JUL 23 2007

DEPARTMENT OF WATER SUPPLY • COUNTY OF HAWAI'I
345 KEKŪANAŌ'A STREET, SUITE 20 • HILO, HAWAI'I 96720
TELEPHONE (808) 961-8050 • FAX (808) 961-8657

June 29, 2007

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

Subject: Final Environmental Assessment/Finding of No Significant Impact
Honomū Well Site Additions, South Hilo District, County of Hawai'i

Dear Ms. Salmonson:

The County of Hawai'i Department of Water Supply (DWS) has reviewed the comments received during the public review period which began on May 23, 2007. Based on our review, we have affirmed our determination that this project will not have significant environmental effects. Consequently, we have issued a Finding of No Significant Impact (FONSI). Please publish this determination in the next available OEQC *Environmental Notice*.

We have enclosed a completed OEQC Publication Form, four copies of the Final Environmental Assessment (FEA), and the project summary on disk. If you have any questions or would like additional information, please call Planning Solutions, Inc., the consultant, at 808-550-4483 and speak with Mr. Perry White.

Sincerely,

Milton D. Pavao, P.E.
Manager

KKO:dld

Enclosures:

(1) Final EA/FONSI, 4 copies
(2) OEQC Publication Form
(3) Electronic version of Project Summary on disk

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OFC. OF ENVIRONMENTAL QUALITY CONTROL

... Water brings progress...

Final Environmental Assessment & Finding of No Significant Impact

HONOMŪ WELL SITE ADDITIONS

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

PREPARED BY:
PLANNING SOLUTIONS

JUNE 2007

PROJECT SUMMARY

Project:	**HONOMŪ WELL SITE ADDITIONS**
Applicant/Approving Agency:	Department of Water Supply County of Hawai‘i 345 Kekūanaō‘a Street., Suite 20, Hilo, HI 96720 Contact: Milton Pavao (808) 961-8050
Location:	South Hilo District; Island of Hawai‘i
Tax Map Key:	2-8-013:055
Parcel Area	31,800 square feet (0.73 acres)
Project Site Area	30,520 square feet (0.70 acres)
State Land Use District:	Agriculture
County Zoning	Ag-20a
Proposed Action:	The Department proposes to install a new 300,000 gallon reservoir and a second municipal well source on its existing Honomū well site adjacent to State Hwy 220, approximately 0.5 mi. *mauka* of the community of Honomū. Three-phase electrical power and telephone service will be extended to the site from existing lines on ‘Akaka Falls Road. A single-story, 672 square-foot control building will be constructed on the site to house the chlorination system, motor control center and other electrical equipment needed to start and stop the well pump. An on-site drainage system and access driveway will also be constructed.
Associated Actions Requiring Environmental Assessment:	Proposed use of County land, County and federal funds.
Consultation	The County Planning Department was consulted during the preparation of this EA. The document was also sent to the individuals and agencies listed in Table 7.1 for review and comment.
Required Permits	• Building Permit, Hawai‘i County • Plan Approval, Hawai‘i County • Pump Installation Permit, State Water Commission • Certification of Well for Drinking Water Use, State Department of Health • Grading Permit, Hawai‘i County • Construction Permit, DOT State Highways Division • Construction Noise Variance (possible)
Determination	Finding of No Significant Impact
Consultant:	Planning Solutions, Inc. 210 Ward Avenue, Suite 330 Honolulu, HI 96814 Contact: Perry White (808) 550-4483

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1.0 PURPOSE & NEED FOR THE PROJECT

1.1 INTRODUCTION

The subject property of this environmental assessment (EA) is the Honomū well site (TMK 2-8-13:55), owned by the County of Hawai'i Department of Water Supply (DWS) and located on 'Akaka Falls Road (State Highway 22; see Figure 1.1). A 0.1 million gallon (MG) concrete reservoir, a chlorination system, and an exploratory well already exist at the site and are part of DWS' water system serving the community of Honomū (Figure 1.2).

DWS presently has permits in place to develop the existing exploratory well at the site into a 250 gallon-per-minute (gpm) production well (hereinafter called Honomū Well #1) that would connect to the existing 0.1 MG reservoir.[1] In addition to these existing facilities, DWS is currently proposing to add a 300,000 gallon (0.3 MG) reservoir and a second 250 gpm production well (hereinafter called Honomū Well #2) with associated control facilities to the site. These additions comprise the proposed action addressed in this Environmental Assessment (EA).

DWS may seek Federal funding for the project under the Drinking Water State Revolving Fund (DWSRF) program administered by the Safe Drinking Water Branch of the State Department of Health. This would constitute a Federal action. Consequently, this *Environmental Assessment* has been prepared under the dual legal authorities of Chapter 343, Hawai'i Revised Statutes/Hawai'i Administrative Rules §11-200 and the National Environmental Policy Act (NEPA). It incorporates the content required to comply with the Hawai'i DWSRF program (see Section 4.1.4 for details). The following section provides more detail about the need for the proposed Honomū well site additions.

1.2 PURPOSE & NEED FOR THE PROJECT

1.2.1 EXISTING DWS SYSTEM SERVING HONOMŪ

The DWS' Honomū system is one of the smaller water systems on the island, serving approximately 250 households. All of the system's potable water is presently supplied by the 'Akaka Falls Spring. All of the system's water storage is provided by the existing 0.1 MG reservoir at the Honomū well site (see Figure 1.3).

Average daily water use for the Honomū system is about 60,000 gallons per day. According to the 2000 U.S. Census, the total population served by the water system is about 600 people.[2] In accordance with County population projections, DWS expects potable water demand in the Honomū area to increase to slightly over 70,000 gallons per day by 2025 (DWS 2006).

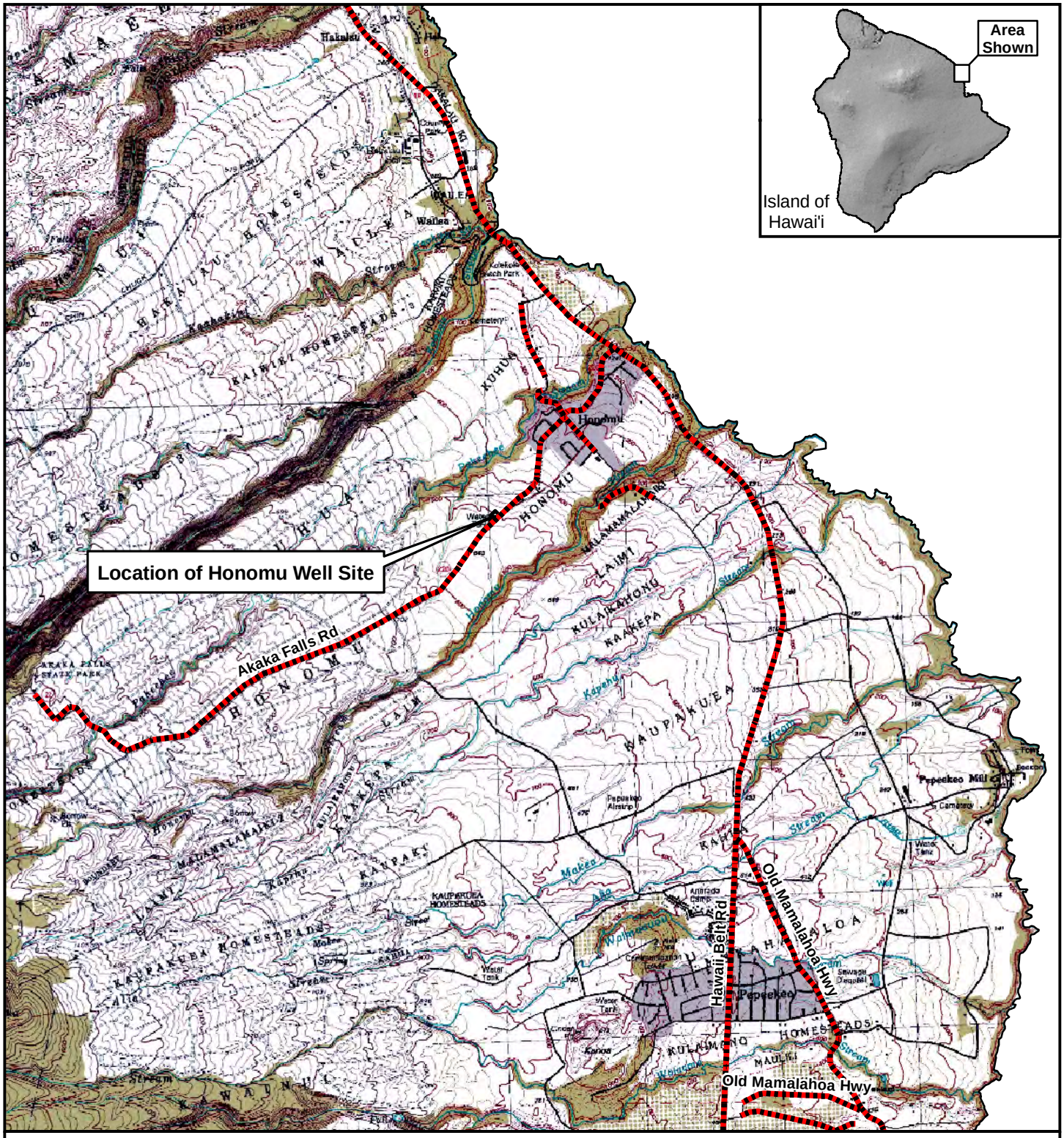
1.2.2 NEED FOR ADDITIONAL WATER STORAGE

According to DWS' Water Master Plan, the Honomū system requires an additional 0.16 million gallons of water storage to maintain adequate potable water and firewater reserves up to the year 2025 (DWS 2006). Hence, DWS has included a new, 0.3 MG reservoir in the proposed action. If the present proposal for additional storage at the site is approved, Honomū Well #1 will connect to the existing reservoir and to the proposed 0.3 MG reservoir, thus enhancing the water storage to the system.[3]

[1] Aa Finding of No Significant Impact was issued for the well in 2002. (OEQC *Environmental Bulletin,* September 8, 2002)

[2] Defined as the population in Year 2000 U.S. Census blocks that have some portion within 500 feet of the water system.

[3] If DWS is unable to obtain the necessary approvals for the 0.3 MG reservoir, it will construct the already-approved well and connect it only to the existing 0.1 MG reservoir.



Prepared For:

Dept. of Water Supply,
County of Hawai'i

Prepared By:

PLANNING SOLUTIONS

Source:

-Tom Nance Water Resource Engineering, Inc. (TNWRE)
-State of Hawaii GIS

0 0.25 0.5 1
Miles

Figure 1.1:

Location Map

Honomu Well Site Additions Project

Figure 1-1 Location Map 2007-04-20.mxd

Existing 0.1 MG Reservoir

Existing exploratory well, Honomu Well No. 1, inside construction fencing.

Prepared For:

Department of Water Supply, County of Hawai'i

Prepared By:

PLANNING SOLUTIONS

Source:

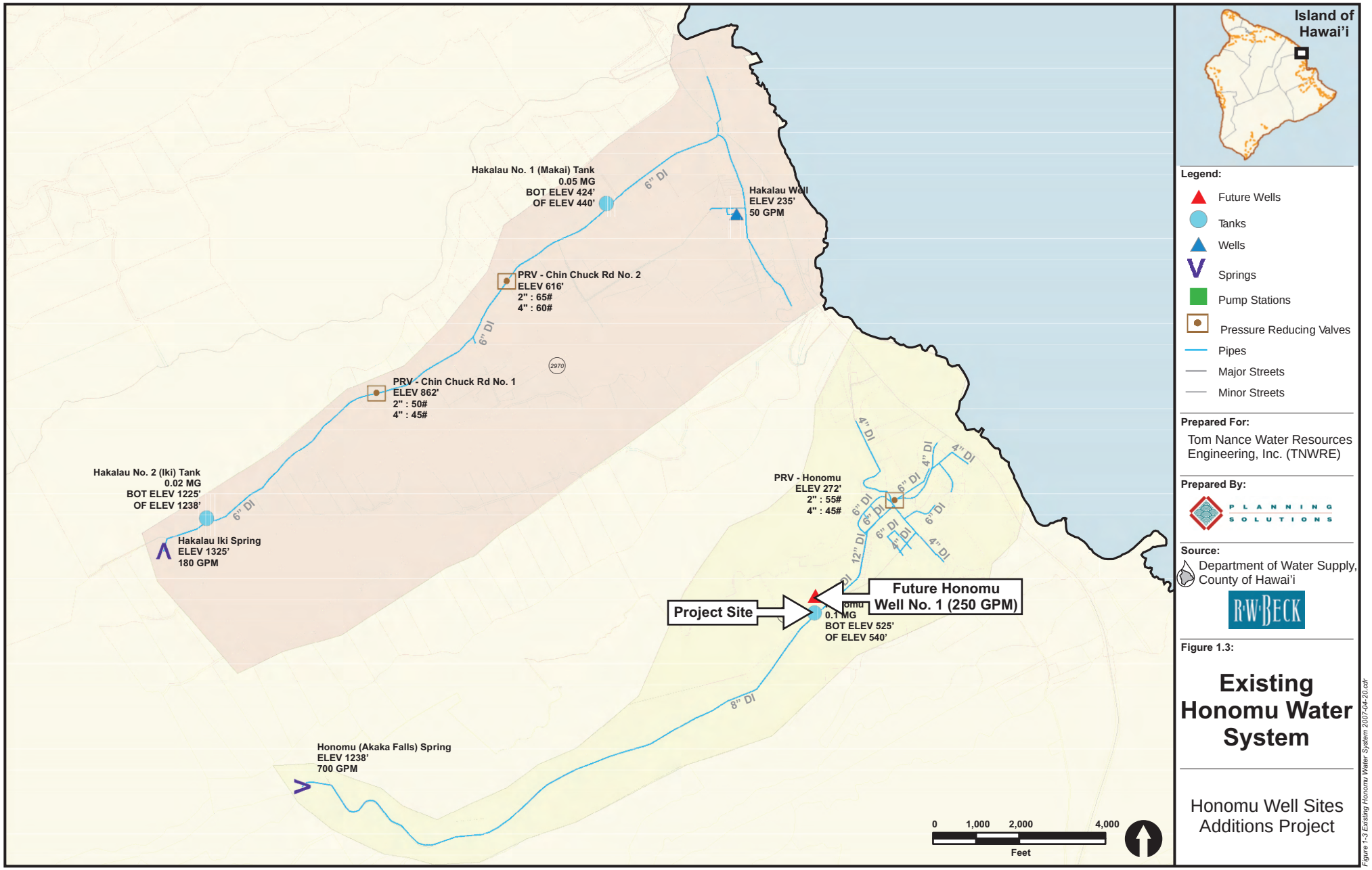
PHRI

Figure 1.2:

Existing Facilities at Project Site

Honomu Well Site Additions Project

Figure 1-2 Existing Facilities at Project Site 2007-04-20.cdr



Island of Hawai'i

Legend:

- Future Wells
- Tanks
- Wells
- Springs
- Pump Stations
- Pressure Reducing Valves
- Pipes
- Major Streets
- Minor Streets

Prepared For:

Tom Nance Water Resources Engineering, Inc. (TNWRE)

Prepared By:

PLANNING SOLUTIONS

Source:

Department of Water Supply, County of Hawai'i

R·W·BECK

Figure 1.3:

Existing Honomu Water System

Honomu Well Sites Additions Project

Figure 1-3 Existing Honomu Water System 2007-04-20.cdr

1.2.3 NEED FOR AN ADDITIONAL WELL SOURCE

The existing exploratory well at the site that DWS plans to develop for production (Honomū Well #1) is intended to replace ʻAkaka Falls Spring as the primary water source serving Honomū. Water from the spring is presently fed by gravity to the Honomū well site and into the existing 0.1 million gallon reservoir (see Figure 1.3). Although the State Department of Health (DOH) has not yet declared the spring to be groundwater under the direct influence of surface water, DWS is anticipating such a designation. That would require water from the spring to meet the requirements of the Surface Water Treatment Rule (SWTR), including enhanced treatment procedures. In order to avoid the excessive costs associated with constructing and operating such facilities, DWS is replacing the spring source with the new drilled well to provide a cost-effective means of meeting current and anticipated Federal requirements.

The Honomū well site additions proposed in this EA include a second 250 gpm production well (Honomū Well #2). This is in order to ensure that the Honomū system has an adequate backup source of high-quality groundwater in the event that one of the wells requires maintenance or emergency repair. Until the second well is constructed, the ʻAkaka Falls Spring source will be retained as the backup source for Honomū Well #1. While this satisfies the County's requirement that each system have a backup source,[4] it does not alleviate the additional cost and risk burdens associated with retaining the spring as a potable water source. Constructing a second well at the site would eliminate any dependence of the Honomū system on the spring.

Collectively, the improvements proposed for the Honomū well site will ensure that DWS' customers in the Honomū area have an adequate supply of clean, affordable potable water well into the future.

1.3 OBJECTIVES OF THE PROPOSED ACTION

DWS' objectives for the proposed project include the following:

- Enhance the water storage capacity for its Honomū system;
- Provide a high-quality backup water source for the Honomū system; and
- Continue to provide DWS customers in the Honomū area with an adequate supply of affordable and high-quality potable water.

1.4 ORGANIZATION OF THE ENVIRONMENTAL ASSESSMENT

The remainder of this EA is organized as follows:

- Chapter 2 describes the proposed action in detail and outlines the alternatives analyzed in this EA, as well as other alternatives that were considered during earlier planning phases.
- Chapter 3 describes the existing environment and analyzes the potential for impacts on environmental, cultural, and socioeconomic resources. It also outlines strategies for minimizing and mitigating unavoidable adverse effects.
- Chapter 4 discusses the consistency of the proposed well and reservoir with relevant plans, policies, and controls at local, regional, state, and federal levels.
- Chapter 5 provides justification for the anticipated determination of a Finding of No Significant Impact (FONSI) by considering each individual significance criterion with respect to the proposed project.
- Chapters 6 and 7, respectively, list the references cited and parties consulted during preparation of this EA.

[4] Water System Standards 2002, Division 100 Planning, Section 111 – Water Requirements, Subsection 111.08 Total Pumping Capacity.

2.0 PROPOSED ACTION & ALTERNATIVES CONSIDERED

2.1 DESCRIPTION OF THE PROPOSED ACTION

The DWS proposes to construct a new 0.3 MG concrete water reservoir and a second well (Honomū Well #2) on its existing Honomū well site (see Figure 2.1). The latter will provide redundant capacity to the Honomū water system, allowing the system to eliminate its dependency on the ʻAkaka Falls Spring. Final design of the well is contingent upon the results of the well exploration, however it is presently anticipated that Honomū Well #2 will be outfitted with the same or similar type of well pump and control equipment as is planned for Honomū Well #1. If pump tests confirm that the new well's yield and water quality is adequate, the DWS will convert it into a production well and add the following facilities to the site:

- A 250 gallon per minute (gpm), 60 horsepower submersible well pump and motor;
- A 672 square-foot control building;
- A 10-by-10 foot seepage pit;
- Chlorination equipment (to be housed in the control building);
- A 0.3 MG reinforced concrete water storage tank;
- A Supervisory Control and Data Acquisition (SCADA) system; and
- An internal access drive to the new facilities.

Photographs of existing facilities and conditions at the site are presented in Figure 2.2. Details concerning the well drilling, pump installation, testing, outfitting, and operation are provided below, along with a description of the proposed reservoir and associated site improvements.

2.1.1 DESIGN OF THE PROPOSED FACILITIES

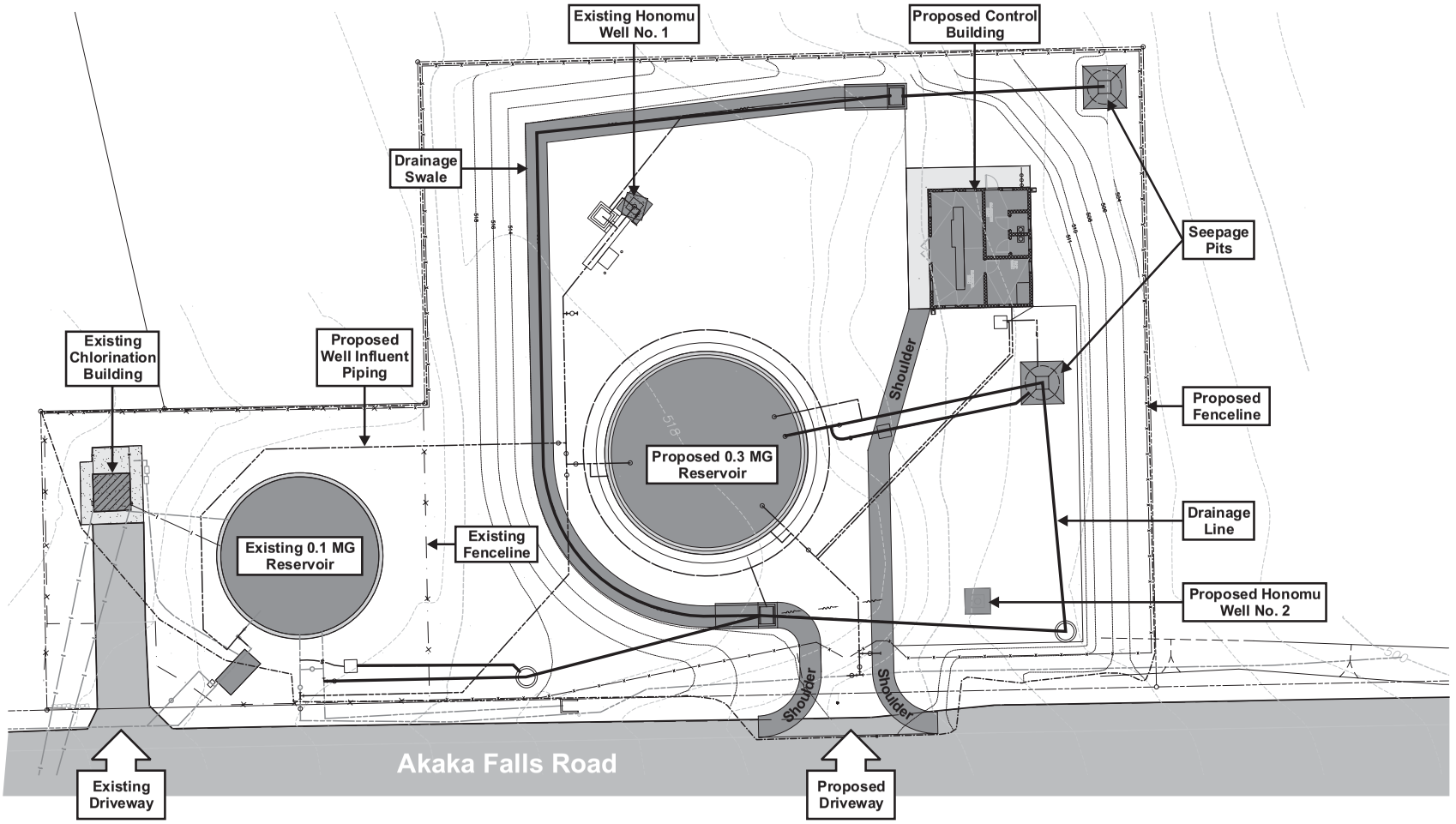
2.1.1.1 Honomū #2 Exploratory Well

Preliminary plans call for the well to be drilled to a depth of about 650 feet below the ground surface elevation of approximately 515 feet. The borehole will have a diameter of 19 inches. As shown in Figure 2.1, solid steel casing 12 inches in diameter will be installed in the upper 500 feet of the hole. Below that will lie 80 feet of perforated casing. The upper 450 feet of the annulus space between the outside of the boring and the solid casing will be filled with cement grout. The design provides for an open hole a minimum of 11 inches in diameter, to be drilled below the bottom of the casing if it is necessary to achieve the desired yield (see Figure 2.3). The exploratory well will be drilled and tested using diesel-powered equipment. Hence, it will not require electrical power during the exploratory phase of development.

Pump testing will be at rates up to 500 gallons per minute and may extend up to seven consecutive days. The contractor may seek additional disposal of pumped water off site, subject to NPDES requirements of the State Department of Health (Hawaii Administrative Rules 11-55, Appendix I).

2.1.1.2 Honomū #2 Well Pump & Equipment

Once pump testing is completed and it is confirmed that the well is suitable for production, the Honomū #2 well will be outfitted with a 60-horsepower, 250 gallon-per-minute submersible well pump (see Figure 2.4). A new water-level transmitter will be installed with the new 0.30 MG reservoir. The SCADA system will control both it and a transmitter connected to the existing 0.1 MG reservoir. In concert, these transmitters will enable automatic start/stop operation of either well pump as needed.



Prepared For:

Department of Water Supply, County of Hawai'i

Prepared By:

PLANNING SOLUTIONS

Source:

Tom Nance Water Resources Engineering, Inc. (TNWRE)

Figure 2.1:

Site Plan

Honomu Well Site Additions Project

Figure 2-1 Site Plan 2007-04-20.cdr

A. View Northwest across site.

B. View Southeast across site.

C. View Northeast across site.

D. View of site from Akaka Falls Road.

Prepared For:

Department of Water Supply, County of Hawai'i

Prepared By:

PLANNING SOLUTIONS

Source:

PHRI

Key to Photo Locations:

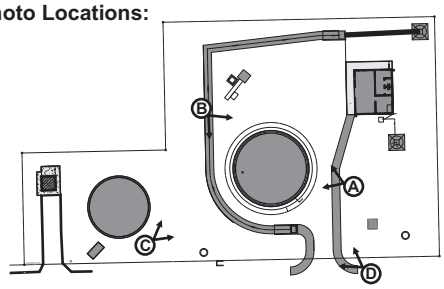
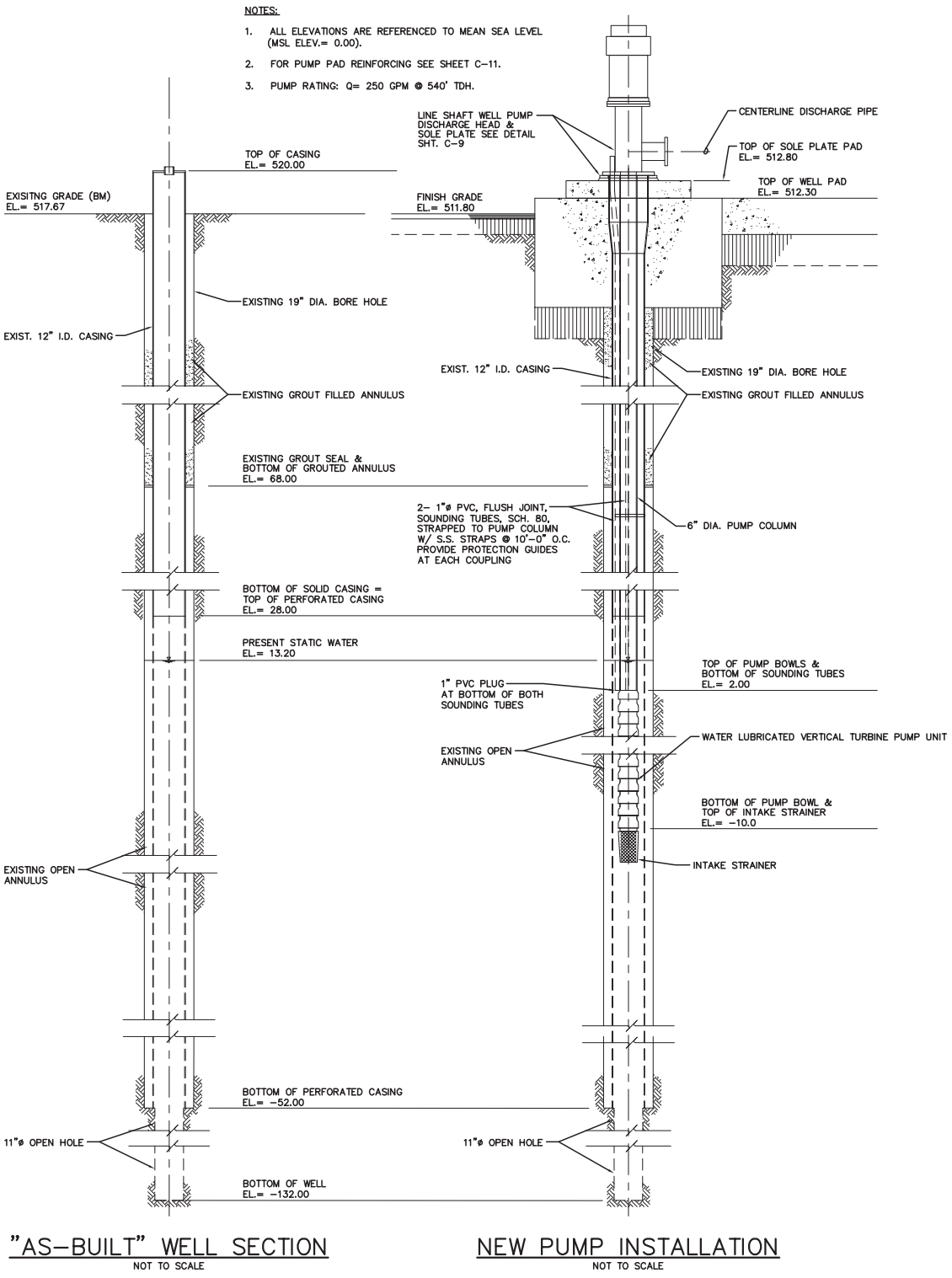


Figure 2.2:

Photographs of Well & Reservoir Site

Honomu Well Site Additions Project

Figure 2-2 Photographs of Well & Reservoir Site 2007-04-20.ctr



Prepared For:

Department of Water Supply, County of Hawai'i

Prepared By:

PLANNING SOLUTIONS

Source:

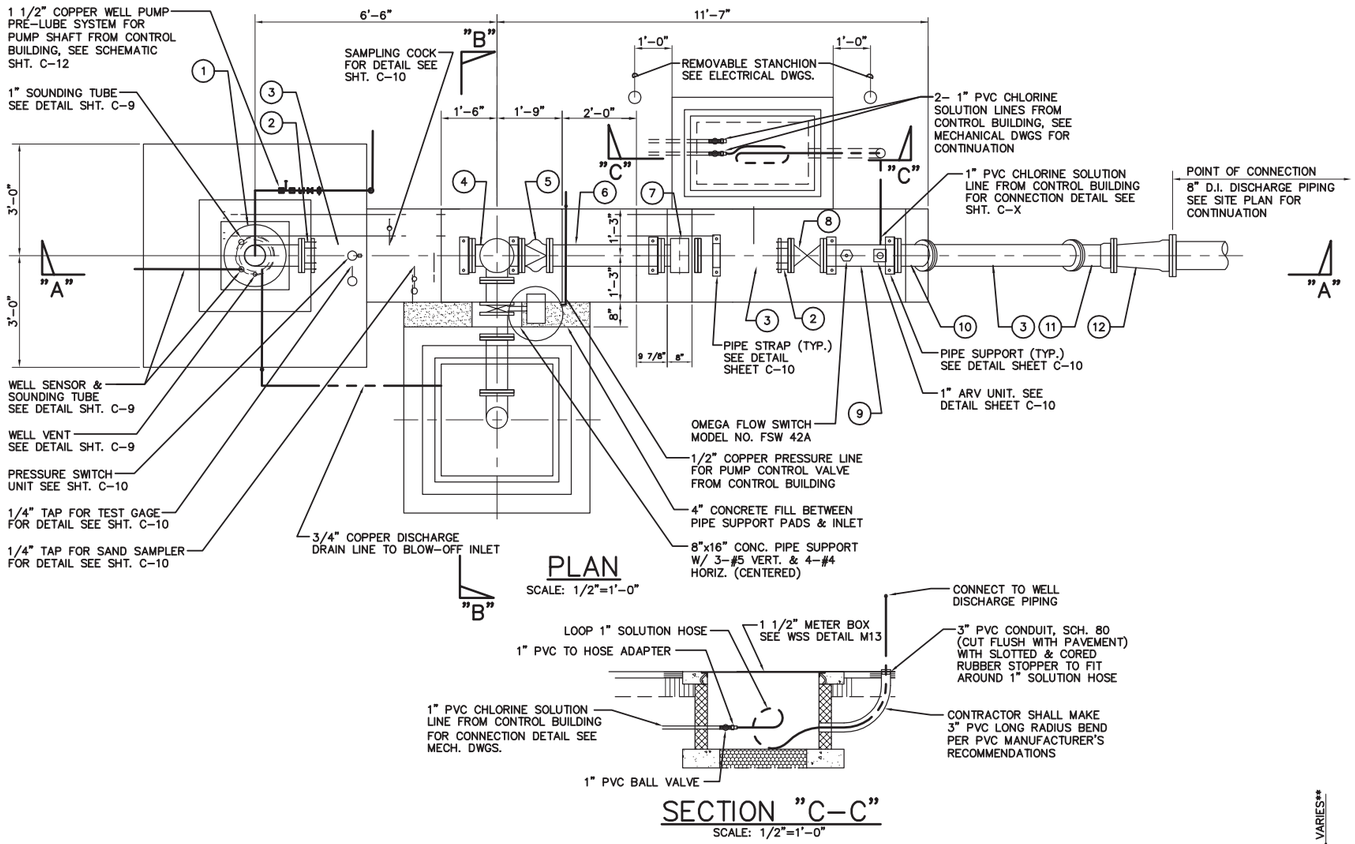
Tom Nance Water Resource Engineering, Inc. (TNWRE)

Figure 2.3:

Well Shaft Sections

Honomu Well Site Additions Project

Figure 2-3 Well Shaft Section 2007-04-24.cdr



NOTES:

1. ALL FLANGES SHALL BE FACED AND DRILLED IN ACCORDANCE WITH ANSI B-16.1 CLASS 125.
2. FLOW SWITCH TO BE INSTALLED PLUMB TO THE VERTICAL CENTERLINE OF THE DISCHARGE PIPING.

Legend:

1. 6" Line Shaft Discharge Head w/ Sole Plate
2. 6" Flanged Coupling Adapter w/ Anchor Pins
3. 6" D.I. Pipe, PExFE, Length to Fit
4. 6" D.I. Tee, FE
5. 6" Center-Guided Check Valve, FE, CL. 125
6. 6" D.I. Pipe, FE, 3'-0" Long
7. 6" Magnetic Flow Meter, FE
8. 6" Gate Valve, FE, w/Handwheel, OS&Y
9. 6" D.I. Pipe, FE, 2'-0" Long
10. 6" 1/8 D.I. Bend, FE
11. 6" 1/8 D.I. Bend, MJ w/Mega-Lug Retainer Glands
12. 6"x8" Increaser, PExMJ, w/ Mega-Lug Retainer Glands
13. 6" Pump Vacuum Release Check Valve, FE, CL.125
14. 6" D.I. Pipe, FE, 0'-8" Long
15. 6" Wafer-Style Butterfly Valve, FE, w/Diaphragm Valve Operator
16. 6" D.I. Pipe, FE, 1'-6" Long
17. 6" 1/4 D.I. Bend, FE
18. 6" Tideflex Check Valve, FE, Series 35

Prepared For:

Department of Water Supply, County of Hawai'i

Prepared By:

PLANNING SOLUTIONS

Source:

Tom Nance Water Resource Engineering, Inc (TNWRE)

Figure 2.4:

Well Pump Plan & Sections

Honomu Well Site Additions Project

Figure 2-4 Well Pump Plan & Sections 2007-04-24.cdr

2.1.1.3 Control Building

The currently undeveloped eastern portion of the well site will be graded to accommodate the production well facilities, access driveway, reservoir, and a single-story control building. The concrete-block control building will house the chlorination equipment, motor control center and other electrical equipment to start and stop the Honomū #2 well pump (see Figure 2.5). The outside dimensions of the structure will be approximately 24 feet by 28 feet, for a total footprint of approximately 672 square feet.

2.1.1.4 0.3 MG Reservoir

The proposed design calls for a standard DWS reinforced concrete tank with a capacity of 0.3 million gallons. The tank will have an approximately 50-foot diameter and 27-foot operating height. It will be designed to Seismic Zone 3 standards (see Section 3.1.2 for discussion).

2.1.1.5 SCADA System

DWS plans to install a Supervisory Control and Data Acquisition (SCADA) system to monitor and control system operation. The SCADA facilities will be housed in the control building. The SCADA telemetry communication will be via phone service provided by Hawaiian Telcom. This will require telephone service to be extended to the site from the existing service line along ʻAkaka Falls Road. Once constructed, the line will be dedicated to Hawaiian Telcom. This phone line will provide the telecommunication link with DWS's master SCADA unit located at their Hilo Baseyard.

2.1.1.6 Seepage Pit

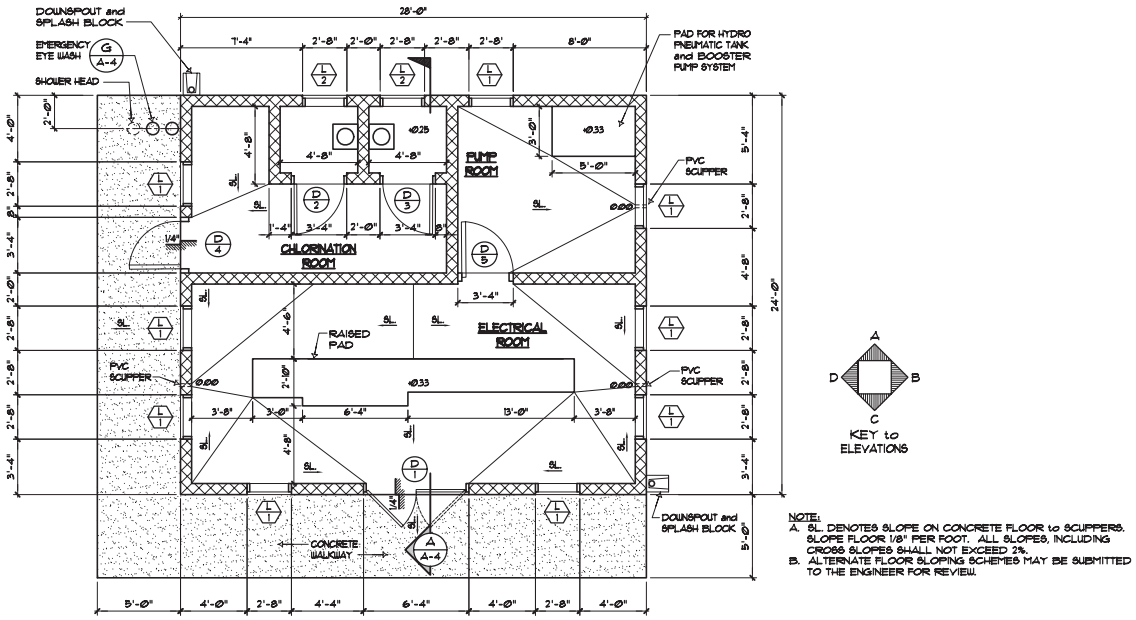
A seepage pit will be constructed to the east of the proposed reservoir (see Figure 2.1). It is approximately 8 feet in internal diameter and 8 feet deep (see Figure 2.6), the same size as the seepage pit that is being installed to support Honomū Well #1. During the exploration phase for Honomū Well #2 the seepage pit will receive water from the pump testing; once the well is operational, it will accommodate water from the pump startup. It will also collect water from the proposed reservoir in the unlikely event that it needs to be emptied for repair. Finally, the seepage pit will collect stormwater runoff from impermeable areas of the site.

2.1.1.7 Electricity & Communications

The proposed facility additions will require electrical power for lighting, pump control equipment in the control building, and for the well pump. The existing Hawaii Electric Light Company (HELCO) power line along ʻAkaka Falls Road has sufficient capacity to accommodate the additional electrical load. However, the existing single-phase electrical service connection to the property will need to be upgraded to three-phase power along ʻAkaka Falls Road and extended overhead across the road and into the well and tank lot as part of this project. Underground service ducts will be installed from the new onsite service pole to a pad-mounted HELCO transformer for the proposed well pump station. The existing chlorination building will continue to utilize its existing HELCO connection and power will be supplied from the new pump station. The service request for this pump station has been submitted to HELCO for processing. Utility metering will conform to HELCO's requirements.

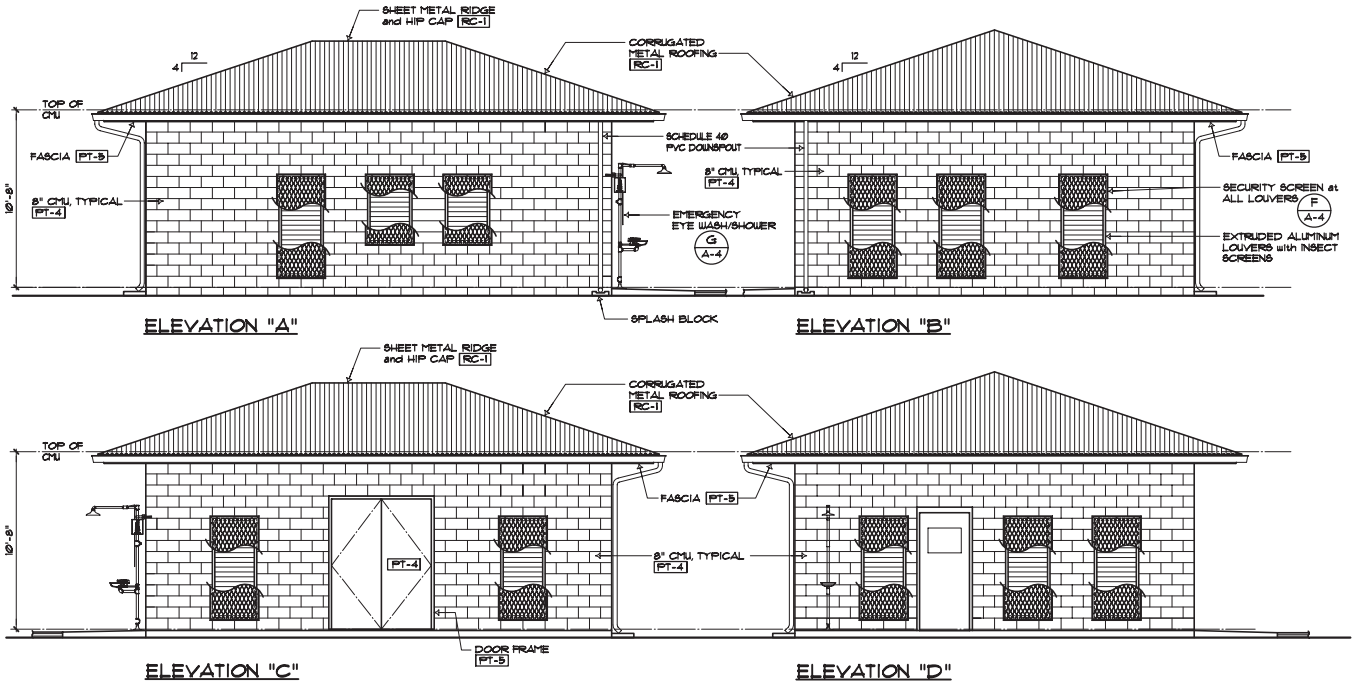
2.1.2 CONSTRUCTION SCHEDULE

Construction of the project will occur in phases. The initial phase consists of the pump outfitting of Honomu Well No. 1, 0.30 MG reservoir, and related support faculties. The second phase consists of drilling, exploring, and outfitting Honomū Well #2 for production. Phase 2 will be undertaken based on availability of funds.



FLOOR PLAN

SC: 1/4" = 1'-0"



ELEVATION "A"

ELEVATION "B"

ELEVATION "C"

ELEVATION "D"

EXTERIOR ELEVATIONS

SC: 1/4" = 1'-0"

GRAPHIC SCALE: 1/4" = 1'-0"

Prepared For:

Department of Water Supply, County of Hawai'i

Prepared By:

PLANNING SOLUTIONS

Source:

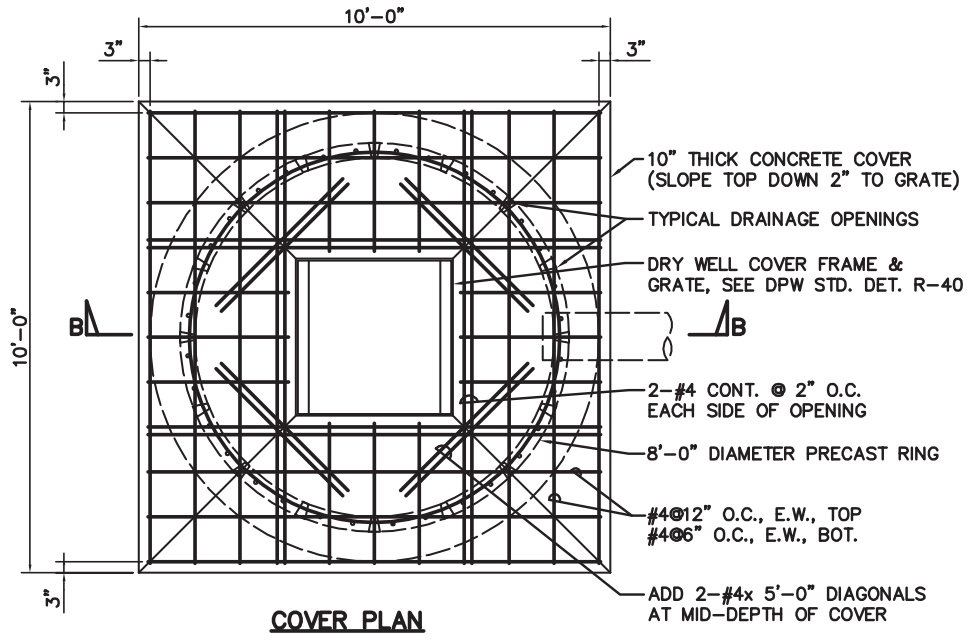
Tom Nance Water Resource Engineering, Inc. (TNWRE)

Figure 2.5:

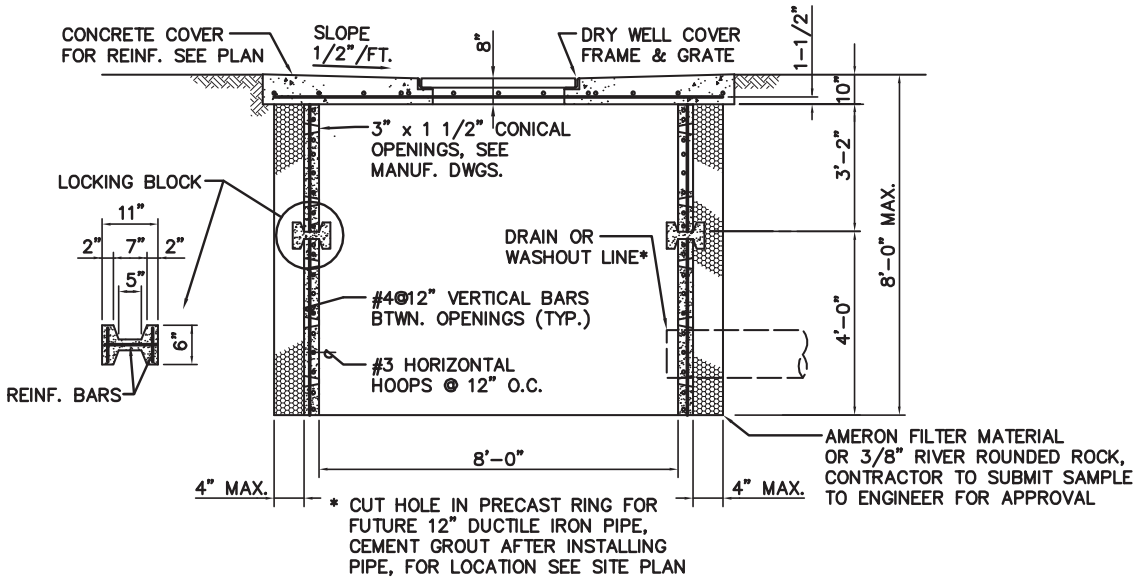
Control Building

Honomu Well Site Additions Project

Figure 2-5 Control Building 2007-02-08.cdr



COVER PLAN



SECTION "B-B" CYLINDER REINFORCING & DRAINAGE DETAILS

NOTE: 28 DAY COMPRESSIVE CONCRETE STRENGTH = 4000 PSI

SEEPAGE PIT DETAIL

NOT TO SCALE

Prepared For:
Department of Water Supply, County of Hawai'i

Prepared By:
PLANNING SOLUTIONS

Source:
Tom Nance Water Resource Engineering, Inc. (TNWRE)
Job No. 2005-863, Sheet C-15

Figure 2.6:

Seepage Pit Detail

Honomu Well Site Additions Project

Figure 2-6 Seepage pit Detail 2007-02-09.cdr

2.1.2.1 Phase I: Completion of Honomū Well #1, 0.3 MG Reservoir & Related Facilities

Outfitting of Honomū Well No. 1 and construction of the 0.30 MG reservoir and related facilities is anticipated to last approximately 12 months:

- Bid Construction Contract: July 2007
- Award Construction Contract: August 2007
- Construction of Well Pump Outfitting, 0.30 MG reservoir and related facilities: September 2007
- Facility Testing and DWS approval from Operation: August 2008

2.1.2.2 Phase II: Honomū Well #2 Exploration and Outfitting for Production

Honomū Well # 2 construction activities will include well drilling and casing installation, followed by pump testing, for which a construction period of up to 12 months is expected. Upon completion of pump testing the subsequent design and construction to convert the well to production is anticipated to last about 14 months:

- Well Design and Permitting : 2 months
- Bid Well Construction: 1 month
- Award Well Construction Contract : 1 month
- Well Construction and Testing: 8 months
- Pump Outfitting Design: 3 months
- Bid Pump Outfitting Design: 1 month
- Award Pump Outfitting Well Construction Contract : 1 month
- Pump Outfitting and Related Facilities Construction Contract: 9 months

2.1.3 PROJECT COST

Table 2.1 presents preliminary estimates of the complete project costs. The project will be funded by the Department of Water Supply, County of Hawai‘i. It may also be funded by Federal funds through the State of Hawai‘i’s Drinking Water State Revolving Fund (DWSRF) program, which would constitute a Federal action and would require the project to meet all of the Hawai‘i DWSRF program requirements (see Section 4.1.4 for further information).

Table 2.1 Preliminary Project Cost Estimate

Item	*Estimated Cost*
Honomū Well #1 Outfitting, 0.30 MG Reservoir, Control Building and associated Site Work	1,540,000
Honomū Well No. 1 pump and system piping	525,000
Electrical & Telephone Service Extension	469,000
Honomū Well # 2 Well Drilling, Casing, and Pump Testing (Exploratory Phase)	610,000
Honomū Well # 2 Well Outfitting & Piping (Development Phase)	460,000
Total Cost	**$3,604,000**
Note: Work associated with Honomū Well #1 was approved under a previous EA, but updated estimates are included here to reflect changing costs since the time the EA was prepared.	
Source: Tom Nance Water Resource Engineering	

2.2 FRAMEWORK FOR CONSIDERATION OF ALTERNATIVES

Title 11, Chapter 200 of the Hawai'i Administrative Rules (HAR §11-200) contains the Department of Health's Environmental Impact Statement Rules. HAR §11-200-5 deals with "agency actions" such as the one that DWS is proposing. It requires that, for all agency actions that are not exempt as defined in HAR §11-200-8, the agency must consider environmental factors and available alternatives and disclose these in an environmental assessment or environmental impact statement. HAR §11-200-9 requires the proposing agency to analyze alternatives, in addition to the proposed action in the environmental assessment. HAR §11-200-10 establishes the required contents of environmental assessments. Among the requirements listed, HAR §11-200-10 (6) calls for an identification and summary of impacts and alternatives considered (emphasis added).

In accordance with these requirements, DWS considered a number of alternatives before determining that the proposed project is the best course of action. These included "No Action", enhanced water conservation, reduced scale action, alternate locations, and delayed action. DWS concluded that only two of these alternatives, merit consideration in the impact analysis portion of this EA. They are "No Action" (as required by Chapter 343), and the proposed action of constructing the Honomū Well #2 and 0.3 MG reservoir as currently designed. The following two subsections describe the alternatives considered in preparation of this EA and the criteria DWS used to decide whether to include them in the impact analysis presented in Chapter 4.

2.3 ALTERNATIVES ADDRESSED IN DETAIL IN EA

2.3.1 PROPOSED ACTION: ADDING 0.3 MG RESERVOIR AND WELL TO HONOMŪ SITE

This alternative consists of the proposed action as described in detail in Section 2.1 above. DWS believes constructing the facility at the proposed site would best enable it to continue to provide adequate, reliable, and affordable drinking water to its Honomū system, and thus it represents their preferred course of action.

2.3.2 NO ACTION ALTERNATIVE

The "No Action" Alternative consists of not constructing an additional, 0.3 MG reservoir and a second well at the Honomū site. This would leave the Honomū system dependent on the existing 0.1 MG reservoir for all of its storage needs, and therefore would leave the system's anticipated storage shortfall unaddressed. Further, it would leave the Honomū system without a backup source of high-quality groundwater, forcing the system to continue to depend on 'Akaka Falls Spring in the event of emergency repairs or maintenance to Honomū Well #1. Hence, "No Action" is not a viable alternative. It is evaluated in the EA solely to fulfill the requirements of HRS Chapter 343, HAR 11-200, and NEPA.

2.4 ALTERNATIVES ELIMINATED FROM DETAILED ANALYSIS

2.4.1 REDUCED SCALE ALTERNATIVES

2.4.1.1 Omit 0.3 MG Reservoir

This alternative would omit the proposed 0.3 MG reservoir from the proposed action. As discussed above, this would not alleviate the projected storage shortfall to the Honomū system, potentially leaving the system without adequate water supply in case of emergency. This alternative would not meet the objectives of the proposed action and thus was not considered in detail.

2.4.1.2 Omit Honomū Well #2

This alternative involves constructing the 0.3 MG reservoir and omitting the future addition of a second well to the site. This would leave the system dependent on the 'Akaka Falls Spring as a

backup source. In the event that Honomū Well #1 requires repair or maintenance, DWS would need to rely upon the spring water to replace the well source. Since the spring is considered groundwater under the influence of surface water, using this source is likely to require enhanced treatment to qualify as a potable water supply. The capital and operating costs of such enhanced treatment would be prohibitively high for a small system such as that serving Honomū. Consequently, retaining the ʻAkaka Falls Spring as a backup source to the Honomū system is not a viable option in the long term.

2.4.2 ENHANCED WATER CONSERVATION ALTERNATIVE

The proposed well and reservoir are not intended to offset an increase in demand. The reservoir will alleviate a water storage deficit, and the proposed second well will provide redundant capacity to the Honomū system, thereby eliminating the system's dependence on the ʻAkaka Falls Spring source. Consequently, decreasing water use in the service area would not eliminate the need for additional storage or for a second groundwater source.

2.4.3 ALTERNATE LOCATIONS

Because of the high groundwater flux through the area, it is likely that wells drilled in other locations would also be productive. While DWS could probably develop a production well elsewhere in the service area, the Honomū well site has several characteristics that make it unlikely that a different location would be superior from an economic, environmental, or operational viewpoint. These include:

- The proposed location is an existing DWS facility that has a proven exploratory well in place. Other possible locations for Honomū Well #2 would require the acquisition of property and exploration of a new well. This would unnecessarily increase the project's cost and environmental impacts and would add the risk of drilling an unsuccessful exploratory well.
- Constructing the well and reservoir on the existing Honomū well site avoids costly and unnecessary duplication of facilities. By adding the 0.3 MG reservoir to the existing Honomū well site, both Honomū Well #1 and eventually #2 can connect to it. If Honomū well #2 was drilled at another site, it would require DWS to construct a new reservoir there.
- The proposed well site's proximity to the existing water transmission and distribution system avoids the need for substantial new water line construction.

A detailed analysis of potential environmental impacts from development of alternative water sources was beyond the scope of this assessment. However, in view of the absence of adverse effects documented above and in Chapter 3, it seems unlikely that other well locations might be better from an environmental standpoint.

2.4.4 DELAYED ACTION

For reasons documented above and in the Department's *20-Year Water Master Plan*, it is undesirable to delay development of the proposed project. There are no existing activities or conditions at the site or in the project area that would make delaying the project desirable or that would reduce the impacts associated with it appreciably if delayed. DWS wants to act quickly to ensure that it maintains adequate storage and a safe drinking water supply for its customers in Honomū. Therefore, it does not consider delayed action a viable alternative.

3.0 EXISTING ENVIRONMENT & PROBABLE IMPACTS

3.1 TOPOGRAPHY, GEOLOGY, AND SOILS

3.1.1 EXISTING CONDITIONS

The Honomū area is on the lower slope of the eastern flank of Mauna Kea. Most of the surface area is composed of Pāhala ash, which is a commonly occurring geological formation in many parts of the island. The Pāhala ash consists of finely divided vitric (glassy) lava believed to have been formed as a byproduct of wind blowing on aerial lava fountains from volcanic eruptions of Mauna Kea. The 400-foot high ʻAkaka Falls, which is located at an elevation of about 1,200 feet some 2.5 miles above the project site, formed where the Kolekole Stream has cut through a blanket-like mantle of Pāhala Ash into a resistant Mauna Kea flow which forms the lip of the falls (McDonald, Abbott, and Peterson 1983).

The soil at the site is the erosional byproduct of the original Pāhala ash. The U.S. Soil Conservation Service classifies it as Kaiwiki silty clay loam (Sato et al. 1973). Kaiwiki soils are well drained and acidic. The surface layer is dark brown and in most areas approximately 15 inches thick. The subsoil is generally about 48 inches thick. Kaiwiki silty clay loam is well suited to agricultural use and the State has classified it as prime agricultural soil.

The Honomū well site slopes gently downhill from west to east from an elevation of about 520 feet at the existing reservoir to about 480 feet on the Honomū Village side. The average slope across the site is less than 10 percent.

3.1.2 PROBABLE IMPACTS

The grading for the access drive, 0.3 MG reservoir, well and control building will affect approximately 26,400 square feet. The reservoir, well pump pad, and seepage pit will also require excavation of approximately 2,207 cubic yards of material. In addition, the contractor will grub and place gravel over the portion of the parcel not used for structures or pavement. These localized modifications will affect the ground contours on the site itself but will not substantially change the overall topography of the surrounding area.

As noted above, Kaiwiki silty clay loam is classified as prime agricultural soil. However, thousands of acres of similar soil lie fallow in the region, and the site has not been under cultivation for many years. Hence, the project will not significantly affect agricultural activities. Neither will it interfere with existing or future agricultural use of the surrounding areas.

The proposed project would not substantially change exposure to geological hazards or bar the use of significant geological resources. No commercially useful minerals are present.

3.2 HYDROLOGY

3.2.1 EXISTING CONDITIONS

3.2.1.1 Surface Water

The Honomū area lies between two perennial streams, the Pāheʻeheʻe Stream to the north and the Honomū Stream to the south. Stormwater runoff from the half of the site closest to ʻAkaka Falls Road moves gradually toward the road, collecting in the shallow swale that parallels the southern side of the roadway. Runoff from the remainder of the site moves gradually away from the roadway. In both cases, any water that does not percolate into the ground eventually finds its way into Pāheʻeheʻe Stream, which is about 1,000 feet away. No wetlands are located near the project site.

3.2.1.2 Groundwater

Like the existing Honomū Well #1, the proposed Honomū Well #2 will tap water in the Hakalau Aquifer System (State Commission on Water Resource Management). Along the shoreline, the System extends from Pepe'ekeo Point on the south to Nahiwa Point on the north, a distance of about 15 miles (see Figure 3.1). CWRM estimates that the sustainable yield of the Hakalau Aquifer System is 150 million gallons per day (MGD). Table 3.1 provides information on the ten wells in the System, including Honomū Well #1. As shown in the table, the total pump capacity of the wells for which there are available data is about 1.5 MGD. Although accurate estimates of the current total actual water withdrawal rates from the wells in the System are not available, it is likely to be less than 1 MGD (Tom Nance Water Resource Engineering).

According to the pump test results for Honomū Well #1 (see Appendix A), the groundwater underlying the well site is very fresh and quite cool, with a specific conductance of about 130 microsiemens/cm, chlorides at around 6 mg/L, and a temperature of about 62˚ F. Drawdown in response to 3 days of pump testing at 450 gpm was stable at only a little more than 2 feet, with rapid recovery following pumping. The report concluded that the well and groundwater source could easily accommodate a withdrawal of 500 gpm, twice the size of the pump planned for the well.

3.2.2 PROBABLE IMPACTS

3.2.2.1 Construction Phase

The contractor will use best management practices as necessary during construction to prevent contaminants such as sediment, petroleum products, and debris from leaving the site via stormwater runoff. It will attempt to schedule work for periods of minimal rainfall, and will place permanent erosion control measures on lands denuded of vegetation as quickly as possible. Since the disturbed area is expected to be under an acre, NPDES Construction Stormwater General permit coverage is not required.[5] During the well construction and testing phase of the project, a temporary diesel engine-powered pump will be used to develop the Honomū Well #2 (i.e., to remove sediment and well cuttings that are a by-product of the drilling) and to determine its hydraulic capacity. The contractor will direct the discharges from pump testing into the new seepage pit.

Because the nearest stream (Pāhe'ehe'e Stream) is about 1,000 feet away from the site and separated from it by fallow agricultural land with highly permeable soils, it is very unlikely that any runoff from the well and reservoir site presently reaches it. This would not change during construction and operation of the project. Regardless, the BMPs that the contractor will implement during construction will ensure that runoff leaving the property conforms to State water quality standards.

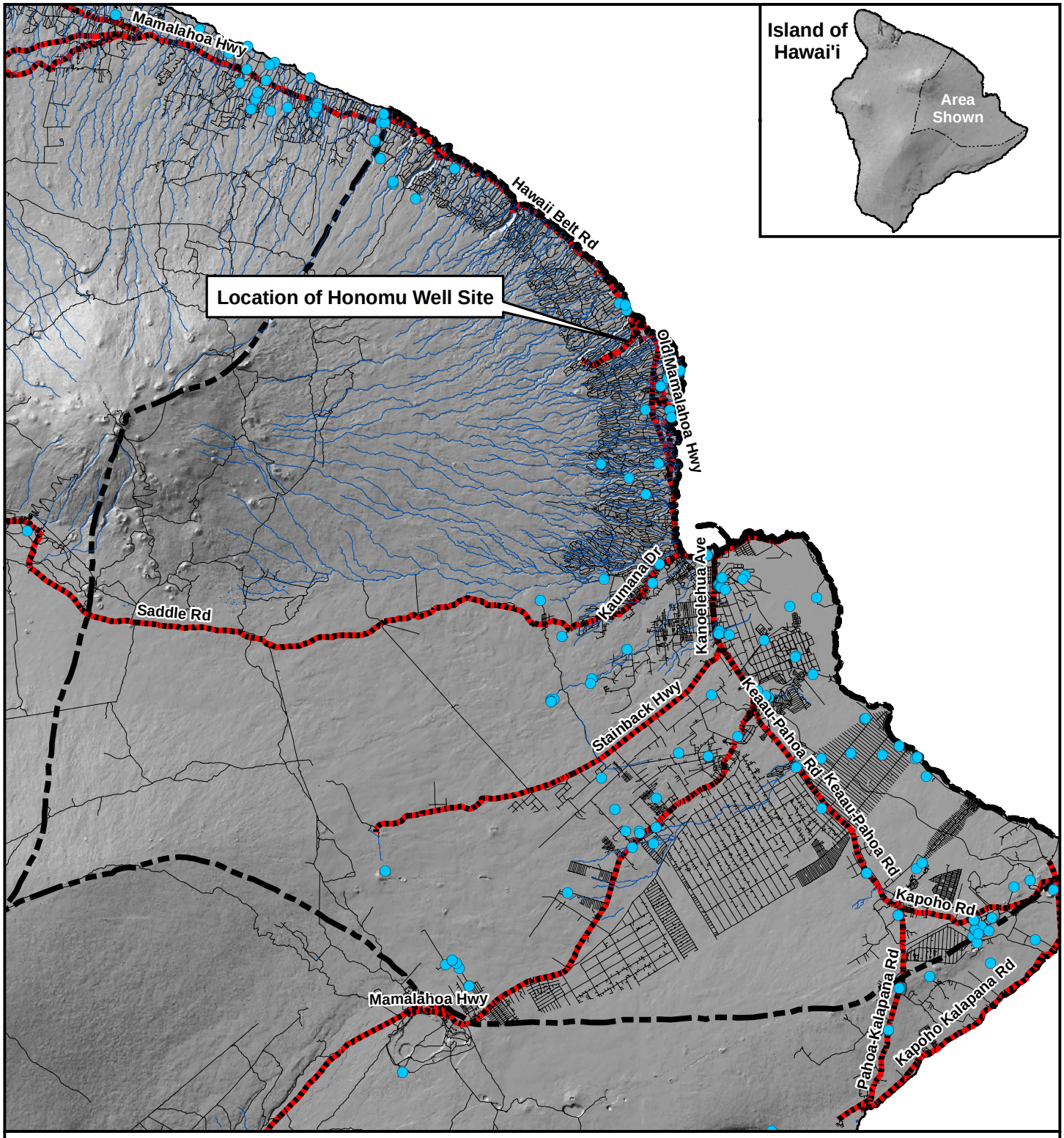
3.2.2.2 Operational Phase

3.2.2.2.1 Surface Water

The proposed Honomū Well #2, 0.3 MG reservoir, and associated structures will add approximately 11,000 square feet of impermeable surface to the site. A concrete swale and drainage system will be installed to collect runoff from paved areas and divert it through underground drain lines into the proposed seepage pit. Because of the permeable nature of the area that will remain and the fact that the on-site drainage system is designed to accommodate runoff from a 10-year storm, this will only increase the volume of surface runoff leaving the site under extremely heavy rainfall conditions. As mentioned above, no runoff would directly enter Pāhe'ehe'e Stream, instead any overflow will sheet flow into the abandoned cane field down slope of the well and tank site.

Much of the runoff that is not immediately absorbed into the ground would be from paved or graveled surfaces that would contribute little or no suspended sediment. There will be virtually no vehicle-traffic or other activity that could add oil, grease, or other common roadway pollutants to the paved

[5] National Pollutant Discharge Elimination System administered through the Clean Water Branch of the State Department of Health (Hawai'i Administrative Rules, 11-55, Appendix C)



Prepared For:

Tom Nance Water Resource Engineering, Inc. (TNWRE)

Prepared By:

PLANNING SOLUTIONS

Source:

-Tom Nance Water Resource Engineering, Inc. (TNWRE)
-State of Hawaii GIS

Source:

- Existing Well Locations
- Perennial Streams
- Hakalau Aquifer
- Highways
- Roadways

0 5 10
Miles

Figure 3.1:

Hakalau Aquifer

TNWRE Honomu Addition Project

Figure 3-1 Hakalau Aquifer 2007-04-24.mxd

areas. Hence, while the quantity of runoff from the proposed additions will be slightly greater than at present, the quality will not significantly change.

After the well begins production, it will discharge approximately 500 to 1,000 gallons of water into the seepage pit each time it is started. This will be done so that particulate matter entrained during start up does not enter into the water supply system. This arrangement helps assure that only high quality water reaches the Department of Water Supply's customers.

3.2.2.2.2 Groundwater

Honomū Well #2 is intended to provide redundant capacity to the Honomū water system. Only one of the two wells on the site would be in use at any given time except in the unlikely event of an emergency situation, and then the use of both wells would be of short term duration. Consequently, for the great majority of the time the effects of groundwater withdrawal from one of the wells would be completely offset by the non-use of the other. As shown in the pump test data included as Appendix A, the groundwater source underlying the site is robust and would be able to handle these rare additional withdrawals should they be needed. Thus, the addition of Honomū Well #2 is not expected to adversely impact groundwater resources or surface flow of the above-mentioned streams.

Table 3.1 Drilled Wells in the Hakalau Aquifer System[1]

State Well No.	*Year Developed*	*Approx. Distance From Site (miles)[2]*	*Current Use*	*Pump Capacity (MGD)[2]*	*Ground Elevation (ft MSL)[3]*	*Well Depth (ft)*	*Water Level (ft MSL)*
HW#1[4]	In process	< 0.1	Exploratory	0.36	520	652	13.2
5006-01	1976	2.4	Municipal	0.43	378	492	12.3
5206-02	1997	1.2	Unused	Not listed	89	105	--
5307-01	1976	1.8	Municipal	0.07	235	317	11.9
5307-02	1981	1.4	Not Known	Not listed	101	130	80
5307-03	1984	1.7	Irrigation	0.036	163	182	72
5814-01	1968	11.0	Municipal	0.14	659	700	5.9
5814-02	1979	11.0	Municipal	0.432	662	711	--

Notes:
[1]Five other wells (#5005-1, 5005-2, 5005-3, 5005-4, and 5005-5) in the aquifer system are not being used and are not included in the table listings.
[2]Data from State GIS (State of Hawaii 2002)
[3]Elevations in feet above mean sea level
[4] As mentioned, DWS has obtained permission to develop Honomū Well #1 into a 250-gpm production well.
Source: CWRM Groundwater Index, compiled by Tom Nance Water Resource Engineering and Planning Solutions

3.3 POTENTIAL FOR WELL CONTAMINATION

DWS will submit an engineering report to the State Department of Health Safe Drinking Water Branch (SDWB) that identifies all potential sources of contamination and alternative control measures applicable to Honomū Well #2. The report will be prepared by a licensed professional engineer, experienced in such fields as water resources, hydrogeology, water supply, or environmental engineering, and will address all the requirements set forth in Hawai‘i Administrative Rules Section 11-20-29. Before the well is placed into service as part of the Honomū System, DWS will obtain approval from the SDWB, as required by these regulations.

For reasons outlined below, there is a low probability that the groundwater that Honomū Well #2 would tap is, or would become, contaminated:

- As required by the State Department of Health, to obtain certification before putting a well into service, in January 2005 MWH Laboratories completed extensive testing of the Honomū Well #1 water. The results, which are included as Appendix B, indicate that the groundwater that well taps is of excellent quality, meeting or exceeding all defined standards for drinking water. The proposed site of Honomū Well #2 is only about 100 feet from Honomū Well #1, suggesting that groundwater quality is likely to be the same.
- No chemical contaminants have been detected in active wells of the Hakalau Aquifer System within the last four years. Prior to that time, several contaminants (mostly associated with sugarcane production) had been detected (see Table 3.2). However, the concentrations present were a fraction of the State and federally defined allowable levels for potable water sources (DOH 2005).
- According to the County of Hawai‘i Department of Environmental Management, Solid Waste Division, the nearest landfill to the project site is in Hilo, more than 10 miles away. The nearest transfer station is in Honomū Village, down gradient from the site.
- The area to the west and upgradient from the well site is entirely agricultural land with no residences and no other sources of sanitary wastewater, except for the ‘Akaka Falls State Park, which is more than two miles from the site at an elevation of about 1,200 feet. Information provided by the State Department of Health Wastewater Branch indicates that the nearest down-gradient wastewater source is a cesspool at a single-family home just over a quarter-mile below the well site. That cesspool is located at an elevation of about 410 feet above sea level.
- As described above in Section 2.1.1, the upper 500 feet of the well will be cased with grout, isolating it from surface water inputs. This, together with the absence of up-gradient sources of pollution and the distance to the nearest down-gradient source (a single cesspool) make it very unlikely that the well could be contaminated by existing sources.
- Based on the State Department of Health Office of Hazard Evaluation and Emergency Response (DOH 2000a), no identified site of concern to the State Department of Health is located within the Honomū area. The nearest listed site is the Hilo Coast Processing facility in Pepe‘ekeo, approximately 2.25 miles down-gradient. This site has been archived by the EPA (Reference No. HID066259938) as one that does not present any health risks to the surrounding environment. Thus, given its distance from the well site and its designation by the EPA, it poses no potential for contamination of the well.
- The Honomū well site does not contain any hazardous materials, and none will be used or generated during construction.

Table 3.2 Measured Contamination in Active Wells of the Hakalau Aquifer System

State Well No.	*Contaminant*	*Detected Level (ppb)*	*Maximum Contaminant Level (MCL) (ppb)*[6]	*Detected Level as % of MCL*	*Date Sampled*
5006-01	Atrazine[1,2]	0.22	3	7%	6/29/05
5006-01	Diuron[3,5]	0.6	10	6%	8/5/91
5006-01	Simazine[3,5]	0.05	4	<2%	9/5/03
5307-01	Atrazine[2]	0.67	3	22%	11/15/05 & 12/15/03
5307-01	PCE[4]	0.130	5	<3%	5/6/85
5814-01	Atrazine[2]	0.23	3	8%	12/16/03 & 3/30/05
5814-02	Atrazine[2]	0.3	3	10%	12/16/03 & 3/30/05

Notes:

[1]Atrazine is an herbicide commonly used for sugarcane.

[2] The value given here is the sum of separate determinations for desethyl atrazine and atrazine, which have similar toxic effects (EPA 2002).

[3] Simazine and Diuron are herbicides.

[4] PCE is tetrachloroethylene, an industrial chemical commonly used by drycleaners.

[5]No Maximum Contaminant Level has been established. The level listed is the EPA Health Advisory Drinking Water Equivalent Level.

[6]There are no State of Hawai‘i Standards in place; the levels shown are from the U.S. EPA Drinking Water Standards (EPA 2000).

Source: State Department of Health (DOH 2005)

3.4 CLIMATE AND AIR QUALITY

3.4.1 EXISTING CONDITIONS

The rain gauging station at Hakalau, located an elevation of 190 feet above sea level about 3 miles northeast of the project site, provides the best indication of conditions at the project site. The median annual precipitation between 1971 and 2000 was 136.2 inches (NOAA 2002). March was the wettest month of the year during this period, with an average rainfall of 16.2 inches. Even in June, the driest month, the averaged rainfall was 8.0 inches. Rainfall varies significantly according to time of day as well as time of year, with the mid-day being generally much drier than the nighttime.

Temperatures at the project site are moderate. Between 1971 and 2000, the median annual temperature, measured at O‘ōkala (the most comparable location from which temperature data are available) was 72.9˚ F. February had the lowest monthly average low temperature at that location (64˚), while September had the highest monthly average high temperature (81.6˚).

No site-specific wind data are available. However, information from other investigations strongly suggests that the wind pattern at the site reflects the influence that the island’s large land mass has on the prevailing trade winds. Long-term wind records from Hilo International Airport (the closest

regular wind monitoring station) and spot measurements made at selected locations along the Hāmākua Coast indicate a strong diurnal pattern to the winds at Honomū. During the daytime, the winds normally blow out of the east with speeds averaging between 10 to 12 miles per hour. During the nighttime, the downslope movement of cool air opposes the trade winds and the wind direction is from the southwest.

There are no substantial sources of anthropogenic air emissions and very little chance for the development of air inversions on the mountain slope. Emissions from the currently active volcanic eruptions are usually carried to the southwest around the island and are not likely to affect the project site. Consequently, air quality is generally excellent.

3.4.2 PROBABLE IMPACTS

3.4.2.1 Construction Phase

As mentioned, grading and excavation of the proposed well site and underground electrical route will disturb less than one acre of land. No more than a few pieces of construction equipment would operate on the site at any one time. Moreover, work would be limited to period of a several months. The site's relatively high rainfall, generally moderate wind speeds, and distance from sensitive receptors means that fugitive dust is unlikely to be a problem during construction. The contractor will ensure that the work conforms with the State Department of Health's guidelines for controlling fugitive dust as outlined in Hawai'i Administrative Rules §11-60.1. Consequently, pollutant emissions from construction equipment do not have the potential to affect the local or regional air quality substantially.

3.4.2.2 Operational Phase

Normal operation of the proposed facilities will not produce on-site air emissions, will not alter airflow in the vicinity, and will have no other measurable effect on the area's microclimate. Since the proposed Honomū Well #2 will only be operated when Honomū Well #1 is shut down, there will be no net increase in emissions due to power generation as a result of the project. In any event, forecast electrical power use by the proposed facilities represents such a small portion of total electrical power use on the island that its operation would have no discernible effect on power plant emissions.

3.5 TERRESTRIAL FLORA AND FAUNA

3.5.1 EXISTING CONDITIONS

Sugarcane was cultivated on the project site for decades and it, together with emergent weeds, are currently the dominant plant species. Vegetation is sparsely distributed on the project site, and much of the surface that is not occupied by existing DWS facilities is covered by gravel (see photos in Figure 2.2). The vegetation that is present consists of California grass (*Brachiaria mutica*), albizia (*Albizia chinensis*), *Mimosa pudica*, and other weeds.

No faunal survey was conducted, but the disturbed nature of the habitat strongly suggests that it is limited to introduced birds and mammals. Given the disturbed quality of the habitat, there is no reason to believe that any rare or endangered species might be present.

3.5.2 PROBABLE IMPACTS

Construction of the proposed facilities will affect less than an acre of land. The land currently supports primarily introduced and invasive species. It does not contain suitable habitat for any rare or endangered species. Consequently, the proposed action will not have any substantial direct impacts on terrestrial flora or fauna.

3.6 NOISE

3.6.1 EXISTING CONDITIONS

Passing trucks, motorcycles, and cars on the ʻAkaka Falls Road are the most significant existing noise sources at the project site. Considering the site's proximity to the highway and typical noise emissions from trucks and automobiles, it is estimated that peak noise levels in the area at the present time approach 80 dBA. Average noise levels during periods of calm winds and no traffic are probably less than 40 dBA.

3.6.2 PROBABLE IMPACTS

3.6.2.1 Construction Phase

Noise from construction activities is likely to be audible above the 35-to-50 dB background levels at the homes closest to the project site. Construction of the reservoir and second production well on the site will involve the operation of diesel-powered drilling equipment for a period of up to 8 months. Noise source levels from un-muffled equipment of this sort could be as high as 80 to 85 dBA measured at a distance of 50 feet. This could result in sound levels of about 53 - 58 dBA at the property line of the nearest residence (which is about 1,200 feet *makai* of the project site). Noise levels on other, more distant properties would be even lower. With the exception of the well testing, construction activities will be limited to daytime hours. Well testing utilizes diesel-powered pumps and requires continuous (i.e., 24-hour-per-day) pumping for a period of at least five days. Consequently, noise from this activity necessarily extends through the night.

Hawaii Administrative Rules §11-46 (Community Noise Control) establishes noise limits for construction, agricultural, and industrial activities. The noise limit for "Class C Districts" [which §11-46-3(3) defines as *"...all areas equivalent to lands zoned agriculture, country, industrial, or similar type."*] is 70 dBA at any time. The noise limit for "Class A Districts" [which §11-46-3(3) defines as *"...all areas equivalent to lands zoned residential, conservation, preservation, public space, open space, or similar type.*] is 55 dBA during the day and 45 dBA at night (see Table 3.3). The limits are applicable at the property line. Based on the quarter-mile distance to the dwelling closest to the well site, any of these activities that are conducted at night (which would occur during pump testing) could exceed the 45 dBA limit. Because of this, a construction noise permit will likely be needed from the State Department of Health.

3.6.2.2 Operational Phase

The permanent pump and motor will operate quietly. A submersible pump and motor will be used, limiting aboveground noise to the hum of the transformer. Because Honomū Well #2 would only be operated when Honomū Well #1 is out of service, the project would not result in a cumulative increase in noise levels at the site. Regardless, the operation of the well pump would only produce noise levels of about 35 to 42 dBA at the property line and noise would not be detectable from the nearest dwelling. The proposed reservoir likewise will not constitute a noise source once in place.

Table 3.3. Maximum Permissible Sounds Levels in dBA (HAR §11-46).

Zoning Districts	*Daytime (7 a.m. to 10 p.m.)*	*Nighttime (10 p.m. to 7a.m.)*
Class A	55	45
Class B	60	50
Class C	70	70

Notes:

(a) The maximum permissible sound levels apply to any excessive noise source emanating within the specified zoning district, and at any point at or beyond (past) the property line.

(b) Noise levels may not exceed the maximum permissible sound levels for more than ten per cent of the time within any twenty minute period, except by permit or variance issued under sections 11-46-7 and 11-46-8.

(c) For mixed zoning districts, the primary land use designation shall be used to determine the applicable zoning district class and the maximum permissible sound level.

(d) Measurements values are for "A" weighting network and "slow" meter response unless otherwise stated. Sound level meters and calibrators must conform to American National Standard, ANSI S1.4-1983, specifications. The maximum permissible sound level for impulsive noise is ten dBA above the maximum permissible sound levels shown and is measured using the "Fast" meter response.

(e) The limits do not apply to the operation of emergency generators, provided the best available control technology is implemented.

(f) For the purpose of the regulations, the following definitions apply:

"*Construction activities*" means any or all activities, including but not limited to those activities necessary or incidental to the erection, demolition, assembling, renovating, installing, or equipping of buildings, public or private highways, roadways, premises, and parks.

"*Construction equipment*" means any device designed and intended for use in construction, including but not limited to any air compressor, pile driver, bulldozer, pneumatic hammer, steam shovel, derrick, crane, tractor, grader, loader, power saw, pump, pneumatic drill, compactor, on-site vehicle, and power hand tool.

"*Construction site*" means any or all areas, necessary or incidental for the purpose of conducting construction activities.

(g) Class A zoning districts include all areas equivalent to lands zoned residential, conservation, preservation, public space, open space, or similar type.

Class B zoning districts include all areas equivalent to lands zoned for multi-family dwellings, apartment, business, commercial, hotel, resort, or similar type.

Class C zoning districts include all areas equivalent to lands zoned agriculture, country, industrial, or similar type.

Source: Hawaii Administrative Rules, Title 11, Chapter 46, Community Noise Control

3.7 AQUATIC RESOURCES

3.7.1 EXISTING CONDITIONS

As shown on Figure 1.1, the site is between two perennial streams. Pāheʻeheʻe Stream to the north is the closer of the two, but is still 1,000 feet away. Honomū Stream to the south is about 1,400 feet from the site. Both of these streams are listed by the U.S. National Park Service (NPS) in the Nationwide Rivers Inventory as candidates for designation as Scenic Rivers.

Both of these streams were listed because they are habitat for a "Diverse population of sensitive native aquatic species" (NPS 1995). For the Honomū Stream, the listing also specifies the endemic goby (*Lentipes concolor*), known locally by its Hawaiian name, ʻoʻopu ʻalamoʻo as a specific basis for the listing. This ʻoʻopu is omnivorous and lives on algae and small aquatic animals. It breeds in upstream areas during the fall and early spring. Newly hatched larvae are carried down to the ocean, where they drift as plankton in coastal waters. The fully developed young ʻoʻopu return to their native stream from February to May. The fish is an excellent climber and has been found in the waters of the Kolekole Stream above ʻAkaka Falls (Yamamoto and Tagawa 2000).

3.7.2 PROBABLE IMPACTS

As discussed above, the withdrawals of water from the well operation will not substantially alter the stream flow in the adjacent Pāheʻeheʻe and Honomū Streams. Neither do they have the potential to introduce pollutants into the stream. Consequently, the proposed action will not have substantial direct or indirect effects on the aquatic communities in streams or nearshore waters.

3.8 ARCHAEOLOGICAL, HISTORIC AND CULTURAL FEATURES

3.8.1 EXISTING CONDITIONS

The entire surface of the site has been disturbed during many years of large-scale mechanized sugarcane cultivation, and a portion of it was graded during construction of the Honomū #1 exploratory well. An archaeological field inspection of the project area was carried out on January 29, 2007, by Paul H. Rosendahl, Inc. (PHRI) (see Appendix C). A 100%-coverage pedestrian survey of the area was conducted; vegetation cover was low to moderate, and ground visibility was good to excellent.

The field inspection uncovered no evidence of any prehistoric or early historic period use of the project area (PHRI 2007). It concluded that even if archaeological, historic, or cultural features were present at one time, it is extremely unlikely that such features would have survived the long period of intensive cultivation.

In addition, the report noted that there was no evidence of any potentially significant cultural properties, features, or natural resources in the project area, and no evidence that cultural practices or beliefs are associated with the area. Furthermore, there is no indication the project area has resources necessary to or currently being used by either Native Hawaiian cultural practitioners exercising traditional and customary access and use rights for any purposes or by individuals of any other cultural affiliation for any traditional cultural purposes (PHRI 2007).

3.8.2 PROBABLE IMPACTS

Based on the findings of the above-referenced archaeological and cultural impact assessment, the State Historic Preservation Division (SHPD) has concluded that the project should have no effect on historic properties. A copy of the assessment and the SHPD determination letter is included in Appendix C. Should any artifact or burial site be encountered during construction, all activities will halt and SHPD will be notified. After consultation with this office and implementation of a monitoring program, construction activities will be completed.

As discussed above, the site has been used for decades for the cultivation of sugarcane. No traditional native Hawaiian cultural practices, beliefs, and/or properties of any kind are known to exist in the project area. Consequently, no substantial impacts to these resources will result from the project.

3.9 NATURAL HAZARD DESIGNATIONS

3.9.1 EXISTING CONDITIONS

The proposed well site is in the region of the Big Island that the U.S. Geological Survey (1987) has designated as Volcanic Lava Flow Hazard level 8 (as measured on a scale of 1 to 9, with 9 being the least hazardous). This rating means that none of the area has been covered by lava within the last 750 years and that only a few percent of the area has been covered by lava within the last 10,000 years.

Defining hazard zones for the effects of earthquakes is more difficult than for eruptions and has not been attempted in any great detail for the Island of Hawai‘i. For the most part, earthquakes on Hawai‘i are concentrated beneath Kīlauea and Mauna Loa, and particularly beneath the south flanks of both volcanoes and in the Ka‘ōiki region between them. The likelihood of a damaging earthquake on Kīlauea or Mauna Loa probably increases with long-lived activity of the rift zones, but its precise time and magnitude are impossible to predict. Large earthquakes unrelated to volcanic activity also occur at irregular intervals on the Island. In 1973, a magnitude 6.2 earthquake located 25 miles beneath Honomū Village injured 11 people and caused $5.6 million worth of damage. Such earthquakes have no known recurrence interval and are difficult to predict (USGS 1997).

For the purposes of structural design, the most of the Island of Hawai‘i, including the Honomū area, is classified as Zone 3 by the Uniform Building Code adopted by the County of Hawai‘i in 1993 (USGS 1994). The proposed well site is not located within a designated Flood Hazard Safety Area nor within a Tsunami Evacuation area (State of Hawai‘i 2002).

3.9.2 PROBABLE IMPACTS

As discussed above, the proposed facilities are not subject to significant hazards from volcanic flows, flooding, or tsunami. To accommodate the relatively high susceptibility to earthquake hazards present on the Island of Hawai‘i, all structures will be built to comply with the Uniform Building Codes for Earthquake Zone 3.

3.10 SCENIC AND AESTHETIC RESOURCES

3.10.1 EXISTING CONDITIONS

‘Akaka Falls Road, which fronts the proposed well site, is a popular route for tourists, and the ocean and rural views along the route contribute to the sight-seeing experience. Visually, the existing water tank, well, and chlorination facility already establish the public facility nature of the location.

3.10.2 PROBABLE IMPACTS

As noted above, the project site is alongside the ‘Akaka Falls Road, which is used by visitors to ‘Akaka Falls State Park. On the road between Honomū Village and ‘Akaka Falls, the existing scenic views consist generally of roadside views of the fallow sugarcane fields and distant views of the ocean.

The proposed Honomū well site additions represent an extension of the public facility use already established by the existing 0.1 MG reservoir, chlorination facility, and Honomū #1 exploratory well. The addition of the proposed 0.3 MG reservoir, Honomū Well #2, small control building, and parking area would not substantially change the visual character of the area or interfere with significant views across the site. As shown in the photos in Figure 2.2, vegetation along the road helps to mask the facility from passing vehicles, and this will continue to be the case.

3.11 TRAFFIC

3.11.1 EXISTING CONDITIONS

Access to the proposed well site will be via the ʻAkaka Falls Road. The road is approximately 5 miles long and ends at ʻAkaka Falls State Park. The bulk of the traffic along the road by the project site consists of park visitors.

3.11.2 PROBABLE IMPACTS

Adequate space exists alongside the roadway and on the existing access driveway to allow construction vehicles to park without interfering with the active traffic lanes. The only possible exceptions to this are brief intervals when large construction equipment and material for the reservoir and other structures are moved onto and off the site and during paving of the access driveway entrance. The latter would require temporary closure of a single road lane over a period of one week or less. The contractor will provide appropriate signage and flaggers to direct traffic around the work area. Due to the low volume of traffic along the road, no major traffic delays or disruptions are expected to result from the project. The facility will not require manned operation, but only occasional monitoring and maintenance. Service vehicles will park in designated on-site areas and will not interfere with traffic. For these reasons, the construction and operation of the proposed site additions will not lead to substantial impacts on area roadways.

3.12 LAND USE, SOCIOECONOMIC AND CULTURAL ENVIRONMENT

3.12.1 EXISTING CONDITIONS

The parcel on which the proposed facilities would be constructed is owned by the County of Hawaiʻi Water Commission (25 Aupuni Street, Room 103, Hilo, HI 96720). Presently, the only use of the site is to house the existing DWS water tank, exploratory well, and chlorination facility. Prior to that it was a fallow agricultural field that had formerly been under intensive sugarcane cultivation. The site is in the State Agriculture District. The County zoning is also Agriculture (Ag-20). The proposed facilities are allowable uses in both these land use districts.

There are no existing commercial, industrial, agricultural, or other economic activities in the vicinity. The nearest residential community is the village of Honomū, located about ½ mile east of the project site. The nearest homes are located on the fringe of Honomū village, more than 1,200 feet from the *makai* boundary of the proposed well site.

The project site is located within year 2000 Census Tract 201, which includes the communities of Honomū, Pepeʻekeo, and Pāpaʻikou. The year 2000 population of this large census tract was less than 5,000 people, or about 3% of the island's population. Median household income was slightly lower than the county average, at $36,399 compared to $39,805. Unemployment within the civilian labor force was 4.1%, slightly lower than the countywide average or 4.9%.

3.12.2 PROBABLE IMPACTS

The proposed well site additions are compatible with the existing use of this parcel and will complement the use of the existing reservoir and Honomū Well #1. The addition of the well, 0.3 MG reservoir and control facilities to the site will not interfere with the use or affect the value of adjacent properties.

The proposed well and reservoir will increase DWS' total source and storage capacity in the Honomū system. This will allow the Department to alleviate a projected storage deficit and will provide a high-quality backup source for Honomū Well #1. Aside from the temporary construction employment and expenditures that it would create, the project will not in and of itself stimulate or otherwise promote population growth or economic activity.

4.0 RELATIONSHIPS TO RELEVANT PLANS, POLICIES & CONTROLS

4.1 STATE AND COUNTY REGULATIONS

4.1.1 COUNTY OF HAWAI'I GENERAL PLAN

The Department of Water Supply operates and maintains over twenty separate systems in the County of Hawai'i, including the Honomū System. The 2005 *Hawai'i County General Plan* contains goals and policies concerning the development and operation of essential water supply facilities. The *General Plan* recognizes that water supply facilities are needed to support the patterns of development which the *General Plan* seeks to achieve. It makes planning for the location of utility facilities such as wells, reservoirs, and pumping stations an integral part of the land planning process.

The *2005 General Plan* identifies the following County policies with regards to public water systems that are relevant to the proposed project:

(a) Water system improvements shall correlate with the County's desired land use development pattern.

(b) All water systems shall be designed and built to Department of Water Supply standards.

(c) Improve and replace inadequate systems.

(d) Water sources shall be adequately protected to prevent depletion and contamination from natural and man-made occurrences or events.

(e) Water system improvements should be first installed in areas that have established needs and characteristics, such as occupied dwellings, agricultural operations and other uses, or in areas adjacent to them if there is need for urban expansion.

(f) A coordinated effort by County, State and private interests shall be developed to identify sources of additional water supply and be implemented to ensure the development of sufficient quantities of water for existing and future needs of high growth areas and agricultural production.

(g) The fire prevention systems shall be coordinated with water distribution systems in order to ensure water supplies for fire protection purposes.

(j) Cooperate with appropriate State and Federal agencies and the private sector to develop, improve and expand agricultural water systems in appropriate areas on the island.

(k) Promote the use of ground water sources to meet State Department of Health water quality standards.

(m) Seek State and Federal funds to assist in financing projects to bring the County into compliance with the Safe Drinking Water Act.

The *2005 Hawai'i County General Plan* identifies a number of actions to implement these policies in the South Hilo District. Specifically, it directs DWS to:

(a) Continue to implement water system maintenance and improvement programs in order to provide the city with a dependable and consistently safe drinking water supply.

(b) Investigate groundwater sources in the upper Waiakea Uka, Kaieie Mauka, Kulaimano, Saddle Road, and Honomu areas.

(c) Further investigate future ground water resources.

(d) Replace existing surface sources with groundwater sources to meet State Department of Health standards.

4.1.1.1 Conformance with the 2005 *Hawai'i County General Plan*

DWS constructed the existing exploratory well at the Honomū site in accordance with the *General Plan* policy for South Hilo that encourages groundwater source investigation for this area of the island. The production well and reservoir that is part of the proposed action is responsive to the same directive. By eliminating the system's dependency on the 'Akaka Falls Spring, the proposed action is also responding to the *General Plan*'s policy of replacing existing surface sources with groundwater sources.

The proposed project meets all applicable design standards. It will allow DWS to continue to meet the needs of the people of Honomū in a cost-effective manner while complying with the State Department of Health requirements for reliability and quality of potable water sources. The proposed well and ancillary facilities are located on a site that is already part of the DWS system. They are compatible with existing uses in the surrounding area and they are allowable under existing State and County zoning and development regulations. Operation of the well and reservoir would not produce substantial air or noise emissions that would disturb existing uses on adjacent properties.

4.1.2 COUNTY OF HAWAI'I ZONING ORDINANCE

The County zoning in the project area is Agriculture (Ag-20a). The Hawai'i County Code (2000 Edition), Section 25-4-11(b) states:

Any substation used by a public utility for the purpose of furnishing telephone, gas, electricity, water, radio, or television shall be a permitted use in any district provided that the use is not hazardous or dangerous to the surrounding area and the director has issued plan approval for such use.

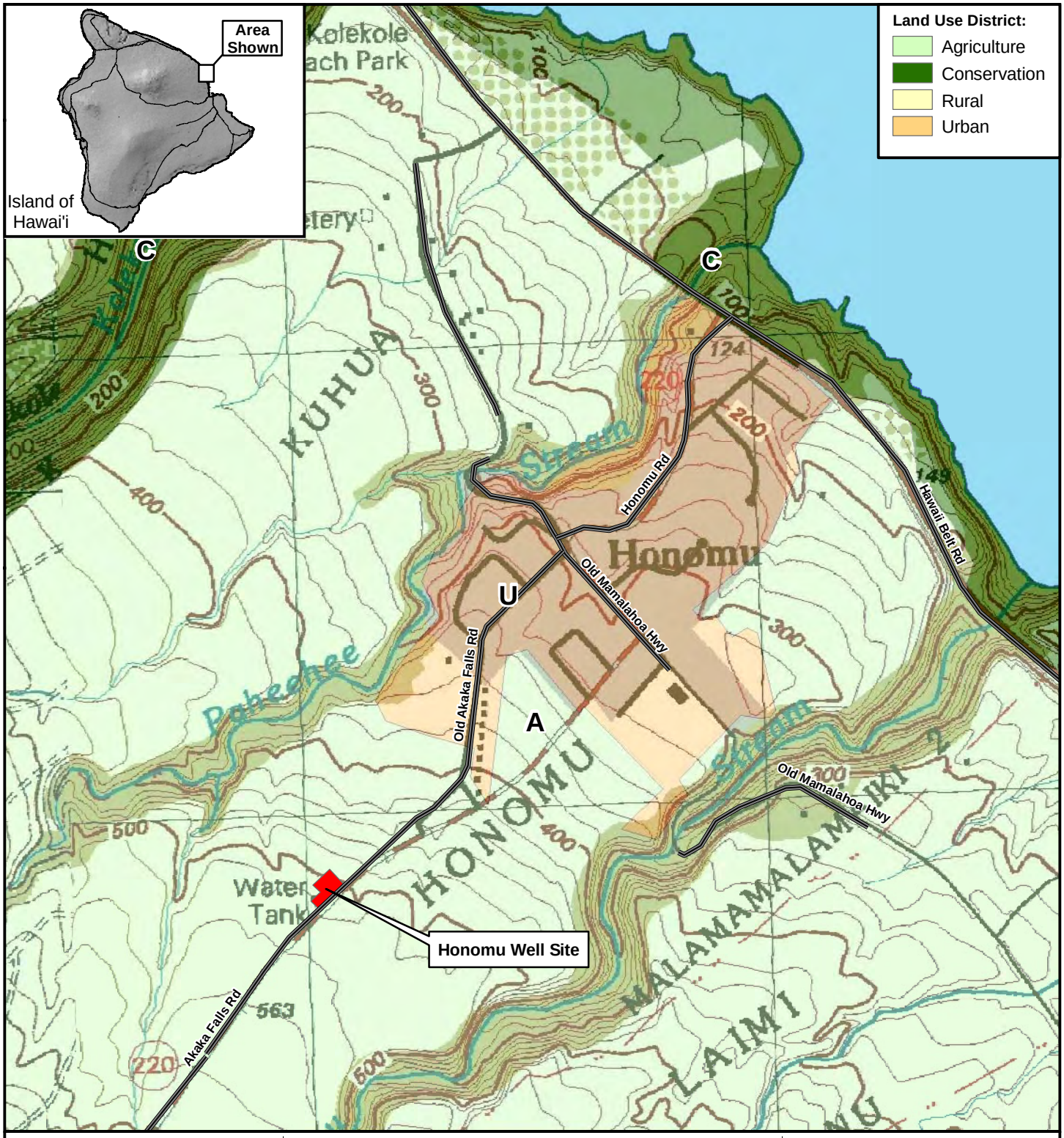
The proposed well and reservoir would be a public utility that would provide additional storage and a backup source of potable water to the Honomū community. Consequently, the project qualifies as a permitted use under this regulation. DWS will submit an *Application for Plan Approval* to the Hawai'i County Department of Planning to obtain the necessary director's approval for the project once the Chapter 343 process is completed.

4.1.3 STATE OF HAWAI'I LAND USE

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.

4.1.4 COMPLIANCE WITH THE STATE OF HAWAI'I'S DRINKING WATER STATE REVOLVING FUND (DWSRF) PROGRAM REQUIREMENTS

This project may be funded by Federal funds through the State of Hawai'i's Drinking Water State Revolving Fund (DWSRF) program. The U.S. Congress established the DWSRF program as a new section 1452 of the Safe Drinking Water Act (SDWA), 33 U.S.C. 300j-12, by the SDWA Amendments of 1996, Public Law 104-182. The DWSRF was established to help prevent contamination through source water protection and enhanced water system management. It also emphasizes the needs of small water systems, such as Honomū. The proposed project is consistent with the overall program intent to prevent potential contamination and also the program emphasis on small water systems. This document includes all of the environmental information required for compliance with the DWSRF program.



Prepared For:

Department of Water Supply, County of Hawai'i

Prepared By:

PLANNING SOLUTIONS

Sources:

-TNWRE
-State of Hawai'i GIS
-USGS 7.5' Quad Map

0 500 1,000 2,000
Feet

Figure 4.1:

State Land Use Districts

Honomu Well Site Addition Project

Land Use Districts 2007-03-13.mxd

4.2 CROSS-CUTTING FEDERAL AUTHORITIES

This following sub-sections address the proposed project's relationship to other Federal "cross-cutting" authorities.

4.2.1 ARCHEOLOGICAL AND HISTORIC PRESERVATION ACT (16 U.S.C. § 469A-1) AND NATIONAL HISTORIC PRESERVATION ACT (16 U.S.C. § 470(F))

As discussed in Section 3.8, the project site is located in an area that has been used extensively for agriculture for many years and no known archaeological or historic features exist at the site. The State of Hawai'i Historic Preservation Division (SHPD) of the Department of Land and Natural Resources has determined that the project will have no effect on historic properties, and the impact assessment conducted for the project detected no evidence that the site is used or valued for cultural purposes. Consequently, the proposed action is in compliance with these regulations.

4.2.2 CLEAN AIR ACT (42 U.S.C. § 7506(C))

As discussed in Section 3.4, air quality at the site of the proposed project is good. The site is in an air quality attainment area as defined by the State of Hawai'i Department of Health in its EPA-approved Air Quality program. Only minor amounts of grading and excavation will be required for the project. This, and the wet climate, mean that fugitive dust will not be a problem during construction.

It is anticipated that diesel-powered construction equipment will be used to construct the proposed well and reservoir. Emissions from the diesel will slightly degrade air quality for the short period of time they are in operation. However, all applicable emission and ambient air quality standards will continue to be met. Normal operation of the proposed facilities will not produce on-site air emissions, will not alter air flow in the vicinity, and will have no other measurable effect on the area's micro-climate. Consequently, the proposed project complies with the provision of the Clean Air Act.

4.2.3 COASTAL BARRIER RESOURCES ACT (16 U.S.C. § 3501)

Coastal Barrier Resources Act (CBRA), Public Law 97-348 (96 Stat. 1653; 16 U.S.C. 3501 et seq.), enacted October 18, 1982, designated various undeveloped coastal barrier islands, depicted by specific maps, for inclusion in the Coastal Barrier Resources System (System). Areas so designated were made ineligible for direct or indirect Federal financial assistance that might support development, including flood insurance, except for emergency life-saving activities. Exceptions for certain activities, such as fish and wildlife research, are provided, and National Wildlife Refuges and other, otherwise protected areas are excluded from the System. The proposed project will not affect any areas protected by this Act.

4.2.4 COASTAL ZONE MANAGEMENT ACT (16 U.S.C. § 1456(C) (1))

Enacted as Chapter 205A, HRS, the Hawaii Coastal Zone Management (CZM) Program was promulgated in 1977 in response to the Federal Coastal Zone Management Act of 1972. The CZM area encompasses the entire state, including all marine waters seaward to the extent of the state's police power and management authority, including the 12-mile U.S. territorial sea and all archipelagic waters.

The Hawai'i Coastal Zone Management Program focuses on ten policy objectives:

- Recreational Resources. To provide coastal recreational opportunities accessible to the public and protect coastal resources uniquely suited for recreational activities that cannot be provided elsewhere.
- Historic Resources. To protect, preserve, and where desirable, restore those natural and manmade historic and prehistoric resources in the coastal zone management area that are significant in Hawaiian and American history and culture.

- Scenic and Open Space Resources. To protect, preserve, and where desirable, restore or improve the quality of coastal scenic and open space resources.
- Coastal Ecosystems. To protect valuable coastal ecosystems, including reefs, from disruption and to minimize adverse impacts on all coastal ecosystems.
- Economic Uses. To provide public or private facilities and improvements important to the state's economy in suitable locations; and ensure that coastal dependent development such as harbors and ports, energy facilities, and visitor facilities, are located, designed, and constructed to minimize adverse impacts in the coastal zone area.
- Coastal Hazards. To reduce hazard to life and property from tsunami, storm waves, stream flooding, erosion, subsidence, and pollution.
- Managing Development. To improve the development review process, communication, and public participation in the management of coastal resources and hazards.
- Public Participation. To stimulate public awareness, education, and participation in coastal management; and maintain a public advisory body to identify coastal management problems and provide policy advice and assistance to the CZM program.
- Beach Protection. To protect beaches for public use and recreation; locate new structures inland from the shoreline setback to conserve open space and to minimize loss of improvements due to erosion.
- Marine Resources. To implement the state's ocean resources management plan.

Other key areas of the CZM program include: a permit system to control development within a Special Management Area (SMA) managed by the Counties and the Office of Planning; a Shoreline Setback Area which serves as a buffer against coastal hazards and erosion, and protects view-planes; and the Marine and Coastal Affairs. Finally, a Federal Consistency provision requires that federal activities, permits and financial assistance be consistent with the Hawai‘i CZM program.

The proposed Honomū Well project is located about a mile from the coastline. It does not involve the placement, erection, or removal of materials near the coastline. The type and scale of the activities that it involves typically do not have the potential to significantly affect coastal resources. Finally, it is consistent with the CZM objectives that are relevant to a project of this sort.

4.2.5 ENDANGERED SPECIES ACT (16 U.S.C. 1536(A)(2) AND (4))

The Endangered Species Act (16 U.S.C. §§ 1531-1544, December 28, 1973, as amended 1976-1982, 1984 and 1988) provides broad protection for species of fish, wildlife, and plants that are listed as threatened or endangered in the U.S. or elsewhere. The Act mandates that federal agencies seek to conserve endangered and threatened species and use their authorities in furtherance of the Act's purposes. Provisions are made for listing species, as well as for recovery plans and the designation of critical habitat for listed species. The Act outlines procedures for federal agencies to follow when taking actions that may jeopardize listed species, and contains exceptions and exemptions.

Existing biota on and near the project site are discussed in Sections 3.5 and 3.7 of this EA. The discussion documents the fact that there are no known rare or endangered species on or immediately around the site of the Honomū Well project. Similarly, the site does not contain unique or valuable wildlife habitat.

4.2.6 ENVIRONMENTAL JUSTICE (EXECUTIVE ORDER 12898)

The Environmental Justice Executive Order was issued in 1994 for the purpose of protecting low-income and minority residents of the United States from disproportionate exposure to environmental and health hazards. Section 1-101 of the Executive Order States:

> *To the greatest extent practicable and permitted by law, and consistent with the principles set forth in the report on the National Performance Review, each Federal agency shall make*

> *achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations in the United States and its territories and possessions, the District of Columbia, the Commonwealth of Puerto Rico, and the Commonwealth of the Mariana Islands.*

As discussed in Section 3.12.1, the Census Tract in which the proposed well is located exhibits a median household income that is only slightly less than the countywide average, and an unemployment rate that is slightly lower. The project area is not considered a low-income area. The purpose of the proposed well is to continue to provide residents of Honomū with additional potable water storage and with a backup groundwater source of drinking water that conforms to State and Federal standards. The project will not have adverse secondary environmental, economic, or social impacts, as discussed in detail in Chapter 3. Moreover, the State and Federal regulations regarding safe drinking water are applicable to all water systems in Hawai'i, irrespective of the economic or demographic characteristics of their residents. Thus, the proposed project complies with this Executive Order.

4.2.7 FARMLAND PROTECTION POLICY ACT (7 U.S.C. § 4202(8))

The U.S. Congress adopted the Farmland Protection Policy Act (FPPA) (Public Law 97-98) on December 22, 1981). The U.S. Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS) has national leadership for administering the FPPA. The effective date of the FPPA rule (part 658 of Title 7 of the Code of Federal Regulations) is August 6, 1984.

The stated purposes of the FPPA are to:

- Minimize the extent to which Federal programs contribute to the unnecessary and irreversible conversion of farmland to nonagricultural uses.
- Assure that Federal programs are administered in a manner that, to the extent practicable, will be compatible with State, unit of local government, and private programs and policies to protect farmland.

"Farmland", as used in the FPPA, includes prime farmland, unique farmland, and land of statewide or local importance. "Farmland" subject to FPPA requirements does not have to be currently used for cropland. Because the Honomū Well Site additions project will result in the use of 25,500 square feet of prime agricultural land for the proposed well and related support facilities and might use Federal with funding assistance from a Federal agency, the proposed action is subject to the FPPA.

The area that would be affected is a very small fraction of the agricultural land in the area. The site and the adjacent area has lain fallow for many years. In addition, the project's location adjacent to the existing DWS facility on the perimeter of the formerly cultivated area means that it will not interfere with any future agricultural use of the remainder of the parcel or other nearby areas. Instead, it is intended to serve residents of the small community of Honomū by alleviating a projected water storage shortfall and providing a high-quality backup well source. Consequently, the project is in compliance with the FPPA.

4.2.8 FISH AND WILDLIFE COORDINATION ACT (16 U.S.C. § 662(A))

The Fish and Wildlife Coordination Act , as amended, authorizes the Secretaries of Agriculture and Commerce to require consultation with the Fish and Wildlife Service and the fish and wildlife agencies of States where the *"waters of any stream or other body of water are proposed or authorized, permitted or licensed to be impounded, diverted . . . or otherwise controlled or modified"* by any agency under a Federal permit or license. Consultation is to be undertaken for the purpose of *"preventing loss of and damage to wildlife resources."*

As documented in this report, the proposed Honomū Well Site additions project will not result in the diversion of any water body and will not result in impacts on fish or wildlife resources.

4.2.9 FLOODPLAIN MANAGEMENT (42 U.S.C. § 4321))

Based on the latest available (December, 2001) Flood Insurance Rate Map for the area, the project site lies outside a defined floodplain. The project does not involve property acquisition, management, or construction within a 100-year flood plain (Zones A or V), and it does not involve a "critical action" within a 500-year flood plain. Consequently, it is consistent with applicable regulations and guidance relating to floodplain management.

4.2.10 SAFE DRINKING WATER ACT (42 U.S.C. § 300H-3(E))

The Safe Drinking Water Act (SDWA) is the principal federal law that ensures the quality of Americans' drinking water. Under SDWA, EPA sets standards for drinking water quality and oversees the states, localities, and water suppliers who implement those standards. The 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 and monitoring requirements for surface water and GWUDI sources being far greater than those for groundwater sources.

As discussed in this report, the proposed Honomū Well #2 will permit continued compliance of the Honomū Water System with the standards mandated pursuant to the SDWA. Extensive testing of the water withdrawn from the well will be carried out by the County of Hawai'i before it is developed into a production well to ensure that the water is consistent with all State and Federal standards for potable water.

The Safe Drinking Water Act also provides the impetus behind the development of regulatory protection of principal or sole source aquifers. Part C of this Law pertains specifically to the protection of underground sources of drinking water, including the establishment of regulations on the injection of materials into subsurface aquifers in those areas of the United States where only one aquifer (principal or sole source aquifer) exists. Section 1424(e) of PL 93-523 states:

> *(e) If the Administrator determines, on his own initiative or upon petition, that an area has an aquifer which is the sole or principal drinking water source for the area and which, if contaminated, would create a significant hazard to public health, he shall publish notice of the determination in the Federal Register. After the publication of any such notice, no commitment for Federal financial assistance (through a grant, contract, loan guarantee, or otherwise) may be entered into for any project which the Administrator determines may contaminate such aquifer through a recharge zone so as to create a significant hazard to public health, but a commitment for Federal financial assistance may, if authorized under another Provision of law, be entered into to plan or design the project to assure that it will not so contaminate the aquifer.*

As identified by the U.S. Environmental Protection Agency, Region IX groundwater Office (http://www.epa.gov/OGWDW/swp/ssa/reg9.html), there are only two Sole Source Aquifers in Hawai'i. They are the Southern O'ahu Basal Aquifer on the Island of O'ahu and the Moloka'i Aquifer on the island of Moloka'i. There are no sole source aquifers on the Island of Hawai'i where the proposed project is located.

4.2.11 PROTECTION OF WETLANDS (42 U.S.C. § 4321)

There are no wetlands on or near the site. Neither are there food resources on the site that are important to wildlife that use wetlands elsewhere on the island. Copies of the *Draft EA* were sent to the administrator of the Pacific Island Eco-Region, U.S. Fish & Wildlife Service, and to the State

Department of Land and Natural Resources Department of Aquatic Resources to ensure adequate consideration of this topic in the environmental review for this project.

4.2.12 WILD AND SCENIC RIVERS ACT (16 U.S.C. 1271-1287)

The purpose of this act, as stated in Section (b) of its preamble is as follows:

> *It is hereby declared to be the policy of the United States that certain selected rivers of the Nation which, with their immediate environments, possess outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values, shall be preserved in free-flowing condition, and that they and their immediate environments shall be protected for the benefit and enjoyment of present and future generations. The Congress declares that the established national policy of dam and other construction at appropriate sections of the rivers of the United States needs to be complemented by a policy that would preserve other selected rivers or sections thereof in their free-flowing condition to protect the water quality of such rivers and to fulfill other vital national conservation purposes.*

As discussed in Section 3.2.1, the closest streams to the project site are Honomū Stream and Pāheʻeheʻe Stream, which are 1,500 and 1,000 feet away, respectively. Both of these streams are listed as candidates for Scenic river designation by the National Park Service. The discussion in Section 3.2.2 documents that no substantial impacts to either of these streams will result from construction and operation of the proposed well site additions. As such, the project is consistent with the provisions of the Wild and Scenic Rivers Act.

5.0 DETERMINATION

5.1 SIGNIFICANCE CRITERIA

Hawaii Administrative Rule §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. §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. Hawaii Administrative Rules §11-200-12 lists the following criteria to be used in making that determination:

In m*ost 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.*

5.2 FINDINGS

The potential effects of constructing and operating the proposed Honomū well site additions described earlier in this document were evaluated using these significance criteria. The findings with respect to these criteria are summarized below:

5.2.1 IRREVOCABLE LOSS OR DESTRUCTION OF VALUABLE RESOURCE

The proposed project would be constructed on vacant, previously cultivated land adjacent to an existing Department of Water Supply facility. It does not involve the loss of any significant cultural or natural resources.

5.2.2 CURTAILS BENEFICIAL USES

Construction and operation of the well and reservoir will not curtail beneficial uses of the site. Withdrawals from the new well would be completely offset by non-use of Honomū Well #1. The development affects less than an acre of land and will not preclude or disrupt future use of the surrounding agricultural land.

5.2.3 CONFLICTS WITH LONG-TERM ENVIRONMENTAL POLICIES OR GOALS

The proposed project is consistent with the County of Hawai'i's General Plan (see Section 4.1) and with the State's long-term environmental policies and goals as expressed in Chapter 344, Hawaii Revised statutes and elsewhere in State law.

5.2.4 SUBSTANTIALLY AFFECTS ECONOMIC OR SOCIAL WELFARE

The proposed well is intended to provide additional potable water storage and a backup water source to existing residents of Honomū. It will not have a substantial adverse effect on economic or social welfare. Rather, it allows the DWS to assure its customers that they have access to an adequate supply of high-quality potable water, consistent with the maintenance of environmental quality.

5.2.5 PUBLIC HEALTH EFFECTS

The proposed project will not adversely affect air or water quality. Neither will it generate solid waste or produce other emissions that will have a significant adverse effect on public health. Construction noise has the potential to 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 will require of the construction contractor.

5.2.6 PRODUCE SUBSTANTIAL SECONDARY IMPACTS

The proposed project will not produce significant secondary impacts. It is not designed to foster population growth or to promote economic development.

5.2.7 SUBSTANTIALLY DEGRADE ENVIRONMENTAL QUALITY

The proposed project will not have substantial long-term environmental effects. Noise from construction and pump testing is the only impact of note, and it will be of limited duration. So long as adequate measures are taken to control the intensity of the construction noise and the time of day during which it will occur, its effects on nearby properties can be managed.

5.2.8 CUMULATIVE EFFECTS OR COMMITMENT TO A LARGER ACTION

Construction and operation of the proposed well and reservoir do not constitute not a commitment to a larger action and are not intended to facilitate substantial population growth. Instead, the project is intended primarily to provide storage and a backup source to support the existing water system.

5.2.9 AFFECTS A RARE, THREATENED, OR ENDANGERED SPECIES

The proposed project will be constructed on a vacant portion of a DWS-owned site that has been heavily disturbed by prior agricultural use. It will not utilize a resource needed for the protection of rare, threatened, or endangered species.

5.2.10 AFFECTS AIR OR WATER QUALITY OR AMBIENT NOISE LEVELS

Construction and operation of the proposed well and reservoir will not have a measurable effect on air or water quality. Neither will they have a long-term effect on noise levels. The project does have the potential to increase noise levels during the construction phase. Adequate mitigation measures will be taken to limit these to reasonable levels.

5.2.11 ENVIRONMENTALLY SENSITIVE AREAS

There are no environmentally sensitive areas or resources in the immediate vicinity of the proposed project. While the Island of Hawai‘i as a whole is subject to certain geologic hazards, such as earthquakes, tsunami, and lava flows, the project site is in an area that has a relatively low frequency of lava flows and is above the tsunami evacuation zone. All structures will be constructed consistent with the Hawai‘i Uniform Building Code for Earthquake Zone 3.

5.2.12 AFFECTS SCENIC VISTAS AND VIEWPLANES

The appearance of the proposed well, reservoir and equipment building will be similar in nature to the facilities already existing at the site. They will not significantly alter the visual character of the site or change views across it.

5.2.13 REQUIRES SUBSTANTIAL ENERGY CONSUMPTION

Energy required for operation of Honomū Well #2 will be completely offset by a decrease in use of the Honomū Well #1. The proposed reservoir does not require substantial energy consumption.

5.3 DETERMINATION

In view of the foregoing, the DWS concludes that the proposed project will not have a significant adverse impact on the environment. Consequently, it has issued a Finding of No Significant Impact for the proposed action.

6.0 BIBLIOGRAPHY

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7.0 CONSULTATION & DISTRIBUTION

7.1 CONSULTATION

The Hawai‘i County Planning Department was consulted during the preparation of this EA. The public will have an opportunity to review and comment on the document in accordance with HRS Chapter 343.

7.2 DRAFT EA DISTRIBUTION

Copies of the *Draft EA* were mailed to the recipients listed in Table 7.1 below. Notice of the *Draft EA* appeared in the May 23, 2007 *Environmental Notice* published by the State Office of Environmental Quality Control.

Table 7.1 Draft EA Distribution List

Federal Agencies	
Environmental Protection Agency, Pacific Islands Contact Office	District Engineer, U.S. Army Engineer District, Honolulu
U.S. Department of Agriculture, Natural Resources Conservation Service	U.S. Fish & Wildlife Service, Pacific Island Eco-Region
District Chief, Geological Survey, Department of the Interior	
State Agencies	
Office of Environmental Quality Control (4 copies)	Department of Business and Economic Development & Tourism, Planning Office
Department of Hawaiian Home Lands	Department of Health, Clean Water Branch
Office of Hawaiian Affairs	Department of Health, Environmental Planning Office
Department of Accounting and General Services	Department of Health, Safe Drinking Water Branch
Department of Agriculture	Department of Land and Natural Resources (5 copies)
Commission on Water Resource Management	DLNR Historic Preservation Division
Department of Transportation (DOT)	Environmental Center, University of Hawai‘i
DOT Highways Division	Water Resources Center, University of Hawai‘i
County of Hawai‘i	
Planning Department	Fire Department
Department of Public Works	Police Department
Department of Parks and Recreation	Department of Environmental Management, Solid Waste Division
Utilities	
Hawaiian Electric Light Company	Hawaiian Telcom
Libraries and Depositories	
Hawai‘i State Library Hawai‘i Documents Center	Hilo Public Library
University of Hawai‘i, Hilo Campus Library	Laupāhoehoe Public and School Library

7.3 COMMENTS & RESPONSES ON THE DRAFT EA

The comment period for the Draft EA ended on June 22, 2007. Table 7.2 below lists the parties that submitted written comments on the project. Their comments and DWS’s responses to them are reproduced at the end of this section.

Table 7.2 Written Comments on the Draft EA

No.	*Name & Title of Commenter*	*Organization*
1	Barry Fukunaga, Director	State Department of Transportation
2	Lawrence K. Mahuna, Chief	Hawai‘i County Police Department
3	Clyde W. Nāmu‘o, Administrator	Office of Hawaiian Affairs
4	Darryl Oliveira, Chief	Hawai‘i County Fire Department
5	Russell Y. Tsuji, Administrator	Land Division, Department of Land and Natural Resources
6	Kelvin H. Sunada, Manager	Environmental Planning Office, Department of Health
7	Christopher J. Yuen, Director	Hawai‘i County Planning Department
8	Ernest Lau, Public Works Administrator	Department of Accounting and General Services

Source: Compiled by Planning Solutions, Inc. (2007).

LINDA LINGLE
GOVERNOR

#1

BARRY FUKUNAGA
DIRECTOR

Deputy Directors
FRANCIS PAUL KEENO
BRENNON T. MORIOKA
BRIAN H. SEKIGUCHI

IN REPLY REFER TO:

STP 8.2507

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
869 PUNCHBOWL STREET
HONOLULU, HAWAII 96813-5097

May 31, 2007

Mr. Perry J. White
Planning Solutions
Ward Plaza, Suite 330
210 Ward Avenue
Honolulu, Hawaii 96814-4012

Dear Mr. White:

Subject: Honomu Well Additions
Draft Environmental Assessment (DEA)
Department of Water Supply, County of Hawaii
TMK: 2-8-013: 055, Hawaii

Thank you for transmitting a copy of the Draft EA for the subject water supply project.

The project will not have a significant traffic impact on our State highway facilities, but any project work within or adjacent to State Highway Route 220 will need to have prior arrangements and coordination with our Highways Division. This includes documentation of the driveway access to the highway as reflected in the project's site plan.

A copy of this letter and the Draft EA you provided is being forwarded to our Highways Division Hawaii District Office for further follow up and coordination with our other Highway Division offices as necessary.

Coordination between the Hawaii County Department of Water Supply and our Highways Hawaii District Office has been done before for other county projects around the island and the same cooperation between the offices is expected to continue.

We appreciate the opportunity to provide our comments.

Very truly yours,

BARRY FUKUNAGA
Director of Transportation

c: Keith Okamoto and Milton Pavao, Hawaii Department of Water Supply
Genevieve Salmonson, Office of Environmental Quality Control
HWY-H

PLANNING
SOLUTIONS

June 8, 2007
2006-0012-001

Mr. Barry Fukunaga, Director
Department of Transportation
State of Hawai'i
869 Punchbowl Street
Honolulu, HI 96813-5097

Subject: Honomū Well Site Additions Project, South Hilo, Hawai'i
Draft Environmental Assessment

Dear Mr. Fukunaga:

Thank you for your May 31, 2007 letter [your reference STP 8.2507] commenting on the Hawai'i County Department of Water Supply's *Draft Environmental Assessment* (*DEA*): *Honomū Well Site Additions Project.* We appreciate the time you and your staff spent reviewing the document and providing written comments.

We are pleased to hear that the Department agrees the project will not have a significant traffic impact on State highway facilities.

A copy of the *DEA* was sent to the Highways Division Hawai'i District Office for review, and any comments will be reproduced and responded to in the *Final EA* for the project. DWS understands the need to coordinate work on the access driveway with the Highways Division and will follow through on this as you suggested.

If you have any further questions concerning the project, please call me at (808) 550-4483.

Sincerely,

Perry J. White

cc: Mr. Keith Okamoto, Department of Water Supply
Office of Environmental Quality Control
Mr. Greg Fukumitsu, TNWRE

Ward Plaza, Suite 330 • 210 Ward Avenue • Honolulu, Hawaii 96814-4012
Phone: 808 550-4483 • Fax: 808 550-4549 • www.psi-hi.com

Harry Kim
Mayor

#2

Lawrence K. Mahuna
Police Chief

Harry S. Kubojiri
Deputy Police Chief

County of Hawaii

POLICE DEPARTMENT

349 Kapiolani Street • Hilo, Hawaii 96720-3998
(808) 935-3311 • Fax (808) 961-8869

June 5, 2007

Mr. Perry White
Planning Solutions
Ward Plaza, Suite 330
210 Ward Avenue
Honolulu, Hawaii 96814-4012

Dear Mr. White:

Re: Draft Environmental Assessment/Anticipated Finding of No Significant Impact for Honomu Well Site Additions

Staff, upon reviewing the provided documents and visiting the proposed site, does not anticipate any significant impact to traffic and/or public safety concerns.

Thank you for allowing us the opportunity to comment.

Sincerely,

James M. Day

JAMES M. DAY
ASSISTANT POLICE CHIEF
AREA I OPERATIONS

KV:lli

"Hawai'i County is an Equal Opportunity Provider and Employer"

PLANNING SOLUTIONS

June 8, 2007
2006-0012-001

Mr. James M. Day, Assistant Chief
Area I Operations
Hawai'i Police Department
County of Hawai'i
349 Kapi'olani Street
Hilo, HI 96720-3998

Subject: Honomū Well Site Additions Project, South Hilo, Hawai'i
Draft Environmental Assessment

Dear Mr. Day:

Thank you for your June 5, 2007 letter regarding the Hawai'i County Department of Water Supply's *Draft Environmental Assessment* (*DEA*): *Honomū Well Site Additions Project.* We appreciate the time you and your staff spent reviewing the document and preparing your letter.

We are pleased that your Department agrees there will be no significant impacts to traffic or public safety concerns resulting from the proposed project. If you have any further questions concerning the project, please call me at (808) 550-4483.

Sincerely,

Perry J. White

cc: Mr. Keith Okamoto, Department of Water Supply
Office of Environmental Quality Control
Mr. Greg Fukumitsu, TNWRE

Ward Plaza, Suite 330 • 210 Ward Avenue • Honolulu, Hawaii 96814-4012
Phone: 808 550-4483 • Fax: 808 550-4549 • www.psi-hi.com

PHONE (808) 594-1888

FAX (808) 594-1865

STATE OF HAWAI'I
OFFICE OF HAWAIIAN AFFAIRS
711 KAPI'OLANI BOULEVARD, SUITE 500
HONOLULU, HAWAI'I 96813

#3

June 6, 2007

HRD07_655B

Perry J. White
Planning Solutions
Ward Plaza, Suite 330
210 Ward Avenue
Honolulu, Hawai'i 96814-4012

Re: Honomū Well Site Additions
Draft Environmental Assessment/Anticipated Finding of No Significant Impact

The Office of Hawaiian Affairs (OHA) is in receipt of your May 21, 2007 letter requesting review and comment on a draft Environmental Assessment (EA) and anticipated Finding of No Significant Impact (FONSI) for the proposed Honomū Well Site Additions.

OHA is obligated to work towards the betterment of native Hawaiians and Hawaiians, and to serve the needs and interests of a wide and diverse beneficiary group. OHA must also ensure that other agencies, on the State and County levels, uphold their constitutionally, statutorily and judicially mandated obligations to the native Hawaiian and Hawaiian people.

The Cultural Impact Assessment dismisses the potential for individuals accessing the project area for traditional and customary purposes, but fails to document any consultation with individuals knowledgeable of the history and any existing cultural resources within Honomū. Office of Environmental Quality Control Guidelines recommend preparers of assessments *"identify and consult with individuals and organizations with expertise concerning the types of cultural resources, practices and beliefs found within the broad geographical area, e.g., district or ahupua'a"*.

OHA seeks your assurance that if this project moves forward, proper mitigation and consultation will occur pursuant to applicable laws should any unanticipated or unidentified cultural, historic, or burial sites and items be encountered during any phase of this project.

Thank you for the opportunity to review the draft EA. Should you have any questions, please contact Keola Lindsey, Lead Advocate-Culture at (808) 594-1904 or keolal@oha.org.

'O wau iho nō,

Clyde W. Nāmu'o
Administrator

C: Lukela Ruddle, OHA Community Resource Coordinator- East Hawai'i

PLANNING
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June 22, 2007
2006-0012-001

Mr. Clyde W. Nāmu'o, Administrator
Office of Hawaiian Affairs
State of Hawai'i
711 Kapi'olani Blvd., Suite 500
Honolulu, HI 96813

Subject: Honomū Well Site Additions Project, South Hilo, Hawai'i
Draft Environmental Assessment

Dear Mr. Nāmu'o:

Thank you for your June 6, 2007 letter [your reference HRD07_655B] commenting on the Hawai'i County Department of Water Supply's *Draft Environmental Assessment* (*DEA*): *Honomū Well Site Additions Project.* We appreciate the time you and your staff spent reviewing the document and providing your thoughtful written comments.

We understand and support your Department's obligation to work toward the betterment of Hawaiians and ensure that State and County agencies uphold their constitutionally, statutorily and judicially mandated obligations to the native Hawaiian and Hawaiian people. While DWS does not expect to encounter unidentified cultural, historic, or burial sites during any phase of the proposed project, DWS asked us to assure you that it will require the contractor to undertake proper mitigation and consultation should there be an unanticipated find.

If you have any further questions, please call me at (808) 550-4483.

Sincerely,

Perry J. White

cc: Mr. Keith Okamoto, Department of Water Supply
Office of Environmental Quality Control
Mr. Greg Fukumitsu, TNWRE

Ward Plaza, Suite 330 • 210 Ward Avenue • Honolulu, Hawaii 96814-4012
Phone: 808 550-4483 • Fax: 808 550-4549 • www.psi-hi.com

Harry Kim
Mayor

Darryl J. Oliveira
Fire Chief

Glen P.I. Honda
Deputy Fire Chief

#4

County of Hawai'i
HAWAI'I FIRE DEPARTMENT

25 Aupuni Street • Suite 103 • Hilo, Hawai'i 96720
(808) 981-8394 • Fax (808) 981-2037

June 5, 2007

Mr. Perry White
Planning Solutions
210 Ward Avenue
Suite 330
Honolulu, Hawaii 96814

SUBJECT: Honomu Well Site Additions
Draft Environmental Assessment/Anticipated Finding of No Significant Impact

In regards to the above-mentioned draft environment assessment, we offer the following response:

Fire apparatus access roads shall be in accordance with UFC Section 10.207:

"Fire Apparatus Access Roads

"Sec. 10.207. (a) **General.** Fire apparatus access roads shall be provided and maintained in accordance with the provisions of this section.

"(b) **Where Required.** Fire apparatus access roads shall be required for every building hereafter constructed when any portion of an exterior wall of the first story is located more than 150 feet from fire department vehicle access as measured by an unobstructed route around the exterior of the building.

"**EXCEPTIONS:** 1. When buildings are completely protected with an approved automatic fire sprinkler system, the provisions of this section may be modified.

"2. When access roadways cannot be installed due to topography, waterways, nonnegotiable grades or other similar conditions, the chief may require additional fire protection as specified in Section 10.301 (b).

"3. When there are not more than two Group R, Division 3 or Group M Occupancies, the requirements of this section may be modified, provided, in the opinion of the chief, fire-fighting or rescue operations would not be impaired.

"More than one fire apparatus road may be required when it is determined by the chief that access by a single road may be impaired by vehicle congestion, condition of terrain, climatic conditions or other factors that could limit access.

"For high-piled combustible storage, see Section 81.109.

"(c) **Width.** The unobstructed width of a fire apparatus access road shall meet the requirements of the appropriate county jurisdiction.

"(d) **Vertical Clearance.** Fire apparatus access roads shall have an unobstructed vertical clearance of not less than 13 feet 6 inches.

"**EXCEPTION:** Upon approval vertical clearance may be reduced, provided such reduction does not impair access by fire apparatus and approved signs are installed and maintained indicating the established vertical clearance.

"(e) **Permissible Modifications.** Vertical clearances or widths required by this section may be increased when, in the opinion of the chief, vertical clearances or widths are not adequate to provide fire apparatus access.

"(f) **Surface.** Fire apparatus access roads shall be designed and maintained to support the imposed loads of fire apparatus and shall be provided with a surface so as to provide all-weather driving capabilities." (20 tons)

"(g) **Turning Radius.** The turning radius of a fire apparatus access road shall be as approved by the chief." (45 feet)

"(h) **Turnarounds.** All dead-end fire apparatus access roads in excess of 150 feet in length shall be provided with approved provisions for the turning around of fire apparatus.

"(i) **Bridges.** When a bridge is required to be used as access under this section, it shall be constructed and maintained in accordance with the applicable sections of the Building Code and using

designed live loading sufficient to carry the imposed loads of fire apparatus.

"(j) **Grade.** The gradient for a fire apparatus access road shall not exceed the maximum approved by the chief." (15%)

"(k) **Obstruction.** The required width of any fire apparatus access road shall not be obstructed in any manner, including parking of vehicles. Minimum required widths and clearances established under this section shall be maintained at all times.

"(l) **Signs.** When required by the fire chief, approved signs or other approved notices shall be provided and maintained for fire apparatus access roads to identify such roads and prohibit the obstruction thereof or both."

DARRYL OLIVEIRA
Fire Chief

PBE:lpc

PLANNING SOLUTIONS

June 22, 2007
2006-0012-001

Mr. Darryl Oliveira, Fire Chief
Hawai'i County Fire Department
25 Aupuni Street, Suite 103
Hilo, HI 96720

Subject: Honomū Well Site Additions Project, South Hilo, Hawai'i
Draft Environmental Assessment

Dear Chief Oliveira:

Thank you for your June 5, 2007 letter commenting on the Hawai'i County Department of Water Supply's *Draft Environmental Assessment* (*DEA*): *Honomū Well Site Additions Project.* We appreciate the time you and your staff spent reviewing the document and providing written comments.

We appreciate your summarizing the design requirements for fire apparatus access roads. The engineer for the proposed project has confirmed that the proposed control building is less than 150 feet from existing fire department vehicle access. Thus, it is our understanding based on the requirements outlined in your letter that the proposed project does not require a fire apparatus road.

If you have any further questions, please call me at (808) 550-4483.

Sincerely,

Perry J. White

cc: Mr. Keith Okamoto, Department of Water Supply
Office of Environmental Quality Control
Mr. Greg Fukumitsu, TNWRE

Ward Plaza, Suite 330 • 210 Ward Avenue • Honolulu, Hawaii 96814-4012
Phone: 808 550-4483 • Fax: 808 550-4549 • www.psi-hi.com

#5

LINDA LINGLE
GOVERNOR OF HAWAII

ALLAN A. SMITH
INTERIM CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

June 20, 2007

Planning Solutions
Ward Plaza, Suite 330
210 Ward Avenue
Honolulu, Hawaii 96814-4012

Attention: Mr. Perry White

Gentlemen:

Subject: Draft Environmental Assessment for Hawaii County, Department of Water Supply Honomu well site additions, Honomu, Hawaii Tax Map Key: (3) 2-8-13:55

Thank you for the opportunity to review and comment on the subject matter. The Department of Land and Natural Resources' (DLNR) Land Division distributed or made available a copy of your report pertaining to the subject matter to DLNR Divisions for their review and comment.

Other than the comments from Engineering Division, the Department of Land and Natural Resources has no other comments to offer on the subject matter. Should you have any questions, please feel free to call our office at 587-0433. Thank you.

Sincerely,

Russell Y. Tsuji
Administrator

LINDA LINGLE
GOVERNOR OF HAWAII

ALLAN A. SMITH
INTERIM CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

May 24, 2007

MEMORANDUM

TO: **DLNR Agencies:**
__Div. of Aquatic Resources
__Div. ~~of Boating & Ocean~~ Recreation
_x_ Engineering Division
__Div. of Forestry & Wildlife
__Div. of State Parks
_x_ Commission on Water Resource Management
__Office of Conservation & Coastal Lands
__Land Division – Hawaii District

FROM: Russell Y. Tsuji
SUBJECT: Draft Environmental Assessment for Honomu Well Site Additions
LOCATION: Honomu, Hawaii, Tax Map Key: (3) 2-8-13:55
APPLICANT: Planning Solutions on behalf of Department of Water Supply

Transmitted for your review and comment on the above referenced document. We would appreciate your comments on this document. Please submit any comments by June 15, 2007.

If no response is received by this date, we will assume your agency has no comments. If you have any questions about this request, please contact my office at 587-0433. Thank you.

Attachments

( ) We have no objections.
( ) We have no comments.
(✓) Comments are attached.

Signed: Eric T. Hirano
Date: 5/30/07

'07 MAY 24 AM 10:34 ENGINEERING

DEPARTMENT OF LAND AND NATURAL RESOURCES
ENGINEERING DIVISION

LD/RTsuji
REF: DEAforHonomuWellSiteAdditions
Hawaii.004

COMMENTS

( ) We confirm that the project site, according to the Flood Insurance Rate Map (FIRM), is located in Flood Zone ___.

(X) Please take note that the project site, according to the Flood Insurance Rate Map (FIRM), is located in an area of minimal tsunami inundation. The National Flood Insurance Program does not have any regulations for developments within this area.

( ) Please note that the correct Flood Zone Designation for the project site according to the Flood Insurance Rate Map (FIRM) is ___.

( ) Please note that the project must comply with the rules and regulations of the National Flood Insurance Program (NFIP) presented in Title 44 of the Code of Federal Regulations (44CFR), whenever development within a Special Flood Hazard Area is undertaken. If there are any questions, please contact the State NFIP Coordinator, Ms. Carol Tyau-Beam, of the Department of Land and Natural Resources, Engineering Division at (808) 587-0267.

Please be advised that 44CFR indicates the minimum standards set forth by the NFIP. Your Community's local flood ordinance may prove to be more restrictive and thus take precedence over the minimum NFIP standards. If there are questions regarding the local flood ordinances, please contact the applicable County NFIP Coordinators below:

( ) Mr. Robert Sumimoto at (808) 523-4254 or Mr. Mario Siu Li at (808) 523-4247 of the City and County of Honolulu, Department of Planning and Permitting.
( ) Mr. Kelly Gomes at (808) 961-8327 (Hilo) or Mr. Kiran Emler at (808) 327-3530 (Kona) of the County of Hawaii, Department of Public Works.
( ) Mr. Francis Cerizo at (808) 270-7771 of the County of Maui, Department of Planning.
( ) Mr. Mario Antonio at (808) 241-6620 of the County of Kauai, Department of Public Works.

( ) The applicant should include project water demands and infrastructure required to meet water demands. Please note that the implementation of any State-sponsored projects requiring water service from the Honolulu Board of Water Supply system must first obtain water allocation credits from the Engineering Division before it can receive a building permit and/or water meter.
( ) The applicant should provide the water demands and calculations to the Engineering Division so it can be included in the State Water Projects Plan Update.

( ) Additional Comments: _____

( ) Other: _____

Should you have any questions, please call Mr. Dennis Imada of the Planning Branch at 587-0257.

Signed: Eric T. Hirano
ERIC T. HIRANO, CHIEF ENGINEER
Date: 5/30/07

PLANNING
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June 22, 2007
2006-0012-001

Mr. Russell Y. Tsuji, Administrator
Land Division
Department of Land and Natural Resources
State of Hawai'i
P.O. Box 621
Honolulu, HI 96809

Subject: Honomū Well Site Additions Project, South Hilo, Hawai'i
Draft Environmental Assessment

Dear Mr. Tsuji:

Thank you for your June 20, 2007 letter concerning the Hawai'i County Department of Water Supply's *Draft Environmental Assessment* (*DEA*): *Honomū Well Site Additions Project.* We appreciate the time you and your staff spent reviewing the document and circulating it to DLNR's various Divisions for review and comment.

Our response to the comment provided by the DLNR Engineering Division is below. The comment is reproduced in italics before the response.

Comment 1:

Please take note that the project site, according to the Flood Insurance Rate Map (FIRM), is located in an area of minimal tsunami inundation. The National Flood Insurance Program does not have any regulations for developments within this area.

Response: Thank you for confirming that the project site is within an area of minimal tsunami inundation and is not regulated by the National Flood Insurance Program.

We understand that the Department of Land and Natural Resources has no further comments on the proposed project. Should you have any questions in the future, please call me at (808) 550-4483.

Sincerely,

Perry J. White

cc: Mr. Keith Okamoto, Department of Water Supply
Office of Environmental Quality Control
Mr. Greg Fukumitsu, TNWRE

Ward Plaza, Suite 330 • 210 Ward Avenue • Honolulu, Hawaii 96814-4012
Phone: 808 550-4483 • Fax: 808 550-4549 • www.psi-hi.com

#6

LINDA LINGLE
GOVERNOR OF HAWAII

CHIYOME L. FUKINO, M.D.
DIRECTOR OF HEALTH

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

In reply, please refer to:
EPO-07-112

June 20, 2007

Mr. Perry White
Planning Solutions
Ward Plaza
210 Ward Avenue, Suite 330
Honolulu, Hawaii 96814-4012

Mr. White:

SUBJECT: Draft Environmental Assessment (DEA) for Honomu Well Site Additions, South Hilo, Island of Hawaii, Hawaii
TMK: (3) 2-8-013: 055

Thank you for allowing us to review and comment on the subject application. The document was routed to the various branches of the Department of Health (DOH) Environmental Health Administration. We have the following Safe Drinking Water Branch and General comments.

Safe Drinking Water Branch

1. The DEA indicates that the project will include the development of a new source of potable water. Hawaii Administrative Rules, Chapter 11-20, section 11-20-29 requires that all new sources of drinking 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 which addressed the requirements set in section 11-20-29.

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

We would like to note that section 1.3.2 of the Final Environmental Assessment for the Honomu Well (No. 1) prepared by Planning Solutions, dated August 2002, was amended in response to similar comments.

If you should have any questions, please call Stuart Yamada of the Safe Drinking Water Branch at 586-4258.

General

We strongly recommend that you review all of the Standard Comments on our website: www.state.hi.us/health/environmental/env-planning/landuse/landuse.html. Any comments specifically applicable to this project should be adhered to.

If there are any questions about these comments please contact Jiacai Liu with the Environmental Planning Office at 586-4346.

Sincerely,

KELVIN H. SUNADA, MANAGER
Environmental Planning Office

c: EPO
SDWB
EH-Hawaii

PLANNING SOLUTIONS

June 29, 2007
2006-0012-001

Mr. Kelvin H. Sunada, Manager
Environmental Planning Office
Department of Health
State of Hawai'i
P.O. Box 3378
Honolulu, HI 96801-3378

Subject: Honomū Well Site Additions Project, South Hilo, Hawai'i
Draft Environmental Assessment

Dear Mr. Sunada:

Thank you for your June 20, 2007 letter [your reference EPO-07-112] commenting on the Hawai'i County Department of Water Supply's *Draft Environmental Assessment (DEA): Honomū Well Site Additions Project.* We appreciate the time you and your staff spent reviewing the document and routing it to the Department of Health Environmental Health Administration's various branches.

Item-by-item responses to your comments are provided below. For your convenience, we have reproduced each comment, along with the headings used in your letter, in italics before each response.

Safe Drinking Water Branch

Comment 1:

The DEA indicates that the project will include the development of a new source of potable water. Hawaii Administrative Rules, Chapter 11-20, section 11-20-29 requires that all new sources of drinking 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 which addressed the requirements set in section 11-20-29.

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

Response: Thank you for clarifying the reporting requirements for development of new potable water sources. The following paragraph has been added to Section 3.3 of the *Final EA* to make explicit these requirements for the development of the proposed Honomū Well #2:

"DWS will submit an engineering report to the State Department of Health Safe Drinking Water Branch (SDWB) that identifies all potential sources of contamination and alternative control measures applicable to Honomū Well #2. The report will be prepared by a licensed professional engineer, experienced in such fields as water resources, hydrogeology, water supply, or environmental engineering, and will address all the requirements set forth in Hawai'i Administrative Rules Section 11-20-29. Before the well is placed into service as part of the Honomū System, DWS will obtain approval from the SDWB, as required by these regulations."

Ward Plaza, Suite 330 • 210 Ward Avenue • Honolulu, Hawaii 96814-4012
Phone: 808 550-4483 • Fax: 808 550-4549 • www.psi-hi.com

General

Comment 3:

We strongly recommend that you review all of the Standard Comments on our website: www.state.hi.us/health/environmental/env-planning/landuse/landuse.html. Any comments specifically applicable to this project should be adhered to.

Response: Thank you for providing this information. DWS has reviewed your Department's Standard Comments and will comply with all those that are applicable to the proposed project.

If you have any further questions, please call me at (808) 550-4483.

Sincerely,

Perry J. White

cc: Mr. Keith Okamoto, Department of Water Supply
Office of Environmental Quality Control
Mr. Greg Fukumitsu, TNWRE

Harry Kim
Mayor

#7

Christopher J. Yuen
Director
Brad Kurokawa, ASLA LEED® AP
Deputy Director

County of Hawaii
PLANNING DEPARTMENT
101 Pauahi Street, Suite 3 • Hilo, Hawaii 96720-3043
(808) 961-8288 • FAX (808) 961-8742

June 20, 2007

Mr. Perry J. White
Planning Solutions
Ward Plaza, Suite 330
210 Ward Avenue
Honolulu HI 96814-4012

Dear Mr. White:

SUBJECT: Draft Environmental Assessment
Applicant: Department of Water Supply
Project: Honomu Well Site Additions
Tax Map Key: 2-8-13:55

This is to acknowledge receipt on May 24, 2007 of a copy of the Draft Environmental Assessment for the Honomu Well Site Additions.

The proposed additions consist of a 300,000 gallon reservoir, a second municipal well source and a single-story 672 square foot control building. The proposed improvement will eliminate the Honomu water system's dependency on the 'Akaka Falls Spring source.

We affirm that the State Land Use designation is Agricultural and the County Zoning is Agricultural (A-20a). According to the General Plan Land Use Pattern Allocation Guide Map, the subject parcel is designated Important Agricultural Land. It is not located with the County's Special Management Area.

We also affirm that although the project is a permitted use on the subject parcel, Plan Approval is required.

Other than the foregoing, we have no further comments to offer.

If you have questions, please feel free to contact Esther Imamura of our office at (808) 961-8288, extension 257.

Sincerely,

CHRISTOPHER J. YUEN
Planning Director

ETI:cd
P:\wpwin60\ETI\EAdraftPre-consul\White Honomu Well.doc

PLANNING SOLUTIONS

June 28, 2007
2006-0012-001

Mr. Christopher Yuen, Director
Planning Department
County of Hawai'i
101 Pauahi Street, Suite 3
Hilo, HI 96720-3043

Subject: Honomū Well Site Additions Project, South Hilo, Hawai'i
Draft Environmental Assessment

Dear Mr. Yuen:

Thank you for your June 20, 2007 letter regarding the Hawai'i County Department of Water Supply's *Draft Environmental Assessment* (*DEA*): *Honomū Well Site Additions Project.* We appreciate the time you and your staff spent reviewing the document and preparing your letter.

Thank you for confirming that the project site is in the Agricultural State Land Use District, the County Agricultural (A-20a) zoning district, and is not located within the County's Special Management Area. We also appreciate your confirmation that, while the proposed project is a permitted use on the subject parcel, Plan Approval is required. All of this is consistent with the information presented in the *DEA.*

We understand that your Department has no further comments to offer on the project at this time. If you have any questions in the future, please call me at (808) 550-4483.

Sincerely,

Perry J. White

cc: Mr. Keith Okamoto, Department of Water Supply
Office of Environmental Quality Control
Mr. Greg Fukumitsu, TNWRE

Ward Plaza, Suite 330 • 210 Ward Avenue • Honolulu, Hawaii 96814-4012
Phone: 808 550-4483 • Fax: 808 550-4549 • www.psi-hi.com

LINDA LINGLE
GOVERNOR

#8

RUSS K. SAITO
COMPTROLLER

BARBARA A. ANNIS
DEPUTY COMPTROLLER

(P)1150.7

STATE OF HAWAII
DEPARTMENT OF ACCOUNTING AND GENERAL SERVICES
P.O. BOX 119, HONOLULU, HAWAII 96810

JUN 2 7 2007

Mr. Perry J. White
Planning Solutions, Inc.
210 Ward Avenue, Suite 330
Honolulu, HI 96814

Dear Mr. White:

Subject: Honomu Well Site Additions
Draft Environmental Assessment / Anticipated Finding of No Significant Impact
South Hilo District, Island of Hawaii
TMK: 2-8-013:055

The project does not impact any of the Department of Accounting and General Services' projects or existing facilities and we have no comment to offer.

If you have any questions regarding the above, please have your staff call Mr. David DePonte of the Planning Branch at 586-0492.

Sincerely,

Don M Lau

Pw ERNEST Y. W. LAU
Public Works Administrator

DD:mo

c: Ms. Genevieve Salmonson, OEQC
Mr. Glenn Okada, Hawaii District Office, DAGS

PLANNING
SOLUTIONS

June 28, 2007
2006-0012-001

Mr. Ernest Y.W. Lau, Public Works Administrator
Department of Accounting and General Services
State of Hawai'i
P.O. Box 119
Honolulu, HI 96810

Subject: Honomū Well Site Additions Project, South Hilo, Hawai'i
Draft Environmental Assessment

Dear Mr. Lau:

Thank you for your June 27, 2007 letter regarding the Hawai'i County Department of Water Supply's *Draft Environmental Assessment* (*DEA*): *Honomū Well Site Additions Project.* We appreciate the time you and your staff spent reviewing the document and preparing your letter.

We appreciate your confirmation that the project will not impact any of the Department of Accounting and General Services' projects or existing facilities and we understand that your Department has no further comments to offer on the project at this time. If you have any questions in the future, please call me at (808) 550-4483.

Sincerely,

Perry J. White

cc: Mr. Keith Okamoto, Department of Water Supply
Office of Environmental Quality Control
Mr. Greg Fukumitsu, TNWRE

Ward Plaza, Suite 330 • 210 Ward Avenue • Honolulu, Hawaii 96814-4012
Phone: 808 550-4483 • Fax: 808 550-4549 • www.psi-hi.com

APPENDIX A HONOMŪ WELL #1 PUMP TEST DATA

Tom Nance Water
Resource Engineering

No. of pages: 12
Fax# 182 [961-8080]

Original ☑ will ☐ will not be mailed to you.

January 13, 2005
05/011 (01-78)

FAXED
JAN 13 2005

MEMORANDUM

TO: Keith Okamoto - DWS

FROM: Tom Nance

SUBJECT: Pump Test Results for the Honomu Well, DWS Job No. 98-705

Introduction

This memo and its attachments present the results of pump testing of the Honomu well conducted from January 4 to 7, 2005. It also includes a brief narrative of the well's construction and hydrologic circumstances.

Construction of the Well and Groundwater Conditions Encountered

Upon completion of the pilot borehole to 572 feet below ground (54 feet below sea level), the static water level as measured on August 25, 2004 was at 25.8 feet (MSL). There was a substantial amount of water pouring into the borehole above this level. It started with noticeable seepage at 90-foot depth and by 125 feet, the flow was substantial enough to completely obscure the video log. A conductivity and temperature profile through the water column showed a relatively constant specific conductance of about 155 micro-Siemens per centimeter (µS/cm) from top to bottom and a temperature of 72.8° F. at the top and 72.6° F. at the bottom (Figure 1). The profile represents a mix of the cascading water down the borehole with the groundwater at the bottom of the well. I suspect it is more representative of the cascading water having displaced the groundwater in the borehole than the actual groundwater characteristics.

Following casing installation and grouting of the upper 450 feet of the annulus, the static water level was measured at 13.4 feet (MSL) on December 14, 2004. In effect, the cascade of water down the open borehole had caused a build-up over the aquifer's static level of more than 12 feet. It was an initial indication that the formations penetrated to a depth of 54 feet below mean sea level were not very permeable.

In mid-December, the test pump was installed and development of the well was undertaken. Initially, water would not reach the ground surface before the pump broke suction. Eventually, the well was developed to the point would produce up to 400 GPM, but the drawdown was over 40 feet and would not stabilize. Because of this, the pump was removed and 80 feet of open hole below the bottom of the casing (to a depth of 122 feet below sea level) was drilled. After 30 feet of drilling, the return water was noticeably cooler and after 50 feet, better yielding layers were encountered. There was no significant change in the water level as the well was deepened. Figure 2 is an as-built schematic of the well's final dimensions. Figure 3 is a profile through the water column of the well after it was deepened. Several characteristics shown on these two drawings should be noted:

680 Ala Moana Boulevard, Suite 406 • Honolulu, Hawaii 96813-5411 • Phone: (808) 537-1141 • Fax: (808) 538-7757 • E-mail: office@tnwre.com

- Although the well was drilled to 132 feet below sea level, not all of the cuttings were removed. As shown on Figure 3, the bottom was found to be 126 feet below sea level on January 11, 2005.
- The pump test (described subsequently) and the two conductivity and temperature profiles suggest three distinctly different waters were encountered in the well: 72° F. water which was cascading down the open borehole; 68° F. water in the aquifer tapped when the well ended 54 feet below sea level; and 63° F. water from the more permeable formations which comprise the lower half of the open borehole.

Step-Drawdown Pump Test

After the pump was reinstalled and the well was developed and chlorinated, a step-drawdown test was run on the morning of January 4, 2005. Four different rates from 269 to 513 GPM were run for 30 minutes each. Drawdown at each rate quickly stabilized and recovery at the end of the test was rapid. Figure 4 depicts the recorded water level and pumping rate before, during, and following the 2-hour test. Figure 5 presents an interpretation of these results based on the data points and curve fitting method described below. The additional drilling produced a well of substantial hydraulic capacity. At 500 GPM, for example, the drawdown is just 2.5 feet.

Step-Drawdown Data*

Flowrate (GPM)	Drawdown (Feet)
269	1.06
345	1.51
455	2.20
513	2.56

*Drawdown from transducer data.

Curve Fitting Method

$S = AQ^2 + BQ$

where: S = Drawdown (Feet)
Q = Flowrate (GPM)
A&B Regression Constants
$A = 4.305 \times 10^{-6}$
$B = 2.833 \times 10^{-3}$
$r^2 = 0.984$

Constant Rate Pump Test

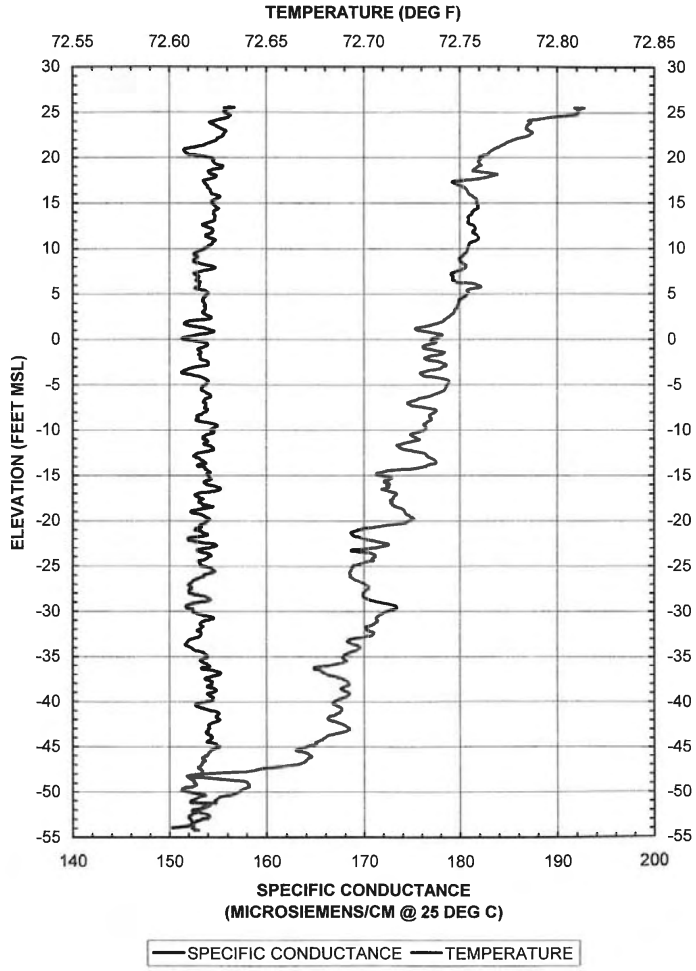
Based on the robust static water level, exceptionally low salinity and temperature, and rapid drawdown and recovery, it was decided to run the constant rate test at 450 GPM for 96 hours, the CWRM's minimum duration for municipal wells. The test was started at 12:30 p.m. on January 4th. Unfortunately, the three fan belts on the generator gave out after just 62 hours and 50 minutes of pumping, about 33 hours short of the CWRM's minimum duration. Pumpage averaged 456 GPM over this period. The drawdown and water quality had been essentially constant during the test, so starting the 96-hour test over was not going to produce any new information. After I explained the situation to Glenn Bauer of the CWRM staff, he agreed that another test was not necessary and indicated that he would send an email to that effect to other staff members. I have followed this up with a memo to Ryan Imata of the CWRM staff with a copy to you.

Figure 6 presents the recorded water level and measured hourly pumping rates during the constant rate test. Figure 7 portrays the hourly specific conductance readings over the same period and Figure 8 is a similar presentation of the temperature. Results and conclusions of this testing can be summarized as follows:

- The static water level is about 13.2 to 13.4 feet above the mean sea level survey datum and there is a semi-diurnal water level variation on the order of 0.1 to 0.2 feet due to barometric pressure variations.
- The pumped water is very fresh and quite cool. Specific conductance is about 130 microsiemens/cm, chlorides are about 6 MG/L, and the temperature is about 62° F. Our chloride results (on Table 1) came out a little lower than the 9 MG/L results of the DWS laboratory.
- Drawdown in response to pumping quickly stabilizes and remains constant thereafter. Similarly, the recovery following pumping is very rapid.
- The well has substantial hydraulic capacity. Although a 250 GPM pump is intended for the initial installation, the well could easily accommodate a 500 GPM pump.

Attachments

FIGURE 1. PROFILE THROUGH THE WATER COLUMN OF THE PILOT HOLE ON AUGUST 25, 2004



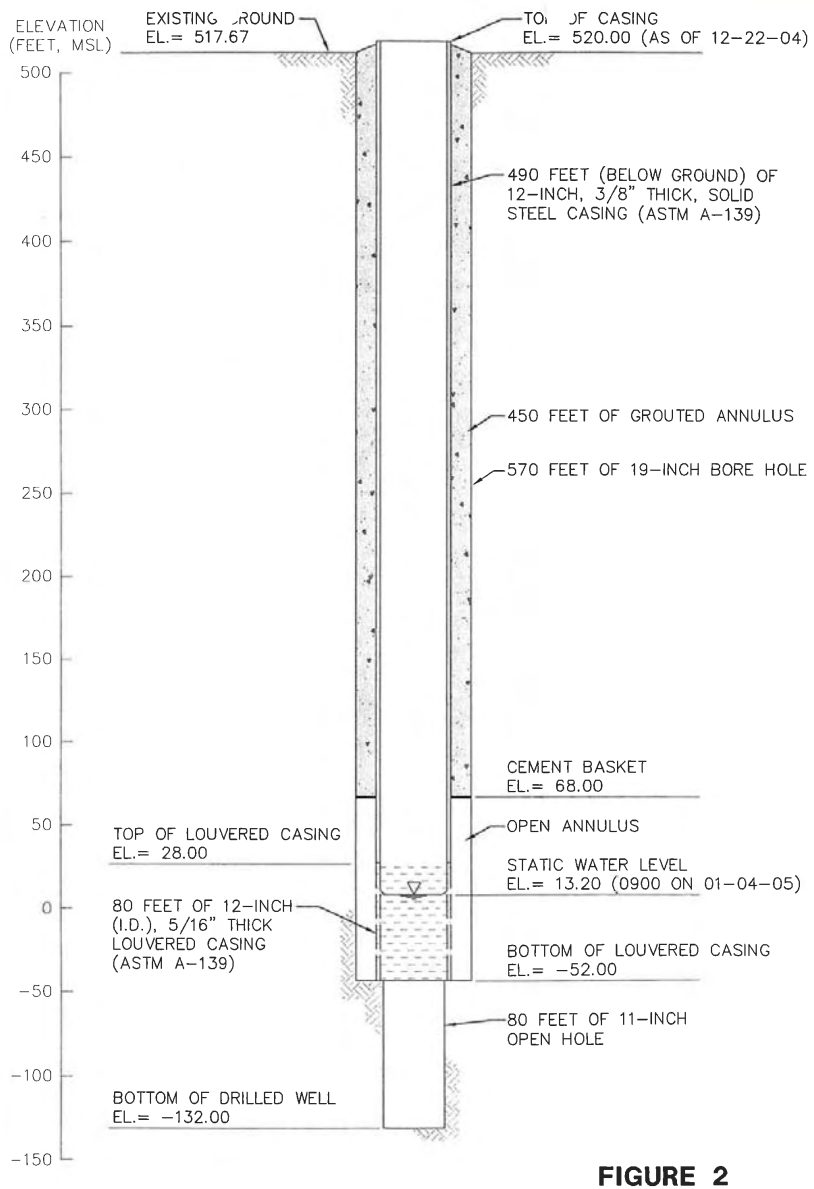
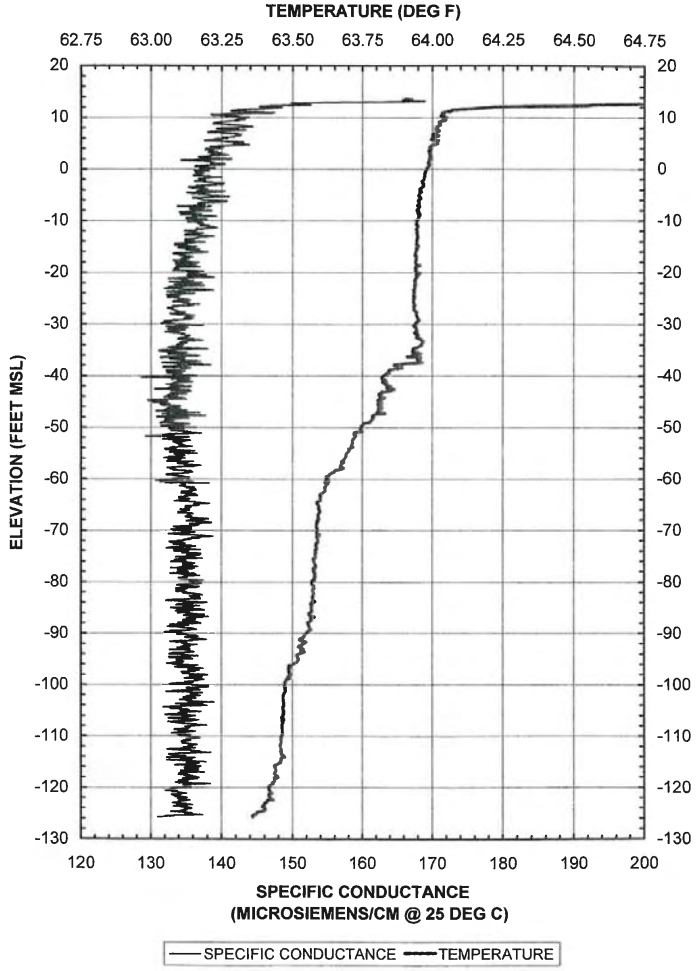


FIGURE 2
AS-BUILT CROSS SECTION OF THE HONOMU WELL

FIGURE 3. PROFILE THROUGH THE WATER COLUMN OF THE COMPLETED WELL ON JANUARY 11, 2005



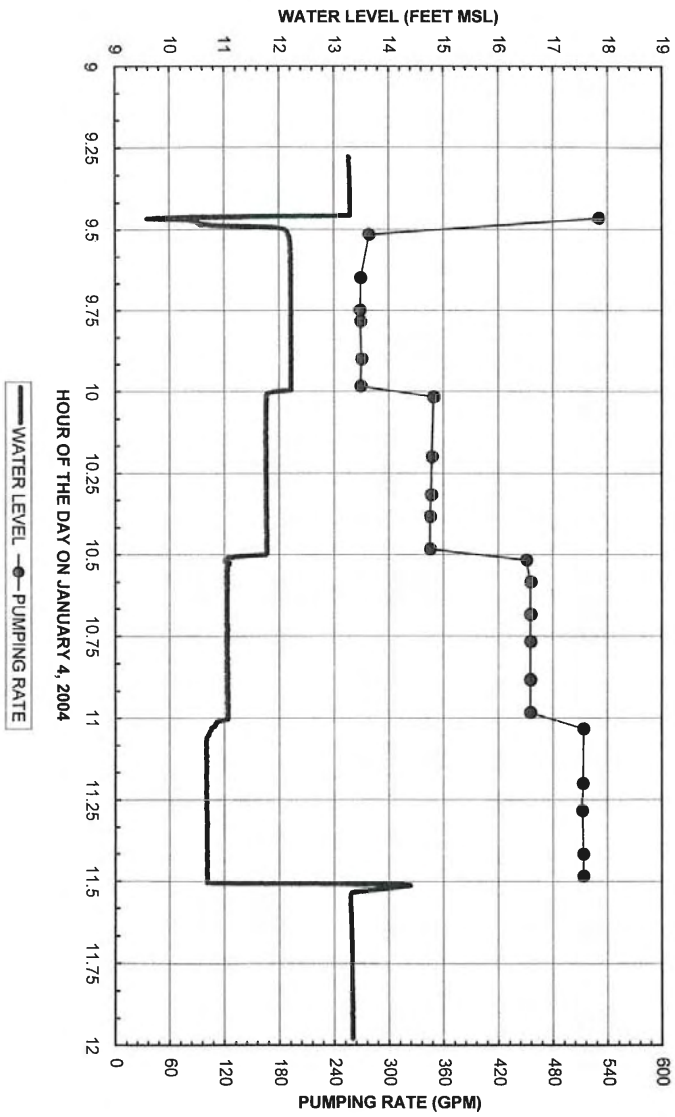


FIGURE 4. WATER LEVEL AND PUMPING RATE DURING THE JANUARY 4, 2005 STEP-DRAWDOWN TEST

FIGURE 5. JANUARY 4, 2004 STEP-DRAWDOWN TEST RESULTS

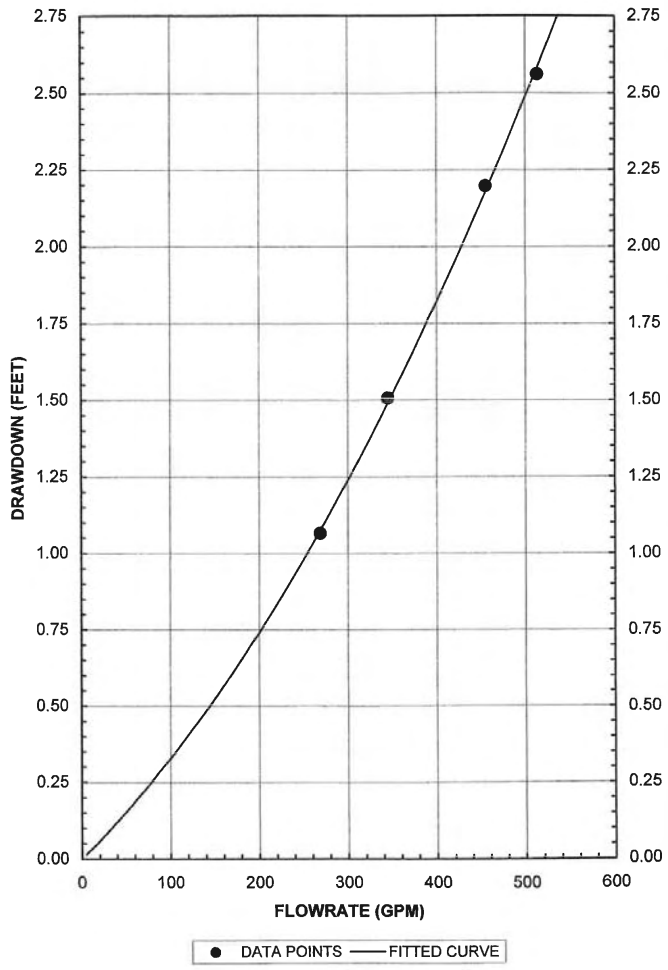


FIGURE 7. SPECIFIC CONDUCTANCE OF THE PUMPED WATER
DURING THE CONSTANT RATE TEST

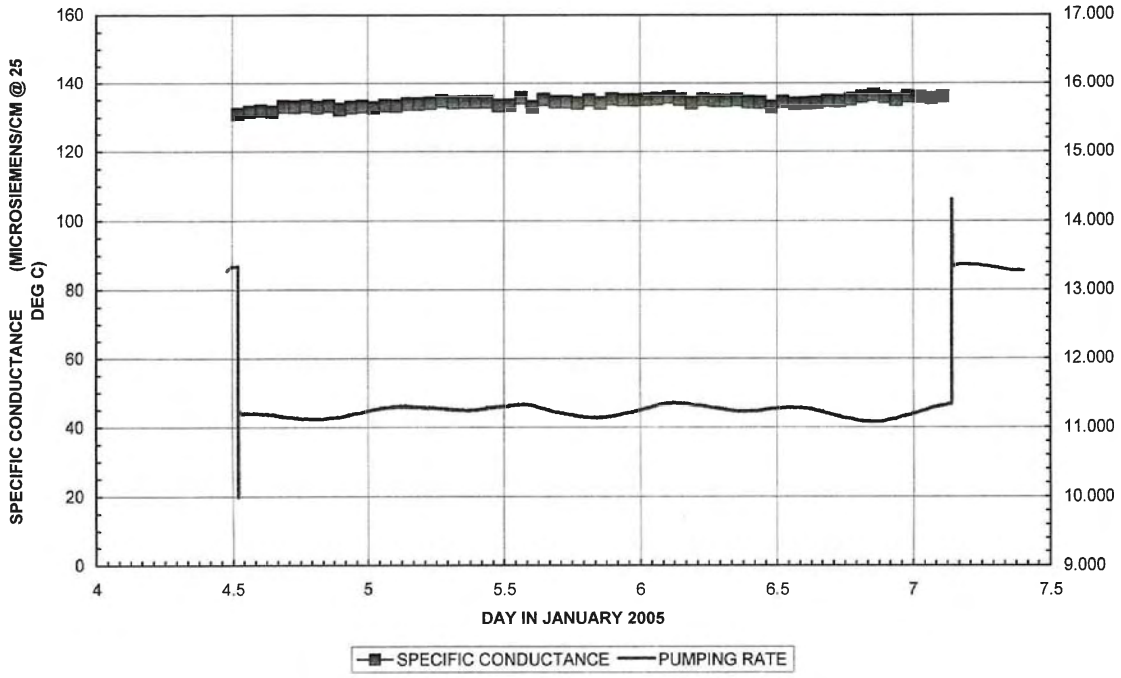
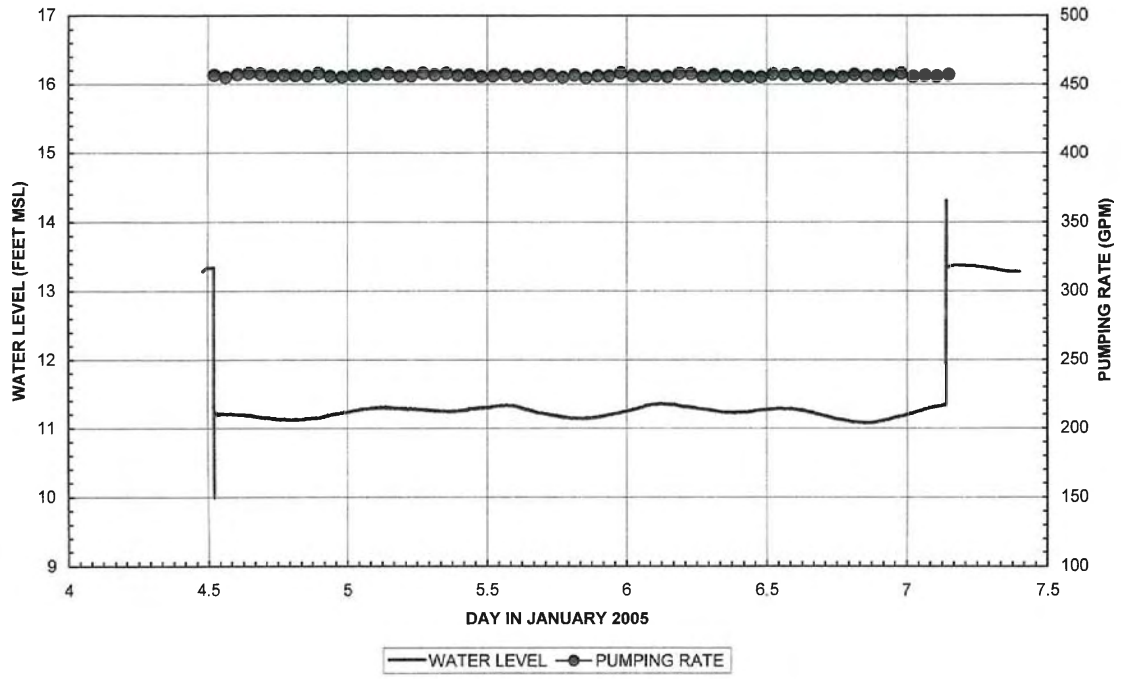


FIGURE 6. WATER LEVEL AND PUMPING RATE DURING
THE 63-HOUR CONSTANT RATE PUMP TEST



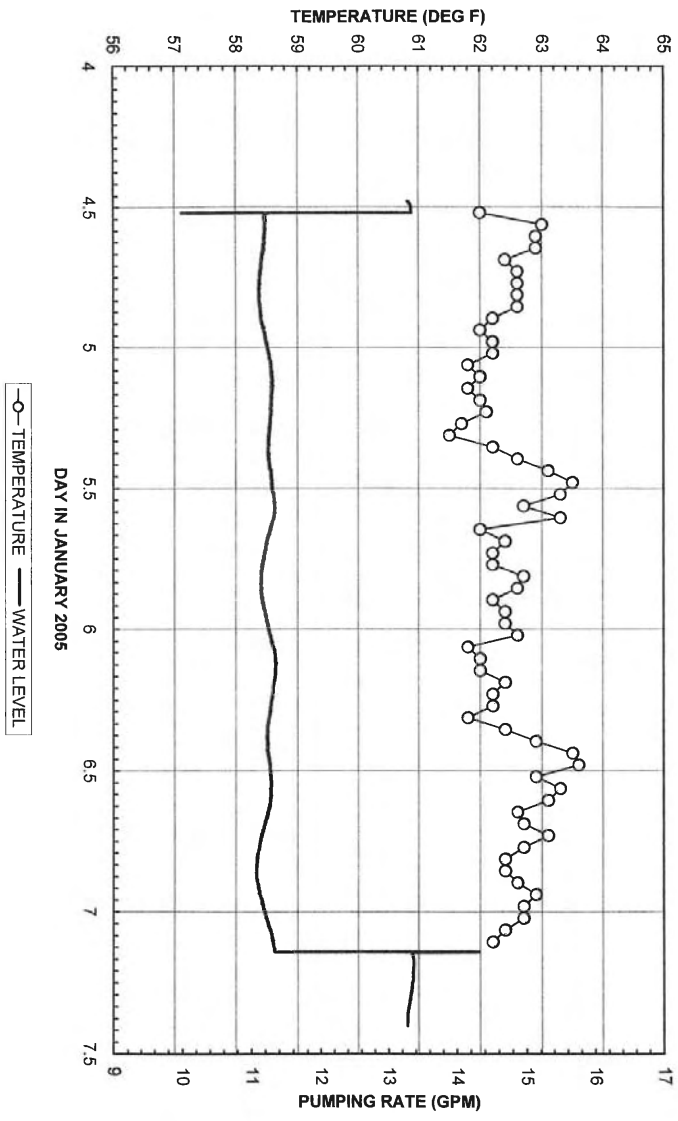


FIGURE 8. TEMEPRATURE OF THE PUMPED WATER DURING THE CONSTANT RATE TEST

Table 1

Specific Conductance and Chlorides of Samples Collected During the Step-Drawdown and Constant Rate Pump Tests

Pump Test	Day in January	Time	Specific Conductance (µS/cm @ 25° C.)	Chlorides (MG/L)
Step-Drawdown	4	1000	127.8	5.9
	4	1030	129.3	6.0
	4	1100	128.3	5.9
	4	1130	128.7	6.0
Constant Rate	4	1240	128.3	5.9
	5	0000	130.1	6.1
	5	1200	130.9	6.2
	6	0000	131.2	6.2
	6	1200	131.7	6.3
	7	0000	131.9	6.3
	7	0230	131.9	6.3

Notes: 1. Specific conductance measured with a HACH Sension 5 meter calibrated to a 84 µS/cm standard.
2. Chlorides by mercuric nitrate filtration in the TNWRE office.

APPENDIX B HONOMŪ WELL #1 WATER QUALITY DATA

MWH Laboratories

MONTGOMERY WATSON HARZA

CHAIN OF CUSTODY RECORD

140807

750 Royal Oaks, Suite 100
Monrovia, California 91016
Phone: (626) 386-1100
(800) 566-5227
Fax: (626) 386-1101

MWH LABS USE ONLY:

LOGIN COMMENTS: * PROCEED WITH NITRATE NITRATE TESTING.

SAMPLES CHECKED AGAINST COC BY: WD

SAMPLES LOGGED IN BY: J.S

SAMPLE TEMP WHEN REC'D AT LAB: 4°C (Compliance: 4 +/- 2°C)

SAMPLES REC'D DAY OF COLLECTION? ☐ (check for yes)

CONDITION OF BLUE ICE: FROZEN ___ PARTIALLY FROZEN ___ THAWED ___

TO BE COMPLETED BY SAMPLER:

COMPANY, UTILITY or PROJECT:	SYSTEM #:	COMPLIANCE SAMPLES - Requires state forms [X]	NON-COMPLIANCE SAMPLES [ ]
DEPT. OF WATER SUPPLY, COUNTY OF HAWAII		Type of samples (circle one): ROUTINE SPECIAL CONFIRMATION	REGULATION INVOLVED: SDWA (eg. SDWA, Phase V, NPDES, FDA,...)
MWH LABS CLIENT CODE: HAWAII	P.O.# / JOB # / PROJECT : CONTRACT 2002-02	*SEE ATTACHED BOTTLE ORDER FOR ANALYSES* [ ] (check for yes), *OR*	
SAMPLER PRINTED NAME AND SIGNATURE: D. NISHIMORI	TAT requested: rush by adv notice only STD ___ 1 week ___ 3 day ___ 2 day ___ 1 day ___	LIST ANALYSES REQUIRED BELOW (enter number of bottles sent for each test for each sample	

SAMPLE DATE	SAMPLE TIME	STATION # or LOCATION	SITE NAME OR SAMPLE I.D.	MATRIX*	GRAB	COMP		SAMPLER COMMENTS
1/5/05	1045	WELL HEAD	HONOMU WELL		X		KMX NEW SOURCE TESTING	

...ur Internal Billing Reference

FedEx Tracking Number 839121381737

...nder's ...me MAE KISE Phone 808 961-8670

Company DEPARTMENT OF WATER SUPPLY

Address 25 AUPUNI ST Dept./Floor/Suite/Room

...y HILO State HI ZIP 96720

*** MATRIX TYPES:** **RSW** = Raw Surface Water; **RGW** = Raw Ground Water; **CFW** = Chlor(am)inated Finished Water; **FW** = Other Finished Water; **CWW** = Chlorinated Waste Water; **WW** = Other Waste Water; **BW** = Bottled Water; **SW** = Storm Water; **SO** = Soil; **SL** = Sludge

	SIGNATURE	PRINT NAME	COMPANY/TITLE	DATE	TIME
~~RELINQUISHED BY:~~	NOT TO SCALE	DUANE NISHIMORI	HAWAII COUNTY DEPT. OF WATER SUPPLY	1/5/05	1100
~~RECEIVED BY:~~		DUANE NISHIMORI	HAWAII COUNTY DEPT OF WATER SUPPLY	1/6/05	0845
RELINQUISHED BY:					
RECEIVED BY:		M. JAMES	MWH	1.7.5	945
RELINQUISHED BY:					
RECEIVED BY:					

C-O-C# ____

PAGE ____ OF ____

MWH Laboratories
A Division of MWH Americas, Inc.

750 Royal Oaks Drive, Suite 100
Monrovia, California 91016-6228
Tel: (626) 386-1100
Fax: (626) 386-1101
1 800 566 LABS (1 800 566 5227)

Laboratory Report

for

Hawaii Department of Water Supply (Hilo)
25 Aupuni St.
Hilo , HI 96720
Attention: Mae Kise
Fax: (808) 961-8759

ACCREDITED IN ACCORDANCE WITH nelac 01114CA

Report#: 140807
PHASEV

DATE OF ISSUE
JAN 2 4 2005
MWH LABORATORIES

JCH Jim Hein
Project Manager

Laboratory certifies that the test results meet all **NELAC** requirements unless noted in the Comments section or the Case Narrative. Following the cover page are Comments, QC Report, QC Summary, Data Report, Hits Report, totaling 40 page[s].

MWH Laboratories, a Divsion of MWH Americas, Inc.
750 Royal Oaks Drive Suite 100
Monrovia CA 91016 (626) 386-1100 FAX (626) 386-1124

Bottle Order for Hawaii Dept. of Water Supply (Hilo)

Page 1

Jim Hein — Your MWL Project Manager
(626) 386-1149 — Direct Phone/Voice Mail

Client Code HAWAII — HI New Source — ProjectName
Project Code PHASEV
PO# / Job#

Group #
Date Sampled
Date Received
1

BO# 28759

Sampler: please return this paper with your samples

Created by JCH

Order Date 11/26/04
Date Needed by Client 12/02/06
Date Samples to Arrive at MWL 12/07/04

Ship Sample Kits to	Send Report to	Billing Address
Hawaii Dept. of Water Supply	Hawaii Dept. of Water Supply	Hawaii Dept. of Water Supply
Micro Lab	25 Aupuni St.	Micro Lab
889 Leilani St.	Hilo, HI 96720	889 Leilani St.
Hilo, HI 96720		Hilo, HI 96720
ATTN: Mae Kise	ATTN: Mae Kise	
PHONE: (808) 961-8670	PHONE: (808) 961-8670	
	FAX: (808) 961-8759	

# of Samples	Tests	Qteline#	Bottles-Qty for each sample, type & preservative if any	UN DOT #
1	@DIQUAT	264-01	1 1L amber poly/ no preservative	
1	@EDB-DBC	264-02	4 40ml amber glass vials/ no preservative	
1	@VOASDWA	264-04	4 40ml amber glass vials+4 drops of 1:1 HCL	UN 1789
1	@525REG	264-05	2 1L amber glass+ 2 ml of 6N HCl.	UN 1789
1	@ML531	264-06	2 40ml amber vials+1ml MCAA	UN 1750
1	@ML515.4	264-08	2 125ml amber glass+ 7 mg SULFITE xls	
1	@ML505	264-09	4 40ml amber vial + 3-4 mg thiosulfate XLS	
1	ENDOTHAL	264-20	1 250ml amber glass/no preservative	
1	GLYPHOS	264-22	1 125ml amber glass/no preservative	
1	D1613EDD	264-27	2 1L amber glass / no preservative	UN 1789
1	CNDW	264-16	1 125ml poly +1 ml NaOH (25%)+3 scoops Ascorbic Acid	UN 1824
1	#MET-HI, CA		1 250ml poly acid rinsed+2 ml HNO3 (18%)	UN2031
1	NO2-N, NO3, F, ALK, EC, PH		2 500 mL poly/ no preservative	
1	@VOASDWA TB		TRIP BLANK: 2 40ml amb glass+4 drops 1:1 HCL+DI Water	UN 1789

Comments

SHIPPING:

Label cooler:
NEW SOURCE - SDWA Sampling

Code | Status | Date Shipped | Via | Tracking # | # of Coolers | Prepared By

SCANNED

MWH Laboratories
750 Royal Oaks Drive, Monrovia, CA 91016
PHONE: 626-386-1100/FAX: 626-386-1101

ACKNOWLEDGMENT OF SAMPLES RECEIVED

Hawaii Department of Water Supply (Hilo)
25 Aupuni St.
Hilo, HI 96720
Attn: Mae Kise
Phone: (808) 961-8670

Customer Code: HAWAII
PO#: Contract 2002-02
Group#: 140807
Project#: PHASEV
Proj Mgr: Jim Hein
Phone: (626) 386-1189

The following samples were received from you on **01/07/05**. They have been scheduled for the tests listed beside each sample. If this information is incorrect, please contact your service representative. Thank you for using MWH Laboratories.

Sample#	Sample Id / Tests Scheduled	Matrix	Sample Date
2501070050	WELL HEAD HONOMU WELL @525REG @DIQUAT @EDB-DBC @ML505 @ML515.4 @ML531 @VOASDWA ALK AS-MS BA-MS BE-MS CA CD-MS CNDW CR-MS CU-MS D1613EDD EC ENDOTHAL F GLYPHOS HG NI-MS NO2-N NO3 P PB-MS PH SB-MS SE-MS T TL-MS	Water	05-jan-2005 10:15:00
2501070057	TRAVEL BLANK-ANALYZE @VOASDWA	Water	05-jan-2005 00:00:00

Test Acronym Description

Test Acronym	Description
@525REG	525 Semivolatiles by GC/MS
@DIQUAT	Diquat and Paraquat
@EDB-DBC	EDB and DBCP by GC-ECD
@ML505	Pesticides by EPA 505
@ML515.4	Herbicides by 515.4
@ML531	Aldicarbs
@VOASDWA	Regulated VOCs plus Lists 1&3
ALK	Alkalinity in CaCO3 units
AS-MS	Arsenic, Total, ICAP/MS
BA-MS	Barium, Total, ICAP/MS
BE-MS	Beryllium, Total, ICAP/MS
CA	Calcium, Total, ICAP
CD-MS	Cadmium, Total, ICAP/MS
CNDW	Cyanide
CR-MS	Chromium, Total, ICAP/MS
CU-MS	Copper, Total, ICAP/MS
D1613EDD	2,3,7,8-Tcdd 1613 Drinking Wtr
EC	Specific Conductance
ENDOTHAL	Endothall
F	Fluoride

Hawaii Department of Water Supply (Hilo)
25 Aupuni St.
Hilo, HI 96720
Attn: Mae Kise
Phone: (808) 961-8670

Customer Code: HAWAII
PO#: Contract 2002-02
Group#: 140807
Project#: PHASEV
Proj Mgr: Jim Hein
Phone: (626) 386-1189

Test Acronym Description

Test Acronym	Description
GLYPHOS	Glyphosate
HG	Mercury
NI-MS	Nickel, Total, ICAP/MS
NO2-N	Nitrite, Nitrogen by IC
NO3	Nitrate as Nitrogen by IC
P	Metals sample pH
PB-MS	Lead, Total, ICAP/MS
PH	Lab pH
SB-MS	Antimony, Total, ICAP/MS
SE-MS	Selenium, Total, ICAP/MS
T	Metals Turbidity
TL-MS	Thallium, Total, ICAP/MS

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Report
Comments
#140807

Group Comments

Analytical results for TCDD Dioxin by 1613B are submitted by Pace Analytical Services, Minneapolis, MN. NELAP01155CA

(QC Ref#: 2501070050)
Test: Nitrite, Nitrogen by IC (ML/EPA 300.0)
H3- Sample was received and analyzed past holding time.
Test: Nitrate as Nitrogen by IC (ML/EPA 300.0)
H3- Sample was received and analyzed past holding time.

(QC Ref#: 257723)
Test: Selenium, Total, ICAP/MS (ML/EPA 200.8)
QC Type: MS
Recovery above method limits. Default to LCS1, LCS2.
QC Type: MSD
Recovery above method limits. Default to LCS1, LCS2.

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Laboratory
Hits Report
#140807

Hawaii Department of Water Supply
(Hilo)
Mae Kise
25 Aupuni St.
Hilo , HI 96720

Samples Received

07-jan-2005 13:55:00

Analyzed	Sample#	Sample ID	Result	Federal MCL	UNITS	MRL
	2501070050	**WELL HEAD HONOMU WELL**				
01/11/05	Alkalinity in CaCO3 units		53.1		mg/l	2.0
01/10/05	Calcium, Total, ICAP		9.3		mg/l	1.0
01/10/05	Chromium, Total, ICAP/MS		2.5	100	ug/l	1.0
01/07/05	Fluoride		0.11	4	mg/l	0.050
01/07/05	Lab pH		8.2	6.5-8.5	Units	0.0010
01/07/05	Nitrate as Nitrogen by IC		0.36	10	mg/l	0.10
01/10/05	Specific Conductance		129		umho/cm	2.0
	2501070057	**TRAVEL BLANK-ANALYZE**				

SUMMARY OF POSITIVE DATA ONLY.

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Laboratory
Data Report
#140807

Hawaii Department of Water Supply
(Hilo)
Mae Kise
25 Aupuni St.
Hilo , HI 96720

Samples Received

01/07/05

Prepared	Analyzed	QC Ref#	Method	Analyte	Result	Units	MRL	Dilution
WELL HEAD HONOMU WELL (2501070050) Sampled on 01/05/05 10:15								
	01/11/05 11:49	257813	(S 2320B/E310.1)	Alkalinity in CaCO3 units	53.1	mg/l	2.0	1
	01/10/05 17:47	257721	(ML/EPA 200.8)	Arsenic, Total, ICAP/MS	ND	ug/l	1.0	1
	01/10/05 17:47	257734	(ML/EPA 200.8)	Barium, Total, ICAP/MS	ND	ug/l	2.0	1
	01/10/05 17:47	257720	(ML/EPA 200.8)	Beryllium, Total, ICAP/MS	ND	ug/l	1.0	1
	01/10/05 13:52	257688	(ML/EPA 200.7)	Calcium, Total, ICAP	9.3	mg/l	1.0	1
	01/10/05 17:47	257729	(ML/EPA 200.8)	Cadmium, Total, ICAP/MS	ND	ug/l	0.50	1
	01/10/05 00:00	257679	(SM4500CN-F)	Cyanide	ND	mg/l	0.025	1
	01/10/05 17:47	257743	(ML/EPA 200.8)	Chromium, Total, ICAP/MS	2.5	ug/l	1.0	1
	01/10/05 17:47	257716	(ML/EPA 200.8)	Copper, Total, ICAP/MS	ND	ug/l	2.0	1
01/17/05	01/18/05 00:00		(EPA 1613)	2,3,7,8-Tcdd 1613 Drinking Wtr	ND	pg/l	5.0	1
	01/10/05 14:41	257696	(ML/S2510B)	Specific Conductance	129	umho/cm	2.0	1
01/12/05	01/14/05 00:00	258828	(ML/EPA 548.1)	Endothall	ND	ug/l	5.0	1
	01/07/05 00:00	257597	(SM4500F-C)	Fluoride	0.11	mg/l	0.050	1
	01/13/05 00:00	258146	(ML/EPA 547)	Glyphosate	ND	ug/l	6.0	1
	01/12/05 15:32	257988	(ML/EPA 245.1)	Mercury	ND	ug/l	0.20	1
	01/10/05 17:47	257714	(ML/EPA 200.8)	Nickel, Total, ICAP/MS	ND	ug/l	5.0	1
	01/07/05 18:25	257656	(ML/EPA 300.0)	Nitrite, Nitrogen by IC	ND(H3)	mg/l	0.10	1
	01/07/05 18:25	257658	(ML/EPA 300.0)	Nitrate as Nitrogen by IC	0.36(H3)	mg/l	0.10	1
	01/10/05 17:47	257738	(ML/EPA 200.8)	Lead, Total, ICAP/MS	ND	ug/l	0.50	1
	01/07/05 00:00	257599	(4500HB/ E 150)	Lab pH	8.2	Units	0.0010	1
	01/10/05 17:47	257732	(ML/EPA 200.8)	Antimony, Total, ICAP/MS	ND	ug/l	1.0	1
	01/10/05 17:47	257723	(ML/EPA 200.8)	Selenium, Total, ICAP/MS	ND	ug/l	5.0	1
	01/10/05 17:47	257736	(ML/EPA 200.8)	Thallium, Total, ICAP/MS	ND	ug/l	1.0	1
525 Semivolatiles by GC/MS								
01/12/05	01/14/05 16:30	258672	(ML/EPA 525.2)	Atrazine	ND	ug/l	0.050	1
01/12/05	01/14/05 16:30	258672	(ML/EPA 525.2)	Benzo(a)pyrene	ND	ug/l	0.020	1
01/12/05	01/14/05 16:30	258672	(ML/EPA 525.2)	Di(2-Ethylhexyl)phthalate	ND	ug/l	0.60	1
01/12/05	01/14/05 16:30	258672	(ML/EPA 525.2)	Di-(2-Ethylhexyl)adipate	ND	ug/l	0.60	1
01/12/05	01/14/05 16:30	258672	(ML/EPA 525.2)	Hexachlorobenzene	ND	ug/l	0.050	1
01/12/05	01/14/05 16:30	258672	(ML/EPA 525.2)	Hexachlorocyclopentadiene	ND	ug/l	0.050	1

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Hawaii Department of Water Supply
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(continued)

Prepared	Analyzed	QC Ref#	Method	Analyte	Result	Units	MRL	Dilution
01/12/05	01/14/05 16:30	258672	(ML/EPA 525.2)	Molinate	ND	ug/l	0.20	1
01/12/05	01/14/05 16:30	258672	(ML/EPA 525.2)	Simazine	ND	ug/l	0.050	1
01/12/05	01/14/05 16:30	258672	(ML/EPA 525.2)	Thiobencarb	ND	ug/l	0.20	1
			(Surrogate)	1.3-dimethyl-2-nbenz(70-130)	102	% Rec		
			(Surrogate)	Perylene-d12(70-130)	103	% Rec		
			(Surrogate)	Triphenylphosphate(70-130)	107	% Rec		
			Aldicarbs					
	01/11/05 00:00	257853	(ML/EPA 531.1)	3-Hydroxycarbofuran	ND	ug/l	2.0	1
	01/11/05 00:00	257853	(ML/EPA 531.1)	Aldicarb (Temik)	ND	ug/l	0.50	1
	01/11/05 00:00	257853	(ML/EPA 531.1)	Aldicarb sulfone	ND	ug/l	0.70	1
	01/11/05 00:00	257853	(ML/EPA 531.1)	Aldicarb sulfoxide	ND	ug/l	0.50	1
	01/11/05 00:00	257853	(ML/EPA 531.1)	Baygon	ND	ug/l	2.0	1
	01/11/05 00:00	257853	(ML/EPA 531.1)	Carbofuran (Furadan)	ND	ug/l	0.90	1
	01/11/05 00:00	257853	(ML/EPA 531.1)	Carbaryl	ND	ug/l	2.0	1
	01/11/05 00:00	257853	(ML/EPA 531.1)	Methiocarb	ND	ug/l	2.0	1
	01/11/05 00:00	257853	(ML/EPA 531.1)	Methomyl	ND	ug/l	1.0	1
	01/11/05 00:00	257853	(ML/EPA 531.1)	Oxamyl (Vydate)	ND	ug/l	2.0	1
			(Surrogate)	BDMC(70-130)	101	% Rec		
			Diquat and Paraquat					
01/11/05	01/18/05 00:00	258597	(ML/EPA 549.2)	Diquat	ND	ug/l	0.40	1
01/11/05	01/18/05 00:00	258597	(ML/EPA 549.2)	Paraquat	ND	ug/l	2.0	1
			EDB and DBCP by GC-ECD					
01/10/05	01/10/05 23:32	258142	(ML/EPA 504.1)	Dibromochloropropane (DBCP)	ND	ug/l	0.010	1
01/10/05	01/10/05 23:32	258142	(ML/EPA 504.1)	Ethylene Dibromide (EDB)	ND	ug/l	0.010	1
			Herbicides by 515.3					
			(Surrogate)	2.4-DCPAA (70-130)	96	% Rec		
			Herbicides by 515.4					
01/10/05	01/11/05 19:07	257863	(ML/EPA 515.4)	2,4,5-T	ND	ug/l	0.20	1
01/10/05	01/11/05 19:07	257863	(ML/EPA 515.4)	2,4,5-TP (Silvex)	ND	ug/l	0.20	1
01/10/05	01/11/05 19:07	257863	(ML/EPA 515.4)	2,4-D	ND	ug/l	0.10	1

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Hawaii Department of Water Supply
(Hilo)
(continued)

Prepared	Analyzed	QC Ref#	Method	Analyte	Result	Units	MRL	Dilution
01/10/05	01/11/05 19:07	257863	(ML/EPA 515.4)	2,4-DB	ND	ug/l	2.0	1
01/10/05	01/11/05 19:07	257863	(ML/EPA 515.4)	Dichlorprop	ND	ug/l	0.50	1
01/10/05	01/11/05 19:07	257863	(ML/EPA 515.4)	Acifluorfen	ND	ug/l	0.20	1
01/10/05	01/11/05 19:07	257863	(ML/EPA 515.4)	Bentazon	ND	ug/l	0.50	1
01/10/05	01/11/05 19:07	257863	(ML/EPA 515.4)	Dalapon	ND	ug/l	1.0	1
01/10/05	01/11/05 19:07	257863	(ML/EPA 515.4)	3,5-Dichlorobenzoic acid	ND	ug/l	0.50	1
01/10/05	01/11/05 19:07	257863	(ML/EPA 515.4)	Tot DCPA Mono&Diacid Degradate	ND	ug/l	1.0	1
01/10/05	01/11/05 19:07	257863	(ML/EPA 515.4)	Dicamba	ND	ug/l	0.080	1
01/10/05	01/11/05 19:07	257863	(ML/EPA 515.4)	Dinoseb	ND	ug/l	0.20	1
01/10/05	01/11/05 19:07	257863	(ML/EPA 515.4)	Pentachlorophenol	ND	ug/l	0.040	1
01/10/05	01/11/05 19:07	257863	(ML/EPA 515.4)	Picloram	ND	ug/l	0.10	1
			(Surrogate)	2.4-DCPAA (70-130)	96	% Rec		
			(Surrogate)	4.4-Dibrombiphenyl(60-140)	114	% Rec		
			Pesticides by EPA 505					
01/11/05	01/11/05 18:45	258049	(ML/EPA 505)	PCB 1016 Aroclor	ND	ug/l	0.070	1
01/11/05	01/11/05 18:45	258049	(ML/EPA 505)	PCB 1221 Aroclor	ND	ug/l	0.10	1
01/11/05	01/11/05 18:45	258049	(ML/EPA 505)	PCB 1232 Aroclor	ND	ug/l	0.10	1
01/11/05	01/11/05 18:45	258049	(ML/EPA 505)	PCB 1242 Aroclor	ND	ug/l	0.10	1
01/11/05	01/11/05 18:45	258049	(ML/EPA 505)	PCB 1248 Aroclor	ND	ug/l	0.10	1
01/11/05	01/11/05 18:45	258049	(ML/EPA 505)	PCB 1254 Aroclor	ND	ug/l	0.10	1
01/11/05	01/11/05 18:45	258049	(ML/EPA 505)	PCB 1260 Aroclor	ND	ug/l	0.10	1
01/11/05	01/11/05 18:45	258049	(ML/EPA 505)	Alachlor (Alanex)	ND	ug/l	0.050	1
01/11/05	01/11/05 18:45	258049	(ML/EPA 505)	Aldrin	ND	ug/l	0.010	1
01/11/05	01/11/05 18:45	258049	(ML/EPA 505)	Chlordane	ND	ug/l	0.10	1
01/11/05	01/11/05 18:45	258049	(ML/EPA 505)	Dieldrin	ND	ug/l	0.010	1
01/11/05	01/11/05 18:45	258049	(ML/EPA 505)	Endrin	ND	ug/l	0.010	1
01/11/05	01/11/05 18:45	258049	(ML/EPA 505)	Heptachlor	ND	ug/l	0.010	1
01/11/05	01/11/05 18:45	258049	(ML/EPA 505)	Heptachlor Epoxide	ND	ug/l	0.010	1
01/11/05	01/11/05 18:45	258049	(ML/EPA 505)	Lindane (gamma-BHC)	ND	ug/l	0.010	1
01/11/05	01/11/05 18:45	258049	(ML/EPA 505)	Methoxychlor	ND	ug/l	0.050	1
01/11/05	01/11/05 18:45	258049	(ML/EPA 505)	Total PCBs	ND	ug/l	0.070	1
01/11/05	01/11/05 18:45	258049	(ML/EPA 505)	Toxaphene	ND	ug/l	0.50	1

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Laboratory
Data Report
#140807

Hawaii Department of Water Supply
(Hilo)
(continued)

Regulated VOCs plus Lists 1&3

Prepared	Analyzed	QC Ref#	Method	Analyte	Result	Units	MRL	Dilution
	01/07/05 00:00	257811	(ML/EPA 524.2)	1,1,1,2-Tetrachloroethane	ND	ug/l	0.50	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	1,1,1-Trichloroethane	ND	ug/l	0.50	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	1,1,2,2-Tetrachloroethane	ND	ug/l	0.50	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	1,1,2-Trichloroethane	ND	ug/l	0.50	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	1,1-Dichloroethane	ND	ug/l	0.50	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	1,1-Dichloroethylene	ND	ug/l	0.50	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	1,1-Dichloropropene	ND	ug/l	0.50	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	1,2,3-Trichlorobenzene	ND	ug/l	0.50	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	1,2,3-Trichloropropane	ND	ug/l	0.50	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	1,2,4-Trichlorobenzene	ND	ug/l	0.50	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	1,2,4-Trimethylbenzene	ND	ug/l	0.50	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	1,2-Dichloroethane	ND	ug/l	0.50	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	1,2-Dichloropropane	ND	ug/l	0.50	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	1,3,5-Trimethylbenzene	ND	ug/l	0.50	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	1,3-Dichloropropane	ND	ug/l	0.50	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	p-Dichlorobenzene (1,4-DCB)	ND	ug/l	0.50	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	2,2-Dichloropropane	ND	ug/l	0.50	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	2-Butanone (MEK)	ND	ug/l	5.0	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	o-Chlorotoluene	ND	ug/l	0.50	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	p-Chlorotoluene	ND	ug/l	0.50	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	4-Methyl-2-Pentanone (MIBK)	ND	ug/l	5.0	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	Benzene	ND	ug/l	0.50	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	Bromobenzene	ND	ug/l	0.50	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	Bromomethane (Methyl Bromide)	ND	ug/l	0.50	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	Bromoethane	ND	ug/l	0.50	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	cis-1,2-Dichloroethylene	ND	ug/l	0.50	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	Chlorobenzene	ND	ug/l	0.50	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	Carbon Tetrachloride	ND	ug/l	0.50	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	cis-1,3-Dichloropropene	ND	ug/l	0.50	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	Bromoform	ND	ug/l	0.50	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	Chloroform (Trichloromethane)	ND	ug/l	0.50	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	Bromochloromethane	ND	ug/l	0.50	1

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Laboratory
Data Report
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Hawaii Department of Water Supply
(Hilo)
(continued)

Prepared	Analyzed	QC Ref#	Method	Analyte	Result	Units	MRL	Dilution
	01/07/05 00:00	257811	(ML/EPA 524.2)	Chloroethane	ND	ug/l	0.50	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	Chloromethane(Methyl Chloride)	ND	ug/l	0.50	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	Chlorodibromomethane	ND	ug/l	0.50	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	Dibromomethane	ND	ug/l	0.50	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	Bromodichloromethane	ND	ug/l	0.50	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	Dichloromethane	ND	ug/l	0.50	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	Di-isopropyl ether	ND	ug/l	3.0	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	Ethyl benzene	ND	ug/l	0.50	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	Dichlorodifluoromethane	ND	ug/l	0.50	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	Fluorotrichloromethane-Freon11	ND	ug/l	0.50	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	Hexachlorobutadiene	ND	ug/l	0.50	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	Isopropylbenzene	ND	ug/l	0.50	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	m-Dichlorobenzene (1,3-DCB)	ND	ug/l	0.50	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	m,p-Xylenes	ND	ug/l	0.50	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	Methyl Tert-butyl ether (MTBE)	ND	ug/l	1.0	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	Naphthalene	ND	ug/l	0.50	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	n-Butylbenzene	ND	ug/l	0.50	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	n-Propylbenzene	ND	ug/l	0.50	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	o-Xylene	ND	ug/l	0.50	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	o-Dichlorobenzene (1,2-DCB)	ND	ug/l	0.50	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	Tetrachloroethylene (PCE)	ND	ug/l	0.50	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	p-Isopropyltoluene	ND	ug/l	0.50	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	sec-Butylbenzene	ND	ug/l	0.50	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	Styrene	ND	ug/l	0.50	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	trans-1,2-Dichloroethylene	ND	ug/l	0.50	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	tert-amyl Methyl Ether	ND	ug/l	3.0	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	tert-Butyl Ethyl Ether	ND	ug/l	3.0	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	tert-Butylbenzene	ND	ug/l	0.50	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	Trichloroethylene (TCE)	ND	ug/l	0.50	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	Trichlorotrifluoroethane(Freon	ND	ug/l	0.50	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	trans-1,3-Dichloropropene	ND	ug/l	0.50	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	Toluene	ND	ug/l	0.50	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	Total 1,3-Dichloropropene	ND	ug/l	0.50	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	Total THM	ND	ug/l	0.50	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	Total xylenes	ND	ug/l	0.50	1

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Hawaii Department of Water Supply
(Hilo)
(continued)

Prepared	Analyzed	QC Ref#	Method	Analyte	Result	Units	MRL	Dilution
	01/07/05 00:00	257811	(ML/EPA 524.2)	Vinyl chloride (VC)	ND	ug/l	0.30	1
			(Surrogate)	1.2-Dichloroethane-d4(70-130)	104	% Rec		
			(Surrogate)	4-Bromofluorobenzene(70-130)	97	% Rec		
			(Surrogate)	Toluene-d8(70-130)	99	% Rec		

TRAVEL BLANK-ANALYZE (2501070057) **Sampled on 01/05/05 00:00**

Regulated VOCs plus Lists 1&3

	01/07/05 00:00	257811	(ML/EPA 524.2)	1,1,1,2-Tetrachloroethane	ND	ug/l	0.50	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	1,1,1-Trichloroethane	ND	ug/l	0.50	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	1,1,2,2-Tetrachloroethane	ND	ug/l	0.50	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	1,1,2-Trichloroethane	ND	ug/l	0.50	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	1,1-Dichloroethane	ND	ug/l	0.50	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	1,1-Dichloroethylene	ND	ug/l	0.50	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	1,1-Dichloropropene	ND	ug/l	0.50	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	1,2,3-Trichlorobenzene	ND	ug/l	0.50	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	1,2,3-Trichloropropane	ND	ug/l	0.50	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	1,2,4-Trichlorobenzene	ND	ug/l	0.50	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	1,2,4-Trimethylbenzene	ND	ug/l	0.50	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	1,2-Dichloroethane	ND	ug/l	0.50	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	1,2-Dichloropropane	ND	ug/l	0.50	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	1,3,5-Trimethylbenzene	ND	ug/l	0.50	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	1,3-Dichloropropane	ND	ug/l	0.50	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	p-Dichlorobenzene (1,4-DCB)	ND	ug/l	0.50	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	2,2-Dichloropropane	ND	ug/l	0.50	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	2-Butanone (MEK)	ND	ug/l	5.0	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	o-Chlorotoluene	ND	ug/l	0.50	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	p-Chlorotoluene	ND	ug/l	0.50	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	4-Methyl-2-Pentanone (MIBK)	ND	ug/l	5.0	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	Benzene	ND	ug/l	0.50	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	Bromobenzene	ND	ug/l	0.50	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	Bromomethane (Methyl Bromide)	ND	ug/l	0.50	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	Bromoethane	ND	ug/l	0.50	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	cis-1,2-Dichloroethylene	ND	ug/l	0.50	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	Chlorobenzene	ND	ug/l	0.50	1

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Data Report
#140807

Hawaii Department of Water Supply
(Hilo)
(continued)

Prepared	Analyzed	QC Ref#	Method	Analyte	Result	Units	MRL	Dilution
	01/07/05 00:00	257811	(ML/EPA 524.2)	Carbon Tetrachloride	ND	ug/l	0.50	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	cis-1,3-Dichloropropene	ND	ug/l	0.50	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	Bromoform	ND	ug/l	0.50	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	Chloroform (Trichloromethane)	ND	ug/l	0.50	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	Bromochloromethane	ND	ug/l	0.50	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	Chloroethane	ND	ug/l	0.50	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	Chloromethane(Methyl Chloride)	ND	ug/l	0.50	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	Chlorodibromomethane	ND	ug/l	0.50	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	Dibromomethane	ND	ug/l	0.50	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	Bromodichloromethane	ND	ug/l	0.50	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	Dichloromethane	ND	ug/l	0.50	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	Di-isopropyl ether	ND	ug/l	3.0	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	Ethyl benzene	ND	ug/l	0.50	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	Dichlorodifluoromethane	ND	ug/l	0.50	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	Fluorotrichloromethane-Freon11	ND	ug/l	0.50	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	Hexachlorobutadiene	ND	ug/l	0.50	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	Isopropylbenzene	ND	ug/l	0.50	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	m-Dichlorobenzene (1,3-DCB)	ND	ug/l	0.50	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	m,p-Xylenes	ND	ug/l	0.50	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	Methyl Tert-butyl ether (MTBE)	ND	ug/l	1.0	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	Naphthalene	ND	ug/l	0.50	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	n-Butylbenzene	ND	ug/l	0.50	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	n-Propylbenzene	ND	ug/l	0.50	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	o-Xylene	ND	ug/l	0.50	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	o-Dichlorobenzene (1,2-DCB)	ND	ug/l	0.50	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	Tetrachloroethylene (PCE)	ND	ug/l	0.50	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	p-Isopropyltoluene	ND	ug/l	0.50	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	sec-Butylbenzene	ND	ug/l	0.50	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	Styrene	ND	ug/l	0.50	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	trans-1,2-Dichloroethylene	ND	ug/l	0.50	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	tert-amyl Methyl Ether	ND	ug/l	3.0	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	tert-Butyl Ethyl Ether	ND	ug/l	3.0	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	tert-Butylbenzene	ND	ug/l	0.50	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	Trichloroethylene (TCE)	ND	ug/l	0.50	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	Trichlorotrifluoroethane(Freon	ND	ug/l	0.50	1

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Data Report
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Hawaii Department of Water Supply
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(continued)

Prepared	Analyzed	QC Ref#	Method	Analyte	Result	Units	MRL	Dilution
	01/07/05 00:00	257811	(ML/EPA 524.2)	trans-1,3-Dichloropropene	ND	ug/l	0.50	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	Toluene	ND	ug/l	0.50	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	Total 1,3-Dichloropropene	ND	ug/l	0.50	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	Total THM	ND	ug/l	0.50	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	Total xylenes	ND	ug/l	0.50	1
	01/07/05 00:00	257811	(ML/EPA 524.2)	Vinyl chloride (VC)	ND	ug/l	0.30	1
			(Surrogate)	1.2-Dichloroethane-d4(70-130)	108	% Rec		
			(Surrogate)	4-Bromofluorobenzene(70-130)	94	% Rec		
			(Surrogate)	Toluene-d8(70-130)	97	% Rec		

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Laboratory
QC Summary
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Hawaii Department of Water Supply
(Hilo)

QC Ref #257597 - Fluoride **Analysis Date: 01/07/2005**

2501070050 WELL HEAD HONOMU WELL

QC Ref #257599 - Lab pH **Analysis Date: 01/07/2005**

2501070050 WELL HEAD HONOMU WELL

QC Ref #257656 - Nitrite, Nitrogen by IC **Analysis Date: 01/07/2005**

2501070050 WELL HEAD HONOMU WELL

QC Ref #257658 - Nitrate as Nitrogen by IC **Analysis Date: 01/07/2005**

2501070050 WELL HEAD HONOMU WELL

QC Ref #257679 - Cyanide **Analysis Date: 01/10/2005**

2501070050 WELL HEAD HONOMU WELL

QC Ref #257688 - Calcium, Total, ICAP **Analysis Date: 01/10/2005**

2501070050 WELL HEAD HONOMU WELL

QC Ref #257696 - Specific Conductance **Analysis Date: 01/10/2005**

2501070050 WELL HEAD HONOMU WELL

QC Ref #257714 - Nickel, Total, ICAP/MS **Analysis Date: 01/10/2005**

2501070050 WELL HEAD HONOMU WELL

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Hawaii Department of Water Supply
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(continued)

QC Ref #257716 - Copper, Total, ICAP/MS **Analysis Date: 01/10/2005**

2501070050 WELL HEAD HONOMU WELL

QC Ref #257720 - Beryllium, Total, ICAP/MS **Analysis Date: 01/10/2005**

2501070050 WELL HEAD HONOMU WELL

QC Ref #257721 - Arsenic, Total, ICAP/MS **Analysis Date: 01/10/2005**

2501070050 WELL HEAD HONOMU WELL

QC Ref #257723 - Selenium, Total, ICAP/MS **Analysis Date: 01/10/2005**

2501070050 WELL HEAD HONOMU WELL

QC Ref #257729 - Cadmium, Total, ICAP/MS **Analysis Date: 01/10/2005**

2501070050 WELL HEAD HONOMU WELL

QC Ref #257732 - Antimony, Total, ICAP/MS **Analysis Date: 01/10/2005**

2501070050 WELL HEAD HONOMU WELL

QC Ref #257734 - Barium, Total, ICAP/MS **Analysis Date: 01/10/2005**

2501070050 WELL HEAD HONOMU WELL

QC Ref #257736 - Thallium, Total, ICAP/MS **Analysis Date: 01/10/2005**

2501070050 WELL HEAD HONOMU WELL

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Hawaii Department of Water Supply
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(continued)

QC Ref #257738 - Lead, Total, ICAP/MS **Analysis Date: 01/10/2005**

2501070050 WELL HEAD HONOMU WELL

QC Ref #257743 - Chromium, Total, ICAP/MS **Analysis Date: 01/10/2005**

2501070050 WELL HEAD HONOMU WELL

QC Ref #257811 - Regulated VOCs plus Lists 1&3 **Analysis Date: 01/07/2005**

2501070050 WELL HEAD HONOMU WELL
2501070057 TRAVEL BLANK-ANALYZE

QC Ref #257813 - Alkalinity in CaCO3 units **Analysis Date: 01/11/2005**

2501070050 WELL HEAD HONOMU WELL

QC Ref #257853 - Aldicarbs **Analysis Date: 01/11/2005**

2501070050 WELL HEAD HONOMU WELL

QC Ref #257863 - Herbicides by 515.4 **Analysis Date: 01/11/2005**

2501070050 WELL HEAD HONOMU WELL

QC Ref #257988 - Mercury **Analysis Date: 01/12/2005**

2501070050 WELL HEAD HONOMU WELL

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QC Ref #258049 - Pesticides by EPA 505 **Analysis Date: 01/11/2005**

2501070050 WELL HEAD HONOMU WELL

QC Ref #258142 - EDB and DBCP by GC-ECD **Analysis Date: 01/10/2005**

2501070050 WELL HEAD HONOMU WELL

QC Ref #258146 - Glyphosate **Analysis Date: 01/13/2005**

2501070050 WELL HEAD HONOMU WELL

QC Ref #258597 - Diquat and Paraquat **Analysis Date: 01/18/2005**

2501070050 WELL HEAD HONOMU WELL

QC Ref #258672 - 525 Semivolatiles by GC/MS **Analysis Date: 01/14/2005**

2501070050 WELL HEAD HONOMU WELL

QC Ref #258828 - Endothall **Analysis Date: 01/14/2005**

2501070050 WELL HEAD HONOMU WELL

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QC Ref #257597 Fluoride

QC	Analyte	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPD (%)
MS	Spiked sample	Lab # 24	01060002	MGL		(0-0)	
LCS1	Fluoride	1.00	1.01	MGL	101.0	(90-110)	
LCS2	Fluoride	1.00	1.02	MGL	102.0	(90-110)	0.99
MBLK	Fluoride	ND	<0.050	MGL			
MS	Fluoride	1.00	1.03	MGL	103.0	(80-120)	
MSD	Fluoride	1.00	1.03	MGL	103.0	(80-120)	0.00
MS_2ND	Fluoride	1.00	1.01	MGL	101.0	(80-120)	
RPD_LCS	Fluoride	101.000	102.000	MGL	1.0	(0-10)	
RPD_MS	Fluoride	103.000	103.000	MGL	0.0	(0-20)	

QC Ref #257599 Lab pH

QC	Analyte	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPD (%)
DUP	Lab pH	7.7	7.7	UNIT		(0-20)	0.0

QC Ref #257656 Nitrite, Nitrogen by IC

QC	Analyte	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPD (%)
LCS1	Nitrite, Nitrogen by IC	1.0	0.979	MGL	97.9	(90-110)	
LCS2	Nitrite, Nitrogen by IC	1.0	0.995	MGL	99.5	(90-110)	1.6
MBLK	Nitrite, Nitrogen by IC	ND	<0.10	MGL			
MS	Nitrite, Nitrogen by IC	1.0	1.04	MGL	104.0	(80-120)	
MSD	Nitrite, Nitrogen by IC	1.0	1.04	MGL	104.0	(80-120)	0.00

Spikes which exceed Limits and Method Blanks with positive results are highlighted by Underlining. Criteria for MS and DUP are advisory only, batch control is based on LCS. Criteria for duplicates are advisory only, unless otherwise specified in the method.

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QC Ref #257658 Nitrate as Nitrogen by IC

QC	Analyte	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPD (%)
LCS1	Nitrate as Nitrogen by IC	2.5	2.46	MGL	98.4	(90-110)	
LCS2	Nitrate as Nitrogen by IC	2.5	2.44	MGL	97.6	(90-110)	0.82
MBLK	Nitrate as Nitrogen by IC	ND	<0.10	MGL			
MS	Nitrate as Nitrogen by IC	2.5	2.38	MGL	95.2	(80-120)	
MSD	Nitrate as Nitrogen by IC	2.5	2.38	MGL	95.2	(80-120)	0.00

QC Ref #257679 Cyanide

QC	Analyte	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPD (%)
MS	Spiked sample	Lab # 24	01060040	MGL		(0-0)	
LCS1	Cyanide	0.10	0.091	MGL	91.0	(80-120)	
MBLK	Cyanide	ND	<0.025	MGL			
MS	Cyanide	0.10	0.084	MGL	84.0	(80-120)	
MSD	Cyanide	0.10	0.085	MGL	85.0	(80-120)	1.2

QC Ref #257688 Calcium, Total, ICAP

QC	Analyte	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPD (%)
LCS1	Calcium, Total, ICAP	50	50.5	MGL	101.0	(85-115)	
LCS2	Calcium, Total, ICAP	50	50.8	MGL	101.6	(85-115)	0.59
MBLK	Calcium, Total, ICAP	ND	<1.0	MGL			
MS	Calcium, Total, ICAP	50	50.4	MGL	100.8	(70-130)	
MSD	Calcium, Total, ICAP	50	50.1	MGL	100.2	(70-130)	0.60

Spikes which exceed Limits and Method Blanks with positive results are highlighted by Underlining.
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QC Ref #257696 Specific Conductance

QC	Analyte	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPD (%)
DUP	Specific Conductance	25900	26200	UMHO		(0-20)	1.2

QC Ref #257714 Nickel, Total, ICAP/MS

QC	Analyte	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPD (%)
AASPKSMP	Spiked sample	Lab # 24	01070150	UGL		(0-0)	
LCS1	Nickel, Total, ICAP/MS	50	48.2	UGL	96.4	(85-115)	
LCS2	Nickel, Total, ICAP/MS	50	48	UGL	96.0	(85-115)	0.42
MBLK	Nickel, Total, ICAP/MS	ND	<5.0	UGL			
MS	Nickel, Total, ICAP/MS	50	49.6	UGL	99.2	(70-130)	
MSD	Nickel, Total, ICAP/MS	50	50.3	UGL	100.6	(70-130)	1.4

QC Ref #257716 Copper, Total, ICAP/MS

QC	Analyte	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPD (%)
AASPKSMP	Spiked sample	Lab # 24	01070150	UGL		(0-0)	
LCS1	Copper, Total, ICAP/MS	100	99.2	UGL	99.2	(85-115)	
LCS2	Copper, Total, ICAP/MS	100	99.3	UGL	99.3	(85-115)	0.10
MBLK	Copper, Total, ICAP/MS	ND	<2.0	UGL			
MS	Copper, Total, ICAP/MS	100	98.4	UGL	98.4	(70-130)	
MSD	Copper, Total, ICAP/MS	100	101	UGL	101.0	(70-130)	2.6

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QC Ref #257720 Beryllium, Total, ICAP/MS

QC	Analyte	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPD (%)
AASPKSMP	Spiked sample	Lab # 24	01070150	UGL		(0-0)	
LCS1	Beryllium, Total, ICAP/MS	5.00	5.15	UGL	103.0	(85-115)	
LCS2	Beryllium, Total, ICAP/MS	5.00	5.05	UGL	101.0	(85-115)	2.0
MBLK	Beryllium, Total, ICAP/MS	ND	<1.0	UGL			
MS	Beryllium, Total, ICAP/MS	5.00	5.33	UGL	106.6	(85-115)	
MSD	Beryllium, Total, ICAP/MS	5.00	5.23	UGL	104.6	(85-115)	1.9

QC Ref #257721 Arsenic, Total, ICAP/MS

QC	Analyte	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPD (%)
AASPKSMP	Spiked sample	Lab # 24	01070150	UGL		(0-0)	
LCS1	Arsenic, Total, ICAP/MS	20	20	UGL	100.0	(85-115)	
LCS2	Arsenic, Total, ICAP/MS	20	20.2	UGL	101.0	(85-115)	1.00
MBLK	Arsenic, Total, ICAP/MS	ND	<1.0	UGL			
MS	Arsenic, Total, ICAP/MS	20	24.4	UGL	122.0	(70-130)	
MSD	Arsenic, Total, ICAP/MS	20	24.5	UGL	122.5	(70-130)	0.41

QC Ref #257723 Selenium, Total, ICAP/MS

QC	Analyte	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPD (%)
AASPKSMP	Spiked sample	Lab # 24	01070150	UGL		(0-0)	
LCS1	Selenium, Total, ICAP/MS	20	21.1	UGL	105.5	(85-115)	
LCS2	Selenium, Total, ICAP/MS	20	21	UGL	105.0	(85-115)	0.48
MBLK	Selenium, Total, ICAP/MS	ND	<5.0	UGL			
MS	Selenium, Total, ICAP/MS	20	27.1	UGL	135.5	(70-130)	
MSD	Selenium, Total, ICAP/MS	20	27.5	UGL	137.5	(70-130)	1.5

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QC Ref #257729 Cadmium, Total, ICAP/MS

QC	Analyte	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPD (%)
AASPKSMP	Spiked sample	Lab # 24	01070150	UGL		(0-0)	
LCS1	Cadmium, Total, ICAP/MS	20	20.6	UGL	103.0	(85-115)	
LCS2	Cadmium, Total, ICAP/MS	20	20.7	UGL	103.5	(85-115)	0.48
MBLK	Cadmium, Total, ICAP/MS	ND	<0.50	UGL			
MS	Cadmium, Total, ICAP/MS	20	21.8	UGL	109.0	(70-130)	
MSD	Cadmium, Total, ICAP/MS	20	22	UGL	110.0	(70-130)	0.91

QC Ref #257732 Antimony, Total, ICAP/MS

QC	Analyte	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPD (%)
AASPKSMP	Spiked sample	Lab # 24	01070150	UGL		(0-0)	
LCS1	Antimony, Total, ICAP/MS	50	48.5	UGL	97.0	(85-115)	
LCS2	Antimony, Total, ICAP/MS	50	48.5	UGL	97.0	(85-115)	0.00
MBLK	Antimony, Total, ICAP/MS	ND	<1.0	UGL			
MS	Antimony, Total, ICAP/MS	50	52.7	UGL	105.4	(70-130)	
MSD	Antimony, Total, ICAP/MS	50	52.8	UGL	105.6	(70-130)	0.19

QC Ref #257734 Barium, Total, ICAP/MS

QC	Analyte	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPD (%)
AASPKSMP	Spiked sample	Lab # 24	01070150	UGL		(0-0)	
LCS1	Barium, Total, ICAP/MS	100	97.7	UGL	97.7	(85-115)	
LCS2	Barium, Total, ICAP/MS	100	97.9	UGL	97.9	(85-115)	0.20
MBLK	Barium, Total, ICAP/MS	ND	<2.0	UGL			
MS	Barium, Total, ICAP/MS	100	100	UGL	100.0	(70-130)	
MSD	Barium, Total, ICAP/MS	100	100	UGL	100.0	(70-130)	0.00

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QC Ref #257736 Thallium, Total, ICAP/MS

QC	Analyte	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPD (%)
AASPKSMP	Spiked sample	Lab # 24	01070150	UGL		(0-0)	
LCS1	Thallium, Total, ICAP/MS	20.0	18.8	UGL	94.0	(85-115)	
LCS2	Thallium, Total, ICAP/MS	20.0	18.9	UGL	94.5	(85-115)	0.53
MBLK	Thallium, Total, ICAP/MS	ND	<1.0	UGL			
MS	Thallium, Total, ICAP/MS	20.0	20.7	UGL	103.5	(70-130)	
MSD	Thallium, Total, ICAP/MS	20.0	20.8	UGL	104.0	(70-130)	0.48

QC Ref #257738 Lead, Total, ICAP/MS

QC	Analyte	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPD (%)
AASPKSMP	Spiked sample	Lab # 24	01070150	UGL		(0-0)	
LCS1	Lead, Total, ICAP/MS	20	19.5	UGL	97.5	(85-115)	
LCS2	Lead, Total, ICAP/MS	20	19.7	UGL	98.5	(85-115)	1.0
MBLK	Lead, Total, ICAP/MS	ND	<0.50	UGL			
MS	Lead, Total, ICAP/MS	20	21	UGL	105.0	(70-130)	
MSD	Lead, Total, ICAP/MS	20	21.1	UGL	105.5	(70-130)	0.48

QC Ref #257743 Chromium, Total, ICAP/MS

QC	Analyte	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPD (%)
AASPKSMP	Spiked sample	Lab # 24	01070150	UGL		(0-0)	
LCS1	Chromium, Total, ICAP/MS	100	94	UGL	94.0	(85-115)	
LCS2	Chromium, Total, ICAP/MS	100	94.2	UGL	94.2	(85-115)	0.21
MBLK	Chromium, Total, ICAP/MS	ND	<1.0	UGL			
MS	Chromium, Total, ICAP/MS	100	97.5	UGL	97.5	(70-130)	
MSD	Chromium, Total, ICAP/MS	100	100	UGL	100.0	(70-130)	2.5

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QC Ref #257811 Regulated VOCs plus Lists 1&3

QC	Analyte	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPD (%)
LCS1	1,1,1,2-Tetrachloroethane	5	5.40	UGL	108.0	(70-130)	
LCS2	1,1,1,2-Tetrachloroethane	5	5.40	UGL	108.0	(70-130)	0.00
MBLK	1,1,1,2-Tetrachloroethane	ND	<0.50	UGL			
RPD_LCS	1,1,1,2-Tetrachloroethane	108.000	108.000	UGL	0.0	(0-20)	
LCS1	1,1,1-Trichloroethane	5	5.39	UGL	107.8	(70-130)	
LCS2	1,1,1-Trichloroethane	5	5.17	UGL	103.4	(70-130)	4.2
MBLK	1,1,1-Trichloroethane	ND	<0.50	UGL			
RPD_LCS	1,1,1-Trichloroethane	107.800	103.400	UGL	4.2	(0-20)	
LCS1	1,1,2,2-Tetrachloroethane	5	4.97	UGL	99.4	(70-130)	
LCS2	1,1,2,2-Tetrachloroethane	5	5.05	UGL	101.0	(70-130)	1.6
MBLK	1,1,2,2-Tetrachloroethane	ND	<0.50	UGL			
RPD_LCS	1,1,2,2-Tetrachloroethane	99.400	101.000	UGL	1.6	(0-20)	
LCS1	1,1,2-Trichloroethane	5	5.04	UGL	100.8	(70-130)	
LCS2	1,1,2-Trichloroethane	5	5.21	UGL	104.2	(70-130)	3.3
MBLK	1,1,2-Trichloroethane	ND	<0.50	UGL			
RPD_LCS	1,1,2-Trichloroethane	100.800	104.200	UGL	3.3	(0-20)	
LCS1	1,1-Dichloroethane	5	5.26	UGL	105.2	(70-130)	
LCS2	1,1-Dichloroethane	5	5.17	UGL	103.4	(70-130)	1.7
MBLK	1,1-Dichloroethane	ND	<0.50	UGL			
RPD_LCS	1,1-Dichloroethane	105.200	103.400	UGL	1.7	(0-20)	
LCS1	1,1-Dichloroethylene	5	5.02	UGL	100.4	(70-130)	
LCS2	1,1-Dichloroethylene	5	4.92	UGL	98.4	(70-130)	2.0
MBLK	1,1-Dichloroethylene	ND	<0.50	UGL			
RPD_LCS	1,1-Dichloroethylene	100.400	98.400	UGL	2.0	(0-20)	
LCS1	1,1-Dichloropropene	5	4.90	UGL	98.0	(70-130)	
LCS2	1,1-Dichloropropene	5	4.86	UGL	97.2	(70-130)	0.82
MBLK	1,1-Dichloropropene	ND	<0.50	UGL			
RPD_LCS	1,1-Dichloropropene	98.000	97.200	UGL	0.8	(0-20)	
LCS1	1,2,3-Trichlorobenzene	5	4.63	UGL	92.6	(70-130)	
LCS2	1,2,3-Trichlorobenzene	5	4.84	UGL	96.8	(70-130)	4.4

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MBLK	1,2,3-Trichlorobenzene	ND	<0.50	UGL			
RPD_LCS	1,2,3-Trichlorobenzene	92.600	96.800	UGL	4.4	(0-20)	
LCS1	1,2,3-Trichloropropane	5	4.85	UGL	97.0	(70-130)	
LCS2	1,2,3-Trichloropropane	5	4.99	UGL	99.8	(70-130)	2.8
MBLK	1,2,3-Trichloropropane	ND	<0.50	UGL			
RPD_LCS	1,2,3-Trichloropropane	97.000	99.800	UGL	2.8	(0-20)	
LCS1	1,2,4-Trichlorobenzene	5	4.53	UGL	90.6	(70-130)	
LCS2	1,2,4-Trichlorobenzene	5	4.78	UGL	95.6	(70-130)	5.4
MBLK	1,2,4-Trichlorobenzene	ND	<0.50	UGL			
RPD_LCS	1,2,4-Trichlorobenzene	90.600	95.600	UGL	5.4	(0-20)	
LCS1	1,2,4-Trimethylbenzene	5	4.60	UGL	92.0	(70-130)	
LCS2	1,2,4-Trimethylbenzene	5	4.60	UGL	92.0	(70-130)	0.00
MBLK	1,2,4-Trimethylbenzene	ND	<0.50	UGL			
RPD_LCS	1,2,4-Trimethylbenzene	92.000	92.000	UGL	0.0	(0-20)	
LCS1	1,2-Dichloroethane	5	5.38	UGL	107.6	(70-130)	
LCS2	1,2-Dichloroethane	5	5.37	UGL	107.4	(70-130)	0.19
MBLK	1,2-Dichloroethane	ND	<0.50	UGL			
RPD_LCS	1,2-Dichloroethane	107.600	107.400	UGL	0.2	(0-20)	
LCS1	1,2-Dichloropropane	5	5.10	UGL	102.0	(70-130)	
LCS2	1,2-Dichloropropane	5	5.10	UGL	102.0	(70-130)	0.00
MBLK	1,2-Dichloropropane	ND	<0.50	UGL			
RPD_LCS	1,2-Dichloropropane	102.000	102.000	UGL	0.0	(0-20)	
LCS1	1,3,5-Trimethylbenzene	5	4.75	UGL	95.0	(70-130)	
LCS2	1,3,5-Trimethylbenzene	5	4.66	UGL	93.2	(70-130)	1.9
MBLK	1,3,5-Trimethylbenzene	ND	<0.50	UGL			
RPD_LCS	1,3,5-Trimethylbenzene	95.000	93.200	UGL	1.9	(0-20)	
LCS1	1,3-Dichloropropane	5	5.16	UGL	103.2	(70-130)	
LCS2	1,3-Dichloropropane	5	5.26	UGL	105.2	(70-130)	1.9
MBLK	1,3-Dichloropropane	ND	<0.50	UGL			
RPD_LCS	1,3-Dichloropropane	103.200	105.200	UGL	1.9	(0-20)	
LCS1	p-Dichlorobenzene (1,4-DCB)	5	4.97	UGL	99.4	(70-130)	
LCS2	p-Dichlorobenzene (1,4-DCB)	5	4.86	UGL	97.2	(70-130)	2.2
MBLK	p-Dichlorobenzene (1,4-DCB)	ND	<0.50	UGL			
RPD_LCS	p-Dichlorobenzene (1,4-DCB)	99.400	97.200	UGL	2.2	(0-20)	
LCS1	2,2-Dichloropropane	5	5.24	UGL	104.8	(70-130)	

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LCS2	2,2-Dichloropropane	5	5.14	UGL	102.8	(70-130)	1.9
MBLK	2,2-Dichloropropane	ND	<0.50	UGL			
RPD_LCS	2,2-Dichloropropane	104.800	102.800	UGL	1.9	(0-20)	
LCS1	2-Butanone (MEK)	50	46.1	UGL	92.2	(70-130)	
LCS2	2-Butanone (MEK)	50	48.7	UGL	97.4	(70-130)	5.5
MBLK	2-Butanone (MEK)	ND	<5.0	UGL			
RPD_LCS	2-Butanone (MEK)	92.200	97.400	UGL	5.5	(0-20)	
LCS1	o-Chlorotoluene	5	4.71	UGL	94.2	(70-130)	
LCS2	o-Chlorotoluene	5	4.62	UGL	92.4	(70-130)	1.9
MBLK	o-Chlorotoluene	ND	<0.50	UGL			
RPD_LCS	o-Chlorotoluene	94.200	92.400	UGL	1.9	(0-20)	
LCS1	p-Chlorotoluene	5	4.92	UGL	98.4	(70-130)	
LCS2	p-Chlorotoluene	5	4.96	UGL	99.2	(70-130)	0.81
MBLK	p-Chlorotoluene	ND	<0.50	UGL			
RPD_LCS	p-Chlorotoluene	98.400	99.200	UGL	0.8	(0-20)	
LCS1	4-Methyl-2-Pentanone (MIBK)	50	48.5	UGL	97.0	(70-130)	
LCS2	4-Methyl-2-Pentanone (MIBK)	50	50.3	UGL	100.6	(70-130)	3.6
MBLK	4-Methyl-2-Pentanone (MIBK)	ND	<5.0	UGL			
RPD_LCS	4-Methyl-2-Pentanone (MIBK)	97.000	100.600	UGL	3.6	(0-20)	
LCS1	Benzene	5	5.17	UGL	103.4	(70-130)	
LCS2	Benzene	5	5.14	UGL	102.8	(70-130)	0.58
MBLK	Benzene	ND	<0.50	UGL			
RPD_LCS	Benzene	103.400	102.800	UGL	0.6	(0-20)	
LCS1	Bromobenzene	5	5.15	UGL	103.0	(70-130)	
LCS2	Bromobenzene	5	5.01	UGL	100.2	(70-130)	2.8
MBLK	Bromobenzene	ND	<0.50	UGL			
RPD_LCS	Bromobenzene	103.000	100.200	UGL	2.8	(0-20)	
LCS1	Bromomethane (Methyl Bromide)	5	5.30	UGL	106.0	(70-130)	
LCS2	Bromomethane (Methyl Bromide)	5	5.21	UGL	104.2	(70-130)	1.7
MBLK	Bromomethane (Methyl Bromide)	ND	<0.50	UGL			
RPD_LCS	Bromomethane (Methyl Bromide)	106.000	104.200	UGL	1.7	(0-20)	
LCS1	cis-1,2-Dichloroethylene	5	5.07	UGL	101.4	(70-130)	
LCS2	cis-1,2-Dichloroethylene	5	5.24	UGL	104.8	(70-130)	3.3
MBLK	cis-1,2-Dichloroethylene	ND	<0.50	UGL			
RPD_LCS	cis-1,2-Dichloroethylene	101.400	104.800	UGL	3.3	(0-20)	

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LCS1	Chlorobenzene	5	5.22	UGL	104.4	(70-130)	
LCS2	Chlorobenzene	5	5.26	UGL	105.2	(70-130)	0.76
MBLK	Chlorobenzene	ND	<0.50	UGL			
RPD_LCS	Chlorobenzene	104.400	105.200	UGL	0.8	(0-20)	
LCS1	Carbon Tetrachloride	5	5.59	UGL	111.8	(70-130)	
LCS2	Carbon Tetrachloride	5	5.44	UGL	108.8	(70-130)	2.7
MBLK	Carbon Tetrachloride	ND	<0.50	UGL			
RPD_LCS	Carbon Tetrachloride	111.800	108.800	UGL	2.7	(0-20)	
LCS1	cis-1,3-Dichloropropene	5	4.94	UGL	98.8	(60-140)	
LCS2	cis-1,3-Dichloropropene	5	5.02	UGL	100.4	(60-140)	1.6
MBLK	cis-1,3-Dichloropropene	ND	<0.50	UGL			
RPD_LCS	cis-1,3-Dichloropropene	98.800	100.400	UGL	1.6	(0-20)	
LCS1	Bromoform	5	5.12	UGL	102.4	(70-130)	
LCS2	Bromoform	5	5.11	UGL	102.2	(70-130)	0.20
MBLK	Bromoform	ND	<0.50	UGL			
RPD_LCS	Bromoform	102.400	102.200	UGL	0.2	(0-20)	
LCS1	Chloroform (Trichloromethane)	5	5.49	UGL	109.8	(70-130)	
LCS2	Chloroform (Trichloromethane)	5	5.39	UGL	107.8	(70-130)	1.8
MBLK	Chloroform (Trichloromethane)	ND	<0.50	UGL			
RPD_LCS	Chloroform (Trichloromethane)	109.800	107.800	UGL	1.8	(0-20)	
LCS1	Bromochloromethane	5	5.34	UGL	106.8	(70-130)	
LCS2	Bromochloromethane	5	5.45	UGL	109.0	(70-130)	2.0
MBLK	Bromochloromethane	ND	<0.50	UGL			
RPD_LCS	Bromochloromethane	106.800	109.000	UGL	2.0	(0-20)	
LCS1	Chloroethane	5	4.97	UGL	99.4	(70-130)	
LCS2	Chloroethane	5	5.20	UGL	104.0	(70-130)	4.5
MBLK	Chloroethane	ND	<0.50	UGL			
RPD_LCS	Chloroethane	99.400	104.000	UGL	4.5	(0-20)	
LCS1	Chloromethane(Methyl Chloride)	5	5.21	UGL	104.2	(70-130)	
LCS2	Chloromethane(Methyl Chloride)	5	5.49	UGL	109.8	(70-130)	5.2
MBLK	Chloromethane(Methyl Chloride)	ND	<0.50	UGL			
RPD_LCS	Chloromethane(Methyl Chloride)	104.200	109.800	UGL	5.2	(0-20)	
LCS1	Chlorodibromomethane	5	5.19	UGL	103.8	(70-130)	
LCS2	Chlorodibromomethane	5	5.35	UGL	107.0	(70-130)	3.0
MBLK	Chlorodibromomethane	ND	<0.50	UGL			

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RPD_LCS	Chlorodibromomethane	103.800	107.000	UGL	3.0	(0-20)	
LCS1	Dibromomethane	5	5.15	UGL	103.0	(70-130)	
LCS2	Dibromomethane	5	5.26	UGL	105.2	(70-130)	2.1
MBLK	Dibromomethane	ND	<0.50	UGL			
RPD_LCS	Dibromomethane	103.000	105.200	UGL	2.1	(0-20)	
LCS1	Bromodichloromethane	5	5.23	UGL	104.6	(70-130)	
LCS2	Bromodichloromethane	5	5.17	UGL	103.4	(70-130)	1.2
MBLK	Bromodichloromethane	ND	<0.50	UGL			
RPD_LCS	Bromodichloromethane	104.600	103.400	UGL	1.2	(0-20)	
LCS1	Dichloromethane	5	5.23	UGL	104.6	(70-130)	
LCS2	Dichloromethane	5	5.28	UGL	105.6	(70-130)	0.95
MBLK	Dichloromethane	ND	<0.50	UGL			
RPD_LCS	Dichloromethane	104.600	105.600	UGL	1.0	(0-20)	
LCS1	Di-isopropyl ether	5	4.50	UGL	90.0	(70-130)	
LCS2	Di-isopropyl ether	5	4.63	UGL	92.6	(70-130)	2.8
MBLK	Di-isopropyl ether	ND	<3.0	UGL			
RPD_LCS	Di-isopropyl ether	90.000	92.600	UGL	2.8	(0-20)	
LCS1	Ethyl benzene	5	4.90	UGL	98.0	(70-130)	
LCS2	Ethyl benzene	5	4.85	UGL	97.0	(70-130)	1.0
MBLK	Ethyl benzene	ND	<0.50	UGL			
RPD_LCS	Ethyl benzene	98.000	97.000	UGL	1.0	(0-20)	
LCS1	Dichlorodifluoromethane	5	5.29	UGL	105.8	(70-130)	
LCS2	Dichlorodifluoromethane	5	5.04	UGL	100.8	(70-130)	4.8
MBLK	Dichlorodifluoromethane	ND	<0.50	UGL			
RPD_LCS	Dichlorodifluoromethane	105.800	100.800	UGL	4.8	(0-20)	
LCS1	Fluorotrichloromethane-Freon11	5	5.58	UGL	111.6	(70-130)	
LCS2	Fluorotrichloromethane-Freon11	5	5.37	UGL	107.4	(70-130)	3.8
MBLK	Fluorotrichloromethane-Freon11	ND	<0.50	UGL			
RPD_LCS	Fluorotrichloromethane-Freon11	111.600	107.400	UGL	3.8	(0-20)	
LCS1	Hexachlorobutadiene	5	5.01	UGL	100.2	(70-130)	
LCS2	Hexachlorobutadiene	5	5.32	UGL	106.4	(70-130)	6.0
MBLK	Hexachlorobutadiene	ND	<0.50	UGL			
RPD_LCS	Hexachlorobutadiene	100.200	106.400	UGL	6.0	(0-20)	
LCS1	Isopropylbenzene	5	4.60	UGL	92.0	(70-130)	
LCS2	Isopropylbenzene	5	4.42	UGL	88.4	(70-130)	4.0

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MBLK	Isopropylbenzene	ND	<0.50	UGL			
RPD_LCS	Isopropylbenzene	92.000	88.400	UGL	4.0	(0-20)	
LCS1	m-Dichlorobenzene (1,3-DCB)	5	5.05	UGL	101.0	(70-130)	
LCS2	m-Dichlorobenzene (1,3-DCB)	5	5.10	UGL	102.0	(70-130)	0.99
MBLK	m-Dichlorobenzene (1,3-DCB)	ND	<0.50	UGL			
RPD_LCS	m-Dichlorobenzene (1,3-DCB)	101.000	102.000	UGL	1.0	(0-20)	
LCS1	m,p-Xylenes	10	10.1	UGL	101.0	(70-130)	
LCS2	m,p-Xylenes	10	10.1	UGL	101.0	(70-130)	0.00
MBLK	m,p-Xylenes	ND	<0.50	UGL			
RPD_LCS	m,p-Xylenes	101.000	101.000	UGL	0.0	(0-20)	
LCS1	Methyl Tert-butyl ether (MTBE)	5	4.54	UGL	90.8	(60-140)	
LCS2	Methyl Tert-butyl ether (MTBE)	5	4.82	UGL	96.4	(60-140)	6.0
MBLK	Methyl Tert-butyl ether (MTBE)	ND	<1.0	UGL			
RPD_LCS	Methyl Tert-butyl ether (MTBE)	90.800	96.400	UGL	6.0	(0-20)	
LCS1	Naphthalene	5	4.15	UGL	83.0	(70-130)	
LCS2	Naphthalene	5	4.47	UGL	89.4	(70-130)	7.4
MBLK	Naphthalene	ND	<0.50	UGL			
RPD_LCS	Naphthalene	83.000	89.400	UGL	7.4	(0-20)	
LCS1	n-Butylbenzene	5	4.53	UGL	90.6	(70-130)	
LCS2	n-Butylbenzene	5	4.46	UGL	89.2	(70-130)	1.6
MBLK	n-Butylbenzene	ND	<0.50	UGL			
RPD_LCS	n-Butylbenzene	90.600	89.200	UGL	1.6	(0-20)	
LCS1	n-Propylbenzene	5	4.73	UGL	94.6	(70-130)	
LCS2	n-Propylbenzene	5	4.69	UGL	93.8	(70-130)	0.85
MBLK	n-Propylbenzene	ND	<0.50	UGL			
RPD_LCS	n-Propylbenzene	94.600	93.800	UGL	0.8	(0-20)	
LCS1	o-Xylene	5	5.05	UGL	101.0	(70-130)	
LCS2	o-Xylene	5	4.95	UGL	99.0	(70-130)	2.0
MBLK	o-Xylene	ND	<0.50	UGL			
RPD_LCS	o-Xylene	101.000	99.000	UGL	2.0	(0-20)	
LCS1	o-Dichlorobenzene (1,2-DCB)	5	4.91	UGL	98.2	(70-130)	
LCS2	o-Dichlorobenzene (1,2-DCB)	5	5.03	UGL	100.6	(70-130)	2.4
MBLK	o-Dichlorobenzene (1,2-DCB)	ND	<0.50	UGL			
RPD_LCS	o-Dichlorobenzene (1,2-DCB)	98.200	100.600	UGL	2.4	(0-20)	
LCS1	Tetrachloroethylene (PCE)	5	5.38	UGL	107.6	(70-130)	

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LCS2	Tetrachloroethylene (PCE)	5	5.39	UGL	107.8	(70-130)	0.19
MBLK	Tetrachloroethylene (PCE)	ND	<0.50	UGL			
RPD_LCS	Tetrachloroethylene (PCE)	107.600	107.800	UGL	0.2	(0-20)	
LCS1	p-Isopropyltoluene	5	4.77	UGL	95.4	(70-130)	
LCS2	p-Isopropyltoluene	5	4.68	UGL	93.6	(70-130)	1.9
MBLK	p-Isopropyltoluene	ND	<0.50	UGL			
RPD_LCS	p-Isopropyltoluene	95.400	93.600	UGL	1.9	(0-20)	
LCS1	sec-Butylbenzene	5	4.68	UGL	93.6	(70-130)	
LCS2	sec-Butylbenzene	5	4.55	UGL	91.0	(70-130)	2.8
MBLK	sec-Butylbenzene	ND	<0.50	UGL			
RPD_LCS	sec-Butylbenzene	93.600	91.000	UGL	2.8	(0-20)	
LCS1	Styrene	5	4.88	UGL	97.6	(70-130)	
LCS2	Styrene	5	4.91	UGL	98.2	(70-130)	0.61
MBLK	Styrene	ND	<0.50	UGL			
RPD_LCS	Styrene	97.600	98.200	UGL	0.6	(0-20)	
LCS1	trans-1,2-Dichloroethylene	5	5.14	UGL	102.8	(70-130)	
LCS2	trans-1,2-Dichloroethylene	5	5.07	UGL	101.4	(70-130)	1.4
MBLK	trans-1,2-Dichloroethylene	ND	<0.50	UGL			
RPD_LCS	trans-1,2-Dichloroethylene	102.800	101.400	UGL	1.4	(0-20)	
LCS1	tert-amyl Methyl Ether	5	4.62	UGL	92.4	(70-130)	
LCS2	tert-amyl Methyl Ether	5	4.57	UGL	91.4	(70-130)	1.1
MBLK	tert-amyl Methyl Ether	ND	<3.0	UGL			
RPD_LCS	tert-amyl Methyl Ether	92.400	91.400	UGL	1.1	(0-20)	
LCS1	tert-Butyl Ethyl Ether	5	4.67	UGL	93.4	(70-130)	
LCS2	tert-Butyl Ethyl Ether	5	4.74	UGL	94.8	(70-130)	1.5
MBLK	tert-Butyl Ethyl Ether	ND	<3.0	UGL			
RPD_LCS	tert-Butyl Ethyl Ether	93.400	94.800	UGL	1.5	(0-20)	
LCS1	tert-Butylbenzene	5	4.58	UGL	91.6	(70-130)	
LCS2	tert-Butylbenzene	5	4.50	UGL	90.0	(70-130)	1.8
MBLK	tert-Butylbenzene	ND	<0.50	UGL			
RPD_LCS	tert-Butylbenzene	91.600	90.000	UGL	1.8	(0-20)	
LCS1	Trichloroethylene (TCE)	5	5.25	UGL	105.0	(70-130)	
LCS2	Trichloroethylene (TCE)	5	5.16	UGL	103.2	(70-130)	1.7
MBLK	Trichloroethylene (TCE)	ND	<0.50	UGL			
RPD_LCS	Trichloroethylene (TCE)	105.000	103.200	UGL	1.7	(0-20)	

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LCS1	Trichlorotrifluoroethane(Freon	5	5.54	UGL	110.8	(70-130)	
LCS2	Trichlorotrifluoroethane(Freon	5	5.35	UGL	107.0	(70-130)	3.5
MBLK	Trichlorotrifluoroethane(Freon	ND	<0.50	UGL			
RPD_LCS	Trichlorotrifluoroethane(Freon	110.800	107.000	UGL	3.5	(0-20)	
LCS1	trans-1,3-Dichloropropene	5	4.80	UGL	96.0	(60-140)	
LCS2	trans-1,3-Dichloropropene	5	4.94	UGL	98.8	(60-140)	2.9
MBLK	trans-1,3-Dichloropropene	ND	<0.50	UGL			
RPD_LCS	trans-1,3-Dichloropropene	96.000	98.800	UGL	2.9	(0-20)	
LCS1	Toluene	5	4.96	UGL	99.2	(70-130)	
LCS2	Toluene	5	4.92	UGL	98.4	(70-130)	0.81
MBLK	Toluene	ND	<0.50	UGL			
RPD_LCS	Toluene	99.200	98.400	UGL	0.8	(0-20)	
LCS1	Vinyl chloride (VC)	5	5.05	UGL	101.0	(70-130)	
LCS2	Vinyl chloride (VC)	5	4.91	UGL	98.2	(70-130)	2.8
MBLK	Vinyl chloride (VC)	ND	<0.30	UGL			
RPD_LCS	Vinyl chloride (VC)	101.000	98.200	UGL	2.8	(0-20)	

QC Ref #257813 Alkalinity in CaCO3 units

QC	Analyte	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPD (%)
MS	Spiked sample	Lab # 24	01060002	MGL		(0-0)	
LCS1	Alkalinity in CaCO3 units	100	98.2	MGL	98.2	(90-110)	
LCS2	Alkalinity in CaCO3 units	100	98.4	MGL	98.4	(90-110)	0.20
MBLK	Alkalinity in CaCO3 units	ND	<2.0	MGL			
MS	Alkalinity in CaCO3 units	100	99.1	MGL	99.1	(80-120)	
MSD	Alkalinity in CaCO3 units	100	101	MGL	101.0	(80-120)	1.9
RPD_LCS	Alkalinity in CaCO3 units	98.200	98.400	MGL	0.2	(0-10)	
RPD_MS	Alkalinity in CaCO3 units	99.100	101.000	MGL	1.9	(0-10)	

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QC Ref #257853 Aldicarbs

QC	Analyte	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPD (%)
LCS1	3-Hydroxycarbofuran	10.0	10.4	UGL	104.0	(80-120)	
MBLK	3-Hydroxycarbofuran	ND	<2.0	UGL			
MS	3-Hydroxycarbofuran	10.0	10.2	UGL	102.0	(65-135)	
MSD	3-Hydroxycarbofuran	10.0	10.4	UGL	104.0	(65-135)	1.9
MS	Spiked sample	Lab # 25	01040109	NONE		(0-0)	
LCS1	Aldicarb (Temik)	10.0	11.0	UGL	110.0	(80-120)	
MBLK	Aldicarb (Temik)	ND	<0.50	UGL			
MS	Aldicarb (Temik)	10.0	10.5	UGL	105.0	(65-135)	
MSD	Aldicarb (Temik)	10.0	10.6	UGL	106.0	(65-135)	0.95
LCS1	Aldicarb sulfone	10.0	10.6	UGL	106.0	(80-120)	
MBLK	Aldicarb sulfone	ND	<0.70	UGL			
MS	Aldicarb sulfone	10.0	10.4	UGL	104.0	(65-135)	
MSD	Aldicarb sulfone	10.0	10.3	UGL	103.0	(65-135)	0.97
LCS1	Aldicarb sulfoxide	10.0	11.2	UGL	112.0	(80-120)	
MBLK	Aldicarb sulfoxide	ND	<0.50	UGL			
MS	Aldicarb sulfoxide	10.0	10.3	UGL	103.0	(65-135)	
MSD	Aldicarb sulfoxide	10.0	10.4	UGL	104.0	(65-135)	0.97
LCS1	Baygon	10.0	11.1	UGL	111.0	(80-120)	
MBLK	Baygon	ND	<2.0	UGL			
MS	Baygon	10.0	10.7	UGL	107.0	(65-135)	
MSD	Baygon	10.0	10.7	UGL	107.0	(65-135)	0.00
LCS1	Carbofuran (Furadan)	10.0	10.6	UGL	106.0	(80-120)	
MS	Carbofuran (Furadan)	10.0	10.4	UGL	104.0	(65-135)	
MSD	Carbofuran (Furadan)	10.0	10.3	UGL	103.0	(65-135)	0.97
LCS1	Carbaryl	10.0	9.56	UGL	95.6	(80-120)	
MBLK	Carbaryl	ND	<2.0	UGL			
MS	Carbaryl	10.0	10.7	UGL	107.0	(65-135)	
MSD	Carbaryl	10.0	11.9	UGL	119.0	(65-135)	11
LCS1	Methiocarb	10.0	9.40	UGL	94.0	(80-120)	
MBLK	Methiocarb	ND	<2.0	UGL			

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MS	Methiocarb	10.0	10.3	UGL	103.0	(65-135)	
MSD	Methiocarb	10.0	11.0	UGL	110.0	(65-135)	6.6
LCS1	Methomyl	10.0	10.7	UGL	107.0	(80-120)	
MBLK	Methomyl	ND	<1.0	UGL			
MS	Methomyl	10.0	10.3	UGL	103.0	(65-135)	
MSD	Methomyl	10.0	10.4	UGL	104.0	(65-135)	0.97
LCS1	Oxamyl (Vydate)	10.0	10.4	UGL	104.0	(80-120)	
MBLK	Oxamyl (Vydate)	ND	<2.0	UGL			
MS	Oxamyl (Vydate)	10.0	10.3	UGL	103.0	(65-135)	
MSD	Oxamyl (Vydate)	10.0	10.3	UGL	103.0	(65-135)	0.00
LCS1	BDMC	100	102	%R	102.0	(70-130)	
MBLK	BDMC	100	99	%R	99.0		
MS	BDMC	100	106	%R	106.0	(70-130)	
MSD	BDMC	100	104	%R	104.0	(70-130)	1.9

QC Ref #257863 Herbicides by 515.4

QC	Analyte	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPD (%)
CCCH	2,4,5-T	4.0	3.80	UGL	95.0	(70-130)	
CCCL	2,4,5-T	1.0	1.01	UGL	101.0	(70-130)	
LCS1	2,4,5-T	0.75	0.77	UGL	102.7	(70-130)	
LCS2	2,4,5-T	3.0	2.96	UGL	98.7	(70-130)	
LCS3	2,4,5-T	3.0	2.96	UGL	98.7	(70-130)	
MBLK	2,4,5-T	ND	<0.20	UGL			
MS	2,4,5-T	3.0	2.93	UGL	97.7	(70-130)	
MSD	2,4,5-T	3.0	2.95	UGL	98.3	(70-130)	0.68
CCCH	2,4,5-TP (Silvex)	4.0	3.75	UGL	93.8	(70-130)	
CCCL	2,4,5-TP (Silvex)	1.0	1.01	UGL	101.0	(70-130)	
LCS1	2,4,5-TP (Silvex)	0.75	0.73	UGL	97.3	(70-130)	
LCS2	2,4,5-TP (Silvex)	3.0	2.94	UGL	98.0	(70-130)	
LCS3	2,4,5-TP (Silvex)	3.0	2.91	UGL	97.0	(70-130)	
MBLK	2,4,5-TP (Silvex)	ND	<0.20	UGL			
MS	2,4,5-TP (Silvex)	3.0	2.72	UGL	90.7	(70-130)	
MSD	2,4,5-TP (Silvex)	3.0	2.74	UGL	91.3	(70-130)	0.73

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CCCH	2,4-D	2.0	1.84	UGL	92.0	(70-130)	
CCCL	2,4-D	0.50	0.46	UGL	92.0	(70-130)	
LCS1	2,4-D	0.375	0.37	UGL	98.7	(70-130)	
LCS2	2,4-D	1.5	1.51	UGL	100.7	(70-130)	
LCS3	2,4-D	1.5	1.53	UGL	102.0	(70-130)	
MBLK	2,4-D	ND	<0.10	UGL			
MS	2,4-D	1.5	1.37	UGL	91.3	(70-130)	
MSD	2,4-D	1.5	1.34	UGL	89.3	(70-130)	2.2
CCCH	2,4-DB	40.0	35.8	UGL	89.5	(70-130)	
CCCL	2,4-DB	10.0	9.91	UGL	99.1	(70-130)	
LCS1	2,4-DB	7.5	6.04	UGL	80.5	(70-130)	
LCS2	2,4-DB	30.0	23.0	UGL	76.7	(70-130)	
LCS3	2,4-DB	30.0	23.0	UGL	76.7	(70-130)	
MBLK	2,4-DB	ND	<2.0	UGL			
MS	2,4-DB	30.0	25.8	UGL	86.0	(70-130)	
MSD	2,4-DB	30.0	25.9	UGL	86.3	(70-130)	0.39
CCCH	Dichlorprop	10.0	8.97	UGL	89.7	(70-130)	
CCCL	Dichlorprop	2.50	2.50	UGL	100.0	(70-130)	
LCS1	Dichlorprop	1.875	2.04	UGL	108.8	(70-130)	
LCS2	Dichlorprop	7.5	7.68	UGL	102.4	(70-130)	
LCS3	Dichlorprop	7.5	7.70	UGL	102.7	(70-130)	
MBLK	Dichlorprop	ND	<0.50	UGL			
MS	Dichlorprop	7.5	6.54	UGL	87.2	(70-130)	
MSD	Dichlorprop	7.5	6.68	UGL	89.1	(70-130)	2.1
MS	Spiked sample	Lab # 24	01040018	NONE		(0-0)	
CCCH	Acifluorfen	4.0	3.59	UGL	89.8	(70-130)	
CCCL	Acifluorfen	1.0	1.06	UGL	106.0	(70-130)	
LCS1	Acifluorfen	0.75	0.75	UGL	100.0	(70-130)	
LCS2	Acifluorfen	3.0	3.02	UGL	100.7	(70-130)	
LCS3	Acifluorfen	3.0	3.15	UGL	105.0	(70-130)	
MBLK	Acifluorfen	ND	<0.20	UGL			
MS	Acifluorfen	3.0	2.50	UGL	83.3	(70-130)	
MSD	Acifluorfen	3.0	2.48	UGL	82.7	(70-130)	0.80
CCCH	Bentazon	10.0	8.55	UGL	85.5	(70-130)	
CCCL	Bentazon	2.50	2.15	UGL	86.0	(70-130)	

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LCS1	Bentazon	1.875	1.54	UGL	82.1	(70-130)	
LCS2	Bentazon	7.5	6.50	UGL	86.7	(70-130)	
LCS3	Bentazon	7.5	6.65	UGL	88.7	(70-130)	
MBLK	Bentazon	ND	<0.50	UGL			
MS	Bentazon	7.5	5.92	UGL	78.9	(70-130)	
MSD	Bentazon	7.5	5.92	UGL	78.9	(70-130)	0.00
CCCH	Dalapon	20.0	19.0	UGL	95.0	(70-130)	
CCCL	Dalapon	5.0	5.52	UGL	110.4	(70-130)	
LCS1	Dalapon	3.75	4.10	UGL	109.3	(70-130)	
LCS2	Dalapon	15.0	14.8	UGL	98.7	(70-130)	
LCS3	Dalapon	15.0	13.8	UGL	92.0	(70-130)	
MBLK	Dalapon	ND	<1.0	UGL			
MS	Dalapon	15.0	13.2	UGL	88.0	(70-130)	
MSD	Dalapon	15.0	13.0	UGL	86.7	(70-130)	1.5
CCCH	3,5-Dichlorobenzoic acid	10.0	9.23	UGL	92.3	(70-130)	
CCCL	3,5-Dichlorobenzoic acid	2.50	2.54	UGL	101.6	(70-130)	
LCS1	3,5-Dichlorobenzoic acid	1.875	2.09	UGL	111.5	(70-130)	
LCS2	3,5-Dichlorobenzoic acid	7.5	7.49	UGL	99.9	(70-130)	
LCS3	3,5-Dichlorobenzoic acid	7.5	7.38	UGL	98.4	(70-130)	
MBLK	3,5-Dichlorobenzoic acid	ND	<0.50	UGL			
MS	3,5-Dichlorobenzoic acid	7.5	7.78	UGL	103.7	(70-130)	
MSD	3,5-Dichlorobenzoic acid	7.5	6.35	UGL	84.7	(70-130)	20
CCCH	Tot DCPA Mono&Diacid Degradate	2.0	1.70	UGL	85.0	(70-130)	
CCCL	Tot DCPA Mono&Diacid Degradate	0.50	0.56	UGL	112.0	(70-130)	
LCS1	Tot DCPA Mono&Diacid Degradate	0.75	0.77	UGL	102.7	(70-130)	
LCS2	Tot DCPA Mono&Diacid Degradate	3.0	3.28	UGL	109.3	(70-130)	
LCS3	Tot DCPA Mono&Diacid Degradate	3.0	3.25	UGL	108.3	(70-130)	
MBLK	Tot DCPA Mono&Diacid Degradate	ND	<1.0	UGL			
MS	Tot DCPA Mono&Diacid Degradate	1.5	1.42	UGL	94.7	(70-130)	
MSD	Tot DCPA Mono&Diacid Degradate	1.5	1.45	UGL	96.7	(70-130)	2.1
CCCH	Dicamba	1.0	0.92	UGL	92.0	(70-130)	
CCCL	Dicamba	0.25	0.26	UGL	104.0	(70-130)	
LCS1	Dicamba	0.1875	0.21	UGL	112.0	(70-130)	
LCS2	Dicamba	0.75	0.83	UGL	110.7	(70-130)	
LCS3	Dicamba	0.75	0.83	UGL	110.7	(70-130)	

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MBLK	Dicamba	ND	<0.080	UGL			
MS	Dicamba	0.75	0.70	UGL	93.3	(70-130)	
MSD	Dicamba	0.75	0.71	UGL	94.7	(70-130)	1.4
CCCH	Dinoseb	4.0	3.74	UGL	93.5	(70-130)	
CCCL	Dinoseb	1.0	1.04	UGL	104.0	(70-130)	
LCS1	Dinoseb	0.75	0.78	UGL	104.0	(70-130)	
LCS2	Dinoseb	3.0	3.07	UGL	102.3	(70-130)	
LCS3	Dinoseb	3.0	3.05	UGL	101.7	(70-130)	
MBLK	Dinoseb	ND	<0.20	UGL			
MS	Dinoseb	3.0	2.11	UGL	70.3	(70-130)	
MSD	Dinoseb	3.0	2.11	UGL	70.3	(70-130)	0.00
CCCH	Pentachlorophenol	0.8	0.77	UGL	96.2	(70-130)	
CCCL	Pentachlorophenol	0.20	0.20	UGL	100.0	(70-130)	
LCS1	Pentachlorophenol	0.15	0.15	UGL	100.0	(70-130)	
LCS2	Pentachlorophenol	0.60	0.62	UGL	103.3	(70-130)	
LCS3	Pentachlorophenol	0.60	0.61	UGL	101.7	(70-130)	
MBLK	Pentachlorophenol	ND	<0.040	UGL			
MS	Pentachlorophenol	0.6	0.49	UGL	81.7	(70-130)	
MSD	Pentachlorophenol	0.6	0.50	UGL	83.3	(70-130)	2.0
CCCH	Picloram	2.0	1.92	UGL	96.0	(70-130)	
CCCL	Picloram	0.50	0.51	UGL	102.0	(70-130)	
LCS1	Picloram	0.375	0.39	UGL	104.0	(70-130)	
LCS2	Picloram	1.5	1.55	UGL	103.3	(70-130)	
LCS3	Picloram	1.5	1.60	UGL	106.7	(70-130)	
MBLK	Picloram	ND	<0.10	UGL			
MS	Picloram	1.5	1.57	UGL	104.7	(70-130)	
MSD	Picloram	1.5	1.58	UGL	105.3	(70-130)	0.63
CCCH	2,4-Dichlorophenylacetic acid	100	92	%R	92.0	(70-130)	
CCCL	2,4-Dichlorophenylacetic acid	100	97	%R	97.0	(70-130)	
LCS1	2,4-Dichlorophenylacetic acid	100	92	%R	92.0	(70-130)	
LCS2	2,4-Dichlorophenylacetic acid	100	92	%R	92.0	(70-130)	0.00
LCS3	2,4-Dichlorophenylacetic acid	100	96	%R	96.0	(70-130)	
MBLK	2,4-Dichlorophenylacetic acid	100	92	%R	92.0		
MS	2,4-Dichlorophenylacetic acid	100	86	%R	86.0	(70-130)	
MSD	2,4-Dichlorophenylacetic acid	100	92	%R	92.0	(70-130)	6.7

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CCCH	4,4'-Dibromooctafluorobiphenyl	100	109	%R	109.0	(50-150)	
CCCL	4,4'-Dibromooctafluorobiphenyl	100	104	%R	104.0	(50-150)	
LCS1	4,4'-Dibromooctafluorobiphenyl	100	103	%R	103.0	(50-150)	
LCS2	4,4'-Dibromooctafluorobiphenyl	100	105	%R	105.0	(50-150)	1.9
LCS3	4,4'-Dibromooctafluorobiphenyl	100	105	%R	105.0	(50-150)	
MBLK	4,4'-Dibromooctafluorobiphenyl	100	102	%R	102.0		
MS	4,4'-Dibromooctafluorobiphenyl	100	126	%R	126.0	(50-150)	
MSD	4,4'-Dibromooctafluorobiphenyl	100	118	%R	118.0	(50-150)	6.6

QC Ref #257988 Mercury

QC	Analyte	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPD (%)
MS	Spiked sample	Lab # 25	01060008	UGL		(0-0)	
LCS1	Mercury	1.50	1.66	UGL	110.7	(85-115)	
LCS2	Mercury	1.50	1.68	UGL	112.0	(85-115)	1.2
MBLK	Mercury	ND	<0.20	UGL			
MS	Mercury	1.50	1.66	UGL	110.7	(70-130)	
MSD	Mercury	1.50	1.67	UGL	111.3	(70-130)	0.60

QC Ref #258049 Pesticides by EPA 505

QC	Analyte	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPD (%)
MBLK	PCB 1016 Aroclor	ND	<0.070	UGL			
MBLK	PCB 1221 Aroclor	ND	<0.10	UGL			
MBLK	PCB 1232 Aroclor	ND	<0.10	UGL			
MBLK	PCB 1242 Aroclor	ND	<0.10	UGL			
MBLK	PCB 1248 Aroclor	ND	<0.10	UGL			
MBLK	PCB 1254 Aroclor	ND	<0.10	UGL			
MBLK	PCB 1260 Aroclor	ND	<0.10	UGL			
MS	Spiked sample	Lab # 25	01060045	NONE		(0-0)	
LCS1	Alachlor (Alanex)	0.2	0.21	UGL	105.0	(70-130)	
LCS2	Alachlor (Alanex)	1.0	0.98	UGL	98.0	(70-130)	
MBLK	Alachlor (Alanex)	ND	<0.050	UGL			

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MS	Alachlor (Alanex)	0.2	0.23	UGL	115.0	(65-135)	
LCS1	Aldrin	0.02	0.022	UGL	110.0	(70-130)	
LCS2	Aldrin	0.10	0.106	UGL	106.0	(70-130)	
MBLK	Aldrin	ND	<0.010	UGL			
MS	Aldrin	0.02	0.022	UGL	110.0	(65-135)	
LCS1	Chlordane	0.5	0.41	UGL	82.0	(70-130)	
LCS2	Chlordane	0.5	0.41	UGL	82.0	(70-130)	0.00
MBLK	Chlordane	ND	<0.10	UGL			
MS	Chlordane	0.5	0.42	UGL	84.0	(65-135)	
LCS1	Dieldrin	0.02	0.021	UGL	105.0	(70-130)	
LCS2	Dieldrin	0.10	0.094	UGL	94.0	(70-130)	
MBLK	Dieldrin	ND	<0.010	UGL			
MS	Dieldrin	0.02	0.022	UGL	110.0	(65-135)	
LCS1	Endrin	0.02	0.021	UGL	105.0	(70-130)	
LCS2	Endrin	0.10	0.095	UGL	95.0	(70-130)	
MBLK	Endrin	ND	<0.010	UGL			
MS	Endrin	0.02	0.023	UGL	115.0	(65-135)	
LCS1	Heptachlor	0.02	0.022	UGL	110.0	(70-130)	
LCS2	Heptachlor	0.10	0.099	UGL	99.0	(70-130)	
MBLK	Heptachlor	ND	<0.010	UGL			
MS	Heptachlor	0.02	0.023	UGL	115.0	(65-135)	
LCS1	Heptachlor Epoxide	0.02	0.021	UGL	105.0	(70-130)	
LCS2	Heptachlor Epoxide	0.10	0.095	UGL	95.0	(70-130)	
MBLK	Heptachlor Epoxide	ND	<0.010	UGL			
MS	Heptachlor Epoxide	0.02	0.022	UGL	110.0	(65-135)	
LCS1	Lindane (gamma-BHC)	0.02	0.021	UGL	105.0	(70-130)	
LCS2	Lindane (gamma-BHC)	0.10	0.094	UGL	94.0	(70-130)	
MBLK	Lindane (gamma-BHC)	ND	<0.010	UGL			
MS	Lindane (gamma-BHC)	0.02	0.023	UGL	115.0	(65-135)	
LCS1	Methoxychlor	0.10	0.11	UGL	110.0	(70-130)	
LCS2	Methoxychlor	0.50	0.45	UGL	90.0	(70-130)	
MBLK	Methoxychlor	ND	<0.050	UGL			
MS	Methoxychlor	0.10	0.11	UGL	110.0	(65-135)	
MBLK	Toxaphene	ND	<0.50	UGL			

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QC Ref #258142 EDB and DBCP by GC-ECD

QC	Analyte	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPD (%)
MS	Spiked sample	Lab # 24	01050111	NONE		(0-0)	
LCS1	Dibromochloropropane (DBCP)	0.02	0.022	UGL	110.0	(70-130)	
LCS2	Dibromochloropropane (DBCP)	0.20	0.21	UGL	105.0	(70-130)	
MBLK	Dibromochloropropane (DBCP)	ND	<0.010	UGL			
MS	Dibromochloropropane (DBCP)	0.20	0.18	UGL	90.0	(65-135)	
MSD	Dibromochloropropane (DBCP)	0.20	0.19	UGL	95.0	(65-135)	5.4
RPD_MS	Dibromochloropropane (DBCP)	90.000	95.000	UGL	5.4	(0-20)	
LCS1	Ethylene Dibromide (EDB)	0.02	0.021	UGL	105.0	(70-130)	
LCS2	Ethylene Dibromide (EDB)	0.20	0.22	UGL	110.0	(70-130)	
MBLK	Ethylene Dibromide (EDB)	ND	<0.010	UGL			
MS	Ethylene Dibromide (EDB)	0.20	0.18	UGL	90.0	(65-135)	
MSD	Ethylene Dibromide (EDB)	0.20	0.20	UGL	100.0	(65-135)	11
RPD_MS	Ethylene Dibromide (EDB)	90.000	100.000	UGL	10.5	(0-20)	
LCS1	1,2-dibromopropane (surr)	100	115	%R	115.0	(74-149)	
LCS2	1,2-dibromopropane (surr)	100	110	%R	110.0	(74-149)	4.4
MBLK	1,2-dibromopropane (surr)	100	109	%R	109.0		
MS	1,2-dibromopropane (surr)	100	116	%R	116.0	(60-140)	
MSD	1,2-dibromopropane (surr)	100	113	%R	113.0	(60-140)	2.6
RPD_MS	1,2-dibromopropane (surr)	116.000	113.000	%R	2.6	(0-20)	

QC Ref #258146 Glyphosate

QC	Analyte	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPD (%)
MS	Spiked sample	Lab # 24	01070050	UGL		(0-0)	
LCS1	Glyphosate	10	9.29	UGL	92.9	(70-130)	
MBLK	Glyphosate	ND	<6.0	UGL			
MS	Glyphosate	10	10.1	UGL	101.0	(70-130)	
MSD	Glyphosate	10	10.5	UGL	105.0	(70-130)	3.9

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QC Ref #258597 Diquat and Paraquat

QC	Analyte	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPD (%)
MS	Spiked sample	Lab # 25	01060040	NONE		(0-0)	
LCS1	Diquat	5.0	4.08	UGL	81.6	(70-130)	
MBLK	Diquat	ND	<0.40	UGL			
MS	Diquat	5.0	4.24	UGL	84.8	(70-130)	
MSD	Diquat	5.0	4.36	UGL	87.2	(70-130)	2.8
RPD_MS	Diquat	84.800	87.200	UGL	2.8	(0-20)	
LCS1	Paraquat	5.0	3.61	UGL	72.2	(70-130)	
MBLK	Paraquat	ND	<2.0	UGL			
MS	Paraquat	5.0	3.91	UGL	78.2	(70-130)	
MSD	Paraquat	5.0	4.01	UGL	80.2	(70-130)	2.5
RPD_MS	Paraquat	78.200	80.200	UGL	2.5	(0-20)	

QC Ref #258672 525 Semivolatiles by GC/MS

QC	Analyte	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPD (%)
LCS1	Atrazine	2	2.31	UGL	115.5	(70-130)	
LCS2	Atrazine	2	2.31	UGL	115.5	(70-130)	0.00
MBLK	Atrazine	ND	<0.050	UGL			
MS	Atrazine	2	2.21	UGL	110.5	(70-130)	
MSD	Atrazine	2	2.24	UGL	112.0	(70-130)	1.3
RPD_LCS	Atrazine	115.500	115.500	UGL	0.0	(0-20)	
RPD_MS	Atrazine	110.500	112.000	UGL	1.3	(0-20)	
LCS1	Benzo(a)pyrene	2	2.12	UGL	106.0	(70-130)	
LCS2	Benzo(a)pyrene	2	2.11	UGL	105.5	(70-130)	0.47
MBLK	Benzo(a)pyrene	ND	<0.020	UGL			
MS	Benzo(a)pyrene	2	2.02	UGL	101.0	(70-130)	
MSD	Benzo(a)pyrene	2	2.08	UGL	104.0	(70-130)	2.9
RPD_LCS	Benzo(a)pyrene	106.000	105.500	UGL	0.5	(0-20)	
RPD_MS	Benzo(a)pyrene	101.000	104.000	UGL	2.9	(0-20)	

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LCS1	Di(2-Ethylhexyl)phthalate	2	2.47	UGL	123.5	(70-130)	
LCS2	Di(2-Ethylhexyl)phthalate	2	2.53	UGL	126.5	(70-130)	2.4
MBLK	Di(2-Ethylhexyl)phthalate	ND	<0.60	UGL			
MS	Di(2-Ethylhexyl)phthalate	2	2.47	UGL	123.5	(70-130)	
MSD	Di(2-Ethylhexyl)phthalate	2	2.41	UGL	120.5	(70-130)	2.5
RPD_LCS	Di(2-Ethylhexyl)phthalate	123.500	126.500	UGL	2.4	(0-20)	
RPD_MS	Di(2-Ethylhexyl)phthalate	123.500	120.500	UGL	2.5	(0-20)	
LCS1	Di-(2-Ethylhexyl)adipate	2	2.13	UGL	106.5	(70-130)	
LCS2	Di-(2-Ethylhexyl)adipate	2	2.30	UGL	115.0	(70-130)	7.7
MBLK	Di-(2-Ethylhexyl)adipate	ND	<0.60	UGL			
MS	Di-(2-Ethylhexyl)adipate	2	2.22	UGL	111.0	(70-130)	
MSD	Di-(2-Ethylhexyl)adipate	2	2.33	UGL	116.5	(70-130)	4.8
RPD_LCS	Di-(2-Ethylhexyl)adipate	106.500	115.000	UGL	7.7	(0-20)	
RPD_MS	Di-(2-Ethylhexyl)adipate	111.000	116.500	UGL	4.8	(0-20)	
LCS1	Hexachlorobenzene	2	2.03	UGL	101.5	(70-130)	
LCS2	Hexachlorobenzene	2	2.03	UGL	101.5	(70-130)	0.00
MBLK	Hexachlorobenzene	ND	<0.050	UGL			
MS	Hexachlorobenzene	2	1.91	UGL	95.5	(70-130)	
MSD	Hexachlorobenzene	2	1.95	UGL	97.5	(70-130)	2.1
RPD_LCS	Hexachlorobenzene	101.500	101.500	UGL	0.0	(0-20)	
RPD_MS	Hexachlorobenzene	95.500	97.500	UGL	2.1	(0-20)	
LCS1	Hexachlorocyclopentadiene	2	1.60	UGL	80.0	(70-130)	
LCS2	Hexachlorocyclopentadiene	2	1.53	UGL	76.5	(70-130)	4.5
MBLK	Hexachlorocyclopentadiene	ND	<0.050	UGL			
MS	Hexachlorocyclopentadiene	2	1.44	UGL	72.0	(70-130)	
MSD	Hexachlorocyclopentadiene	2	1.66	UGL	83.0	(70-130)	14
RPD_LCS	Hexachlorocyclopentadiene	80.000	76.500	UGL	4.5	(0-20)	
RPD_MS	Hexachlorocyclopentadiene	72.000	83.000	UGL	14.2	(0-20)	
LCS1	Molinate	2	2.14	UGL	107.0	(70-130)	
LCS2	Molinate	2	2.16	UGL	108.0	(70-130)	0.93
MBLK	Molinate	ND	<0.20	UGL			
MS	Molinate	2	2.12	UGL	106.0	(70-130)	
MSD	Molinate	2	2.15	UGL	107.5	(70-130)	1.4
RPD_LCS	Molinate	107.000	108.000	UGL	0.9	(0-20)	
RPD_MS	Molinate	106.000	107.500	UGL	1.4	(0-20)	

Spikes which exceed Limits and Method Blanks with positive results are highlighted by Underlining.
Criteria for MS and DUP are advisory only, batch control is based on LCS. Criteria for duplicates are advisory only, unless otherwise specified in the method.

MWH Laboratories
A Division of MWH Americas, Inc.

750 Royal Oaks Drive, Suite 100
Monrovia, California 91016-3629
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Laboratory
QC Report
#140807

Hawaii Department of Water Supply
(Hilo)
(continued)

LCS1	Simazine	2	2.26	UGL	113.0	(70-130)	
LCS2	Simazine	2	2.16	UGL	108.0	(70-130)	4.5
MBLK	Simazine	ND	<0.050	UGL			
MS	Simazine	2	2.09	UGL	104.5	(70-130)	
MSD	Simazine	2	2.11	UGL	105.5	(70-130)	0.95
RPD_LCS	Simazine	113.000	108.000	UGL	4.5	(0-20)	
RPD_MS	Simazine	104.500	105.500	UGL	1.0	(0-20)	
LCS1	Perylene-d12	100	98	%R	98.0	(70-130)	
LCS2	Perylene-d12	100	97	%R	97.0	(70-130)	1.0
MBLK	Perylene-d12	100	98	%R	98.0		
MS	Perylene-d12	100	96	%R	96.0	(70-130)	
MSD	Perylene-d12	100	100	%R	100.0	(70-130)	4.1
LCS1	1,3-dimethyl-2-nitrobenzene	100	101	%R	101.0	(70-130)	
LCS2	1,3-dimethyl-2-nitrobenzene	100	92	%R	92.0	(70-130)	9.3
MBLK	1,3-dimethyl-2-nitrobenzene	100	102	%R	102.0		
MS	1,3-dimethyl-2-nitrobenzene	100	98	%R	98.0	(70-130)	
MSD	1,3-dimethyl-2-nitrobenzene	100	94	%R	94.0	(70-130)	4.2
LCS1	Triphenylphosphate	100	99	%R	99.0	(70-130)	
LCS2	Triphenylphosphate	100	104	%R	104.0	(70-130)	4.9
MBLK	Triphenylphosphate	100	107	%R	107.0		
MS	Triphenylphosphate	100	96	%R	96.0	(70-130)	
MSD	Triphenylphosphate	100	100	%R	100.0	(70-130)	4.1
LCS1	Thiobencarb	2	2.22	UGL	111.0	(70-130)	
LCS2	Thiobencarb	2	2.26	UGL	113.0	(70-130)	1.8
MBLK	Thiobencarb	ND	<0.20	UGL			
MS	Thiobencarb	2	2.22	UGL	111.0	(70-130)	
MSD	Thiobencarb	2	2.31	UGL	115.5	(70-130)	4.0
RPD_LCS	Thiobencarb	111.000	113.000	UGL	1.8	(0-20)	
RPD_MS	Thiobencarb	111.000	115.500	UGL	4.0	(0-20)	

Spikes which exceed Limits and Method Blanks with positive results are highlighted by Underlining.
Criteria for MS and DUP are advisory only, batch control is based on LCS. Criteria for duplicates are advisory only, unless otherwise specified in the method.

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#140807

Hawaii Department of Water Supply
(Hilo)
(continued)

QC Ref #258828 Endothall

QC	Analyte	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPD (%)
MS	Spiked sample	Lab # 25	01110202	UGL		(0-0)	
LCS1	Endothall	25	22.8	UGL	91.2	(66-130)	
MBLK	Endothall	ND	<5.0	UGL			
MS	Endothall	25	24.2	UGL	96.8	(66-130)	
MSD	Endothall	25	19.8	UGL	79.2	(66-130)	20
MS_2ND	Endothall	25	22.8	UGL	91.2	(66-130)	
RPD_MS	Endothall	96.800	79.200	UGL	20.0	(0-20)	

Spikes which exceed Limits and Method Blanks with positive results are highlighted by Underlining.
Criteria for MS and DUP are advisory only, batch control is based on LCS. Criteria for duplicates are advisory only, unless otherwise specified in the method.

MONTGOMERY WATSON LABORATORIES
555 East Walnut Street
Pasadena, California 91101
818 568 6400; Fax: 818 568 6324;
1 800 566 LABS (1 800 566 5227)

Laboratory
Report
140807

Hawaii Department of Water Supply (Hilo)
Mae Kise
25 Aupuni St.
Hilo , HI 96720

Sample Received
07-jan-2005 13:55:00
2501070050

SAFE DRINKING WATER BRANCH
PHASE II AND PHASE V CONTAMINANTS
SUMMARY FORM

Water System Name: _____ PWS ID No. _____

Sample Location: WELL HEAD HONOMU WELL

Sample Date: 01/05/05

Laboratory Name: Montgomery Laboratories Lab Report No. 2501070050

Contaminant	EPA Method	Detection Limit	Concentration
2,4-D (ug/L)	515.4	0.1	ND
2,4,5-TP (ug/L)	515.4	0.2	ND
Pentachlorophenol (ug/L)	515.4	0.04	ND
Pichloram (ug/L)	515.4	0.1	ND
Dalapon (ug/L)	515.4	1	ND
Dinoseb (ug/L)	515.4	0.2	ND
Benzo(a)pyrene (ug/L)	525.2	0.02	ND
Di(2-ethylhexyl)adipate (ug/L)	525.2	0.6	ND
Diethylhexylphthalate (ug/L)	525.2	0.6	ND
Dioxin (Picograms/L)	1613	5	ND
Diquat (ug/L)	549.2	0.4	ND
Endothall (ug/L)	548.1	5	ND
Cyanide (Milligrams/L)	500CN-F	0.025	ND

Group A,B,C -- Note: Surface water systems must take annual samples for cynanide

Pace Analytical™
www.pacelabs.com

140807
HAWAII

Pace Analytical Services, Inc.
1700 Elm Street, Suite 200
Minneapolis, MN 55414
Phone: 612.607.1700
Fax: 612.607.6444

DETERMINATION OF 2,3,7,8-TCDD

Prepared for:
MWH
Attn: Michael Lettona
750 Royal Oaks Drive, Suite 100
Monrovia, CA 91016-3629

ACCREDITED IN ACCORDANCE WITH nelac

This report contains 4 pages.

The results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report.

REPORT OF LABORATORY ANALYSIS

Pace Analytical™
www.pacelabs.com

Pace Analytical Services, Inc.
1700 Elm Street, Suite 200
Minneapolis, MN 55414
Phone: 612.607.1700
Fax: 612.607.6444

January 19, 2005
Attn: Michael Lettona
MWH
750 Royal Oaks Drive, Suite 100
Monrovia, CA 91016-3629

140807
MWL Project # 140087
MWL Sub PO # 99-15739
Pace Project # 105959
State Cert. #: Hawaii
Expiration Date: 30-Jun-2005

Dear Mr. Lettona:

Enclosed are analytical results of one drinking water sample analyzed for 2,3,7,8 -TCDD content. This sample was was analyzed according to Method 1613B by High Resolution Gas Chromatography/High Resolution Mass Spectrometry.

MWL Sample ID	Pace Sample ID	Date Collected	Date Received
2501070050	105959001	01/05/2005	01/11/2005

The results reported for this sample and the associated quality control samples were all within the criteria described in Method 1613B. If you have any questions or concerns regarding these results, please contact me at (612) 607-6407, by facsimile at (612) 607-6444 or by e-mail at Holly.Peepers@pacelabs.com.

Sincerely,

Holly Peepers

Holly Peepers, Project Manager
High Resolution Mass Spectrometry
Pace Analytical Services
Minneapolis MN

REPORT OF LABORATORY ANALYSIS

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Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612-607-6444

Drinking Water Analysis Results
2,3,7,8-TCDD -- USEPA Method 1613B
Montgomery Watson Harza Labs

Sample ID.....2501070050
Project #.....140087
Sub PO #.....99-15739
Lab Sample ID.....105959001

Source ID.....WELL HEAD HONOMU WELL
Date Collected.....01/05/2005
Date Received.....01/11/2005
Date Extracted.....01/17/2005

Spike..... 200 pg
IS Spike.....2000 pg
CS Spike..... 200 pg

	Sample 105959001	Method Blank	Lab Spike	Lab Spike Dup
[2,3,7,8-TCDD]	**ND**	ND	--	--
RL	5 pg/L	5 pg/L	--	--
2,3,7,8-TCDD Recovery	--	--	93%	112%
Spike Recovery Limit	--	--	73-146%	73-146%
RPD			18.0%	
IS Recovery	**80%**	61%	76%	87%
pg Recovered	1610 pg/L	1228 pg/L	1519 pg/L	1745 pg/L
IS Recovery Limits	31-137%	31-137%	25-141%	25-141%
CS Recovery	**86%**	73%	84%	92%
pg Recovered	173 pg/L	145 pg/L	167 pg/L	185 pg/L
CS Recovery Limits	42-164%	42-164%	37-158%	37-158%
Filename	A50118C_6	A50118C_3	A50118C_1	A50118C_2
Analysis Date	01/18/2005	01/18/2005	01/18/2005	01/18/2005
Analysis Time	15:06	13:30	12:26	12:58
Analyst	NAH	NAH	NAH	NAH
Volume	1.023L	1.012L	1.009L	0.956L
Dilution	NA	NA	NA	NA
CCAL Filename	A50118A_2	A50118A_2	A50118A_2	A50118A_2

! = Outside the Control Limits
ND = Not Detected
RL = Reporting Limit
Limits = Control Limits from Method 1613 (10/94 Revision), Tables 6A and 7A
RPD = Relative Percent Difference of Lab Spike Recoveries
IS = Internal Standard [2,3,7,8-TCDD-$^{13}C_{12}$]
CS = Cleanup Standard [2,3,7,8-TCDD-$^{37}Cl_4$]

Analyst: Nathan Hoff

Project No.....105959

MWH Laboratories
A Division of MWH Americas,Inc.
750 Royal Oaks Drive Suite 100
Monrovia, CA 91016-3629
Ph (626) 386-1100 Fax (626) 386-1095

Date 01/10/05

Submittal Form & Purchase Order 99-15739

***REPORTING REQUIREMENTS: One report for this MWH Project Number: 140807**
Do Not Combine Report with any other samples submitted under different MWH project numbers!
Report & Invoice must have the MWH Project Number and Sub PO#: **99-15739**

Report all quality control data according to Method, include dates analyzed, date extracted (if extracted) and Method reference on the report. Email by .pdf to Michael.Lettona@mwhglobal.com or Fax results to 626-386-1095
Results must have Complete data & QC with Approval Signature.
See reverse side for List of Terms and Conditions

Reports & Invoices to: Michael Lettona Sub-contracting Administrator
EMAIL TO: Michael.Lettona@mwhglobal.com
MWH Laboratories 750 Royal Oaks Drive CA 91016
Phone (626) 386-1137 Fax (626) 386-1095

Provide in each Report
the Specified State
Certification # & Exp Date for
requested tests + matrix

Hawaii DW

105959

Ship To **Holly Peepers**
Pace Analytical
1700 Elm Street SE Suite 200
Minneapolis, Minnesota 55414

Bill Recipient FedEx Acct:1797-5692-7

612-607-6407 Fax 612-607-6444

MWH Project # **140807**
Report Due: **01/25/05**
Sub PO# **99-15739**
mgl

Client Sample ID for reference only | Analysis Requested | Date & Time | Matrix | Container

1	D1613E2D	2501070050	WELL HEAD HONOMU WELL	2,3,7,8-Tcdd Dioxin in drinking water 1613b	01/05/05 10:15	ow	1 1L amber glass / no preservative

If any HT for NJ NY UT) 1613B DW

Relinquished by: Sample Control Date 01/10/05 Time 1252 MUST HAVE NOTIFICAION IF TEMP IS GREATER THAN 6 OR LESS THAN 2 CELSIUS
Page !
Received by: Date Time An Acknowledgement of Receipt is requested to attn: Dennis Faigal

APPENDIX C ARCHAEOLOGICAL & CULTURAL IMPACT ASSESSMENT

PHRI **Paul H. Rosendahl, Ph.D., Inc.**
Archaeological • Historical • Cultural Resource Management Studies & Services
224 Walanuenue Avenue • Hilo, Hawai'i 96720 • (808) 969-1763 • FAX (808) 961-6998
P.O. Box 23305 • G.M.F., Guam 96921 • (671) 472-3117 • FAX (671) 472-3131

PHRI Report 2672-012907

January 31, 2007

ARCHAEOLOGICAL AND CULTURAL IMPACT ASSESSMENT FOR ENVIRONMENTAL ASSESSMENT (EA)

HONOMŪ WELL PROJECT

Land of Honomū, South Hilo District, Island of Hawai'i (TMK: (3)2-8-13:55)

Prepared by
Paul H. Rosendahl, Ph.D.
for
Department of Water Supply

Introduction

At the request of Planning Solutions, Inc. (PSI), and on behalf of their client, the Department of Water Supply, Paul H. Rosendahl, Ph.D., Inc. (PHRI) conducted an archaeological and cultural impact assessment for the Honomū Well Project (TMK:(3)2-8-13:55), located in the Land of Honomū, South Hilo District, on the windward side of the Island of Hawai'i (*Figure 1*, at end). The assessment was conducted in connection with preparation of a Chapter 343 (Haw.Rev.Stat.) environmental assessment (EA) for development planning and subsequent permit applications that would be made to such agencies as the Hawai'i County Planning Department (HCPD), the Hawai'i County Department of Public Works (HCDPW), and the Hawai'i State Department of Land and Natural Resources (DLNR).

Assessment Purpose, Objectives, and General Scope of Work

Archaeological Assessment

The basic purpose of the archaeological assessment was to comply with all current historic preservation requirements of the Hawai'i State Historic Preservation Division (SHPD) and the HCPD. The specific objectives of the survey were to determine: (a) the general nature, extent, and potential significance of any archaeological–historical remains that might be present, (b) the historic preservation implications of any such remains for the feasibility of any proposed future development; and (c) the general scope of work and level of effort for any subsequent archaeological–historic preservation work that might be appropriate and/or required.

Cultural Impact Assessment

The basic purpose of the cultural impact assessment study was to comply with the requirements of Chapter 343 (Haw. Rev. Stat.), as amended by H.B. No.2895 H.D. 1 of the Hawai'i State Legislature (2000) and approved by the Governor as Act 50 on April 26, 2000, and which among other things requires that environmental assessments (EA) and environmental impact statements (EIS) identify and assess the potential effects of any proposed project upon the "...cultural practices of the community and State...." Chapter 343 (Haw. Rev. Stat.) was amended by the State legislature because of the perceived need to assure that the environmental review process explicitly addressed the potential effects of any proposed

project upon "....Hawai'i's culture, and traditional and customary rights." Guidelines previously prepared and adopted by the State Office of Environmental Quality Control (OEQC) (1997) provide compliance guidance. Both Act 50 and the OEQC *Guidelines for Assessing Cultural Impacts* mandate consideration of all the different groups comprising the multi-ethnic community of Hawai'i. This inclusiveness, however, is generally understated, and the emphasis—as indicated by a background review of the cultural impact assessment issue (PHRI 1998:5-8), and the intent and evolution of both the legislative action and the guidelines—is clearly meant to be upon aspects of Native Hawaiian culture—particularly traditional and customary access and use rights.

The specific objectives of the cultural impact assessment were to determine the following: (a) if the project area is currently being accessed by native Hawaiian cultural practitioners, or individuals of any other cultural groups, for any traditional and customary cultural uses; (b) if the proposed project would have any adverse impacts upon any identified current native Hawai'i or other cultural group uses of the area; and (c) what measures might be proposed to mitigate any adverse impacts the proposed project might have upon the uses of the area by any identified current native Hawaiian or other cultural group.

The scope of work and methodology for the Honomū Well Project cultural impact assessment is based on the general assumption that the level of study effort appropriate in any project-specific context should involve the consideration of several factors, the most relevant of which are the following: (a) the probable number and significance of known or suspected cultural properties, features, practices, or beliefs within or associated with the specific project area; (b) the potential number of individuals (potential informants) with cultural knowledge of the specific project area; (c) the availability of historical and cultural information on the specific project area or immediately adjacent lands; (d) the physical size, configuration, and natural and human modification history of the specific project area; and (e) the potential effects of the project on known or expected cultural properties, features, practices, or beliefs within or related to the specific project area.

Consideration of these factors within the specific nature and context of the proposed Honomū Well Project indicated that the most appropriate level of study for an adequate assessment of potential cultural impacts would be a limited or abbreviated assessment study. Based on the location, small size, and the extensive recent historic period modification, and development and utilization of the project site, this study assumes that: (a) potential cultural impact assessment issues would be highly unlikely, (b) the negative results of the archaeological survey conducted for the project would confirm both the greatly altered physical nature of the project area and the absence of cultural resources within or related to the project area, and (c) in the unlikely instance that any legitimate cultural impact assessment issues should arise during the environmental review period, they could be addressed adequately within the framework of the regulatory review process (i.e., from Draft to Final Environmental Assessment).

General Scope of Work

Based on a information provided by the client, and based on a preliminary review of available background information for the general vicinity of the project area, and familiarity with both the general project area and the current regulatory review requirements of the SHPD and the HCPD, the following scope of work was determined to be appropriate for the current cultural impact assessment:

1. Conduct appropriate background review and research;
2. Mobilization–including all field work preparations, field crew travel time, and demobilization;
3. Conduct variable intensity, 100%-coverage, pedestrian surface reconnaissance fieldwork only of the project area;
4. Conduct post-field analysis of field and other data;
5. Prepare a written assessment report–including description and evaluation of assessment findings, and a scope of work and cost estimate for any additional work that might be required by various regulatory agencies in connection with project planning and development; and

6. Coordinate and consult with client, client representatives, agency staff, etc. (as appropriate and/or required).

Based on available information on the general status and past land use history of the project area and its immediate vicinity, the likelihood of encountering potentially significant archaeological-historical resources seemed to be very low. It was believed likely that a formal determination of "no historic properties affected" for the project area, in accordance with the general guidance provided by *Chapter 13-284: Section 5(b)* of the SHPD Rules and Regulations (*HAR*) (effective 12/11/03), could be requested of and received from SHPD for the project area. Such a determination would satisfy the historic preservation review requirements of the SHPD and the HCPD. This preliminary evaluation was made with the qualification that it was always possible, however, unlikely, that potentially significant resources requiring subsequent additional work might be encountered during the assessment fieldwork.

Project Area Description

The Honomū Well Project area (TMK:3-2-8-13:55) is situated c. 0.8 miles from the coastline, c. 0.75 miles inland of and above the Hawai'i Belt Road, along 'Akaka Falls Road, approximately 2,900 ft. (0.54 miles) west of Honomū Village, in the Land of Honomū, South Hilo District, on the windward side of the Island of Hawai'i (*Figures 2 and 3*, at end). The project area totals c. 31,800 square feet (0.73 acres overall of open, undeveloped land). *Figures 4, 5,* and *6* (*at end*) are photographs of the site from different views.

The project area is located on the lower windward slope of the eastern flank of Mauna Kea, at an elevation of c. 516 ft above mean sea level. The area is geologically dominated by Pahala Ash, a finely divided vitric (glassy) lava believed to have been formed as a byproduct of wind blowing on aerial lava fountains erupting from Mauna Kea. The lava series to which the project area belongs is the Hamakua volcanic series of volcanic rocks of Mauna Kea Volcano, which are overlain by the later andesitic and basaltic lava flows of the lower member of the Laupahoehoe volcanic series of volcanic rocks of Mauna Kea Volcano (Stearns and Macdonald 1946:152-7,159-165). The physiographic type of landform is Hamakua Dissected Upland, which is characterized by slopes cut by numerous major valleys with established master drainages (Armstrong 1983:37).

The ground surface of the project area is generally flat and has been much disturbed due to former sugarcane cultivation and construction of a water tank on adjacent land. A bed of gravel covers the soil in many areas. Beneath the gravel, the project area consists of soils classified as Kaiwiki silty clay loam, an erosional byproduct of the original Pahala ash, (Sato et al. 1973:23). These are very strongly acidic to medium acid in the surface layer, which is about 15 inches thick. The subsoil is medium to strongly acidic and is dark-brown to dark reddish-brown and about 48 inches thick. These soils were used for sugarcane growing (Sato et al. 1973:23).

Annual rainfall in the project area is estimated to be c. 136 inches, and the mean annual temperature is approximately 72 degrees F. (Armstrong 1986:63-4). Vegetation within the area is rather limited, and consists mainly of various low grasses, California grass (*Brachiaria mutica*), *Mimosa pudica*, albizia, and many introduced weeds.

Field Inspection

A field inspection of the project area was carried out on January 29, 2007, by PHRI Supervisory Archaeologist Alan B. Corbin, M.A., assisted by Field Technician Leonard Kubo, B.A. A 100%-coverage pedestrian survey of the area was conducted; vegetation cover was low to moderate, and ground visibility was good to excellent.

Archaeological and Cultural Impact Assessment Results

No evidence of any prehistoric or early historic period use of the project area was encountered. As noted, the ground surface has been heavily disturbed in the past; the disturbance would have doubtlessly destroyed any archaeological resources that once might have been present. There was also no evidence

of any potentially significant cultural properties, features, or natural resources in the project area, and no evidence that cultural practices or beliefs are associated with the area. Furthermore, there is no indication the project area has resources necessary to or currently being used by either Native Hawaiian cultural practitioners exercising traditional and customary access and use rights for any purposes or by individuals of any other cultural affiliation for any traditional cultural purposes.

Conclusion

Based on the negative findings of the current project, it is concluded that the proposed well project area should have no significant effects—much less any adverse impacts—upon any cultural resources, and that therefore no mitigation measures of any kind are necessary or appropriate.

Request to SHPD for Determination of "No Historic Properties Affected"

Based on the negative results of the current project, it is requested the SHPD issue a written determination of "no historic properties affected" for the current property, in accordance with the general guidance provided by Chapter 13-284: Section 5(b) of the SHPD Rules Pertaining to the Historic Preservation Review Process (*HAR*) (effective 12/11/03).

References Cited

Armstrong, R.W. (ed.)

1983 *Atlas of Hawaii*. Honolulu: University of Hawaii Press. (Second edition)

OEQC (Office of Environmental Quality Control, State of Hawai'i)

1997 Guidelines for Assessing Cultural Impacts. Adopted by the Environmental Council; November 19, 1997.

PHRI (Paul H. Rosendahl, Ph.D., Inc.)

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Sato, H.H., W. Ikeda, R. Paeth, R. Smythe, and M. Takehiro, Jr.

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Stearns, H.T., and G.A. MacDonald

1946 Geology and Ground-Water Resources of the Island of Hawaii. *Hawaii Division Hydrography Bulletin* 9.

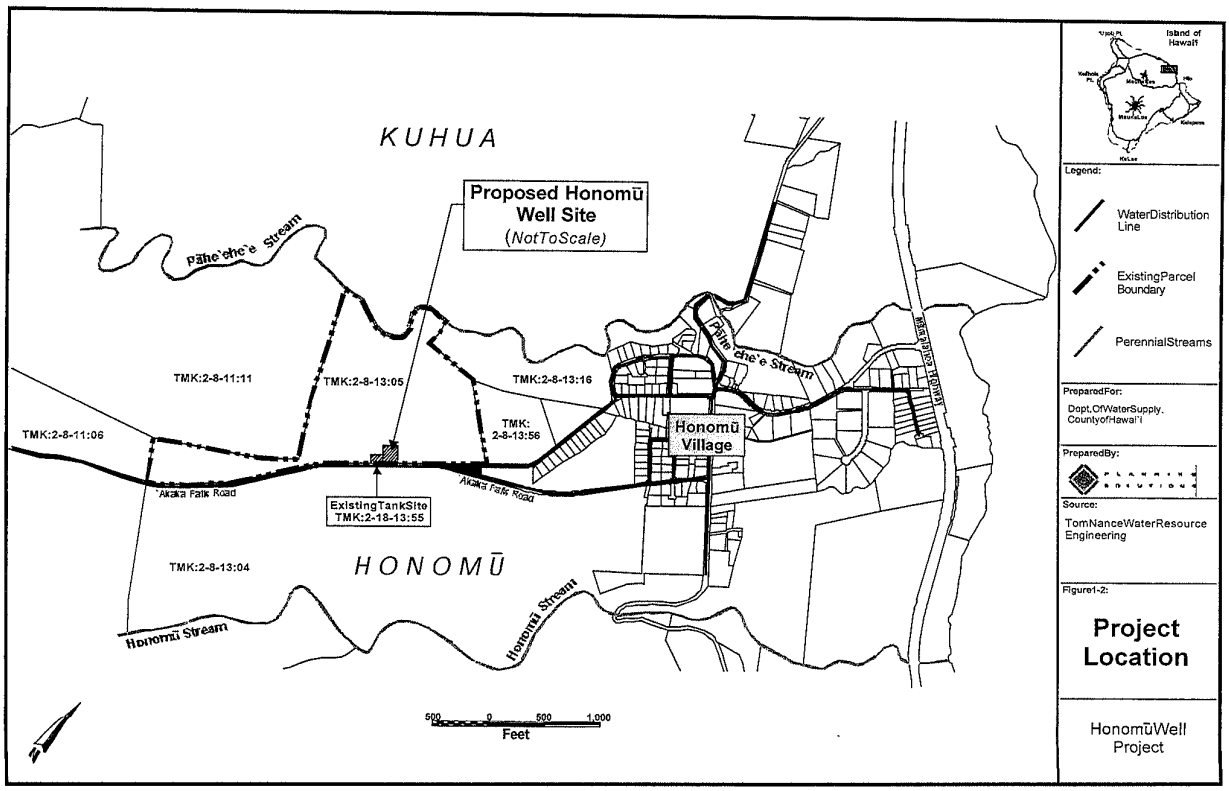

Figure 2. Proposed Well Site

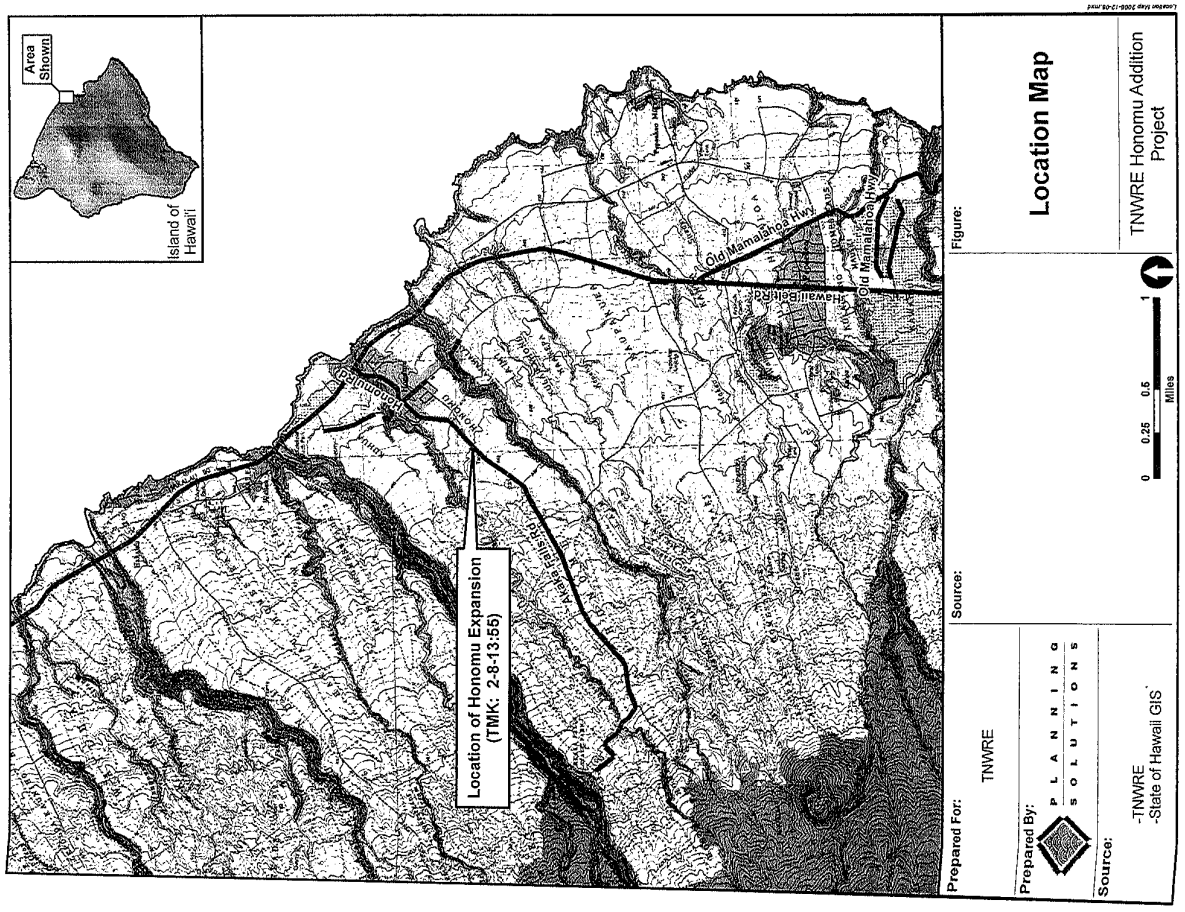

Figure 1. Project Location

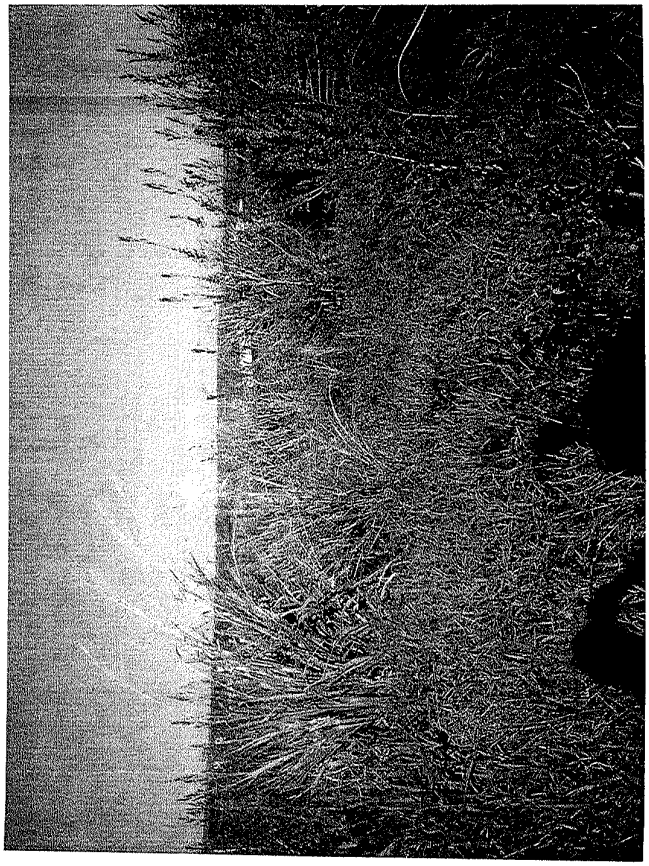

Figure 4. Project Area, View to Northwest

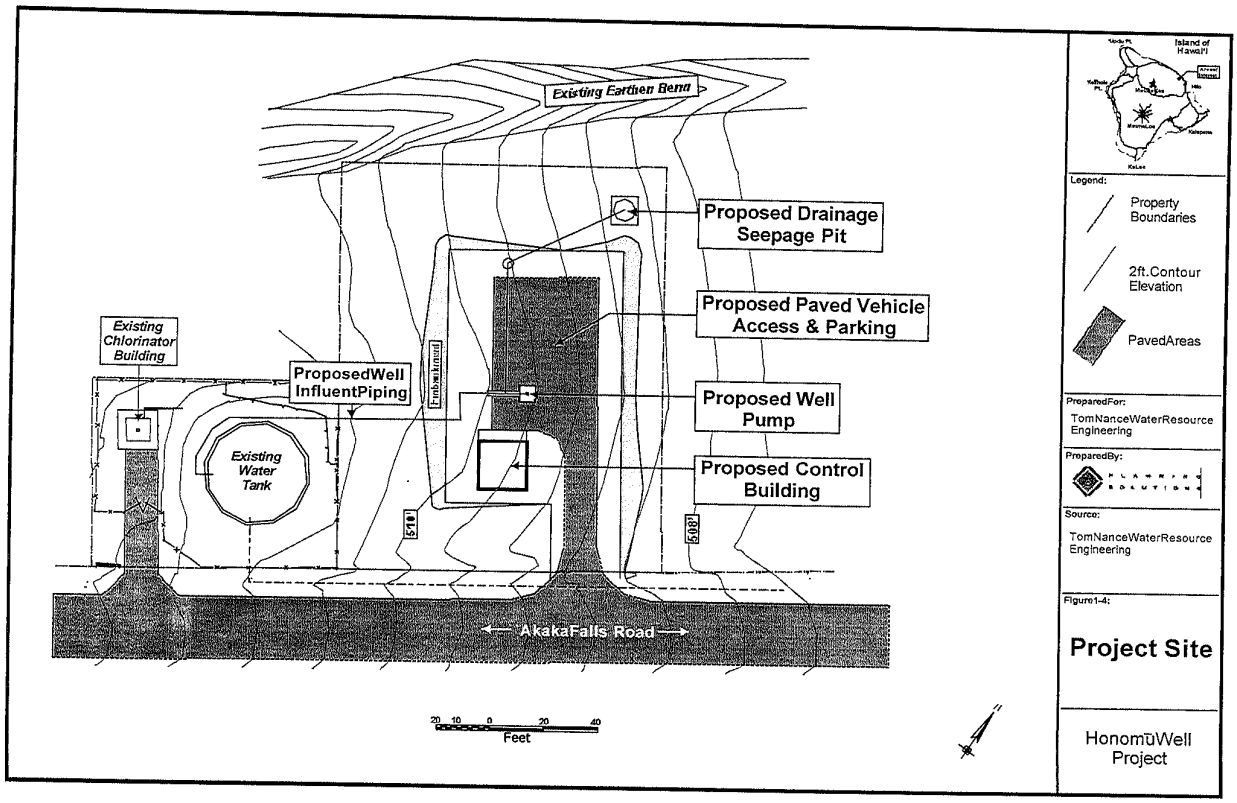

Figure 3. Plan View of Proposed Well Site

Figure 5. Project Area, View to Northeast

Figure 6. Project Area, View to Southeast

To Charles Morgan	From
Co./Dept. Planning Solutions	Co. Hist Sites
Phone #	Phone #
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STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

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

March 29, 2007

Milton Pavao
Department of Water Supply
345 Kekuanaoa Street, Suite 20
Hilo, Hawaii 96720

LOG NO: 2007.0978
DOC NO: 0703MK33
Archaeology

Dear Mr. Pavao:

SUBJECT: **Chapter 6E-8 Historic Preservation Review [County/DWS] –**
Well Pump Permit; State Commission on Water Resource Management
Honomu Ahupuaa, Hamakua District, Island of Hawaii
TMK (3) 2-8-013:055

The proposed action consists of expanding the existing Honomu reservoir and well site by less than 10,000 square feet to accommodate an additional well and storage tank.

We concur that **no historic properties will be affected** by this undertaking because:

- ☐ Intensive cultivation has altered the land
- ☐ Residential development/urbanization has altered the land
- ☐ Previous grubbing/grading has altered the land
- ☒ An accepted archaeological inventory survey (AIS) found no historic properties
- ☐ SHPD previously reviewed this project and mitigation has been completed
- ☒ Other: *We are in receipt of an Archaeological and Cultural Impact Assessment for an EA regarding the Honomu Well Project (PHRI 2007) for which a field inspection of the proposed project area was undertaken. Based on the results of the field inspection, we believe no historic properties will be affected by the proposed expansion of the well.*

In the event that historic resources, including but not limited to artifacts, lava tubes, blisters or caves, or human skeletal remains, are identified during routine construction activities, all work must cease within the immediate vicinity of the find, the find shall be protected from additional disturbance, and the State Historic Preservation Division, must be contacted immediately at (808) 243-5169.

Aloha,

Melanie Chinen, Administrator
State Historic Preservation Division

APR - 4 2007

MK:kf

c: Charles L. Morgan, Environmental Planner, Planning Solutions, Inc. FAX (808) 550-4549
Paul H. Rosendahl, PHRI, FAX 961-6998