



DEPARTMENT OF WATER SUPPLY • COUNTY OF HAWAII

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November 19, 1999

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State of Hawaii
Office of Environmental Quality Control
State Office Tower, Suite 702
235 South Beretania Street
Honolulu, Hawaii 96813

OFFICE OF ENVIRONMENTAL
QUALITY CONTROL

**FINDING OF NO SIGNIFICANT IMPACT
KAIEIE MAUKA WELL
SOUTH HILO, HAWAII**

The Department of Water Supply has reviewed the comments received for the Kaieie Mauka Well during the public review period, which began on October 8, 1999 and ended on November 8, 1999. In accordance with the provisions of Hawaii Administrative Rules §11-200, we have determined that the construction, testing, and operation of the proposed Kaieie Mauka Well and appurtenant facilities will not have a significant adverse effect on the environment. In accordance with this finding, we have issued a Finding of No Significant Impact ✓ for the project.

Our consultant, Planning Solutions, Inc., has submitted under separate cover on our behalf four copies of the Final Environmental Assessment and a completed *OEQC Publication Form*. An electronic version of the publication form has been emailed to your office at oeqc@pixi.com, attentioned to Ms. Kay Kaminaka.

If you have any questions, please contact Mr. Glenn Ahuna of our staff at 961-8665.

Sincerely yours,

Milton D. Pavao, P.E.
Manager

GGA:gms

copy - Mr. Perry White, Planning Solutions, Inc.
Mr. Tom Nance, Tom Nance Water Resource Engineering, Inc.

... *Water brings progress...*

158

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Final Environmental Assessment/
Finding of No Significant Impact

KA'IE'IE MAUKA WELL

SOUTH HILO DISTRICT, HAWAI'I

PROPOSING AGENCY:
County of Hawai'i
Department of Water Supply

PREPARED BY:



P L A N N I N G
S O L U T I O N S

NOVEMBER 1999

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PROPOSING AGENCY:
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NOVEMBER 1999

SUMMARY SHEET

Proposing Agency: County of Hawai'i
Department of Water Supply

Accepting Agency: County of Hawai'i
Planning Department

Landowner: County of Hawai'i

Project Location: South Hilo District, Island of Hawai'i

Tax Map Key: 2-7-02: Portion 3

Land Area: Approximately 28,000 square feet

Chapter 343 Trigger: Proposed use of County land and funds

Proposed Use: The Department of Water Supply proposes to construct a well, control building, and 0.05-MG storage tank on a site adjacent to the existing 0.02-MG Ka'ie'ie Mauka Reservoir. The site is located in the Ka'ie'ie Mauka area, roughly 2.5 miles inland of Pāpa'ikou in the South Hilo District. The proposed facilities are similar to existing DWS structures, which will be removed once the proposed facilities are constructed. Electrical power and telecommunications for the proposed facilities will be drawn from short extensions of existing overhead lines along Ka'ie'ie Homestead Road. The proposed well will be drilled, tested, and outfitted. It will be connected to the existing reservoir until the proposed 0.05-MG reservoir is completed. A single-story, 437 square-foot control building will be constructed north of the proposed well to house the motor control center and other electrical equipment needed to start and stop the well pump. Water from the well will be used initially as a substitute for water from the Pāpa'ikou Spring Source, which recent changes in the State Department of Health's Surface Water Treatment Rule (SWTR) will make too expensive.

Determination: Finding of No Significant Impact

Required Permits: Grading Permit, Hawai'i County
Building Permit, Hawai'i County
Construction Noise Variance, State Department of Health
Well Construction Permit, State Commission on Water Resource Management
Pump Installation Permit (granted administratively following receipt of pump test results), State Commission on Water Resource Management
Certification of Well for Drinking Water Use, State Department of Health

Parties Consulted: The Draft Environmental Assessment (DEA) was prepared using information obtained from published documents and contacts with resource agencies and organizations. These included the Hawai'i County Planning Department, the Hawai'i County Department of Public Works, the State Department of Health, the Hawai'i Electric Light Company, and GTE Hawaiian Tel.

In addition, DWS sent copies of the DEA to 36 public agencies and public interest groups for comments on the proposed project. Several comment letters were received, the majority of them indicating no comment or no objection to the project. A list of the agencies to whom the DEA was sent, a copy of the letter that was used to solicit input, and copies of the written comment and response letters are provided in this Final EA.

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CHAPTER 1— PROJECT DESCRIPTION

1.1 BACKGROUND

1.1.1 NEED FOR ADDITIONAL WATER SUPPLY FACILITIES

1.1.1.1 EXISTING SOURCES AND WATER USE

The Hawai'i County Department of Water Supply (DWS) is a semi-autonomous agency responsible for the development, operation, and maintenance of the municipal water systems throughout the Island of Hawai'i. The *Hawai'i County Water Use and Development Plan* is DWS's long-range planning document. The Plan guides the County in carrying out its responsibilities under the State Water Code (Hawai'i Revised Statutes, Chapter 174C).

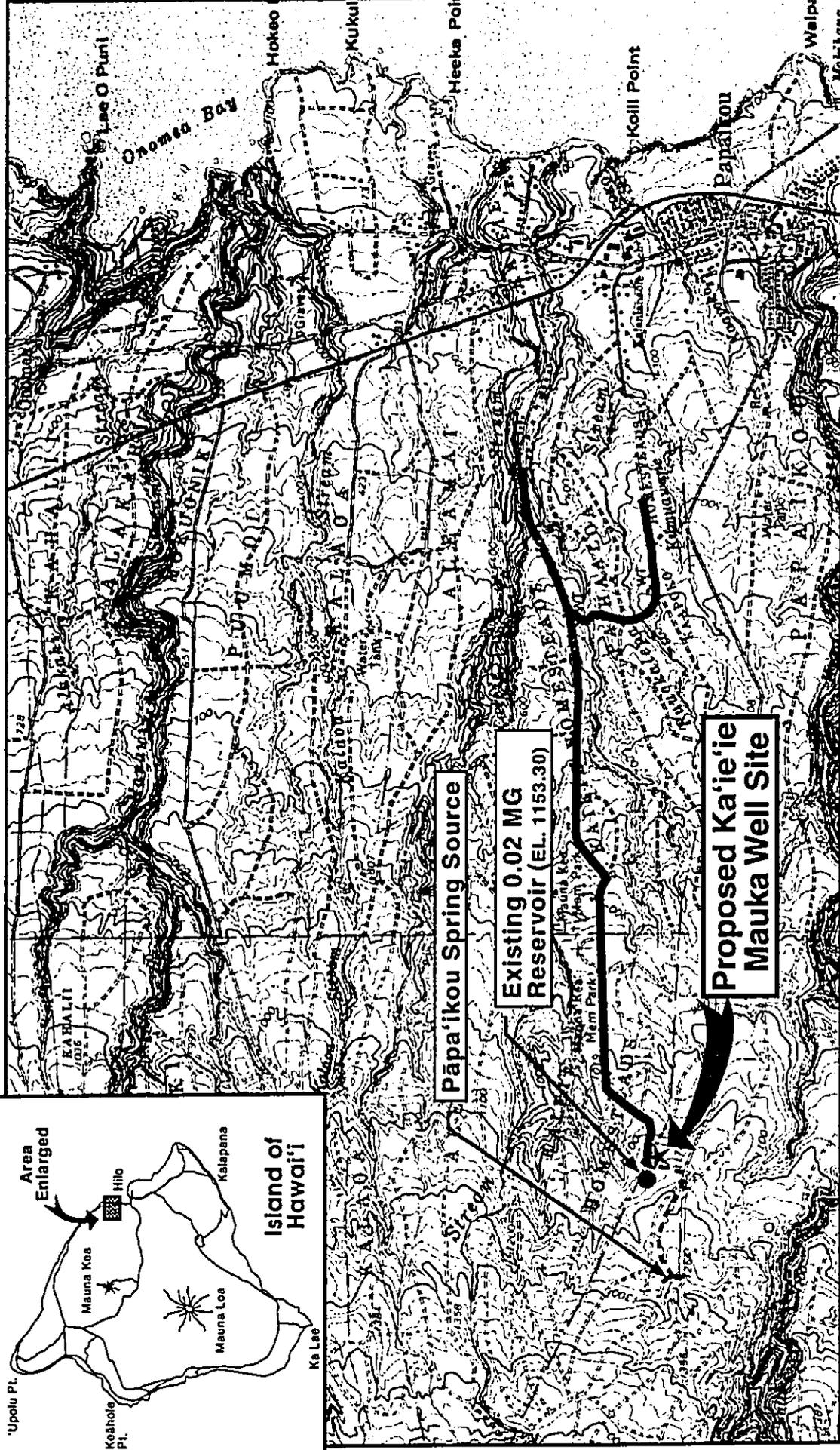
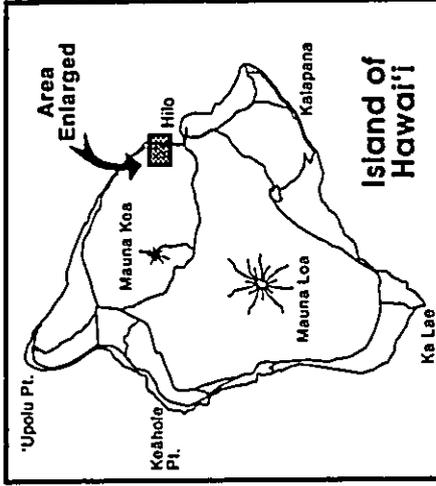
Currently, the Ka'ie'ie Mauka service area is served by the Pāpa'ikou Spring source. This source is a high-level, perched water source. Water from the Pāpa'ikou Spring source is distributed at relatively low cost. Water flows by gravity from the Pāpa'ikou Spring source to the DWS 0.02-million gallon (MG) Ka'ie'ie Mauka Reservoir located off Ka'ie'ie Homestead Road. From the reservoir, water flows to individual homes via a 3-inch pipeline along Ka'ie'ie Homestead Road. The location of the Pāpa'ikou Spring source, the 0.02-MG reservoir, and the pipeline that services the Ka'ie'ie Mauka service area are shown in Figure 1-1.

Typically, 0.025 million gallons of water per day (MGD) flows from the Pāpa'ikou Spring source to the reservoir tank. The maximum flow of water to the tank has been as high as 0.0576 MGD. When water from the Pāpa'ikou Spring source has been insufficient to meet demand, DWS has trucked water to the reservoir tank.

Annual water consumption for the Ka'ie'ie Mauka service area has ranged between 4.414 MG [roughly 12,000 gallons per day (GPD)] in 1990 to 6.251 MG (17,000 GPD) in 1997. Annual consumption is expected to increase to 7.7 MG (21,000 GPD) by the year 2008, a relatively modest growth in water use in the service area. (See Figure 1-2.)

1.1.1.2 PURPOSE OF THE PROPOSED ACTION

The Federal Safe Drinking Water Act requires that all public water systems meet stringent water quality standards. These standards cover a long list of potential chemical, radiological and biological contaminants. The standards distinguish between surface water and groundwater sources, with the testing, treatment, disinfection, and monitoring requirements for surface water sources being far greater than those for groundwater sources. These requirements are known as the Surface Water Treatment Rule (SWTR).



PREPARED FOR:
Department of Water Supply
County of Hawaii

PREPARED BY:
Planning Solutions, Inc.
Pacific Data Digitizing

SOURCE:
USGS 7.5' Avaka and Pāpa'ikou Quadrangles, 1983.
Department of Water Supply, August 17, 1999.

LEGEND:

- ★ Proposed Ka'ie'ie Mauka Well Site
- Existing Ka'ie'ie Mauka Reservoir
- Existing Pāpa'ikou Intake and Underground Pipeline
- Ka'ie'ie Mauka Water System Pipeline

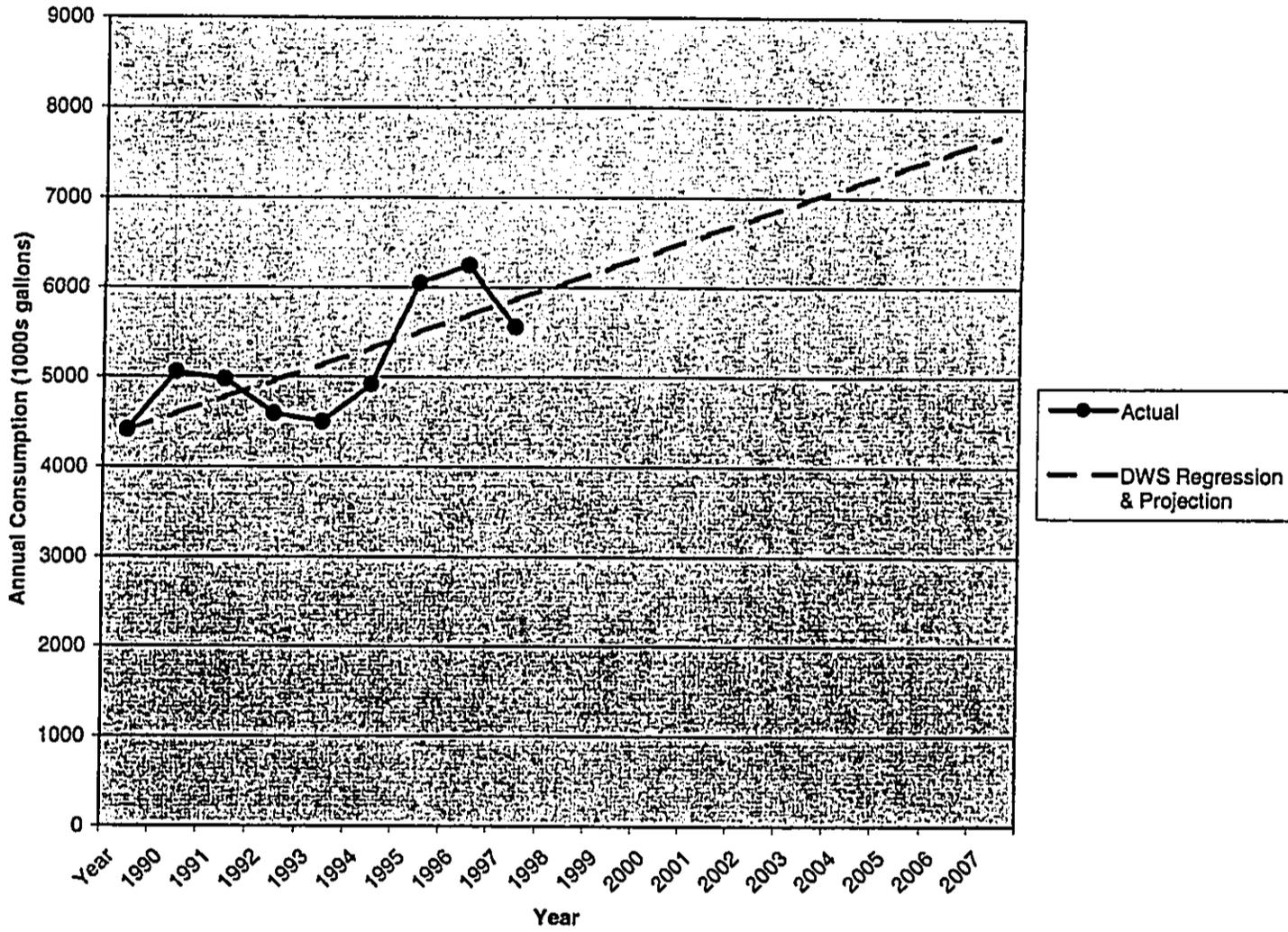


FIGURE 1-1:

Location Map with Proposed Well Site and Existing Department of Water Supply Facilities in Ka'ie'ie Mauka

Ka'ie'ie Mauka Well Environmental Assessment

Figure 1-2. Annual Water Consumption for the Ka'ie'ie Mauka Service Area.



Source: Hawai'i County Department of Water Supply records, 1999.

Although the State Department of Health (DOH) has not yet declared the Pāpa'ikou Spring source as a groundwater source under the direct influence of surface water (GWUDI), DWS is anticipating such a declaration. This declaration would make the spring subject to the SWTR and would require costly treatment processes. Consequently, DWS proposes to provide a new deep well water source to replace the existing Pāpa'ikou Spring source. Its life-cycle costs would be lower than if DWS operated the existing source in accordance with the SWTR, and it would provide a more reliable source of water for the Ka'ie'ie Mauka service area.

1.1.2 LOCATION OF PROPOSED WELL

DWS proposes to construct the new deep well on the *makai* side of the existing 0.02-MG Ka'ie'ie Mauka Reservoir (see Figure 1-1). It would be constructed on approximately two-thirds acre of TMK 2-7-02: Portion 3, roughly 2.5 miles *mauka* of the community of Pāpa'ikou. The property lies between 1,125 to 1,145 feet above sea level. Road access would be via Ka'ie'ie Homestead Road off Highway 19 (Hawai'i Belt Road).

As discussed in subsequent sections of this report, substantial flows of high quality groundwater are known to occur beneath the area. According to data from the US Geological Survey's (USGS) Ka'ie'ie Mauka test well (State No. 4708-03) located approximately 110 feet east of the reservoir, groundwater is expected to stand about 135 feet above sea level. It is anticipated that yields from the proposed well will be more than sufficient to replace the Pāpa'ikou Spring and to meet the forecast demand.

1.1.3 EXISTING USE OF THE PROPOSED SITE

The proposed site has been used as pasture for cattle grazing for the past two decades (see Figure 1-3). Before that, it was used for sugarcane cultivation.

1.2 DESCRIPTION OF THE PROPOSED ACTION

1.2.1 OVERVIEW OF THE PROPOSED FACILITIES AND ACTIVITIES

The DWS proposes to construct a well, control building, and storage tank approximately 120 feet southeast of its existing 0.02-MG Ka'ie'ie Mauka Reservoir (see Site Plan in Figure 1-4). DWS would proceed with the project incrementally. First it would drill and test the proposed well. Once the testing is satisfactorily completed, DWS would outfit the well and connect it to the existing reservoir. It would also extend electric power and telecommunication services to the site via overhead lines. Use of the Pāpa'ikou Spring source would cease at that time. Finally, the DWS would construct a new 0.05-MG reservoir tank at the site and discontinue use of the existing reservoir. All of the facilities except for the new reservoir have already been funded.

Existing 0.02MG Reservoir

Proposed Well Site



PREPARED FOR:
Department of Water Supply
County of Hawaii

PREPARED BY:
Planning Solutions, Inc.
Pacific Data Digitizing

SOURCE:
TNWRE Inc., August 4, 1999.

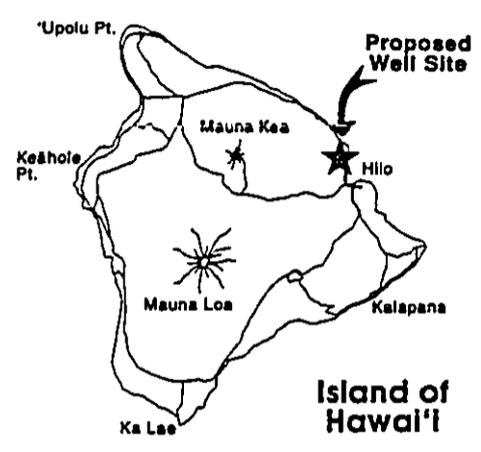
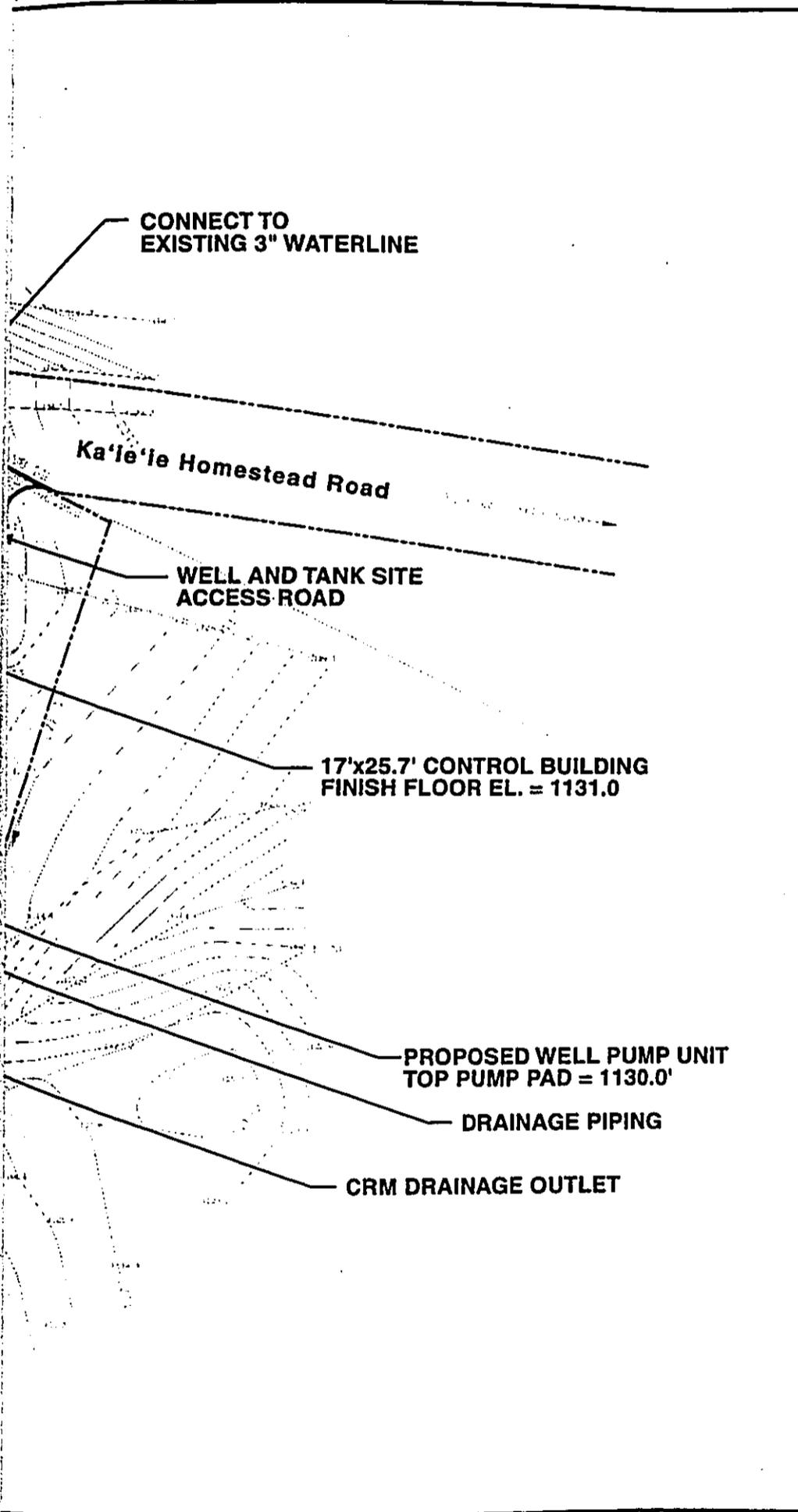
LEGEND:

FIGURE 1-3:

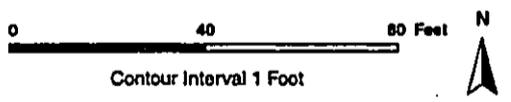
**Panoramic View of Existing
Conditions for Proposed Well Site
From Ka'ie'ie Homestead Road**

Ka'ie'ie Mauka Well
Environmental Assessment

ENV. FIG. 1-3 PANORAMIC VIEW 8/21/99



LEGEND:



PREPARED FOR:
Department of Water Supply
County of Hawai'i

PREPARED BY:
Planning Solutions, Inc.,
Pacific Data Digitizing

SOURCE:
TNWRE Inc., August 16, 1999.

FIGURE 1-4:

Site Plan

Ka'ie'ie Mauka Well
Environmental Assessment

KAWA, PG. 1-4, 11/20/99, 11/23/99

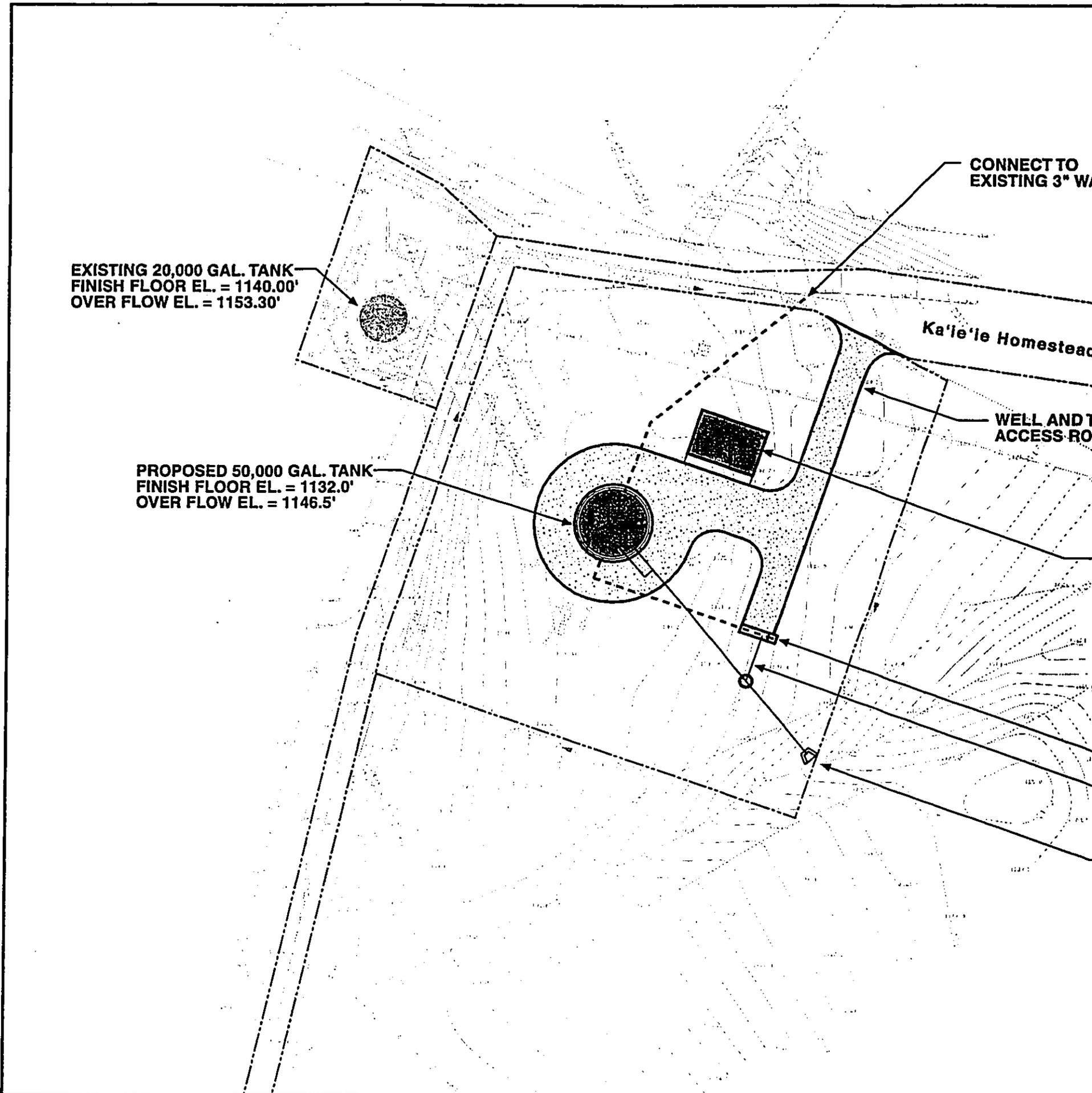
EXISTING 20,000 GAL. TANK
FINISH FLOOR EL. = 1140.00'
OVER FLOW EL. = 1153.30'

PROPOSED 50,000 GAL. TANK
FINISH FLOOR EL. = 1132.0'
OVER FLOW EL. = 1146.5'

CONNECT TO
EXISTING 3" W

Ka'le'le Homestead

WELL AND
ACCESS RO



1.2.2 TECHNICAL CHARACTERISTICS OF THE PROPOSED ACTION

1.2.2.1 WELL DRILLING AND TESTING

Preliminary plans call for the well to be drilled to a depth of 1,150 feet below ground surface, roughly 20 feet below sea level. The borehole would have a diameter of 21 inches. As shown in Figure 1-5, solid steel casing 14 inches in diameter would be installed in the upper 990 feet of the hole; 160 feet of perforated casing would be installed below it. The annulus space between the outside of the boring and the solid casing would be filled with cement grout. If warranted by conditions encountered during drilling, the well may require an open hole 13 inches in diameter beneath the cased portion of the well. The length of this uncased hole would be determined in the field and would be drilled in addition to the 1,150-foot depth.

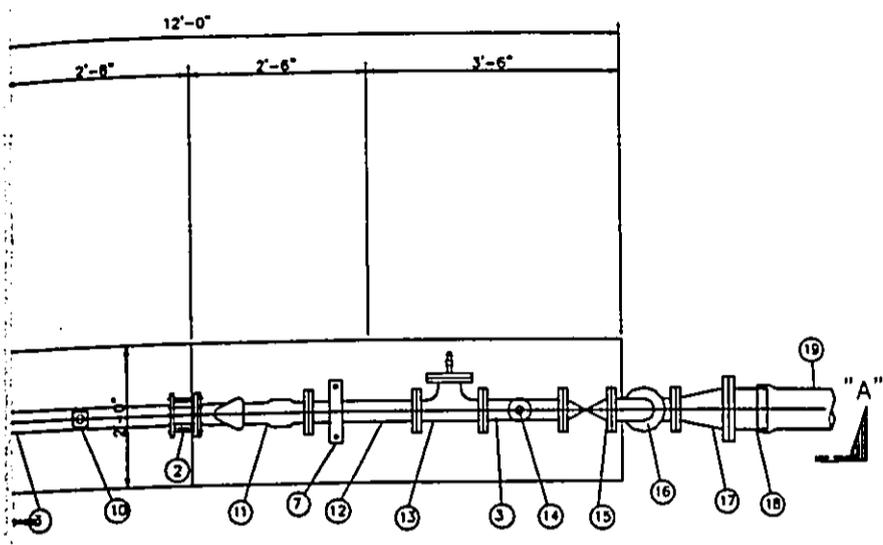
It is anticipated that the well would be drilled by rotary methods with air and foam as the circulating medium. Drilling would begin with a pilot borehole of 9 or 12 inches in diameter. Following this, the borehole would be reamed in one or more passes to its finished 21-inch diameter.

Pump testing would be at rates up to 200 gallons per minute and would be conducted over up to seven consecutive days. Pump test water would be discharged into the swale at the southern corner of the site. This swale drains into a gully and an unnamed stream that eventually drains into Pu'uokālepa Stream. The discharge would be made in accordance with all NPDES requirements of the State Department of Health. The drilling, casing, and pump testing is expected to be carried out over a period of approximately 6 months.

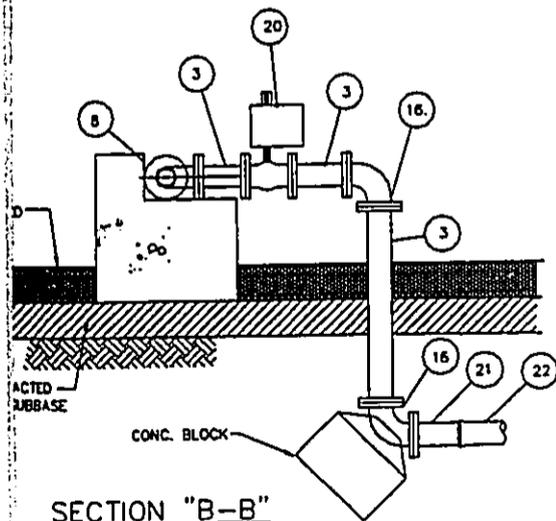
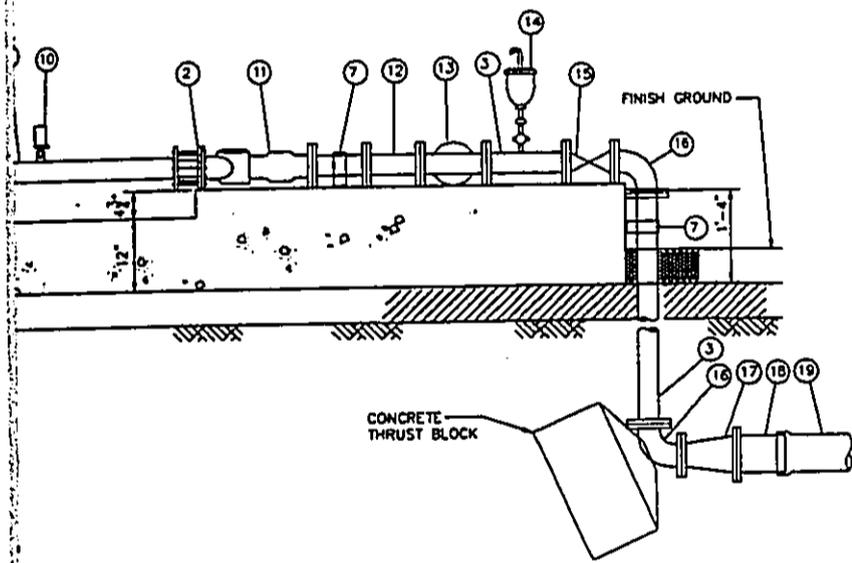
1.2.2.2 WELL OUTFITTING AND ANCILLARY STRUCTURES

Once the pump testing has been successfully completed, DWS will install a 25-horsepower submersible turbine pump with a rated capacity of 50 gpm. In accordance with standard DWS practice, the design provides a drainpipe that allows water produced during the first 5 to 10 minutes of each startup to be discharged into the existing swale that runs diagonally along the southern edge of the proposed site.

The proposed project also includes the construction of a single-story, concrete block 17' x 25.7' control building which would house the motor control center, electrical equipment, alarm system, and chlorination system needed to operate the well pump. (See Figure 1-6 for a plan of the control building.) The building would be naturally vented. The proposed well would be connected to the existing 0.02 MG Ka'ie'ie Mauka Reservoir tank via an underground pipe, and the chlorination sheds adjacent to the existing tank would be removed.



PLAN
SCALE: 3/8"=1'-0"



SECTION "B-B"
SCALE: 3/8"=1'-0"

LEGEND:

1	3" SUBMERSIBLE SURFACE & BASE PLATE. BASE PLATE SHALL BE WELDED TO STEEL WELL CASING
2	3" FLANGE COUPLING ADAPTER W/ ANCHOR PINS
3	3" D.I. PIPE (F.E. X F.E. OR P.E.), LENGTH AS REQUIRED
4	PRESSURE SWITCH UNIT
5	TEST GAGE CONNECTION
6	1" WELL AIR & VACUUM VALVE, APCO MODEL NO. 142DAT
7	PIPE STRAP
8	3" D.I. TEE, F.E.
9	3" CENTER-GUIDED CHECK VALVE, F.E.
10	1 1/2" PUMP FLOW SWITCH
11	3" TURBINE METER W/ STRAINER
12	3" D.I. PIPE, F.E., 18" LONG
13	3" TEE, F.E. W/ BLIND FLANGE & HOSE BIBB
14	1" AIR RELEASE VALVE, APCO MODEL NO. 50.
15	3" GATE VALVE, F.E.
16	4" 1/4 BEND, F.E.
17	3" x 6" D.I. INCREASER, FE
18	6" D.I. PIPE ADAPTOR, F.E. x P.E.
19	6" D.I. PIPE, M.J., OR PVC PIPE, B.E.
20	3" BALL VALVE WITH ELECTRIC VALVE ACTUATOR
21	3" D.I. PIPE ADAPTOR, F.E. x P.E.
22	3" D.I. PIPE, M.J., OR PVC PIPE, BE
23	WELL AIR VENT
24	PROVIDE 1" BRASS NIPPLE W/ SCREWED CAP FOR EACH SOUNDING TUBE

PREPARED FOR:
Department of Water Supply
County of Hawai'i

PREPARED BY:
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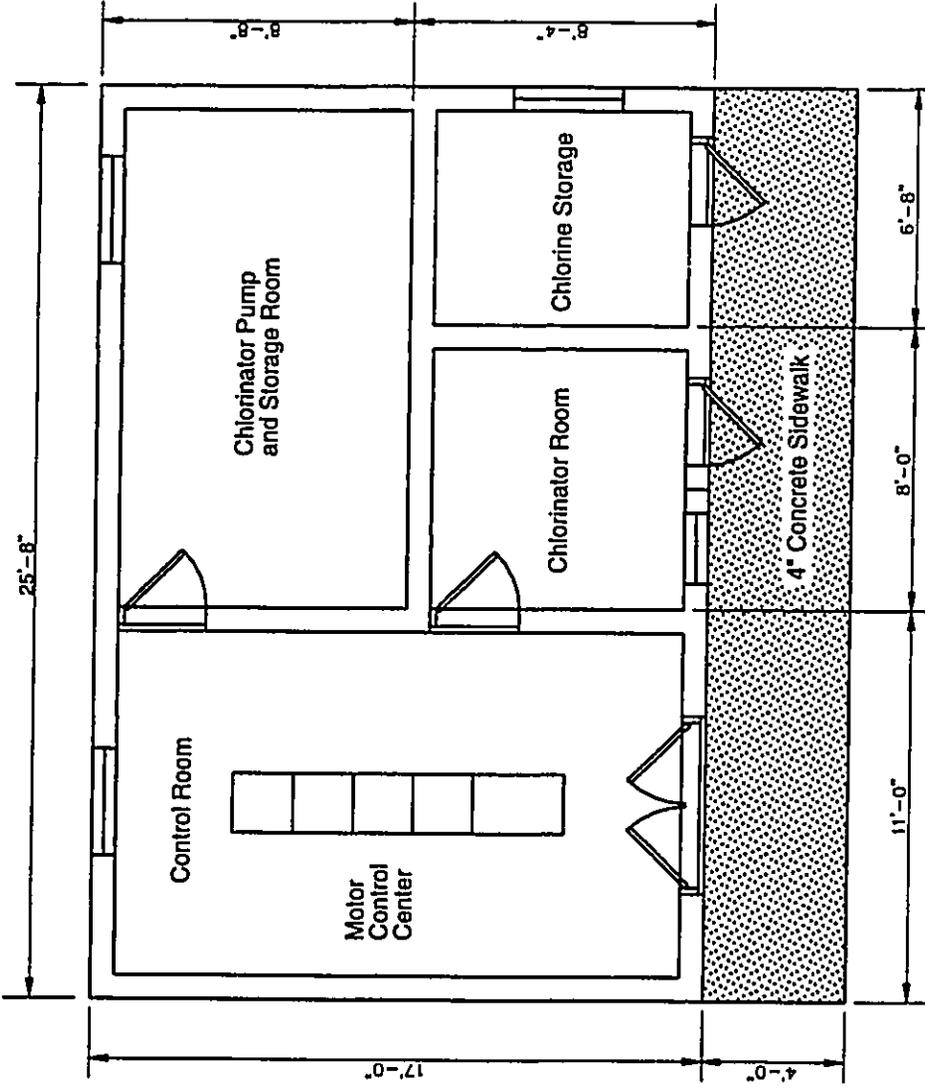
SOURCE:
TNWRE Inc., August 16, 1999.

FIGURE 1-5:

**Proposed Permanent Well Pump
Plans and Sections**

Ka'ie'ie Mauka Well
Environmental Assessment

DATE: 7/15/99



PREPARED FOR:
Department of Water Supply
County of Hawaii

PREPARED BY:
Planning Solutions, Inc.
Pacific Data Digitizing

SOURCE:
TNWRE Inc., August 16, 1999.

LEGEND:



FIGURE 1-6:

**Pump Control Building
Floor Plan**

Ka'ie'ie Mauka Well
Environmental Assessment

Electrical service for the deepwell pump and control building would be supplied by the Hawai'i Electric Light Company (HELCO). This would be drawn from a new 3-phase, 12.47 kV overhead power line strung along existing poles on Ka'ie'ie Homestead Road. New poles also would be installed to extend the line to the proposed project site. The exact distance of the extension would be determined during the design phase of the project. At the proposed site, a 3-phase pole-top transformer bank would be provided by HELCO to serve the project. Utility metering system would conform to HELCO's requirements.

Telephone service would be provided via overhead lines on the same joint power poles from GTE Hawaiian Tel (HTCO). Telemetry facilities would include an automatic dialer system that would monitor alarm conditions such as pump failure or low reservoir level. A Supervisor Control and Data Acquisition (SCADA) system may be included with the well outfitting according to DWS system requirements. This would be determined during the design phase of the well.

1.2.2.3 NEW RESERVOIR

Eventually, the DWS would construct a 0.05-MG reservoir tank to replace the existing 0.02-MG tank. A standard DWS reinforced concrete tank design would be used. The tank would have an internal radius of 12.5 feet and an operating height of 14.5 feet. Once completed, water would be pumped directly from the well to the 0.05-MG tank and the 0.02-MG tank would be taken out of service. The tank inflow and outflow piping would be a minimum of 6 inches in diameter and would be underground. Drainage piping from the tank would be connected to the same drain used to dispose of water during well startup (see Figure 1-4). The reservoir would be constructed as soon as DWS funds are available.

1.2.3 ECONOMIC CHARACTERISTICS OF THE PROPOSED FACILITIES

Preliminary estimates of project costs are tabulated below:

<i>Item</i>	<i>Estimated Cost</i>
Well Drilling, Casing, and Pump Testing	\$ 507,000
Pump Outfitting, Control Building, Electric Power, and Telemetry	\$ 835,000
0.05 MG Tank	\$ 160,000
GRAND TOTAL	\$ 1,502,000

The project has been authorized and is being funded by the Department of Water Supply, County of Hawai'i. The project is identified as DWS Job Number 98-711, Ka'ie'ie Mauka Exploratory Well.

1.2.4 IMPLEMENTATION SCHEDULE

The County anticipates the following schedule for the proposed project:

- Award Construction Contract — November 1999
- Complete Drilling and Testing of Well — April 2000
- Outfit Wells and Construct Control Facilities — April 2001
- Begin Operation — Late April 2001
- Install 0.05 MG Tank — Subject to Funding

CHAPTER 2 — EXISTING CONDITIONS

2.1 PHYSICAL ENVIRONMENT

2.1.1 TOPOGRAPHY

The ground elevation on the upper (southwestern) corner of the proposed well site is approximately 1,145 feet above mean sea level (msl). The parcel slopes downward toward the east. Its lowest point is 1,125 feet above msl. The ground slope ranges between 7 and 12 percent. Most of the elevation change occurs gradually. The proposed 0.05-MG tank would be located in the flatter area (<5 percent slope) near the middle of the parcel. The well pump and control building would be located southeast and northeast of the tank, respectively (see Figure 1-3). Drainage at the site currently sheet flows across the site from west to east.

2.1.2 GEOLOGY AND SOILS

The proposed well site is located on the eastern slope of Mauna Kea, the largest of the island's five volcanoes. Scientists believe Mauna Kea probably has not erupted for at least 2,000 years (Macdonald, *et al.*, 1983: 348). However, it is not known for certain whether the volcano is extinct or simply dormant.

Like all areas of the Big Island, the site experiences periodic earthquakes. The largest earthquake recorded in the Hawaiian Islands during historic times occurred on April 2, 1868. Its epicenter was near the southern tip of the island, and it had an estimated magnitude of 7.5 or greater. The largest earthquake during the 20th century was the magnitude 7.2 quake that occurred in November 1975. That earthquake was also centered along the southern coast of the island. Localized subsidence occurred during both quakes.

The soils on the project site belong to the Kaiwiki Series as defined by the U.S. Soil Conservation Service (Sato *et al.*, December 1973). These soils consist of well-drained silty clay loam and were formed in layers of volcanic ash. They have thick surface and subsoil layers. The soils are ideal for sugarcane cultivation and also are used for pasture. However, they are highly compactable, and have low weight-bearing capacities. Because the soil's permeability is good, runoff is slow on flatter slopes. The erosion hazard is slight to moderate.

2.1.3 HYDROLOGY

2.1.3.1 SURFACE WATER

The proposed well site lies on a broad interfluvium that separates Ka'ie'ie and Kapue Streams. The topography is such that little runoff from areas *mauka* of the property crosses the site. Pāpa'ikou Spring is located approximately one-quarter mile west of the site. It discharges into a shallow gully that runs south of

the well site. At its closest, the gully passes within 800 feet south of the well site, eventually discharging into Kapue Stream at an elevation of approximately 600 feet. Kapue Stream discharges into the Pacific Ocean just south of Pāpa'ikou.

2.1.3.2 GROUND WATER

The State Commission on Water Resource Management (CWRM) has identified groundwater areas consisting of one or more separate aquifer systems. The proposed Ka'ie'ie well is in CWRM's Onomea Aquifer System (Code 80204). The Onomea Aquifer System encompasses approximately 180 square miles. It extends from the shoreline between Hilo and Pepe'ekeo Point to the upper slopes of Mauna Kea. The *State Water Resources Protection Plan: Volume I* (George A. Yuen, March 1992) estimates the sustainable yield of the Onomea Aquifer System at 147 million gallons per day (MGD). It attributes this high yield to the high average annual rainfall (approximately 134 inches per year) which recharges the groundwater system. Due to only limited well development at present, essentially all of this water discharges from the aquifer system along the shoreline from the north end of Hilo Bay to Pepe'ekeo Point.

The U.S. Geological Survey has drilled a test well on the site of the proposed Ka'ie'ie well (State Well No. 4708-03). Records from this well indicate that the driller encountered perched water at a depth of 98 feet below ground level. The yield of the perched water was pump-tested when the hole was at a depth of 172 feet. The results showed that it had a large drawdown at modest pumping rates, indicating that the perched water source has limited extent and insufficient yield for the Ka'ie'ie Mauka service area.

The borehole was drilled to a total depth of 1,150 feet, about five feet below sea level. Water was encountered at a depth of approximately 1,010 feet below the ground surface or 135 feet above sea level. The borehole was not pump-tested at this depth.

The only active well in the near vicinity is State Well No. 4706-01. This well, which is owned and operated by the Hawaii County Department of Water Supply, is located at an elevation of 370 feet above sea level. The static water level in this well is 21 feet above sea level, and the chloride content is approximately 4 mg/l. The static water level is higher and the chloride concentration level is lower than would be expected if the water were from a basal lens.

The limited data summarized above suggest that the geology at depth is more complicated than might be expected from the relatively simple surficial geology. However, they are insufficient to provide a precise picture of the subsurface geology, except to say that it creates favorable conditions for groundwater development.

2.1.4 CLIMATE AND AIR QUALITY

Average annual rainfall at the proposed Ka'ie'ie Mauka well site is over 200 inches. Monthly averages vary from a low of about 12 inches (in June) to over 20 inches in March, April, August, and December. Rainfall also varies significantly according to time of day, with the mid-day being much drier than the nighttime.

Temperatures at the project site are not available. However, high temperatures at Hilo Airport (roughly 7 miles southeast on the coast) generally do not exceed the low 80s, and low temperatures are generally in the 60s (all temperatures are in degrees Fahrenheit, °F). In view of its higher elevation and greater cloud cover, the well site is probably 3 to 4 degrees cooler than this. Relative humidity is typically between 60 and 90 percent.

Hilo's wind pattern reflects the influence that the island's large landmass has on the prevailing trade winds. During the daytime the winds at Hilo Airport normally blow out of the north to east. During the nighttime, the down gradient movement of cool air reverses the direction and the wind most commonly blows out of the southwest. At an average of about 11 miles per hour, average wind speed during the day is noticeably stronger than the average speed during the night (6 miles per hour). In view of the topography near the Ka'ie'ie Mauka well site, winds there are probably more nearly from the east during the day and from the west at night than at the Hilo Airport.

2.1.5 FLORA AND FAUNA

The project site was completely cleared during sugarcane cultivation, which was carried out on the property for several decades. It has been used as pasture since the plantation closed. The only vegetation now present on the proposed project site are various grasses and a few mango trees on the side of Ka'ie'ie Homestead Road. In addition to the pasture grasses, the site supports the usual assemblage of weedy species (e.g., swollen fingergrass Mexican poppy (*Argemone mexicana*), *Macroptilium atropurpureum*, *Brachiaria subquadripara*, white thunbergia (*Thunbergia fragrans*), sensitive plant (*Mimosa pudica*) swollen fingergrass, guinea grass and little bell).

Because the vegetation and other ecological characteristics of the site are typical of large tracts of surrounding land, no faunal survey was conducted. However, observations made during the course of field visits indicate that only common birds and small rodents are present. The mammalian species likely to be present include rat (*Rattus sp.*), domestic dog (*canis F. familiaris*), cat (*Felis catus*) and the house mouse (*Mus musculus*). Bird species commonly found in this type of habitat include Red-crested Cardinal (*Paroaria coronata*), Northern Cardinal (*Cardinalis cardinalis*), Spotted Dove (*Streptopelia chinensis*), Zebra Dove (*Geopelia striata*), and Ring-necked Pheasant (*Phasianus colchicus*). Given the nature of the habitat, there is no reason to believe that any rare or endangered species might be present.

2.1.6 NOISE

The proposed Ka'ie'ie Mauka Well site is approximately 900 feet from the nearest residence. Spot noise measurements were taken at and near the proposed well site during a site visit on the morning of August 6, 1999. Measurements were made with B&K Type 2219 Sound Level Meter and were typical of those taken in similar agricultural and rural areas. Near the trees on the access road adjacent to the proposed well site, existing noise levels ranged from 46 to 52 dBA with gentle winds and an occasional goose honking in the distance. Half way up the cattle road between the existing reservoir and the Pāpa'ikou Spring source, noise levels measured 42 to 44 dBA with gentle wind and stream noise in the background and aircraft noise in the very distant background. Passing automobiles on the access road, wind blowing through the vegetation, and vocalizations of grazing animals produce the highest noise levels at the present time.

2.1.7 AQUATIC RESOURCES

There are no standing or flowing bodies of water on or immediately adjacent to the project site. The closest drainageway is the tributary to Kapue Stream that is fed by the Pāpa'ikou Spring. No survey of aquatic fauna in the stream channel was conducted.

2.1.8 ARCHAEOLOGICAL FEATURES

There are no known historic sites of significance located at the proposed site according to the State Historic Preservation Division's Hawai'i Island Historic Register. The entire surface of the site was disturbed during decades of intensive sugarcane cultivation. Had any archaeological artifacts existed at one time, this would have obliterated them. Consequently, the potential for archaeological remains to be present is low.

2.1.9 SCENIC AND AESTHETIC RESOURCES

The parcel on which the wells and related facilities would be constructed is located along an unpaved section of Ka'ie'ie Homestead Road. The proposed project site consists of rolling pasture, with sparse trees and shrubbery, and various fences including electrified cattle fencing, barbed wire, and chain link. The proposed facilities would be similar to the existing DWS structures. The appearance of both the existing site and the surrounding areas is typical of other areas in Ka'ie'ie Mauka.

2.2 ECONOMIC AND CULTURAL ENVIRONMENT

The well site is situated at the *mauka* end of the Ka'ie'ie Homesteads residential area about a half-mile above Mauna Kea Memorial Park. The proposed site is a small portion of the parcel currently owned and used as pastureland by Mauna Kea Agribusiness Co., Inc. The homes located nearby are rural homesteads.

There are no other industrial or commercial activities in the vicinity. The project site has been previously disturbed by intensive sugarcane cultivation, which makes it unlikely that cultural remains are present.

2.3 EXISTING LAND USE

The land on which the well and support facilities would be built is presently part of a large fenced pasture. It is adjacent to an existing 0.02-MG DWS reservoir. The area immediately *makai* of the well site consists of open grassland, a farm pond, a farm residence, and other related uses. Similar farm and rural residences, as well as the Mauna Kea Memorial Park, line the roadway connecting the site with Māmalahoa Highway.

2.4 LAND USE CONTROLS

The site is in the State Agriculture District. HRS Chapter 205 §205-4.5 (7) defines permissible uses within the State Agricultural District as including "public, private, and quasi-public utility lines and roadways, ... major water storage tanks, and appurtenant small buildings such as booster pumping stations."

The County zoning is Agriculture (A-20a, agricultural district with 20 acres per building site). According to Section 25-51 of the Hawai'i County Code:

- (a) Communication, transmission, and power lines of public and private utilities and governmental agencies are permitted uses within any district,
- (b) Substations used by public utilities for the purpose of furnishing telephone, gas, electricity, or water shall be permitted uses where the director finds that the same are not hazardous, dangerous, or a nuisance to surrounding areas and has granted plan approval therefor,
- (c) Community, public, and public service buildings are permitted uses provided they conform to the general plan.

Hence, the proposed facilities are allowable uses in both the State and Hawai'i County land use districts.

2.5 LAND OWNERSHIP

DWS is currently negotiating to purchase the land needed to construct the proposed well and related facilities from its owner, Mauna Kea Agribusiness Co., Inc. Once the negotiations are complete, the parcel will be owned by the County of Hawai'i and will be under the control of the Department of Water Supply. The immediately adjacent parcels are all large residential lots in private ownership.

CHAPTER 3 — PROBABLE IMPACTS

3.1 PROBABLE IMPACTS ON THE PHYSICAL ENVIRONMENT

3.1.1 TOPOGRAPHIC IMPACTS

The contractor would undertake minor finished grading and excavation for the production well facilities. The parcel is relatively level in the areas of the well pump, control building, and reservoir tank. The existing grade would be altered by no more than 2 to 5 feet to provide suitable pads for these facilities. It would be possible to balance cut and fill within the site. These changes would not alter the overall topography or drainage pattern of the site.

3.1.2 GEOLOGIC AND SOILS IMPACTS

3.1.2.1 GEOLOGICAL IMPACTS AND ISSUES

The minor grading that is proposed would not alter the geology of the area. Neither would it involve the removal or alteration of valuable minerals.

As discussed in Chapter 2, Mauna Kea is believed to be dormant. Scientists have found evidence of three eruptions from this volcano during the past 10,000 years. The youngest of these is believed to have occurred approximately 4,500 years ago. Moreover, the absence of any Hawaiian legends or chants concerning eruptions from this mountain (which would almost certainly exist if it had erupted during the past 2,000 years) points to a low level of volcanic activity. While future eruptions may occur, they are likely to be few and far between, and the likelihood of any affecting the project site is small.

3.1.2.2 SOILS-RELATED IMPACTS AND ISSUES

The project would preclude agricultural use from the site. However, the well site is a small fraction of the total area used for cattle grazing. It is not expected to impact the quality or ability of the remaining areas to support ongoing grazing activities.

3.1.3 HYDROLOGIC IMPACTS

3.1.3.1 CONSTRUCTION PHASE

Construction of the proposed facilities would add approximately 5,300 square feet of impermeable surface to the site. This is about 19 percent of the total project site area. Because of the permeable nature of the area that would remain, this would only change the volume of surface runoff under extremely heavy rainfall conditions. This would have a negligible effect on total runoff from the area tributary to Kapue Stream.

During the well construction and pump testing, a temporary pump would be used to develop the well (i.e., to remove sediment and well cuttings that are a by-product of the drilling) and to determine the well's hydraulic capacity. Water from the pump testing would drain into the existing swale that runs south of the proposed site. The swale would carry the water downhill through the large tract of pastureland below the site, eventually discharging into an unnamed gully that joins Pu'uokālepa Stream. The discharge would be made in accordance with all NPDES requirements of the State Department of Health.

3.1.3.2 OPERATIONAL PHASE

After the well begins production, it would discharge approximately 250 to 500 gallons of water into the drainage swale at each pump start-up. This is done so that any sediment entrained during start-up is not pumped into the water supply system. This arrangement helps assure that only high quality water is delivered to the Department of Water Supply's customers. It is estimated that DWS would run the pump only once daily, on average. Consequently, it is expected that this discharge normally would be absorbed into the ground before reaching any surface waters.

DWS intends to use Ka'ie'ie Well as a replacement for the Pāpa'ikou Spring source. As a result, initial pumpage of the well is expected to be less than 20,000 GPD, rising only slowly after that. Since the Onomea Aquifer System's sustainable yield is 147 MGD and the existing uses are less than one-tenth of 1 percent of that, the anticipated pumpage of the proposed well will not significantly alter groundwater conditions within the aquifer system.

When the well is placed in service, the County would terminate its use of the existing Pāpa'ikou Spring source. This would allow water that is now diverted from the spring to remain in its natural drainageway. Average flow in the drainageway below the diversion would increase by the small amount of the present diversion of 12 to 15 gallons per minute. This is equivalent to 0.03 cubic feet per second (cfs), far too small to have a significant effect on flooding.

The groundwater that would be tapped by the proposed well stands at an elevation of about 135 feet above sea level. This is approximately 1,000 feet below the elevation of the beds of streams and watercourses in the vicinity of the well. Consequently, pumpage from the proposed well would not affect streamflow.

3.1.4 CLIMATE AND AIR QUALITY IMPACTS

3.1.4.1 CONSTRUCTION PHASE

Only minor amounts of grading and excavation are contemplated as part of the project. This, in addition to the wet climate, suggests that fugitive dust is unlikely to be a problem during construction.

It is anticipated that a diesel-driven drill rig will be used to construct the well and that a diesel-driven pump would be used for well development and testing. Emissions from the diesels would slightly degrade air quality for the short period of time they are in operation. All applicable emission standards would be met, and no violation of ambient air quality standards is anticipated. Consequently, no adverse health effects from this source are anticipated. However, depending upon meteorological conditions during the testing period, it is possible that odor from the diesel exhaust may be noticeable in nearby homes. This effect would persist only during the one-week pump-testing period.

3.1.4.2 OPERATIONAL PHASE

Normal operation of the proposed facilities would not produce on-site air emissions, would not alter airflow in the vicinity, and would have no other measurable effect on the area's microclimate. The electrical power consumed in the operation of the wells would require additional power generation (and, therefore, fuel consumption and gaseous emissions) by the Hawaii Electric Light Company. The increase represents such a small portion of total power use that its effect not be significant in and of itself.

3.1.5 IMPACTS ON FLORA AND FAUNA

Construction of the proposed facilities would affect only a few thousand square feet of existing grasslands. The final design of the well facilities would accommodate the existing trees in the area in order to preserve them. The area does not constitute habitat for any rare or endangered species. Therefore, no impacts on flora or fauna are expected from these activities.

3.1.6 NOISE IMPACTS

3.1.6.1 CONSTRUCTION PHASE

Well drilling would involve the operation of diesel-powered drilling equipment for a period of 2 to 3 weeks. Noise source levels from unmuffled equipment of this sort can be as high as 80 - 85 dBA measured at a distance of 50 feet. This could result in sound levels of over 80 dBA at the property line of the proposed well site. Normal noise attenuation is expected to reduce this to the mid-50 dBA level by the time it reaches the nearest residence, which is approximately 900 feet away. Special sound attenuation of the equipment could lower this further.

Well development requires repeatedly surging the pump to help remove drill cuttings from the hole. Electric pumps are poorly suited to this kind of operation; consequently, diesel-powered pumps are generally used. The diesel engines used for the pump testing are typically about as noisy as the drilling equipment (i.e., 80 dBA at the property line).

Well testing requires continuous (i.e., 24-hour-per-day) pumping for a period of up to seven consecutive days. Noise from the diesel engine that would be used

to power the pump would, therefore, extend through the night and, possibly, into a Sunday.¹ When operated at full load, such engines can be as loud as the engines used for other well construction activities. However, the relatively low rates at which the well will be pumped during the testing mean that the engine will be operated at the low end of its power range, moderating its noise output. Further sound reduction is possible by placing the generator within a noise abatement enclosure.

Hawaii Administrative Rules (HAR) §11-46 (Community Noise Control) establishes noise limits for construction, agricultural, and industrial activities. The noise limits for "Class C Districts" [which §11-46-3(1) defines as "...all areas equivalent to lands zoned agriculture, country, industrial, or similar type"], is 70 dBA regardless of the time of day. The limit is applicable at the property line. Noise emissions in excess of these limits require a permit or variance from the Director of the Department of Health issued in accordance with §11-46-7.

If the well contractor must use equipment that produces noise in excess of these limits, a permit and/or variance would be obtained from the DOH as provided for in HAR §11-46-7 and 8. To obtain this permit, the applicant must demonstrate to the Director's satisfaction that:

- the activity that generates the noise is in the public interest;
- the noise from the proposed activity would not substantially endanger human health or safety; and
- compliance with the normal noise limits would create a serious hardship without equal or greater benefits to the public.

3.1.6.2 OPERATIONAL PHASE

The submersible permanent pump and motor would operate quietly. A submersible pump and motor would be used, limiting aboveground noise to the hum of the enclosed transformer. The maximum noise level at the property boundary is expected to be approximately 40 dBA when the well is in operation. It would be inaudible at the nearest residences.

3.1.7 IMPACT ON AQUATIC RESOURCES

The proposed well would draw from an aquifer that begins approximately 1,000 feet below the existing ground level in the area. Hence, it would not affect the amount of groundwater discharged into nearby streams. Termination of the diversion from Pāpa'ikou Spring would allow that water to flow once again in the natural watercourse, benefiting stream organisms in the vicinity. The withdrawal from this deep aquifer would slightly reduce groundwater discharge along the shoreline and possibly into streams near their shoreline discharge point. In summary, the change from a spring to a deep well source would: (i)

¹ Due to cost constraints, it is not likely to be practical to switch from the diesel engine that must be used for well development to an electric pump for extended pump testing.

slightly increase flow over most of the stream's length and (ii) slightly decrease groundwater discharge along the shoreline. Neither change constitutes a significant modification to the stream or shoreline habitat.

3.1.8 IMPACTS ON HISTORIC AND ARCHAEOLOGICAL FEATURES

Because there are no historic or archaeological features on the project site, the proposed action does not have the potential to affect these resources. However, if any articles of archaeological or cultural significance are uncovered during construction activities, all work would be suspended and the State Historic Preservation Division notified.

3.1.9 SCENIC AND AESTHETIC RESOURCES

The proposed well is a small, low-profile facility that would be difficult to see from off-site. The diameter of the proposed reservoir (28 feet) is 10 feet greater than that of the existing tank, but it is roughly the same height. The control building housing the well controls and related equipment is also slightly larger than the existing structure. However, both remain relatively small structures in keeping with the rural character of the area.

Existing topography and vegetation partially screen the proposed well and reservoir from view from the home that is located immediately *makai* of them. Vegetation also provides a partial screen of the site from the three houses located across the small gully to the north of the site. The nearest of these homes is roughly 900 feet away. Considering the amount of separation, the orientation of the homes, the effect of existing vegetation, and other factors, the proposed project will not significantly alter views or other aesthetic resources.

3.2 PROBABLE IMPACTS ON THE ECONOMIC AND CULTURAL ENVIRONMENT

3.2.1 LAND USE

The proposed facilities are compatible with the existing land uses surrounding the site. The addition of the well and control facilities to the site would not affect the value of adjacent land uses. The installation and operation of these facilities are intended to serve the water needs of Ka'ie'ie Mauka and would not affect the viability of existing or planned land use on adjacent lands. Consequently, no significant adverse effect on land uses is anticipated over the long run.

3.2.2 POPULATION AND ECONOMIC ACTIVITY

The proposed well is needed to replace the existing shallow groundwater Pāpa'ikou Spring source. Water pumped from the well would obviously be more costly than gravity delivery from the naturally flowing spring. However, it would be less costly than if the County were required to install and operate the water treatment facilities needed to conform to Federal and Department of

Health standards for a ground water source under the direct influence of surface water. The increased cost of constructing and operating the Ka'ie'ie Mauka Well is not sufficient to significantly affect the economic viability of the Department of Water Supply's customers. The additional costs the DWS would incur would not require it to alter rates or other charges to the point where it might have a significant direct or indirect effect on population.

CHAPTER 4 - ALTERNATIVES CONSIDERED

4.1 NO-ACTION ALTERNATIVE

"No Action" is not a viable alternative. DWS anticipates that the Department of Health will declare the Pāpa'ikou Source a groundwater source under the direct influence of surface waters. The change in designation will greatly increase the treatment and testing that the DWS must conduct in order to comply with Surface Water Treatment Rules (SWTR).

4.2 TREATMENT AND TESTING TO CONFORM TO THE SWTR

The DWS could continue to use the existing water source and ultimately install the treatment facilities and perform the testing required to meet the SWTR. The cost of treating and testing the water is high, however, and this cost could be spread over only a small number of customers. Consequently, the per-user cost for this alternative would be higher than the cost of constructing and operating the proposed Ka'ie'ie Mauka well.

4.3 PUMPING FROM EXISTING SOURCES

The DWS could install new booster pumps, bypass piping, and other facilities that would allow it to transmit water from its existing lower-elevation well into the Ka'ie'ie Mauka service area. It would still need to construct the larger 0.05 MG Ka'ie'ie Mauka reservoir in order to meet the DWS's present design standards. Finally, this alternative would increase the operating complexity of the system, imposing a greater burden on DWS staff.

4.4 ENHANCED WATER CONSERVATION

The proposed well is not intended to offset an increase in demand. Rather, the water from it would serve as a substitute for water that is presently being provided by a spring source that the DWS has determined will be uneconomic to operate if it must comply with the increased testing and treatment requirements that are mandated by the SWTR.

Because the need for the proposed facility is prompted by changes in the water testing and treatment requirements for groundwater under the influence of surface water, decreasing water use in the Ka'ie'ie Mauka service area would not eliminate the need to find a replacement for the Pāpa'ikou Spring source. Instead, it would simply reduce the amount of water required.

4.5 OTHER SOURCE DEVELOPMENT ALTERNATIVES

Because of the high groundwater flux through the area, it is likely that wells drilled in other locations would also be productive. However, the proposed

project has several characteristics that make it unlikely that these alternatives would be superior from an operational viewpoint. These include:

- the well's proximity to the existing water transmission and distribution system, avoiding the need for new water line construction, and;
- its location adjacent to an existing 0.02 MG reservoir that can serve as a temporary tank for the well, until funds for a new tank can be allocated.

4.6 ALTERNATIVE TIME FRAMES

Anticipating application of the SWTR to the Pāpa'ikou Spring source requires an alternative source be developed. Consequently, delaying the project is not a viable alternative. Similarly, the project is already funded and on a fast-track construction timetable. Consequently, accelerating development is not practical.

CHAPTER 5 - RELATIONSHIP TO GOVERNMENTAL PLANS, POLICIES, & CONTROLS

As discussed in Chapter 2, the site is in the State Agriculture District. HRS Chapter 205 §205-4.5 (7) lists public utility facilities such as those that are proposed as permissible uses within the State Agricultural District.

The County zoning for the site is Agriculture (A-20a, agricultural district with 20 acres per building site). According to Section 25-51 of the Hawai'i County Code, public utilities such as the proposed well, reservoir, and appurtenant facilities are permitted in the A-20a District.

The Hawai'i County General Plan calls upon the County to provide the public facilities and infrastructure needed to support approved land uses. The proposed project is intended to allow the DWS to continue to meet the needs of the people of Ka'ie'ie Mauka when it discontinues use of the Pāpa'ikou Spring source. While the proposed well would be capable of producing more water than is immediately needed, it would not accelerate development in Ka'ie'ie Mauka.

The proposed well and ancillary facilities are located on a site that is adjacent to existing DWS facilities. This would allow for an easy transition from existing to new facilities and would minimize disruption in water service to area residents. Operation of the well is compatible with the adjacent development.

CHAPTER 6 - DETERMINATION

6.1 SIGNIFICANCE CRITERIA

Hawai'i Administrative Rules §11-200-11.2 establishes procedures for determining if an environmental impact statement (EIS) should be prepared or if a finding of no significant impact is warranted. Section 11-200-11.2 (1) provides that proposing agencies should issue an environmental impact statement preparation notice (EISPN) for actions that it determines may have a significant effect on the environment. Hawai'i Administrative Rules §11-200-12 lists the following criteria to be used in making that determination:

In most instances, an action shall be determined to have a significant effect on the environment if it:

- (1) Involves an irrevocable commitment to loss or destruction of any natural or cultural resource;*
- (2) Curtails the range of beneficial uses of the environment;*
- (3) Conflicts with the State's long-term environmental policies or goals as expressed in Chapter 344, HRS, and any revisions thereof and amendments thereto, court decisions, or executive orders;*
- (4) Substantially affects the economic or social welfare of the community or State;*
- (5) Substantially affects public health;*
- (6) Involves substantial secondary impacts, such as population changes or effects on public facilities;*
- (7) Involves a substantial degradation of environmental quality;*
- (8) Is individually limited but cumulatively has considerable effect on the environment or involves a commitment for larger actions;*
- (9) Substantially affects a rare, threatened, or endangered species, or its habitat;*
- (10) Detrimentally affects air or water quality or ambient noise levels;*
- (11) Affects or is likely to suffer damage by being located in an environmentally sensitive area such as a flood plain, tsunami zone, beach, erosion-prone area, geologically hazardous land, estuary, fresh water, or coastal waters;*
- (12) Substantially affects scenic vistas and viewplanes identified in county or state plans or studies; or,*
- (13) Requires substantial energy consumption.*

6.2 FINDINGS

The potential effects of drilling, testing, and operating the proposed Ka'ie'ie Mauka Well described earlier in this document were evaluated using the aforementioned significance criteria. The findings with respect to each criterion are summarized below.

6.2.1 IRREVOCABLE LOSS OR DESTRUCTION OF VALUABLE RESOURCE

The proposed project would be constructed adjacent to and eventually would replace existing Department of Water Supply facilities. Its construction would remove 0.65 acres from pasture use. At the same time it would allow the DWS to discontinue use of the area around the existing Pāpa'ikou Spring source. Given the expanse of the remaining pasturelands, this change does not constitute the loss or destruction of significant natural or cultural resources.

6.2.2 CURTAILS BENEFICIAL USES

Construction, testing, and operation of the proposed well would not curtail beneficial uses of areas adjacent to the site. Construction of the new facilities would reduce slightly the amount of pastureland, but the change is too small to have a substantial effect on the viability of ongoing agricultural operations. Normal flow of the Pāpa'ikou Spring source and the stream which it feeds would be restored and the water that would be withdrawn from the proposed well is a small fraction of the developable yield of the aquifer. The project will not affect the amount of water that is discharged into the ocean.

6.2.3 CONFLICTS WITH LONG-TERM ENVIRONMENTAL POLICIES OR GOALS

The proposed project is consistent with the State's long-term environmental policies and goals as expressed in Chapter 344, Hawai'i Revised Statutes and elsewhere in State law. In fact, the primary reason the County is seeking to develop it at this time is the desire to reduce withdrawals from a source that is considered to be at greater risk of pollution.

6.2.4 SUBSTANTIALLY AFFECTS ECONOMIC OR SOCIAL WELFARE

The proposed well is intended to provide a continuing supply of water to existing residents of Ka'ie'ie Mauka at an affordable price. It would not have a substantial adverse effect on economic or social welfare except insofar as it allows the DWS to assure its customers that they are receiving the best quality water at the lowest price consistent with the maintenance of environmental quality.

6.2.5 PUBLIC HEALTH EFFECTS

The proposed project would not adversely affect air or water quality. Neither would it generate solid waste or produce other emissions that would have a

significant adverse effect on public health. Construction noise has the potential to temporarily exceed noise standards at the property line, but the potential adverse effects of this can be mitigated by the noise abatement and attenuation measures that the County would require of the construction contractor.

6.2.6 PRODUCE SUBSTANTIAL SECONDARY IMPACTS

The proposed project would not produce significant secondary impacts. It is not designed to foster population growth or to promote economic development. It would replace an existing water source that would no longer be used.

6.2.7 SUBSTANTIALLY DEGRADE ENVIRONMENTAL QUALITY

The proposed project would not have substantial long-term environmental effects. Water resources and runoff are not expected to change substantially on the proposed site nor would the existing flora and fauna be affected by the project. Noise from construction and pump testing is the only impact of note, and it would be of limited duration.

So long as adequate measures are taken to control the intensity of the drilling noise and the time of day during which it would occur, its effects on nearby residents can be managed. Mitigation of adverse nighttime noise effects during the five- to seven-day period during which round-the-clock pump testing would take place will be more difficult. The fact that the nearest residences are approximately 900 feet from the site helps attenuate noise levels, but they are still likely to be higher than ambient noise levels at those properties. Good communication with the residents concerning the need for the testing and the steps that are being taken to minimize unnecessary noise emissions will help mitigate the adverse effect.

6.2.8 CUMULATIVE EFFECTS OR COMMITMENT TO A LARGER ACTION

Construction and operation of the proposed well and reservoir is not a commitment to a larger action. Neither is it intended to facilitate substantial population growth. Instead, it is intended primarily to replace an existing water source that the SWTR would render economically unattractive.

The groundwater resources of the area are so rich that withdrawals from the proposed Ka'ie'ie Mauka well would not significantly reduce groundwater flow. Moreover, to the extent that it simply replaces the Pāpa'ikou Spring source, it would not initially increase overall groundwater use.

6.2.9 AFFECTS A RARE, THREATENED, OR ENDANGERED SPECIES

The proposed project would be constructed on an already disturbed site. It would not utilize a resource needed for the protection of rare, threatened, or endangered species.

6.2.10 AFFECTS AIR OR WATER QUALITY OR AMBIENT NOISE LEVELS

Construction and operation of the proposed well would not have a measurable effect on air or water quality. Neither would it have a long-term effect on noise levels.

The project does have the potential to increase noise levels during the construction and testing phases. Adequate mitigation measures would be taken to limit these to reasonable levels.

6.2.11 ENVIRONMENTALLY SENSITIVE AREAS

There are no environmentally sensitive areas or resources in the vicinity of the proposed project. While all of Hawai'i Island is subject to certain geologic hazards, such as earthquakes, the project site is no more susceptible to these than the users it would serve. It is in an area that is less susceptible to damage from lava flows than most areas of the Island.

6.2.12 AFFECTS SCENIC VISTAS AND VIEWPLANES

The proposed well and equipment building are small and in keeping with the existing character of the site. The site is not within a designated scenic area. They would not significantly alter the visual character of the site or change views across it.

6.2.13 REQUIRES SUBSTANTIAL ENERGY CONSUMPTION

Operation of the wells would require more energy than is used for the existing Pāpa'ikou source. However, the increase is relatively small. Moreover, no other new sources could be used that would require significantly less energy.

6.3 DETERMINATION

In view of the foregoing, the DWS concludes that the proposed project would not have a significant adverse impact on the environment. As documented in Chapter 7 of this report, all of the organizations and individuals who responded after reviewing the Draft EA either had no comments or no objections. Questions that were raised are addressed in the response letters and are included in Appendix A. Consequently, the DWS issues a Negative Declaration for the proposed action.

CHAPTER 7- CONSULTATION

7.1 OEQC ANNOUNCEMENT

An announcement of the availability of the Draft EA for the Ka'ie'ie Mauka Well was first published in the October 8, 1999 edition of The Environmental Notice. The official public review period ended on November 8, 1999.

7.2 REVIEW OF THE DRAFT EA

The Department of Water Supply's consultant sent copies of the Draft Environmental Assessment to the 36 individuals and organizations listed in Table 8-1. A copy of the text of the letter used to solicit comments for the document is reproduced as Figure 7-1.

7.3 COMMENTS TO THE DRAFT EA AND RESPONSES FROM DWS

Several comment letters regarding the Ka'ie'ie Mauka Well Draft EA were received. In addition, the DWS's consultant received telephone calls from representatives of three public agencies. All of the respondents either had no comment or no objection to the proposed action. In response to the comments that were received, DWS returned written replies to the commenters and the following changes were made to the Draft EA for the Final EA:

- Section 3.1.6.1: Corrected the actual drilling time from "4 to 5 months" to "2 to 3 weeks".
- Included the 1991 Megumi Kon, Inc.'s *Hawai'i County Water Use and Development Plan* in the chapter of References.
- Corrected minor typographic errors.

Copies of all the comment letters and the written responses from DWS are reproduced in Appendix A.

Table 7-1. Parties from Whom Comments on the Draft EA Were Requested.

FEDERAL AGENCIES	DEA SENT (10/05/99)	RESPONSE LETTER NO.*	TYPE OF COMMENT**
(1) Administrator, United States Environmental Protection Agency, Region IX	Y	--	--
(2) Directorate of Facilities Engineering, United States Army Support Command Hawai'i	Y	--	--
(3) Manager, Pacific Islands Contact Office, Environmental Protection Agency	Y	--	--
(4) State Conservationist, Natural Resources Conservation Service, Department of Agriculture	Y	--	--
(5) District Engineer, U.S. Army Engineer District, Honolulu	Y	7	NC
(6) Pacific Island Ecoregion, U.S. Fish and Wildlife Service, Department of the Interior	Y	T	NC/NO
(7) District Chief, U.S. Geological Survey, Department of the Interior	Y	--	--
STATE OF HAWAII AGENCIES			
(1) Department of Agriculture	Y	--	--
(2) Department of Accounting and General Services	Y	T	NC
(3) Department of Defense	Y	--	--
(4) Department of Education	Y	5	NC
(5) Department of Hawaiian Home Lands	Y	3	NC
(6) Environmental Health Administration, Department of Health	Y	10	C/NO
(7) Commission on Water Resource Management for the Department of Land and Natural Resources	Y	6	C/NO
(8) State Historic Preservation Division, Department of Land and Natural Resources	Y	--	--
(9) Department of Business and Economic Development & Tourism	Y	--	--
(10) Housing and Community Development Corporation of Hawai'i	Y	2	NC

* T = Response received by telephone, not in writing. Consequently, no reply was returned.

** C = Comment; NC = No comment at this time; NO = No objection at this time.

Note: Table continues on next page.

STATE OF HAWAII AGENCIES (CONTINUED)	EA SENT (10/05/99)	RESPONSE LETTER NO.*	TYPE OF COMMENT**
(11) Energy Resources & Technology Division, Department of Business, Economic Development, & Tourism	Y	--	--
(12) Planning Office, Department of Business, Economic Development, & Tourism	Y	8	NO
(13) Department of Transportation	Y	--	--
(14) Environmental Center, University of Hawaii	Y	--	--
(15) Water Resources Research Center, University of Hawaii	Y	--	--
(16) Hilo Public Library	Y	--	--
(17) Librarian, Mo'okini Library, University of Hawaii - Hilo	Y	--	--
(18) Administrator, Office of Hawaiian Affairs	Y	1	NC
(19) Office of Environmental Quality Control	Y	9	C/NO
COUNTY OF HAWAII AGENCIES			
(1) Planning Department	Y	T	NC
(2) Department of Parks and Recreation	Y	--	--
(3) Fire Department	Y	--	--
(4) Chief Engineer, Department of Public Works	Y	--	--
(5) Department of Research and Development	Y	4	C/NO
OTHER ORGANIZATIONS & INDIVIDUALS			
(1) Editor, <i>The Honolulu Advertiser</i>	Y	--	--
(2) Editor, <i>Honolulu Star-Bulletin</i>	Y	--	--
(3) Editor, <i>Hawai'i Tribune Herald</i>	Y	--	--
(4) Editor, <i>West Hawai'i Today</i>	Y	--	--
(5) Director of Environmental Health, American Lung Association	Y	--	--

* T = Response received by telephone, not in writing. Consequently, no reply was returned.

** C = Comment; NC = No comment at this time; NO = No objection at this time.

Figure 7-1. Text of Letter Requesting Comments on the Draft EA.

October 5, 1999

*Subject: Ka'ie'ie Mauka Well:
Draft Environmental Assessment/Anticipated Finding of No
Significant Impact*

A copy of the Draft Environmental Assessment (DEA) for the proposed Ka'ie'ie Mauka Well project is attached. An announcement of its availability will appear in the October 8, 1999 edition of The Environmental Notice published by the State Office of Environmental Quality Control (OEQC).

The Hawai'i County Department of Water Supply's proposed Ka'ie'ie Mauka Well project involves the drilling, outfitting, testing, and completion of a new municipal water supply well. It also includes the construction of a 17' x 25' control building, 0.05-million gallon (MG) reservoir, and other appurtenant facilities. These facilities would be constructed on a site roughly 28,000 square feet in size and located 2.5 miles west of Pāpa'ikou in the South Hilo District on the Island of Hawai'i. The proposed site is adjacent to the existing DWS 0.02-MG reservoir. Water from the well would replace water now being drawn from the Pāpa'ikou Spring source. The substitution is necessitated by recent changes in the State Department of Health's Surface Water Treatment Rule (SWTR) for ground water sources under the influence of surface water.

As indicated in the DEA, the Department of Water Supply has concluded that construction and operation of the well would not have significant adverse impacts on the environment. It proposes to mitigate short-term construction impacts on nearby residents by requiring the selected contractor to incorporate rigorous mitigation measures in its work program. Consequently, it anticipates a Finding of No Significant Impact (FONSI) for the project.

We would appreciate it if you would review the DEA/Anticipated FONSI and write to us with any comments or suggestions. If you have any questions or would like additional information before reaching a conclusion, please call Ms. Kimi Mikami Yuen or me at 593-1288.

Sincerely,

Perry J. White

*cc: Office of Environmental Quality Control (w/o Attachment)
Mr. Milton D. Pavao, Hawaii County DWS*

CHAPTER 8 - REFERENCES

- Commission on Water Resource Management, Department of Land and Natural Resources, State of Hawai'i, February 1992. *Hawai'i County Water Use and Development Plan, Review Draft*. Honolulu: Author.
- Department of Business, Economic Development, and Tourism, State of Hawai'i, 1997. *State of Hawai'i Data Book*. Honolulu: Author.
- Department of Geography, University of Hawai'i, 1993. *Atlas of Hawai'i, Second Edition*. Honolulu, University of Hawai'i Press.
- Department of Water Supply, County of Hawai'i, No Date (ND). Printout of *1993 Big Island Well Pumpage Report*.
- Department of Water Supply, County of Hawai'i, ND. Printout of *1994 Big Island Well Pumpage Report*.
- Department of Water Supply, County of Hawai'i, ND. Printout of *1995 Big Island Well Pumpage Report*.
- Division of Water Resource Management, Department of Land and Natural Resources, State of Hawai'i, December 27 1992. *Printout of Groundwater Summary - Hawai'i Code 8*. Honolulu: Author. Pages 5 and 7.
- Furumoto, Augustine S., W. M. Adams, and E. Herrero-Bevera, 1988. *Earthquake Risk and Hazard Potential of the Hawaiian Islands*. Honolulu: State of Hawai'i Department of Defense.
- Bolt, Beranek, and Newman, 1971. *Noise from Construction Equipment and Operations, Building Equipment, and Home Appliances*. Prepared for the U.S. Environmental protection Agency, Office of Noise Abatement and Control, Washington, D.C.
- Macdonald, Gordon A., A. T. Abbott, and F. L. Peterson, 1983. *Volcanoes in the Sea*. Honolulu: University of Hawai'i Press.
- Megumi Kon, Inc, February 1992. *Hawai'i County Water Use and Development Plan (Review Draft)*. Honolulu: Commission on Water Resource Management, Department of Land and Natural Resources, State of Hawai'i.
- Sewake, R. William, April 20, 1992. Letter from Department of Water Supply to Mr. Manabu Tagamori, Division of Water and Land Development, Department of Land and Natural Resources, State of Hawai'i. *Big Island Well Pumpage Report, January 1991 through December 1991*.

- Pavao, Milton D., July 16, 1999. Letter from the Department of Water Supply, County of Hawai'i, to Mr. Tom Nance, Tom Nance Water Resource Engineering. Letter provides water consumption data for the Ka'ie'ie Mauka Service Area.
- Sewake, R. William, October 11, 1991. Letter from Department of Water Supply to Mr. Manabu Tagamori, Division of Water and Land Development, Department of Land and Natural Resources, State of Hawai'i. *Big Island Well Pumpage Report, July 1990 through June 1991.*
- Sewake, R. William, April 20, 1992. Letter from Department of Water Supply to Mr. Manabu Tagamori, Division of Water and Land Development, Department of Land and Natural Resources, State of Hawai'i. *Big Island Well Pumpage Report, January 1991 through December 1991.*
- Sewake, R. William, April 8, 1993. Letter from Department of Water Supply to Mr. Manabu Tagamori, Division of Water and Land Development, Department of Land and Natural Resources, State of Hawai'i. *Big Island Well Pumpage Report, January 1992 through December 1992.*
- U.S. Department of Agriculture, 1973. *Soil Survey of the Island of Hawai'i.* Washington, D.C.: U.S. Government Printing Office.

**APPENDIX A – COPIES OF COMMENT AND RESPONSE
LETTERS**

The following parties submitted written comments on the Draft EA for the Ka'ie'ie Mauka Well project:

- (1) Office of Hawaiian Affairs, State of Hawai'i
- (2) Housing and Community Development Corporation of Hawai'i
- (3) Department of Hawaiian Home Lands, State of Hawai'i
- (4) Department of Research and Development, County of Hawai'i
- (5) Department of Education, State of Hawai'i
- (6) Commission on Water Resource Management, Department of Land and Natural Resources, State of Hawai'i
- (7) US Army District Engineer, Honolulu
- (8) Office of Planning, Department of Business, Economic Development, & Tourism, State of Hawai'i
- (9) Office of Environmental Quality Control, State of Hawai'i
- (10) Environmental Health Administration, Department of Health, State of Hawai'i

Copies of the above comment letters and the Department of Water Supply's responses to them are reproduced on the following pages.

PHONE (808) 594-1880



STATE OF HAWAII
OFFICE OF HAWAIIAN AFFAIRS
711 KAPOLANI BOULEVARD, SUITE 500
HONOLULU, HAWAII 96813

October 7, 1999

FAX (808) 594-1865



DEPARTMENT OF WATER SUPPLY • COUNTY OF HAWAII
25 AUPUNI STREET • HILO, HAWAII 98720
TELEPHONE (808) 961-8660 • FAX (808) 961-8657

November 3, 1999

Perry J. White
Planning Solutions
1210 Auahi Street, Suite 221
Honolulu, Hawaii 96814

EIS #344

Subject: Ka'ie'ie Mauka Well:
Draft Environmental Assessment/Anticipated FONSI

Dear Mr. White:

Thank you for the opportunity to review the above-referenced draft.

At this time the Office of Hawaiian Affairs has no comment on this project. If you have any questions please contact Ken R. Salva Cruz, Policy Analyst at 594-1847.

Sincerely,

Colin Kippen
Deputy Administrator

cc: Board of Trustees
Hilo CAC

C. Sebastian Aloob
Division Director

Mr. Randall K. Ogata, Administrator
Office of Hawaiian Affairs
711 Kapiolani Boulevard, Suite 500
Honolulu, HI 96813

DRAFT ENVIRONMENTAL ASSESSMENT/ANTICIPATED FONSI
KA'IE'IE MAUKA EXPLORATORY WELL

Although you had no comment on the subject document, as evidenced in your October 7, 1999 letter, we appreciate the time you and your staff spent reviewing the subject document and responding to us.

If you have any questions, please contact the Water Resources and Planning Branch at 961-8665.

Hilvon D. Pavao, P.E.
Manager

GGA:cms

copy - Office of Environmental Quality Control
Mr. Perry White, Planning Solutions, Inc.

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SEYMOUR J. CAETANO
GOVERNOR



STATE OF HAWAII
DEPARTMENT OF BUSINESS, ECONOMIC DEVELOPMENT & TOURISM
HOUSING AND COMMUNITY DEVELOPMENT CORPORATION OF HAWAII
677 QUEEN STREET, SUITE 300
HONOLULU, HAWAII 96813
FAX (808) 587-0900

DONALD K.W. LAU
EXECUTIVE DIRECTOR
SHAWN L. BEYLER
EXECUTIVE ASSISTANT



DEPARTMENT OF WATER SUPPLY • COUNTY OF HAWAII
25 AUPUNI STREET • HILO, HAWAII 98720
TELEPHONE (808) 961-8880 • FAX (808) 961-8857

November 3, 1999

Mr. Perry J. White
Planning Solutions
1210 Auahi Street, Suite 221
Honolulu, Hawaii 96814

Dear Mr. White:

Re: Draft Environmental Assessment for the Ka'ie'ie Mauka Well
Thank you for the opportunity to review the subject draft environmental assessment.

We have no comments to offer.

Sincerely,

Donald K.W. Lau
Executive Director

Mr. Donald K.W. Lau, Executive Director
Housing and Community Development Corporation of Hawaii
677 Queen Street, Suite 300
Honolulu, HI 96813

DRAFT ENVIRONMENTAL ASSESSMENT/ANTICIPATED FONSI
KA'IE'IE MAUKA EXPLORATORY WELL

Although you had no comment on the subject document, as evidenced in your October 13, 1999 letter, we appreciate the time you and your staff spent reviewing the subject document and responding to us.

If you have any questions, please contact the Water Resources and Planning Branch at 961-8665.

Milton B. Pavao, P.E.
Manager
GGAT:UBS

copy - Office of Environmental Quality Control
Mr. Perry White, Planning Solutions, Inc.

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EDUARDO J. CASTILLO
CHAIRMAN
STATE OF HAWAII



STATE OF HAWAII
DEPARTMENT OF HAWAIIAN HOME LANDS
P.O. BOX 1879
HONOLULU, HAWAII 96805

RAYNARD C. SOON
CHAIRMAN
HAWAIIAN HOME LANDS COMMISSION
JOSE M. DE M. FALGOUTIER
SECRETARY TO THE COMMISSION



DEPARTMENT OF WATER SUPPLY • COUNTY OF HAWAII
25 AUPUNI STREET • HILO, HAWAII 96720
TELEPHONE (808) 961-8660 • FAX (808) 961-8637

November 3, 1999

October 13, 1999

Mr. Perry J. White
Planning Solutions
1210 Auahi Street, Suite 221
Honolulu, Hawaii 96814

Mr. Raynard C. Soon, Chairperson
State of Hawaii
Department of Hawaiian Home Lands
P.O. Box 1879
Honolulu, HI 96805

Dear Mr. White:

Subject: Ka'ie'ie Mauka Well: Draft Environmental Assessment

The Department of Hawaiian Home Lands has reviewed the subject draft environmental assessment concerning the new municipal well serving the Papaikou area of Hilo. We have no comments to offer at this time.

If you have any questions, please call Rebecca Alakai of our Planning Office at 587-6423.

Aloha,

Raynard C. Soon
Raynard C. Soon, Chairman
Hawaiian Homes Commission

DRAFT ENVIRONMENTAL ASSESSMENT/ANTICIPATED FONSI
KA'IE'IE MAUKA EXPLORATORY WELL

Although you had no comment on the subject document, as evidenced in your October 13, 1999 letter, we appreciate the time you and your staff spent reviewing the subject document and responding to us.

If you have any questions, please contact the Water Resources and Planning Branch at 961-8665.

Raynton D. Pavao
Raynton D. Pavao, P.E.
Manager
GGA:DM5

copy - Office of Environmental Quality Control
Mr. Perry White, Planning Solutions, Inc.

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Stephen K. Yamashiro
Mayor



County of Hawaii
DEPARTMENT OF RESEARCH AND DEVELOPMENT
23 Aupuni Street, Room 219 • Hilo, Hawaii 96720-4132
HILLO: (808) 961-4366 • Fax (808) 933-1265 • KONA: (808) 329-3226 • Fax (808) 326-5663
E-mail: chrisder@hawaii.net

Diane S. Quitiquit
Director

4



DEPARTMENT OF WATER SUPPLY • COUNTY OF HAWAII
23 AUPUNI STREET • HILO, HAWAII 96720
TELEPHONE (808) 961-8860 • FAX (808) 961-8857

November 9, 1999

4

October 18, 1999

Mr. Perry J. White
Planning Solutions
1210 Auahii Street, Suite 221
Honolulu, Hawaii 96814

Dear Mr. White:

Re: Kaieie Mauka Well - Draft Environmental Assessment

We thank you for the opportunity to comment on the referenced DEA. Our only concern at this time is that of expected purity of water from this new well. Since the adjacent lands were previously under intensive sugar cultivation, is there any risk of finding undesirable residues of pesticides or other contaminants? If so, how will this concern be addressed?

Yours truly,

Raymond Carr
Economic Development Specialist

c.c. Diane Quitiquit, Director

TO: Mr. Raymond Carr, Economic Development Specialist
Department of Research and Development

FROM: Milton D. Pavao, Manager

SUBJECT: KAIEIE MAUKA EXPLORATORY WELL
DRAFT ENVIRONMENTAL ASSESSMENT/ANTICIPATED FONSI

Thank you for your October 18, 1999 letter commenting on the *Draft Environmental Assessment* for the Department of Water Supply's proposed Kaieie Mauka Exploratory Well. We appreciate the time you and your staff spent reviewing the document and preparing your comments to us.

We share your concern about water quality at the proposed well. Based on the information available to us for the general area, we believe the risk of finding prior agricultural related contaminants in the water to be relatively small. For one, only limited cultivation occurred upstream of the well site. Secondly, the groundwater aquifer we will tap is about 1,000 feet below ground surface and there is an intervening shallow aquifer that would be more likely to receive any contaminants.

While we do not expect such contaminants to be present, testing for them is a normal part of the process during pump testing of the well. If contaminants were to be found, the Department of Water Supply would either install appropriate treatment or simply not use the well.

Should you have any questions or need additional information, please contact our Water Resources and Planning Branch at 961-8665.

CGA:gms

Milton D. Pavao, P.E.
Manager

copy - Office of Environmental Quality Control
Mr. Perry White, Planning Solutions, Inc. ✓

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BERNARD J. CARTER
SUPERVISOR



STATE OF HAWAII
DEPARTMENT OF EDUCATION
PO BOX 2380
HONOLULU, HAWAII 96814

PAUL G. LEHAHIEU, Ph.D.
SUPERINTENDENT



DEPARTMENT OF WATER SUPPLY • COUNTY OF HAWAII
25 AUPUNI STREET • HILO, HAWAII 98720
TELEPHONE (808) 981-8660 • FAX (808) 981-8657

November 3, 1999

OFFICE OF THE SUPERINTENDENT

October 15, 1999

Mr. Perry J. White
Planning Solutions
1210 Auahi Street, Suite 221
Honolulu, Hawaii 96814

Dear Mr. White:

Subject: Kaieie Mauka Well Draft EA

The Department of Education has no comment on the proposed project.

Thank you for the opportunity to respond.

Very truly yours,

Paul G. Lehaieau, Ph.D.
Superintendent of Education

PL:htcl

cc: OBS

Dr. Paul G. Lehaieau, Superintendent of Education
State of Hawaii
Department of Education
P.O. Box 2360
Honolulu, HI 96804

DRAFT ENVIRONMENTAL ASSESSMENT/ANTICIPATED FORSI
KA'IE'IE MAUKA EXPLORATORY WELL

Although you had no comment on the subject document, as evidenced in your October 15, 1999 letter, we appreciate the time you and your staff spent reviewing the subject document and responding to us.

If you have any questions, please contact the Water Resources and Planning Branch at 961-8665.

Milton Q. Pavao, P.E.
Manager
CGA:oms

copy - Office of Environmental Quality Control
Mr. Perry White, Planning Solutions, Inc.

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STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT
P.O. BOX 521
HONOLULU, HAWAII 96804

October 22, 1999

Mr. Perry J. White
Planning Solutions
1210 Auahi Street, Suite 221
Honolulu, HI 96814

Dear Mr. White:

Draft Environmental Assessment/Anticipated FONSI for Ka'ie Mauka Well

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.
- [] We recommend coordination with the Land 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.
- [] 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 the project may affect streamflows, which may require an instream flow standard amendment.
- [] We recommend that no development take place affecting highly erodible slopes which drain into streams within or adjacent to the project.
- [] If the proposed project includes construction of a stream diversion, the project may require a stream diversion works permit and amend the instream flow standard for the affected stream(s).
- [] If the proposed project alters the bed and banks of a stream channel, the project may require a stream channel alteration permit.
- [] OTHER.

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

Sincerely,

LINNET T. NISHIOKA
Deputy Director



DEPARTMENT OF WATER SUPPLY • COUNTY OF HAWAII

25 AUPUNI STREET • HILO, HAWAII 98720
TELEPHONE (808) 961-8600 • FAX (808) 961-8637

November 3, 1999

Ms. Linnet T. Nishioka, Deputy Director
Commission on Water Resource Management
Department of Land and Natural Resources
State of Hawaii
P.O. Box 621
Honolulu, HI 96804

DRAFT ENVIRONMENTAL ASSESSMENT/ANTICIPATED FONSI
KA'IE MAUKA EXPLORATORY WELL

Thank you for your October 22, 1999 letter concerning the *Draft Environmental Assessment* for the subject project. In response to your comments, please note that we, as a Hawaii County agency, have initiated this project in coordination with the appropriate County agencies. The project is consistent with the Hawaii County Water Use and Development Plan and we will apply for all the required permits including a Well Construction Permit and a Pump Installation Permit from the Commission.

We appreciate the time you and your staff spent reviewing the document and responding to us. If you have any questions, please contact the Water Resources and Planning Branch at 961-8665.

Hilton D. Pavao, P.E.

Manager

GGA:ans

copy - Office of Environmental Quality Control
Mr. Perry White, Planning Solutions, Inc.

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DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, HONOLULU
FT. SHAFTER, HAWAII 96861-5440

REPLY TO
ATTENTION OF

October 25, 1999

Civil Works Technical Branch

Mr. Perry Well
Planning Solutions
1210 Auahi Street, Suite 221
Honolulu, Hawaii 96814

Dear Mr. Well:

Thank you for the opportunity to review and comment on the Draft Environmental Assessment (DEA) for the Proposed Ka 'Ie 'Ie Mauka Well Project, Hilo, Hawaii (TMK 2-7-2; por.3). We do not have any comments to offer at this time since no waters of the U.S. are involved.

Sincerely,


James K. Hatashima
Acting Chief, Civil Works
Technical Branch



DEPARTMENT OF WATER SUPPLY • COUNTY OF HAWAII
28 AUPUNI STREET • HILO, HAWAII 96720
TELEPHONE (808) 981-8860 • FAX (808) 981-8857

November 3, 1999

Mr. James K. Hatashima, Acting Chief
Civil Works Technical Branch
US Army Engineer District, Honolulu
Building 230
Honolulu, HI 96858-5440

DRAFT ENVIRONMENTAL ASSESSMENT/ANTICIPATED FONSI
KA 'IE 'IE MAUKA EXPLORATORY WELL

Although you had no comment on the subject document, as evidenced in your October 15, 1999 letter, we appreciate the time you and your staff spent reviewing the subject document and responding to us.

If you have any questions, please contact the Water Resources and Planning Branch at 961-8665.


Milijon D. Pavao, P. E.
Manager
GGA:cms

copy - Office of Environmental Quality Control
Mr. Perry White, Planning Solutions, Inc.

... *Water brings progress...*



**DEPARTMENT OF BUSINESS,
ECONOMIC DEVELOPMENT & TOURISM**

OFFICE OF PLANNING
235 South Beretania Street, 6th Floor, Honolulu, Hawaii 96813
Mailing Address: P.O. Box 2359, Honolulu, Hawaii 96804

WILLIAM S. CHRISTIANO
GOVERNOR
SOL J. RAY, P.L.D.
BRADLEY J. HARRISON
DEPUTY DIRECTOR
DAVID W. BLANE
DIRECTOR, OFFICE OF PLANNING

Telephone: (808) 587-2848
Fax: (808) 587-2844

Ref. No. P-8341

October 25, 1999

Mr. Perry White
Planning Solutions
1210 Auahi Street, Suite 221
Honolulu, Hawaii 96814

Dear Mr. White:

Subject: Kaieie Mauka Well
Draft Environmental Assessment (EA)

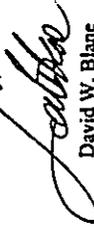
Thank you for your letter dated October 5, 1999, requesting our comments.

The Office of Planning (OP) has reviewed the Hawaii County Department of Water Supply's (DWS) proposed well project in South Hilo District, Hawaii, which involves the drilling, outfitting, testing and completion of a new municipal water supply well and related structures/facilities. It is our understanding that the proposed project site is adjacent to the existing DWS Kaieie Mauka Reservoir.

Since the draft EA states that a Well Construction Permit will be required from the State Commission of Water Resource Management (CWRM), we defer comments on hydrologic impacts to CWRM. Impacts to flora, fauna and archaeological resources should be minimal since the project site was used for sugarcane cultivation for several decades.

Should you have any questions, please call the Land Use Division at 587-2842.

Sincerely,


David W. Blane
Director
Office of Planning

cc: Seiji F. Naya
Esther Ueda



DEPARTMENT OF WATER SUPPLY • COUNTY OF HAWAII
25 AUPUNI STREET • HILO, HAWAII 96720
TELEPHONE (808) 961-6880 • FAX (808) 961-6657

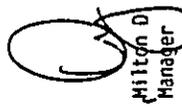
November 3, 1999

Mr. David W. Blane, Director
Office of Planning
Department of Business, Economic Development and Tourism
State of Hawaii
P.O. 2359
Honolulu, HI 96804

DRAFT ENVIRONMENTAL ASSESSMENT/ANTICIPATED FONSI
KA'IE'IE MAUKA EXPLORATORY WELL

Thank you for your October 25, 1999 letter concerning the *Draft Environmental Assessment* for the subject project. We understand that you defer comment on the project's hydrologic impact to the Commission on Water Resource Management. Please note that we have received a letter from the Commission dated October 22, 1999, and will comply with its comments. We also recognize that you believe the impacts to flora, fauna, and archaeological resources will be minimal since the site previously was used for sugarcane cultivation.

We appreciate the time you and your staff spent reviewing the document and responding to us. If you have any questions, please contact the Water Resources and Planning Branch at 961-8665.


Hilton D. Pavao, P.E.
Manager

GGA:dms

copy - Office of Environmental Quality Control
Mr. Perry White, Planning Solutions, Inc.

... Water brings progress...

BENJAMIN J. CAVETAKO
GOVERNOR



STATE OF HAWAII
OFFICE OF ENVIRONMENTAL QUALITY CONTROL

278 SOUTH BERTANCA STREET
HONOLULU, HAWAII 96813
TELEPHONE: (808) 541-1111
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GENEVYVE SULLMONSON
DIRECTOR

Mr. Pavao
Page 2

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3. Aquifer or Hydrologic Unit Status

Please provide the following information on the aquifer or hydrologic unit status:

- Pending installed capacity and/or use for other wells within the aquifer.

4. Contamination Analysis and Vulnerability Assessment

Please describe the record of contamination problems in the aquifer or hydrologic unit including but not limited to saltwater intrusion, turbidity, heavy metals, inorganic and organic chemicals, microbiological agents, water quality parameters (such as pH, alkalinity, calcium, conductivity and temperature), and radioactivity. If contamination exists, the sources and duration of the contamination should be listed. Water quality data from nearby wells should be presented as well as any anticipated need for treatment or filtering systems. Discuss past and existing land uses within the likely wellhead protection area and the potential for future contamination from those uses.

The potential for contamination should be assessed based on geologic and hydrologic considerations. Although sources of contamination might be presently absent, vulnerability to in the future, due to factors such as high rates of infiltration or thin, protective soil horizons.

Any hazardous materials used and/or produced during drilling and treatment should be described. The method of handling these hazardous materials should also be disclosed.

5. Financial and Institutional Arrangements

In some instances, a well is developed by private financing, the transfer of public lands to government or private developers, or in return for a water allocation credit to supply an urban development. The EA should include a full discussion of any institutional, financial or land use arrangements or commitments related to developing the well and delivering water to end users.

These arrangements may include the formation of public utility companies and subsequent rate-setting, the establishment of county water commitments, the co-funding of state or county

Mr. Milton D. Pavao, Manager
Hawaii County Department of Water Supply
25 Aupuni Street
Hilo, Hawaii 96720

Dear Mr. Pavao:

Subject: Draft Environmental Assessment for the Ka'ie'ie Mauka Well, Hawaii

Thank you for the opportunity to review the subject document. We have the following comments.

1. Visual Impacts

Please illustrate the visual impacts of the proposed reservoir from public places such as roads and lookouts. Photos of existing conditions taken from public view points are helpful in evaluating visual impacts. Renderings of future structures superimposed on photos of existing views should be provided. We recommend constructing and painting the reservoir with materials and colors that blend with the surroundings. We also recommend landscaping with native Hawaiian plants to reduce the visual impacts.

2. Orientation Maps

Please provide maps with the appropriate scale and coverage to analyze the aquifer or hydrologic unit that show the following:

a) Contamination information: Points or regions of known contamination, points of potential contamination (landfills, individual wastewater disposal systems, hazardous waste sites, dry wells and injection wells), and likely wellhead protection area for the proposed well.

Mr. Pavao
Page 3

water system development, an executive order or other set-aside of state lands, and purchase of land or easements by public entities.

Any or all of these arrangements and all permits or governmental approvals required to fulfill these commitments should be listed.

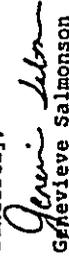
6. Watershed and Land Use Analysis

Please discuss how the proposed well development may affect land and water uses on the island and in the region. The analysis should include a discussion of the following (published materials may be referenced):

- * Hawaii State Water Plan and its component parts
- * Plans for future water development within the aquifer
- * An assessment of the well's impact on the land owners, water users including farmers and kuleana residents in the region and a declaration if ceded lands are involved.

Should you have any questions, please call Jeyan Thirugnanam at 586-4185.

Sincerely,


Genevieve Salmonson
Director

C: Planning Solutions



DEPARTMENT OF WATER SUPPLY • COUNTY OF HAWAII
25 AUPUNI STREET • HILO, HAWAII 96720
TELEPHONE (808) 961-8660 • FAX (808) 961-8637

November 19, 1999

Ms. Genevieve Salmonson, Director
State of Hawaii
Office of Environmental Quality Control
State Office Tower, Suite 702
235 South Beretania Street
Honolulu, Hawaii 96813

**KAIKIE MAUKA WELL
DRAFT ENVIRONMENTAL ASSESSMENT/ANTICIPATED FONSI**

Thank you for your letter dated November 8, 1999 concerning the *Draft Environmental Assessment (DEA)* for this Department's proposed Kaieie Mauka Well. We appreciate the time you and your staff spent reviewing the document and responding to us. In response, we address each of your concerns below.

1. Visual Impacts

The kinds of illustrations you requested are excellent ways of depicting significant visual effects where they exist. However, we do not believe that the proposed action would result in such impacts. While renderings of the proposed structures superimposed on photographs of existing views are helpful, they are costly. In light of the small size of the proposed structures and their distance from significant viewpoints, we believe this type of analysis is not appropriate. At the same time, please note that Figure 1-3 of the DEA provides a panoramic view of the existing conditions from the only public viewpoint, the unimproved stretch of Kaieie Homestead Road.

To our knowledge, the site is not visible from other public places or lookouts. It can only be seen from the access road and a few homes that are roughly 900' or more away (see Section 3.1.9 of the DEA). Furthermore, as described in the DEA, the control building would be a one-story structure occupying less than 440 square feet. The new reservoir tank would be 10' wider but roughly the same height as the existing reservoir. Together, they would occupy approximately half the space of a typical single-family home. Existing vegetation and topography also help to screen the site from the few existing homes mentioned above.

The Department of Water Supply (DWS) typically paints and landscapes their facilities to blend with their surroundings. Since the proposed action is located on the wetter side of Hawaii Island, DWS plans to paint the structures in a green hue. We would grass and landscape the site placing plantings along the fence line to screen the facilities and further integrate them with their surroundings.

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Ms. Genevieve Salmonson, Director
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2. Requested Orientation Maps

Contamination Information: Based on available information, there are no known points or regions of contamination in the area of the proposed action. There are no hazardous waste sites listed with the State Hazard Evaluation and Emergency Response Office or landfills near the proposed project site. According to the Hawaii County Department of Public Works Solid Waste Division, the only landfill in the Hilo area is located on Leilani Street near the Hilo International Airport over 8 miles southeast of the proposed well and outside of the Ooomea Aquifer System. According to the State Department of Health (DOH) Environmental Health Division staff on Hawaii Island, there are records of only two cesspools in the area. One is approximately 900' away from the proposed well and the other is over 1,000' away. There are no septic systems within 1,000' of the proposed well. All underground storage tanks (UST) listed with the DOH in the area are either closed and/or not causing any known contamination. Furthermore, from the locational descriptions given in the DOH's database, all of the USTs are over a mile downgradient from the site near Highway 19 and are not expected to affect water quality. Maps of the USTs are currently unavailable.

Based on some initial analytical approximations, the likely wellhead protection area for the proposed well would measure 35'-100' north and south of the well and would extend upslope (roughly west) from the well. It would be parabolic in shape and would taper to a stagnation point on the order of 10'-30' makai of the proposed well site.

3. Aquifer or Hydrologic Unit Status

We provided information on the aquifer status in Sections 2.1.3.2 and 3.1.3.2 of the DEA. There is nothing pending within the aquifer except for the proposed well.

4. Contamination Analysis and Vulnerability Assessment

As described in Section Nos. 1.1.3 and 2.3 of the DEA, past and present land uses for the project site and surrounding areas include agricultural and rural uses. Based on the information that is available to us, however, we believe the risk of finding contaminants from prior agricultural activities in the water drawn from the proposed Kaiete Manka Well to be relatively small. Historical photographs indicate that only limited cultivation occurred upgradient of the well site. Also, the groundwater we will tap is about 1,000' below ground surface. There is an intervening shallow aquifer that would be more likely to receive any contaminants.

There is no documented record of contamination of the deep source aquifer from which we will be drawing water. Once the well is drilled, DWS will analyze water samples collected during the pump test to confirm that the water from it is suitable for potable use. We have summarized the data that are currently available from other wells in the general area in Section Nos. 1.1.2 and 2.1.3.2 of the DEA.

Ms. Genevieve Salmonson, Director
Page 3
November 19, 1999 .

No hazardous materials will be used and/or produced during drilling. Therefore, no treatment or special handling methods will be required.

5. Financial and Institutional Arrangements

As discussed in the first chapter of the DEA, the DWS is developing the well to replace the existing Papaikou Spring source currently serving its Kaiete Manka service area. DWS will purchase the land from the current owners, Mauna Kea Agribusiness Co., Inc., (see Section 2.5 of the DEA) and will fund the entire project (see Section 1.2.3 of the DEA). There are no other arrangements or commitments tied to the development of the proposed facilities. A list of the required permits is included in the Summary Sheet at the front of the DEA.

6. Waterbed and Land Use Analysis

The proposed well development is not expected to affect land or water uses in the area. The DWS is developing the proposed well to replace the water currently withdrawn from the Papaikou Spring source. As described in Section 3.1.7 of the DEA, withdrawals from this deep groundwater aquifer will not affect surface waters since the aquifer is roughly 1,000' below the ground level. The restoration of water flow from the Papaikou Spring will slightly increase stream flow. No ceded lands are involved in the proposed action.

The proposed action is included in the 1991 *Hawaii County Water Use Development Plan*, and is expected to be "a positive factor in promoting the County's desired land use development pattern" and "would provide the rural (South Hilo) customers with a reliable system producing higher quality water, particularly during dry weather" (Megumi Kon, Inc., 1991 *Hawaii County Water Use and Development Plan*, page Nos. 3-8).

Should you need additional information, please contact our Water Resources and Planning Branch at 961-8665.

Sincerely yours,



Milton D. Pavao, P.E.
Manager

GGA:grm

copy - Tom Nance Water Resource Engineering, Inc.
Mr. Perry White, Planning Solutions, Inc.



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

BRUCE S. ANDERSON, P.E., M.P.H.
DIRECTOR OF HEALTH

IN REPLY, PLEASE REFER TO
FILE #

November 5, 1999

99-210/epo

Mr. Perry J. White
Planning Solutions
1210 Auahi Street, Suite 221
Honolulu, Hawaii 96814

Dear Mr. White:

Subject: Draft Environmental Assessment (DEA)
Ka'ie Mauka Well
South Hilo District, Hawaii
TNMK-2-7-2; por. 3

Thank you for allowing us to review and comment on the subject project. We have the following comments to offer:

Safe Drinking Water Branch

1. Federal and state regulations define a public water system as a system that serves 25 or more individuals at least 60 days per year or has at least 15 service connections. All public water system owners and operators are required to comply with Hawaii Administrative Rules, Title 11, Chapter 20, "Rules Relating to Potable Water Systems."
2. The draft EA states that the Ka'ie Mauka Well will be developed as a drinking water source. Section 11-20-29 of Chapter 20 requires that all new sources of potable water serving a public water system be approved by the Director of Health prior to its use. Such an approval is based primarily upon the submission of a satisfactory engineering report that addresses the requirements set in Section 11-20-29.
3. The engineering report must identify all potential sources of contamination and evaluate alternative control measures which could be implemented to reduce or eliminate the potential for contamination, including treatment of the water source. In addition, water quality analyses, performed by a laboratory certified in the State of

Mr. Perry J. White
November 5, 1999
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99-210/epo

Hawaii, must be submitted as part of the report to demonstrate compliance with all drinking water standards. Additional tests may be required by the Director upon his review of the information submitted.

4. Section 11-20-30 requires that new or substantially modified distribution systems for public water systems be approved by the Director. However, if the water system is under the jurisdiction of the County of Hawaii, the Hawaii Department of Water Supply will be responsible for the review and approval of the plans.
5. In 1996, Congress amended the Safe Drinking Water Act and added several new programs. One of these new programs was the Source Water Assessment Program (SWAP). The objective of the SWAP is to assess the susceptibility of a drinking water source to activities that have significant potential to release contaminants to the source. It is anticipated that Hawaii's SWAP will begin implementation in November 1999. Any new drinking water source for a public water system must then be required to submit the following information for review:
 - a. Delineation of the assessment area around the drinking water source.
 - b. Inventory of the assessment area to identify potential contaminating activities.
 - c. Susceptibility of the drinking water source to become contaminated from the identified potential contaminating activities.

If you should have any questions, please contact Ms. Queenie Komori of the Safe Drinking Water Branch, Engineering Section, at 586-4258.

Sincerely,

GARY GILL
Deputy Director for
Environmental Health

c: SDWB
OEQC



DEPARTMENT OF WATER SUPPLY • COUNTY OF HAWAII
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November 19, 1999

Mr. Gary Gill, Deputy Director
State of Hawaii
Department of Health
Environmental Health Administration
P.O. Box 3378
Honolulu, Hawaii 96801

**KAIEIE MAUKA EXPLORATORY WELL
DRAFT ENVIRONMENTAL ASSESSMENT/ANTICIPATED FONSI
FILE 99-210/EPO**

Thank you for your letter dated November 5, 1999 concerning the *Draft Environmental Assessment (DEA)* for this Department's proposed Kaieie Mauka Exploratory Well project. We appreciate the time you and your staff spent reviewing the document and responding to us.

We will comply with all State and Federal rules including Hawaii Administrative Rules Section 11-20 and the amended Safe Drinking Water Act in the development of the Kaieie Mauka Well. As noted in the Summary Sheet of the DEA, we also plan to seek Certification of the Well for Drinking Water Use from the State Department of Health (DOH). We will submit a comprehensive engineering report to the DOH as part of our application. Please note that the Department of Water Supply is not planning to add or modify substantially the distribution system in this area.

Should you need additional information, please contact our Water Resources and Planning Branch at 961-8665.

Sincerely yours,

Milton D. Pavao, P.E.
Manager

GGA:gms

copy - Office of Environmental Quality Control
Mr. Perry White, Planning Solutions, Inc.

... *Water brings progress* ...