest medical facility for the area and provides 24-hour emergency services. Small medical facilities are located in Wailuku and Kahului Towns. The proposed project should not affect health care facilities unless an emergency occurs.

4. Schools

The public schools that serve the Wailuku area are Wailuku Elementary School, Iao Intermediate School, Baldwin High School. St. Anthony School is also located in Wailuku. The proposed project should not affect schools in the area.

5. Solid Waste

The Wailuku district is served by a County refuse system. All solid waste is transported to the Central Maui Landfill. Once the project is completed, the well will not generate solid waste. The contractor shall be responsible for maintaining a clean site and remove all waste that is generated during construction.

E. INFRASTRUCTURE

1. Roadways

The proposed project is accessed via West Alu Road. The well is located within an existing County of Maui Reservoir Lot which is bordered by both paved roads and unpaved roads. No roadway improvements are needed for the proposed well. There will be a short-term increase in traffic as workers and equipment come and leave the project site. Parking for construction employees will be located on the lot to avoid impacts to existing traffic.

2. Water

The Central Maui Water System receives its water primarily from the Iao Aquifer System, which has an assigned sustainable yield of 20 mgd. The Iao Aquifer is bounded by the south ridge of Waihee River and Waikupu Valley, extending from the coast to the summit of the West Maui Mountains. There are currently 15 active wells in the Iao Aquifer.

The proposed project may provide additional data on the Iao Aquifer System. The data obtained from the pump test will provide better understanding on the Iao Aquifer and its sustainable yield. The proposed exploratory well will not increase the total amount of pumping from the Iao Aquifer System.

If the pump test from the exploratory well is successful a new Environmental Assessment will be conducted for the development of a production well. The future production well would be used to replace the water being pump from Wailuku Shaft 33, which would more evenly distribute the pumping over the aquifer. Wailuku Shaft 33 is not owned by DWS or the County of Maui and the access for maintenance is extremely difficult. The development of a new source well at this location would replace the county's use of Wailuku Shaft 33.

3. Wastewater

Wastewater disposal in Wailuku Heights is by septic tanks and cesspools. The county sewer system extends to the residential area just below the project location. The proposed project will not have wastewater generating facilities. New development within 1000 ft of the proposed well will require aerobic units with shallow soil absorption system.

4. Drainage

The proposed project involves minimal land alteration activities and will not alter existing drainage patterns in the area. There are no drainage-ways at the site and storm runoff generally sheet flows into adjacent gulches.

Once the project is completed, the top of the well casing shall be terminated above the ground surface and sealed to protect against surface water, pollutants and other contaminants from entering the well. As such exploratory wells are not anticipated to have an adverse effect upon the existing hydrological conditions, adjoining or downstream properties, or coastal waters.

IV. RELATIONSHIPS TO GOVERNMENTAL PLANS, POLICIES, AND CONTROLS

A. STATE LAND USE DISTRICTS

Chapter 205, Hawaii Revised Statutes, relating to the Land Use Commission (LUC), establishes the 4 major land use districts in which all lands in the State are placed. These districts are designated "Urban", "Rural", "Agricultural", and "Conservation." The proposed project, Iao Exploratory Well, is permitted within the "Agricultural" district.

B. MAUI COUNTY GENERAL PLAN

The Maui County General Plan (1990 Update) sets forth broad objectives and policies to help guide the long-range development of the County. As stated in the Maui County Charter, "The purpose of the General Plan is to recognize and state the major problems and opportunities concerning the needs and the development of the County and the social, economic and environmental effects of such development and set forth the desired sequence, patterns and characteristics of future development."

The proposed Iao Exploratory Well is keeping within the guidelines of the following Maui County General Plan. The proposed well will be used to produce data that may be used to reduce pumping at other sites with the Iao Aquifer and is not intended to increase development or change zoning and land use.

C. WAILUKU-KAHULUI COMMUNITY PLAN

The well site is within the Wailuku-Kahului Community Plan region; one of nine community plan regions established in the County of Maui. Planning for each region is guided by the respective Community Plans, which are designated to implement the Maui County General Plan. Each Community Plan contains recommendations and standards that guide the sequencing, patterns and characteristics of future development in the region. The well site is designated "Agriculture" by the Wailuku-Kahului Community Plan Land Use Map. The proposed project is consistent with the "Agriculture" designation.

V. OTHER REQUIRED PERMITS AND APPROVALS

A Well Construction Permit is needed from the State Commission on Water Resource Management.

VI. ALTERNATIVES TO THE PROPOSED ACTION

A. NO ACTION

There is general agreement by the State Commission on Water Resource Management, U.S. Geological Survey and other hydrologists that wells within the aquifer should be spaced to stabilize the aquifer and to improve the quality of water pumped from an aquifer. If the pump test is successful, the proposed Iao Exploratory Well would generate data that could be used to distribute wells more evenly throughout the Iao Aquifer. In addition, the data may provide information that would allow the pumping from Wailuku Shaft 33 to be replaced. Currently, Wailuku Shaft 33 is difficult to access for maintenance and repair.

A no action alternative would not allow data to be gathered regarding the potential pump rate and water quality at the proposed well location. The lack of data would prohibit additional water sources from being developed. As a result there may be an increase in salinity at the other well locations due to the uneven spacing of the wells. The reduction of centralized pumping will reduce the possibility for localized up coning and increased salinity.

B. RESTORE WAILUKU SHAFT 33

Wailuku Shaft 33 was intended to be a temporary water source for the Wailuku Water System until other source wells could be developed. Shaft 33 is not owned by the DWS. The shaft and wells are built in 1946 and are in need of maintenance and repair. Due to the length and slope of the shaft, the wells are difficult to access for repairs.

In order to incorporate Wailuku Shaft 33 into the Wailuku Water System as a permanent water source, the DWS must obtain ownership of the well. In addition, due to the design of Shaft 33, restoring the system to acceptable standards would require reconfiguration of the entire system. Restoring Wailuku Shaft 33 would be infeasible.

C. ALTERNATE LOCATION

The location that was selected for the proposed project was based on the proximity of the proposed well to Wailuku Shaft 33. The proposed location was chosen to more evenly distribute the pumping over the aquifer. In addition, the property is owned by DWS.

In order to consider an alternative location for the proposed project, land must be acquired by DWS or the County of Maui. In addition, the selection of the land is critical to more evenly distribute the pumping over the aquifer

VII. FINDINGS AND CONCLUSIONS: FINDING OF NO SIGNIFICANT IMPACT (FONSI)

- (1) Involve a loss or destruction of any natural or cultural resource;**
The State Historical Preservation Division has previously investigated the site and found no archaeological findings at the proposed well site. The site has already been disturbed during the construction of the existing 3 million gallon tank. The project is an exploratory well and when complete, the top of the well casing will be left two feet above ground surface.
- (2) Curtail the range of beneficial uses of the environment;**
The Project conforms to the land uses allowed in the Wailuku-Kahului Community Plan and State Land Use Plan Designation. The proposed project will be used to gather data to improve the current water quality and reliability of water in the Iao Aquifer System.
- (3) Conflict with the State's long-term goals or guidelines as expressed in Chapter 343, HRS;**
The proposed improvements are for public use and do not conflict with the Environmental Policies established in Chapter 344, HRS, and the National Environmental Policy Act.
- (4) Substantially affect the economic or social welfare of the community or state;**
The Project will not substantially affect the economic or social welfare of the community or state. The project, in itself, is not contributing to new population growth or economic benefit to any specific organization. The project is for data gathering in conformance with Department of Water Supply Standards. Should the Department of Water Supply decide to develop the well, a separate environmental assessment will be made to determine economic and social impacts.
- (5) Substantially affect public health;**
Once the Project is completed, there will be no air, noise, and water quality impacts. The annular space will be grouted to prevent surface waters from infiltrating into the well. The well will be capped to prevent impacts to the aquifer.
- (6) Involve substantial secondary effects, such as population changes or infrastructure demands;**
The proposed project will not in itself generate new population growth, but it will provide additional water source information on the Iao Aquifer. Should results show that additional water can be feasibly developed, the Department of Water Supply may develop the well to replace Wailuku Shaft 33. The development will not impact wastewater demands; however, method of individual wastewater disposal will change to aerobic systems. Long-term traffic impact should be minimal since the well will be used to obtain data or be used by maintenance personnel.
- (7) Involves a substantial degradation of environmental quality;**
Once completed the well will be capped and left in place. Occasionally, site visits will be made to obtain additional data. As stated previously, the well will be capped 2 feet above ground surface.

- (8) **Cumulatively have a considerable effect on the environment or involve a commitment to larger actions;**
 Once the project is completed, no equipment generating noise or affecting the air quality will be left on site. Occasionally, site visits will be made to obtain additional data. Should the Department of Water Supply decide to develop the well, a separate environmental assessment will be made to determine environmental impacts.
- (9) **Substantially affect a rare, threatened, or endangered species or its habitat;**
 No endangered plant or animal species were observed within the project site.
- (10) **Detrimentially affect air or water quality or ambient noise levels;**
 The well annular space will be grouted from about 10-feet above the basal water surface to ground surface to prevent high level water, seepage, or surface waters from entering the well. Air and water quality will comply with the State Department of Health noise and clean water regulations.
- (11) **Affect an environmentally sensitive area, such as a flood plain, tsunami zone, erosion prone area, geologically hazardous land, estuary, freshwater area, or coastal waters;**
 The assessment of the Physical Environment explains that no environmentally sensitive area will be substantially affected. Impacts to surface waters will be mitigated by grouting the annular space from about 10-feet above the basal water surface to ground surface to prevent high level waters and surface waters from entering the well. Once test pumping is completed, the well will be capped. According to the Flood Insurance Maps, the well is located in an area not prone to tsunami or flooding.
- The well will be drilled to the basal aquifer, which is significantly lower than the bottom of any of the streams in the area except near the shoreline.
- (12) **Substantially affect any scenic vista or view plane;**
 The well once completed will be capped approximately 2-feet above ground surface; as such, the well will not affect any scenic vista or view planes.
- (13) **Require substantial energy consumption.**
 Well construction, in general, does not require any electrical energy from the local power company; drill rigs are usually diesel operated equipment varying in size. Highest energy consumption occurs during the test pumping of the well. The test pump will need to be capable of pumping up to 1,600 gpm for a continuous test period of 96 hours. Power for the pump is usually by diesel operated equipment. Once the pump is completed all equipment will be removed, and there will be no energy consumption.

VIII. REFERENCES

Community Resources, Inc., Maui County Community Plan Update Program Socio-Economic Forecast Report. January 1994.

County of Maui, Maui Planning Department. Community Plan: Wailuku-Kahului Community Plan.

County of Maui, Maui Planning Department. The General Plan of the County of Maui. 1990 Update.

County of Maui, Office of Economic Development. Maui County Data Book 1995. February 1996.

U.S. Department of Agriculture, Soil Conservation Service in cooperation with the University of Hawaii Agricultural Experiment Station. Soil Survey of Islands of Kauai, Oahu, Maui, Molokai, and Lanai, State of Hawaii. 1972.

University of Hawaii, Department of Geography, Atlas of Hawaii, Second Edition. University of Hawaii Press. 1983.

IX. LIST OF FIGURES

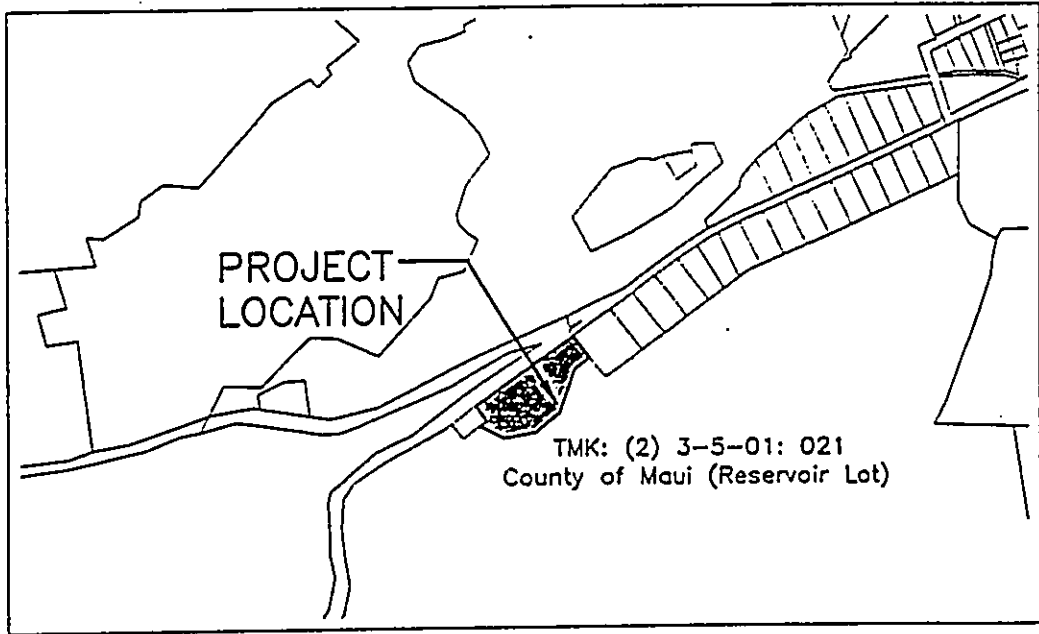
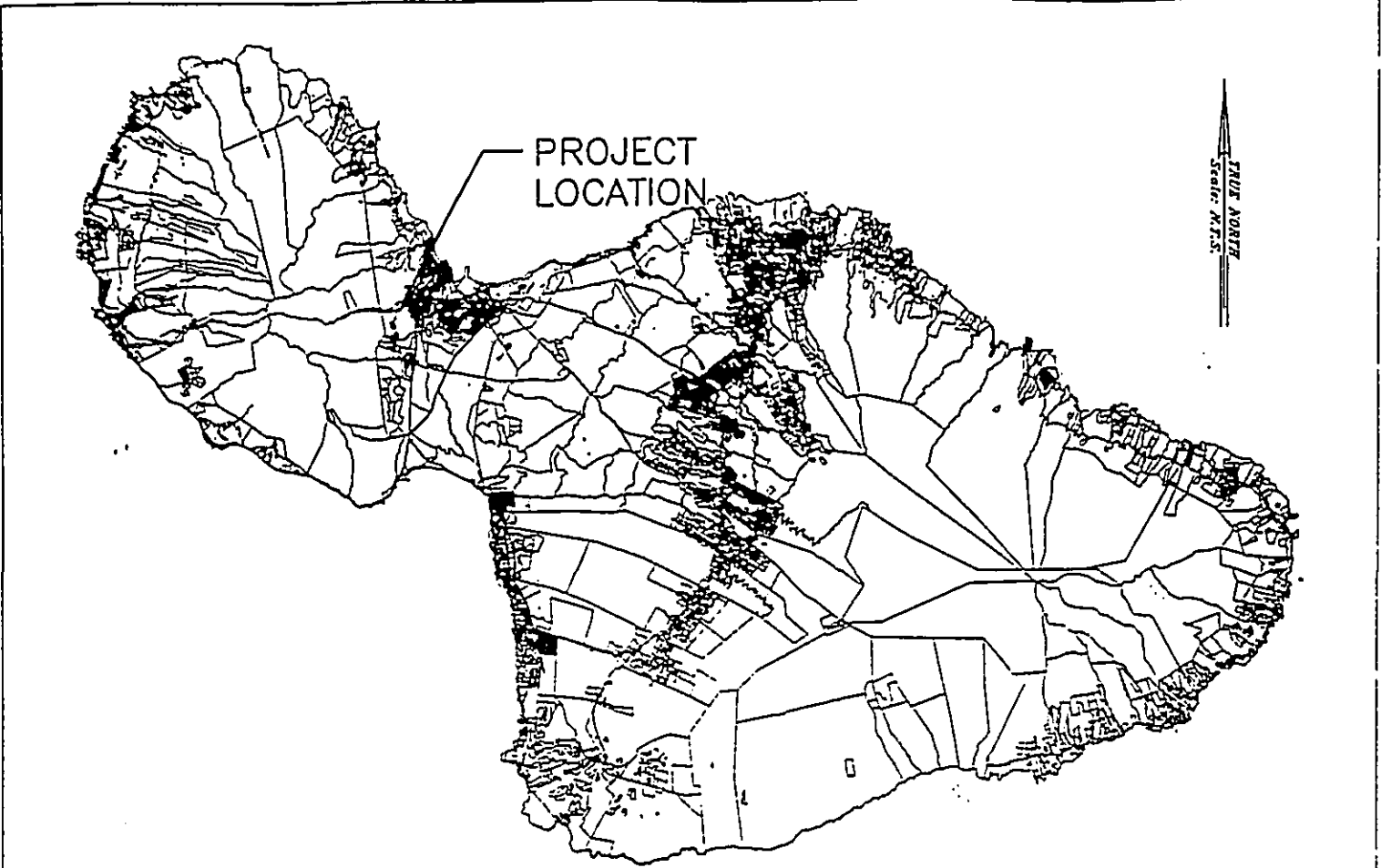
Figure 1 - Proposed Exploratory Well Location (USGS)

Figure 2 - Tax Map Location of Well Site

Figure 3 - Preliminary Lot Topography

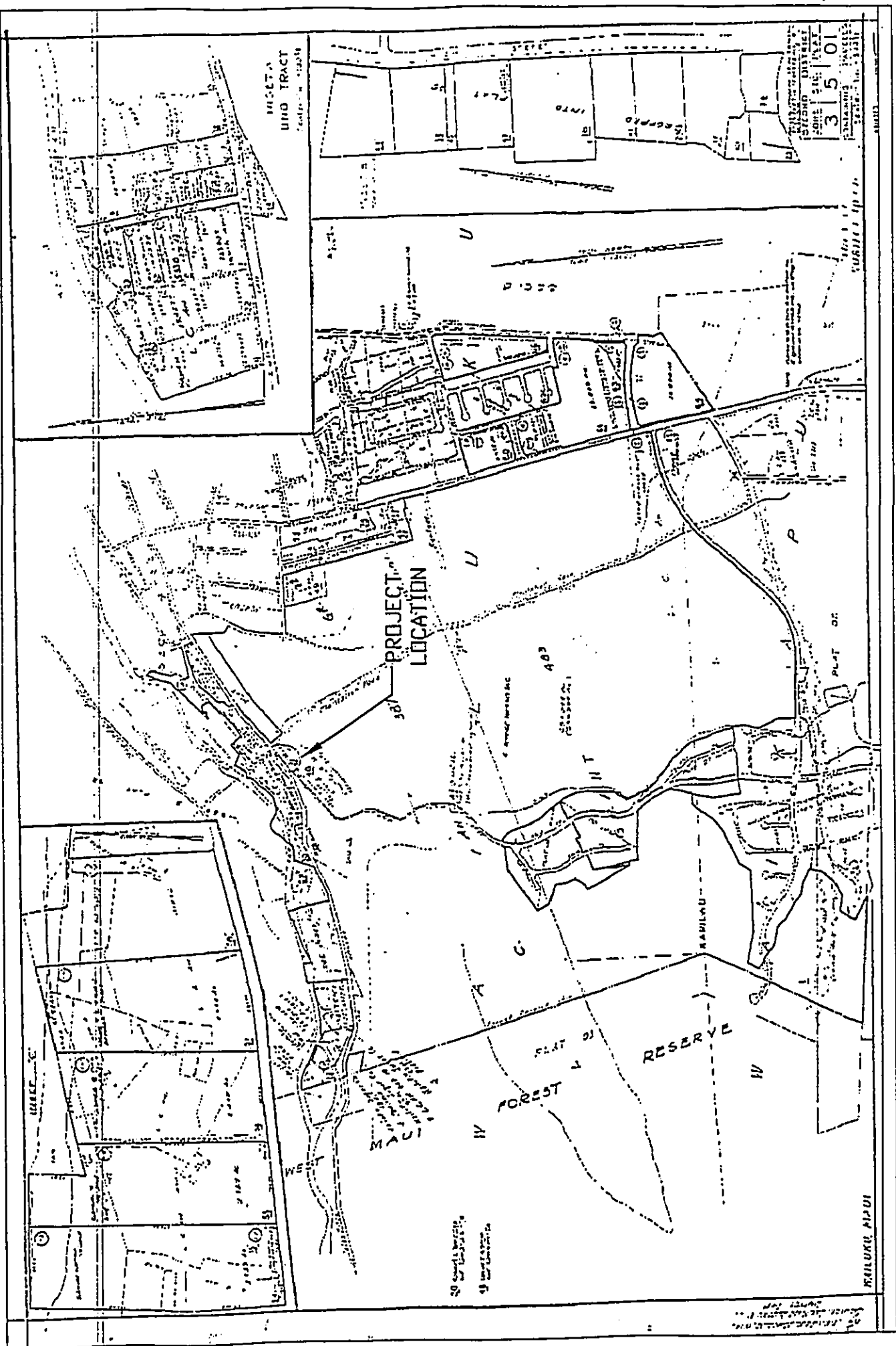
Figure 4 - Preliminary Well Section

DOCUMENT CAPTURED AS RECEIVED



IAO EXPLORATORY WELL

IAD EXPLORATORY WELL, TMK (2) 3-5-01:021, WAILUKU, MAUI, HAWAII



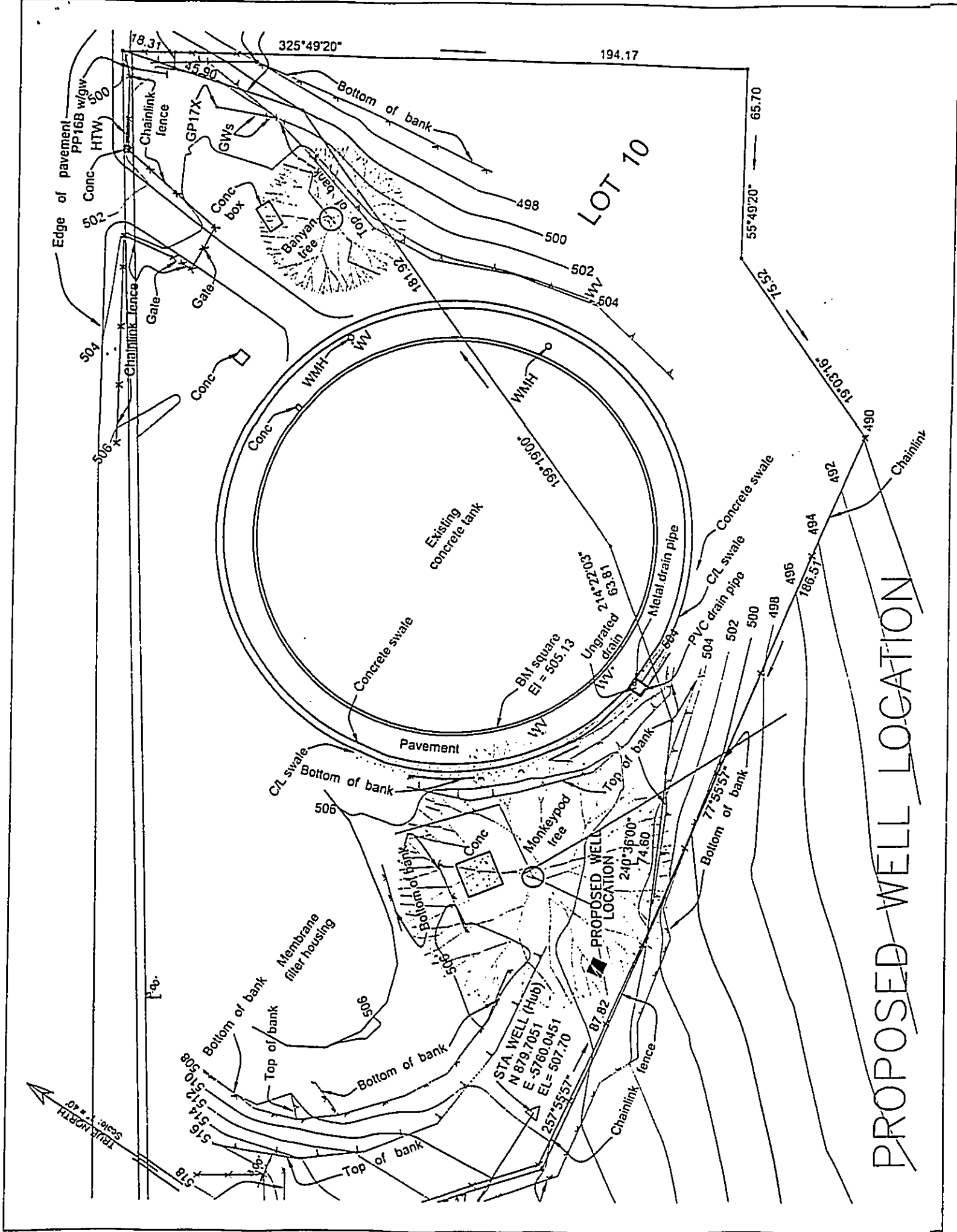
AS SHOWN ON THE MAP
SHEET 1 OF 1
DATE: 10/1/81

KAWILOU MAUI

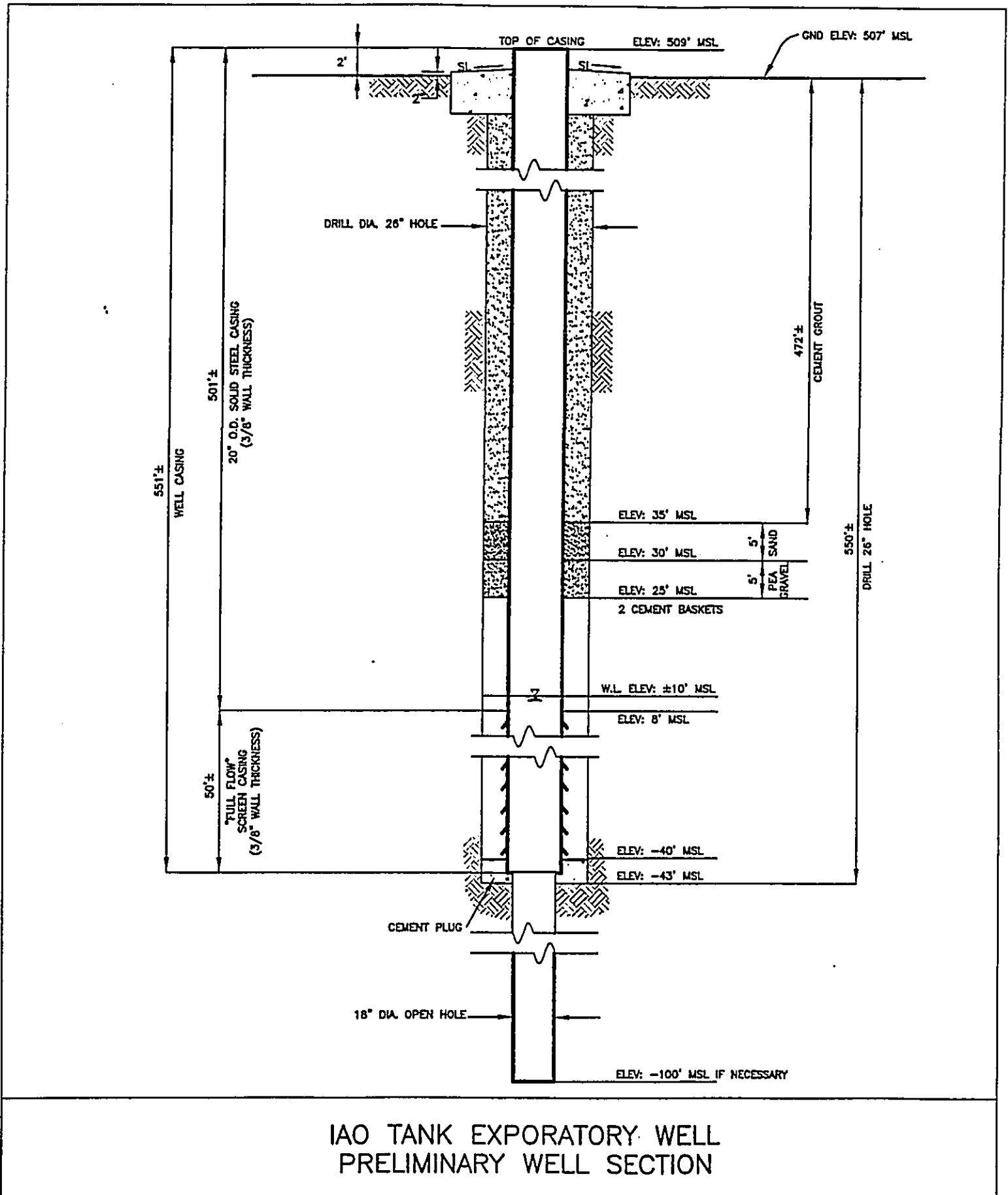
20' SETBACK
48' SETBACK

PROJECT
WIND TRACT

3 5 01
PLAT OF
KAWILOU MAUI



PROPOSED WELL LOCATION



IAO TANK EXPORATORY WELL
PRELIMINARY WELL SECTION

**APPENDIX A - AGENCIES CONTACTED DURING THE PREPARATION OF
THE DRAFT ENVIRONMENTAL ASSESSMENT**

Commission on Water Resources Management
Department of Land and Natural Resources
P.O. Box 621
Honolulu, Hawaii 96809

Department of Health
Safe Drinking Water Branch
P.O. Box 3378
Honolulu, Hawaii 96801

Department of Planning
County of Maui
220 South High Street
Wailuku, Hawaii 96793

Department of Public Works and Environmental Management
County of Maui
220 South High Street
Wailuku, Hawaii 96793

State Historic Preservation Division
Department of Land and Natural Resources
Kakahihawa Building Room No. 555
Kapolei Boulevard
Kapolei, Hawaii 96707

Wailuku Main Street Association
2035 Main Street, Suite 1
Wailuku, Hawaii 96793

Wailuku Public Library
251 High St.
Wailuku, Hawaii 96793

**APPENDIX B – DRAFT ENVIRONMENTAL ASSESSMENT COMMENT
LETTERS AND RESPONSES**

Organizations/Persons Contacted:

Commission on Water Resources Management
Department of Land and Natural Resources
P.O. Box 621
Honolulu, Hawaii 96809

Department of Health
Safe Drinking Water Branch
P.O. Box 3378
Honolulu, Hawaii 96801

Department of Planning
County of Maui
220 South High Street
Wailuku, Hawaii 96793

Department of Public Works and Environmental Management
County of Maui
220 South High Street
Wailuku, Hawaii 96793

State Historic Preservation Division
Department of Land and Natural Resources
Kakahihawa Building Room No. 555
Kapolei Boulevard
Kapolei, Hawaii 96707

Wailuku Main Street Association
2035 Main Street, Suite 1
Wailuku, Hawaii 96793

Wailuku Public Library
251 High St.
Wailuku, Hawaii 96793

Sally Raisbeck
427 Liholiho Street
Wailuku, Hawaii 96793

ALAN M. ARAKAWA
Mayor
MICHAEL W. FOLEY
Director
WAYNE A. BOTEILHO
Deputy Director



COUNTY OF MAUI
DEPARTMENT OF PLANNING

September 24, 2003

Ms. Mery Apple
C: Takumi Engineering, Inc.
18 Central Avenue
Wailuku, Maui, Hawaii 96793

Dear Ms. Apple:

RE: Draft Environmental Assessment (DEA) For Iao Exploratory Well
located at TMK: 3-5-001:021, Wailuku, Hawaii (LTR 2003/3049)

In response to your request for the above referenced project the Maui Planning Department offers the following comments:

- The proposed project is an allowable use within the State Land Use Agricultural Designation and the County Zoning Agriculture District.
- We recommend the use of Best Management Practice's to minimize the impacts of the project on air, noise levels, water and land.
- That runoff from the pump tests on adjacent property be with the authorization of the land owner.

Thank you for the opportunity to comment. If you have any questions, please contact Ms. Maria N. Isotov, Staff Planner, of this office at 270-7735.

Sincerely,

A handwritten signature in black ink that reads "M. W. Foley".

MICHAEL W. FOLEY
Planning Director

Ms. Mery Apple
September 24, 2003
Page 2

MWF:MNI:sp

c: Clayton I. Yoshida, AICP, Planning Program Administrator
Maria N. Isotov, Staff Planner
General File
K:\WP_DOCS\PLANNING\EA\2003\DEA\aoExplorWell.wpd

C. Takumi Engineering, Inc.
Civil Engineering Consultants
18 Central Avenue
Wailuku, Hawaii 96793
Phone: (808) 249-0411 Fax: (808) 249-0311

October 27, 2003

Director
PLANNING DEPARTMENT
250 South High Street
Wailuku, HI 96793

SUBJECT: Iao Tank Exploratory Well
Environmental Assessment
Wailuku, Maui, Hawaii

Job No. CWS-011

Dear Sir:

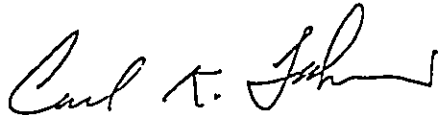
We have reviewed your comments relating to the Iao Tank Exploratory Well and respond as follows:

- Thank you for confirming the State Land Use and County Zoning for the subject property included in the Environmental Assessment.
- Impacts on air, noise levels, water and land has been discussed in the Final Environmental Assessment.
- Water from pump testing will be directed to an existing on-site drop inlet which is part of the existing drainage system.

If you have any questions, please do not hesitate to call us at (808) 249-0411.

Very truly yours,

C. Takumi Engineering, Inc.



Carl K. Takumi, P.E.

LINDA LINGLE
GOVERNOR OF HAWAII



PETER T. YOUNG
CHAIRPERSON

MEREDITH J. CHING
CLAYTON W. DELA CRUZ
JAMES A. FRAZIER
CHIYOME L. FUKINO, M.D.
STEPHANIE A. WHALEN

ERNEST Y. W. LAU
DEPUTY DIRECTOR

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT
P.O. BOX 621
HONOLULU, HAWAII 96809

October 15, 2003

Ms. Mery Apple
C. Takumi Engineering
18 Central Avenue
Wailuku, HI 96793

Dear Ms. Apple:

SUBJECT: Environmental Assessment, Iao Exploratory Well

FILE NO.: CWS-011

Thank you for the opportunity to review the subject document. Our comments related to water resources are marked below.

In general, the CWRM strongly promotes the efficient use of our water resources through conservation measures and use of alternative non-potable water resources whenever available, feasible, and there are no harmful effects to the ecosystem. Also, the CWRM encourages the protection of water recharge areas, which are important for the maintenance of streams and the replenishment of aquifers.

- [X] We recommend coordination with the county government to incorporate this project into the county's Water Use and Development Plan.
- [X] We recommend coordination with the Engineering Division of the State Department of Land and Natural Resources to incorporate this project into the State Water Projects Plan.
- [] We are concerned about the potential for ground or surface water degradation/contamination and recommend that approvals for this project be conditioned upon a review by the State Department of Health and the developer's acceptance of any resulting requirements related to water quality.
- [X] A Well Construction Permit and/or a Pump Installation Permit from the Commission would be required before ground water is developed as a source of supply for the project.
- [X] The proposed water supply source for the project is located in a designated water management area, and a Water Use Permit from the Commission would be required prior to use of this source.
- [] Groundwater withdrawals from this project may affect streamflows, which may require an instream flow standard amendment.

Ms. Mery Apple
Page 2
October 15, 2003

- We are concerned about the potential for degradation of instream uses from development on highly erodible slopes adjacent to streams within or near the project. We recommend that approvals for this project be conditioned upon a review by the corresponding county's Building Department and the developer's acceptance of any resulting requirements related to erosion control.
- If the proposed project includes construction of a stream diversion, the project may require a stream diversion works permit and amend the instream flow standard for the affected stream(s).
- If the proposed project alters the bed and banks of a stream channel, the project may require a stream channel alteration permit.
- OTHER:

We highly recommend locating any new production wells farther south from the existing cluster of lao wells near lao Stream. While replacement of Wailuku Shaft pumpage by DWS with reduced pumpage at the new site is an improvement, the Wailuku Shaft may continue to be used by the current owner.

If there are any questions, please contact Charley Ice at 587-0251.

Sincerely,


ERNEST Y.W. LAU
Deputy Director

Cl:ss

C. Takumi Engineering, Inc.
Civil Engineering Consultants
18 Central Avenue
Wailuku, Hawaii 96793
Phone: (808) 249-0411 Fax: (808) 249-0311

October 27, 2003

Commission on Water Resource Management
Dept. Of Land & Natural Resources
P.O. Box 621
Honolulu, HI 96809

SUBJECT: Iao Tank Exploratory Well
Environmental Assessment
Wailuku, Maui, Hawaii

Job No. CWS-011

Dear Sir:

We have reviewed your comments relating to the Iao Tank Exploratory Well and respond as follows:

The exploratory well will be constructed to obtain information on the aquifer conditions in the area. The Department of Water Supply will review the data obtained then determine whether to proceed with the development of the well or to maintain the well for monitoring purposes.

Should the Department determine that the aquifer conditions are favorable for well development, another environmental assessment shall be prepared. In addition, development of the well will be incorporated into the County's Water Use and Development Plan and the Engineering Division of the State Department of Land and Natural Resources shall be notified so the project can be incorporated into the State Water Project Plan.

A Well Construction Permit shall be obtained from the Commission on Water Resource Management prior to construction of the exploratory well. The Department shall apply for a Pump Installation Permit should data obtained from the exploratory well construction be favorable. A Water Use Permit shall be obtained from the Commission at the same time.

After review of the data from the exploratory well construction, the Department of Water Supply shall decide whether to proceed with the development of the well. The Iao Tank Well is south of the existing cluster of Mokuhau Wells and in accord with your recommendations. The conditions of continued use of Wailuku Shaft shall be determined by the Commission on Water Resource Management upon submittal of a Water Use Permit by the current owner.

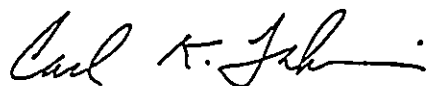
Environmental Assessment
Iao Tank Exploratory Well
October 27, 2003
Page 2

Again, we thank you for your comments regarding the Environmental Assessment for the Iao Tank Exploratory Well.

If you have any questions, please do not hesitate to call us at (808) 249-0411.

Very truly yours,

C. Takumi Engineering, Inc.

A handwritten signature in cursive script, appearing to read "Carl K. Takumi".

Carl K. Takumi, P.E.

ALAN M. ARAKAWA
Mayor

GILBERT S. COLOMA-AGARAN
Director

MILTON M. ARAKAWA, A.I.C.P.
Deputy Director

Telephone: (808) 270-7945
Fax: (808) 270-7955



COUNTY OF MAUI
**DEPARTMENT OF PUBLIC WORKS
AND ENVIRONMENTAL MANAGEMENT**
200 SOUTH HIGH STREET
WAILUKU, MAUI, HAWAII 96793

RALPH NAGAMINE, L.S., P.E.
Development Services Administration

TRACY TAKAMINE, P.E.
Wastewater Reclamation Division

LLOYD P.C.W. LEE, P.E.
Engineering Division

BRIAN HASHIRO, P.E.
Highways Division

JOHN D. HARDER
Solid Waste Division

October 21, 2003

Ms. Mery Apple
C. TAKUMI ENGINEERING, INC.
18 Central Avenue
Wailuku, Maui, Hawaii 96793

Dear Ms. Apple:

**SUBJECT: DRAFT ENVIRONMENTAL ASSESSMENT
IAO TANK EXPLORATORY WELL
TMK: (2) 3-5-001:021**

We received your request for the subject draft environmental assessment and have the following comments:

1. The applicant indicates that the well will be tested by pumping water at the rate of between 300 gallons per minute to 1600 gallons per minute. It is unclear how long the pumping test period will be and the total amount of water discharged into nearby fields. There is concern regarding this discharge and the potential impact the discharged water will have on downstream properties. The applicant should review where the water will pass through and any potential impacts it may have in flooding properties downstream. Appropriate mitigative measures should be in place to prevent flooding and/or damage to downstream properties as a result of pump tests discharging water into adjacent fields.
2. Discharge of pump test water during times of wet weather may exacerbate downstream flooding. Appropriate measures should be in place to mitigate any problems.

Ms. Mery Apple
October 21, 2003
Page 2

If you have any questions regarding this letter, please call Milton Arakawa
at 270-845.

Very truly yours,


for GILBERT S. COLOMA-AGARAN
Director

GSCA:msc
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C. Takumi Engineering, Inc.
Civil Engineering Consultants
18 Central Avenue
Wailuku, Hawaii 96793
Phone: (808) 249-0411 Fax: (808) 249-0311

October 27, 2003

Director
Dept. Of Public Works & Environmental Management
200 South High Street
Wailuku, HI 96793

SUBJECT: Iao Tank Exploratory Well
Environmental Assessment
Wailuku, Maui, Hawaii

Job No. CWS-011

Dear Sir:

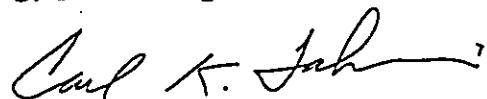
We have reviewed your comments relating to the Iao Tank Exploratory Well and respond as follows:

1. Two pump tests will be made. The first is the step pump test and the second will be the continuous pump test. As mentioned, the step pump test rate will range from 300 gallons per minute (gpm) to 1,600 gpm. Testing should be completed within 8 hours. The second test is the continuous pump test. The anticipated pump rate is 2 million gallons per day or about 1,400 gpm. The test is normally run for 96 hours.
2. Water from pump testing will be directed to an existing on-site drop inlet which is part of the existing site drainage system. There will be personnel at the site at all times to monitor the pump test; the pump test can be stopped should a large storm occur that may cause downstream flooding.

If you have any questions, please do not hesitate to call us at (808) 249-0411.

Very truly yours,

C. Takumi Engineering, Inc.



Carl K. Takumi, P.E.

LINDA LINGLE
GOVERNOR OF HAWAII



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

HISTORIC PRESERVATION DIVISION
KAKUHIHEWA BUILDING, ROOM 555
601 KAMOKILA BOULEVARD
KAPOLEI, HAWAII 96707

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

DAN DAVIDSON
DEPUTY DIRECTOR - LAND

ERNEST Y.W. LAU
DEPUTY DIRECTOR - WATER

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

HAWAII HISTORIC PRESERVATION
DIVISION REVIEW

Log #: 2003.2160
Doc #: 0310CD67

Applicant/Agency: Mery Apple
Address: C. Takumi, Inc.
18 Central Ave.
Wailuku, Hawaii 96793

SUBJECT: Chapter 6E-8 Historic Preservation Review – Draft Environmental Assessment
for the Iao Tank Exploratory Well

Ahupua'a: Wailuku

District, Island: Wailuku

TMK: (2) 3-5-001:021

1. We believe there are no historic properties present, because:

- a) intensive cultivation has altered the land
- b) residential development/urbanization has altered the land
- c) previous grubbing/grading has altered the land
- d) an acceptable archaeological assessment or inventory survey found no historic properties
- e) other: In the event that historic sites (human skeletal remains, etc.) are identified during the construction activities, all work needs to cease in the immediate vicinity of the find, the find needs to be protected from additional disturbance, and the State Historic Preservation Office needs to be contacted immediately at 243-5169, on Maui, or at (808) 692-8023, on O'ahu.

2. This project has already gone through the historic preservation review process, and mitigation has been completed .

Thus, we believe that "no historic properties will be affected" by this undertaking

Staff: Cathleen A. Dagher Date: 29 October 2003
Cathleen A. Dagher, Assistant Maui/Lana'i Island Archaeologist
(808) 692-8023

C. Takumi Engineering, Inc.
Civil Engineering Consultants
18 Central Avenue
Wailuku, Hawaii 96793
Phone: (808) 249-0411 Fax: (808) 249-0311

October 29, 2003

Historic Preservation Division
Dept. Of Land & Natural Resources
Kakahihawa Bldg. Rm 555
Kapolei Boulevard
Kapolei, HI 96707

SUBJECT: Iao Tank Exploratory Well
Environmental Assessment
Wailuku, Maui, Hawaii

Job No. CWS-011

Dear Sir:

Thank you for your comments on the environmental assessment for the subject project and the determination that "no historic properties will be affected".

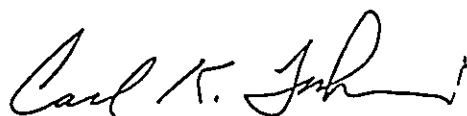
We will incorporate the following note in the construction documents:

"In the event that historic sites (human skeletal remains, etc.) are identified during the construction activities, all work shall cease in the immediate vicinity of the find, the find shall be protected from additional disturbance, and the State Historic Preservation Office shall be contacted immediately at (808) 243-5169, on Maui, or at (808) 692-8023, on O'ahu."

Again thank you for your participation in the environmental assessment process. If you have any questions, please do not hesitate to call us at (808) 249-0411.

Very truly yours,

C. Takumi Engineering, Inc.



Carl K. Takumi, P.E.

cc: Herb Kogasaka, Dept. of Water Supply