FILE COPY

JAN 23 2020

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

January 14, 2020

Mr. Scott Glenn, Director
State of Hawai'i
Office of Environmental Quality Control
235 South Beretania Street, Suite 702
Honolulu, HI 96813

Dear Mr. Glenn:

Subject: Wai'aha Well B Project
Final Environmental Assessment and Finding of No Significant Impact

The enclosed *Final Environmental Assessment for the Wai'aha Well B Project* (FEA) assesses the potential effects of constructing, testing, and operating the proposed facilities. Based on the information contained in this FEA and the requirements of Hawai'i Revised Statutes, Chapter 343, and its implementing regulations contained in the Hawai'i Administrative Rules, Title 11, Chapter 200, the County of Hawai'i, Department of Water Supply, has determined that an Environmental Impact Statement is not required and is issuing a Finding of No Significant Impact (FONSI). Please publish a notice of FEA and FONSI in the next edition of the Office of Environmental Quality Control's (OEQC) *The Environmental Notice*.

We have also provided the action summary, significance criteria, and other required information via the OEQC online submittal form.

Please contact our project consultant, Mr. Makena White, of Planning Solutions, Inc., at (808) 550-4538, if you have any questions.

Sincerely yours,

Keith K. Okamoto, P.E.
Manager-Chief Engineer

SHU:dmj

Enc.

From: webmaster@hawaii.gov
To: HI Office of Environmental Quality Control
Subject: New online submission for The Environmental Notice
Date: Wednesday, January 15, 2020 8:35:11 AM

Action Name

Waiʻaha Well B Project

Type of Document/Determination

Final environmental assessment and finding of no significant impact (FEA-FONSI)

HRS §343-5(a) Trigger(s)

- (1) Propose the use of state or county lands or the use of state or county funds

Judicial district

North Kona, Hawaiʻi

Tax Map Key(s) (TMK(s))

7-5-014:016, 7-5-015:015

Action type

Agency

Other required permits and approvals

Water Use Permit, New Potable Water Source Approval, HRS Chapter 343 Review, Well Construction and Pump Installation Permit, Construction Noise Permit, Grubbing and Grading Permit, Building Permit.

Proposing/determining agency

County of Hawaiʻi, Department of Water Supply

Agency contact name

Shari Uyeno

Agency contact email (for info about the action)

suyeno@hawaiidws.org

Email address or URL for receiving comments

makena@psi-hi.com

Agency contact phone

(808) 961-8070

Agency address

345 Kekuanaoa Street, Suite 20
Hilo, Hawaii 96720
United States
Map It

Was this submittal prepared by a consultant?

Yes

Consultant

Planning Solutions, Inc.

Consultant contact name

Makena White

Consultant contact email

makena@psi-hi.com

Consultant contact phone

(808) 550-4538

Consultant address

711 Kapiolani Boulevard, Suite 950
Honolulu, Hawaii 96813
United States
Map It

Action summary

The County of Hawai‘i, Department of Water Supply proposes to construct and operate a new well (“Well B”) at its existing Wai‘aha Well and Reservoir facility as a source for its North Kona Water System. The project will also include a new pump control and chlorination building and installation of ancillary power and pump equipment.

Reasons supporting determination

The significance criteria and determination are contained in Chapter 5, Sections 5.1, 5.2, and 5.3.

Attached documents (signed agency letter & EA/EIS)

- Final-Environmental-Assessment-for-Waiaha-Well-B-Project-2020-01-14-to-OEQC.pdf
- DWS-FEA-FONSI-Letter-to-OEQC-2020-01-15.pdf

Shapefile

- The location map for this Final EA is the same as the location map for the associated Draft EA.

Action location map

- Waiaha_Well_B_-_Project_Parcels.zip

Authorized individual

Makena White, AICP

Authorization

- The above named authorized individual hereby certifies that he/she has the authority to make this submission.

Final Environmental Assessment &
Finding of No Significant Impact

WAI‘AHA WELL B PROJECT

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

PREPARED BY:
PLANNING SOLUTIONS

JANUARY 2020

PROJECT SUMMARY

Project:	Waiʻaha Well B Project
Applicant/Approving Agency:	Department of Water Supply County of Hawaiʻi 345 Kekūanaōʻa Street., Suite 20 Hilo, Hawaiʻi 96720 Contact: Shari Uyeno, P.E. (808) 961-8070 ext. 252
Location:	75-5703 Māmalahoa Highway North Kona District; Island of Hawaiʻi
Tax Map Keys:	7-5-014:016 and 7-5-015:015
Parcel Area:	:016 = 0.985 ac.; :015 = 0.795 ac.
Project Site Area:	0.795 ac. (Located within existing lot.)
State Land Use District:	Agriculture
County Zoning:	Ag-1a
Proposed Action:	The Department proposes to install a new Waiʻaha Well B at the site of the existing Waiʻaha Well (State Well No. 3857-004). The project will also include: (*i*) installation of a new 400 horsepower pump (HP); (*ii*) a new pump control and chlorination building; and (*iii*) related ancillary power and pump equipment.
Associated Actions Requiring Environmental Assessment:	Proposed use of County land, County and federal funds.
Consultation:	State Historic Preservation Division
Potential Required Permits and Approvals:	• HRS Chapter 343 Environmental Assessment • Water Use Permit • Well Construction and Pump Installation Permit • Conditional Approval, New Potable Water Source • Construction Noise Permit • Grubbing and Grading Permit • Building Permit
Determination:	Finding of No Significant Impact
Consultant:	Planning Solutions, Inc. 711 Kapiʻolani Boulevard, Suite 950 Honolulu, Hawaiʻi 96813 Contact: Mākena White (808) 550-4538 makena@psi-hi.com

TABLE OF CONTENTS

1.0 PURPOSE OF & NEED FOR THE PROJECT 1-1
1.1 INTRODUCTION 1-1
1.2 PURPOSE OF THE PROPOSED ACTION 1-1
1.3 NEED FOR THE PROPOSED ACTION 1-5
1.4 OBJECTIVES OF THE PROPOSED ACTION 1-6
1.5 ORGANIZATION OF THE ENVIRONMENTAL ASSESSMENT 1-6

2.0 PROPOSED ACTION AND ALTERNATIVES CONSIDERED 2-1
2.1 DESCRIPTION OF THE PROPOSED ACTION 2-1
2.1.1 Site Preparation 2-1
2.1.2 Wai'aha Well B 2-8
2.1.3 Pump Control and Chlorination Building 2-9
2.1.4 Additional Infrastructure 2-10
2.1.5 Water Testing 2-10
2.2 PROJECT SCHEDULE 2-10
2.3 PROJECT BUDGET 2-11
2.4 FRAMEWORK FOR CONSIDERATION OF ALTERNATIVES 2-11
2.5 ALTERNATIVES ADDRESSED IN DETAIL 2-12
2.5.1 Proposed Action: Wai'aha Well B Project 2-12
2.5.2 No Action Alternative 2-12
2.6 ALTERNATIVES ELIMINATED FROM DETAILED ANALYSIS 2-12
2.6.1 Alternate Locations 2-12
2.6.2 Delayed Action 2-13
2.6.3 Enhanced Water Conservation Alternative 2-14

3.0 EXISTING ENVIRONMENT AND PROBABLE IMPACTS 3-1
3.1 TOPOGRAPHY, GEOLOGY, AND SOILS 3-1
3.1.1 Existing Conditions 3-1
3.1.2 Potential Impacts: Proposed Action 3-1
3.2 HYDROLOGY 3-2
3.2.1 Existing Conditions 3-2
3.2.1.1 Surface Water 3-2
3.2.1.2 Basal Water 3-4
3.2.1.3 High-Level Groundwater 3-4
3.2.1.4 Keauhou Aquifer System Area 3-5
3.2.1.5 Sustainable Yield 3-5
3.2.2 Potential Impacts 3-6
3.2.2.1 Surface Water 3-6
3.2.2.2 Ground Water 3-7
3.2.2.3 Impact to Basal Ground Water 3-7
3.2.3 Potential Contamination 3-8
3.2.3.1 Affected Environment 3-8
3.2.3.2 Potential Impacts 3-8
3.3 CLIMATE, CLIMATE CHANGE, AND SEA LEVEL RISE 3-9
3.3.1 Existing Conditions 3-9
3.3.2 Potential Impacts 3-9
3.4 AIR QUALITY 3-10
3.4.1 Existing Conditions 3-10
3.4.2 Potential Impacts 3-10
3.4.2.1 Construction Period Impacts 3-10
3.4.2.2 Operational Period Impacts 3-11
3.5 BIOLOGICAL RESOURCE 3-11
3.5.1 Existing Conditions 3-11
3.5.2 Potential Impacts 3-11
3.5.2.1 Botanical Resources 3-11

TABLE OF CONTENTS

3.5.2.2 Avian Resources ... 3-12
3.5.2.3 Mammalian Resources ... 3-12
3.6 AQUATIC RESOURCES ... 3-13
3.6.1 Existing Conditions ... 3-13
3.6.1.1 Wai'aha Stream ... 3-13
3.6.2 Potential Impacts ... 3-14
3.7 NOISE ... 3-14
3.7.2 Existing Conditions ... 3-15
3.7.3 Potential Impacts ... 3-16
3.7.3.1 Construction ... 3-16
3.7.3.2 Operational Noise Impacts ... 3-18
3.8 ARCHAEOLOGICAL, HISTORIC, AND CULTURAL FEATURES ... 3-18
3.8.1 Existing Conditions ... 3-18
3.8.2 Potential Impacts ... 3-19
3.9 NATURAL HAZARDS ... 3-19
3.9.1 Existing Conditions ... 3-19
3.9.1.1 Flooding ... 3-19
3.9.1.2 Volcanic Hazards ... 3-19
3.9.1.3 Seismic Hazards ... 3-20
3.9.1.4 Tsunami Hazards ... 3-20
3.9.2 Potential Impacts ... 3-20
3.10 SCENIC AND AESTHETIC RESOURCES ... 3-21
3.10.1 Existing Conditions ... 3-21
3.10.2 Potential Impacts ... 3-21
3.11 TRAFFIC ... 3-21
3.11.1 Existing Conditions ... 3-21
3.11.2 Potential Impacts ... 3-21
3.12 LAND USE, SOCIOECONOMIC AND CULTURAL ENVIRONMENT ... 3-22
3.12.1 Existing Conditions ... 3-22
3.12.2 Potential Impacts ... 3-22
3.13 UTILITIES AND PUBLIC INFRASTRUCTURE ... 3-23
3.13.1 Existing Conditions ... 3-23
3.13.2 Potential Impacts ... 3-24
3.14 PUBLIC SERVICES ... 3-24
3.14.1 Existing Conditions ... 3-24
3.14.2 Potential Impacts ... 3-25

4.0 RELATIONSHIPS TO RELEVANT PLANS, POLICIES & CONTROLS ... 4-1
4.1 HAWAI'I COUNTY GENERAL PLAN ... 4-1
4.1.1 Applicable Goals, Policies and Recommended Actions ... 4-1
4.1.2 Conformance With the 2005 Hawai'i County General Plan ... 4-2
4.2 COUNTY OF HAWAI'I ZONING ORDINANCE ... 4-2
4.3 KEĀHOLE TO KAILUA DEVELOPMENT PLAN ... 4-2
4.4 KONA COMMUNITY DEVELOPMENT PLAN ... 4-2
4.5 SPECIAL MANAGEMENT AREA ... 4-3
4.6 HAWAI'I STATE PLAN ... 4-3
4.6.1 Part I – Objectives and Policies ... 4-3
4.6.1.1 HRS §226-13 Objectives and Policies for the Physical Environment – Land, Air, and Water Quality ... 4-4
4.6.1.2 HRS §226-14 Objectives and Policies for Facility Systems – In General ... 4-4
4.6.1.3 HRS §226-16 Objectives and Policies for Facility Systems – Water ... 4-5
4.6.1.4 HRS §226-108 Sustainability ... 4-5
4.8 STATE LAND USE LAW ... 4-11
4.9 STATE ENVIRONMENTAL POLICY ... 4-11
4.10 OTHER PERMITS AND APPROVALS ... 4-12

5.0 DETERMINATION ... 5-1
5.1 SIGNIFICANCE CRITERIA ... 5-1

5.2 FINDINGS 5-1
5.2.1 Irrevocable Loss or Destruction of Valuable Resource 5-2
5.2.2 Curtails Beneficial Uses 5-2
5.2.3 Conflicts with Long-Term Environmental Policies or Goals 5-2
5.2.4 Substantially Affects Economic or Social Welfare 5-2
5.2.5 Public Health Effects 5-2
5.2.6 Produce Substantial Secondary Impacts 5-2
5.2.7 Substantially Degrade Environmental Quality 5-2
5.2.8 Cumulative Effects or Commitment to a Larger Action 5-2
5.2.9 Affects a Rare, Threatened, or Endangered Species 5-3
5.2.10 Affects Air or Water Quality or Ambient Noise Levels 5-3
5.2.11 Environmentally Sensitive Areas 5-3
5.2.12 Affects Scenic Vistas and Viewplanes 5-3
5.2.13 Requires Substantial Energy Consumption 5-3
5.3 DETERMINATION 5-3

6.0 REFERENCES CITED 6-1

7.0 CONSULTATION & DISTRIBUTION 7-1

APPENDIX A BIOLOGICAL SURVEYS A-1

APPENDIX B PRIOR ARCHAEOLOGICAL STUDIES AND CORRESPONDENCE B-1

LIST OF FIGURES

FIGURE 1.1 LOCATION MAP 1-2
FIGURE 1.2 VICINITY MAP 1-3
FIGURE 1.3 EXISTING NORTH KONA WATER SYSTEM 1-4
FIGURE 2.1 GENERAL SITE PLAN 2-2
FIGURE 2.2 SITE PLAN DETAIL 2-3
FIGURE 2.3 SECTION VIEW OF PROPOSED WAI'AHA WELL B SHAFT 2-4
FIGURE 2.4 SECTION VIEW OF PROPOSED WAI'AHA WELL B HEAD 2-5
FIGURE 2.5 PLAN VIEW OF PROPOSED PUMP CONTROL AND CHLORINATION BUILDING 2-6
FIGURE 2.6 ELEVATION VIEW OF PROPOSED PUMP CONTROL AND CHLORINATION BUILDING 2-7
FIGURE 2.7 EXISTING CONDITIONS ON THE PROJECT SITE 2-8
FIGURE 3.1 RAINFALL IN THE PROJECT AREA 3-3

LIST OF TABLES

TABLE 1.1 SUMMARY OF THE NORTH KONA WATER SYSTEM 1-5
TABLE 1.2 RESIDENT POPULATION IN NORTH KONA: 1980-2016 1-6
TABLE 1.3 SUMMARY OF WAI'AHA WELL B PROJECT OBJECTIVES 1-6
TABLE 2.1 DIMENSIONS OF PROPOSED WAI'AHA WELL B 2-9
TABLE 2.2 PRELIMINARY PROJECT SCHEDULE 2-11
TABLE 2.3 PRELIMINARY PROJECT COST ESTIMATE 2-11
TABLE 3.1 DAILY AVERAGE FLOW RATES IN WAI'AHA STREAM AT 2,850 +MSL 3-4
TABLE 3.2 EXISTING WELLS IN THE PROJECT VICINITY 3-6
TABLE 3.3 WAI'AHA STREAM PERCENTAGE OF REACH TYPES 3-13
TABLE 3.4 LAND USE WITHIN THE WAI'AHA STREAM WATERSHEDS 3-14
TABLE 3.5 HAWAI'I ADMINISTRATIVE RULES §11-46 NOISE LIMITS 3-15
TABLE 3.6 CONSTRUCTION EQUIPMENT NOISE EMISSIONS LEVELS 3-17
TABLE 3.7 SUMMARY OF ECONOMIC DATA FOR CENSUS TRACT 215.2 3-22
TABLE 4.1 SUMMARY OF REQUIRED PERMITS AND APPROVALS 4-12
TABLE 7.1 PRELIMINARY DRAFT EA DISTRIBUTION LIST 7-1
TABLE 7.2 COMMENTS ON THE DRAFT ENVIRONMENTAL ASSESSMENT 7-2

THIS PAGE INTENIONALLY LEFT BLANK

1.0 PURPOSE OF & NEED FOR THE PROJECT

1.1 INTRODUCTION

The County of Hawaiʻi's Department of Water Supply (DWS) is responsible for the development, operation, and maintenance of the municipal water systems throughout the Island of Hawaiʻi. In 2004, DWS constructed the Waiʻaha Well Project on the current project site (TMK Nos. 7-5-014:016 and 7-5-015:015) and a portion of one additional parcel. The purpose of that project was to develop a production well, reservoir, and related facilities to supply the North Kona District of Hawaiʻi County with high-quality potable water. That effort took advantage of the site's location close to the center of the service area and its elevation, which allowed the water to be distributed by gravity to most of the homes and businesses that it was intended to serve.

DWS now intends to add a second production well (henceforth "Waiʻaha Well B") to this facility. The use of County of Hawaiʻi funds constitutes a "trigger" for the provisions of Hawaiʻi Revised Statutes (HRS) Chapter 343 and its implementing regulations contained in Hawaiʻi Administrative Rules (HAR) §11-200. In addition, DWS may seek federal funding for the project under the Drinking Water State Revolving Fund (DWSRF) program, administered by the State of Hawaiʻi's Department of Health (DOH 2008). Because allocation of DWSRF funds constitutes a federal action under the National Environmental Policy Act (NEPA), this *Environmental Assessment for the Waiʻaha Well B Project* (EA) incorporates the content required to comply with NEPA so that DWSRF can rely on the information herein should they participate in the project.

The project is located near the rapidly growing community of Kailua-Kona in the North Kona District of the Island of Hawaiʻi (see Figure 1.1). The proposed project would be located within the fenced area of the Waiʻaha Well and Reservoir facility, owned and operated by DWS (see Figure 1.2) at 75-5703 Māmalahoa Highway. DWS now proposes to:

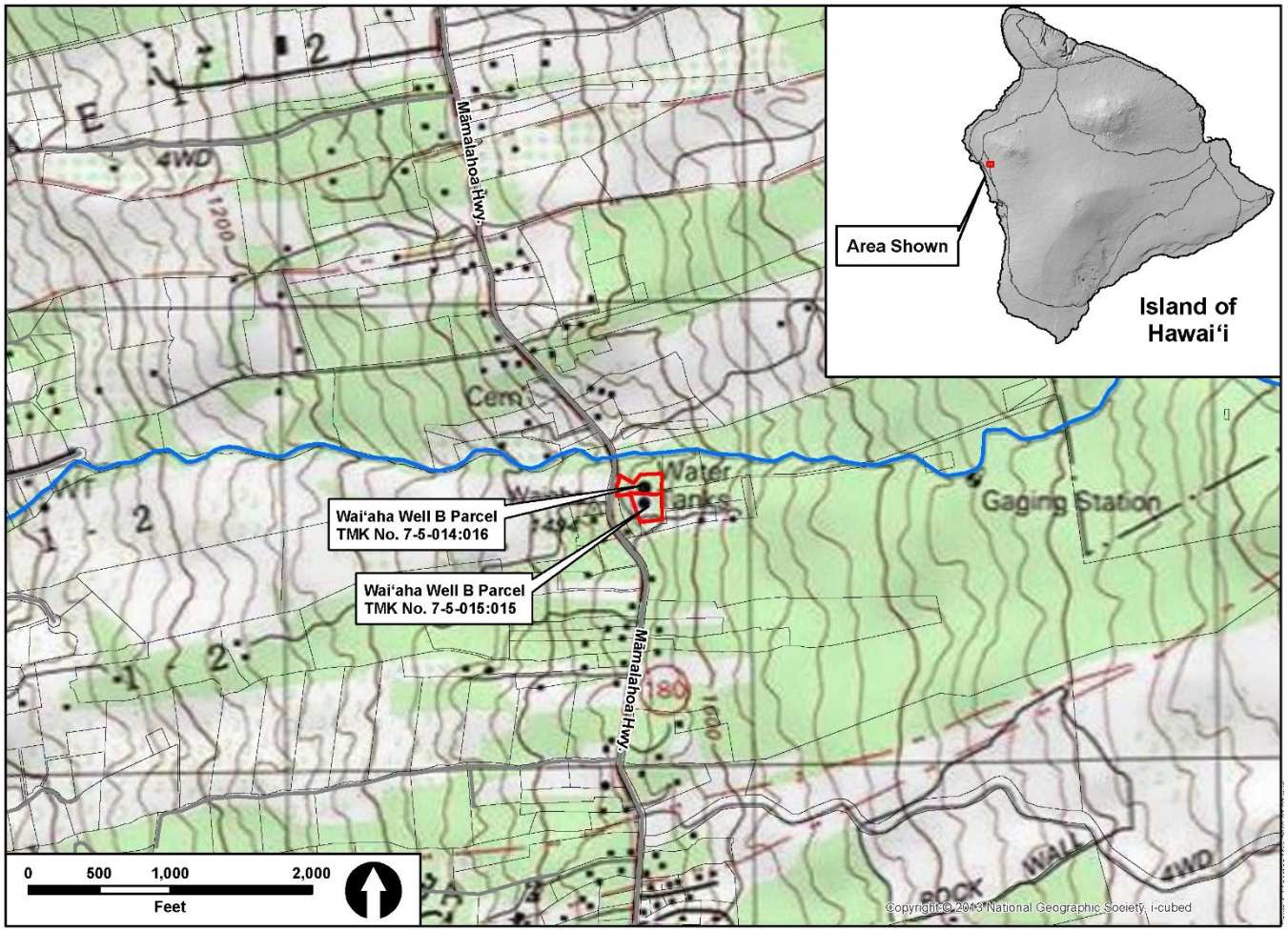
1. Add a second production well and related facilities on TMK Nos. 7-5-015:015 at DWS' Waiʻaha Well and Reservoir facility to supply potable water to the North Kona Water System.
2. Install a 700 gallon per minute (GPM) pump driven by a 400 horsepower (HP) submersible motor in the new Waiʻaha Well B.
3. Construct and operate a new pump control and chlorination building with a chain link security fence around these new facilities.

Hawaiʻi Electric Light Company Co. (HELCO) already delivers adequate high voltage power to the site to power both pumps, however some new electrical conduits and equipment will be included in the proposed project.

1.2 PURPOSE OF THE PROPOSED ACTION

The purpose of the proposed project is to provide a source of reliable, high-quality potable water to DWS' North Kona Water System (see Figure 1.3). According to DWS' 2006 *20-Year Water Master Plan*, the North Kona Water System has the highest metered water consumption of any DWS water system and ranks second in the number of connections. The high rate of consumption in the North Kona Water System is attributed to the area's numerous resorts and the rapidly growing community.

Figure 1.1 Location Map

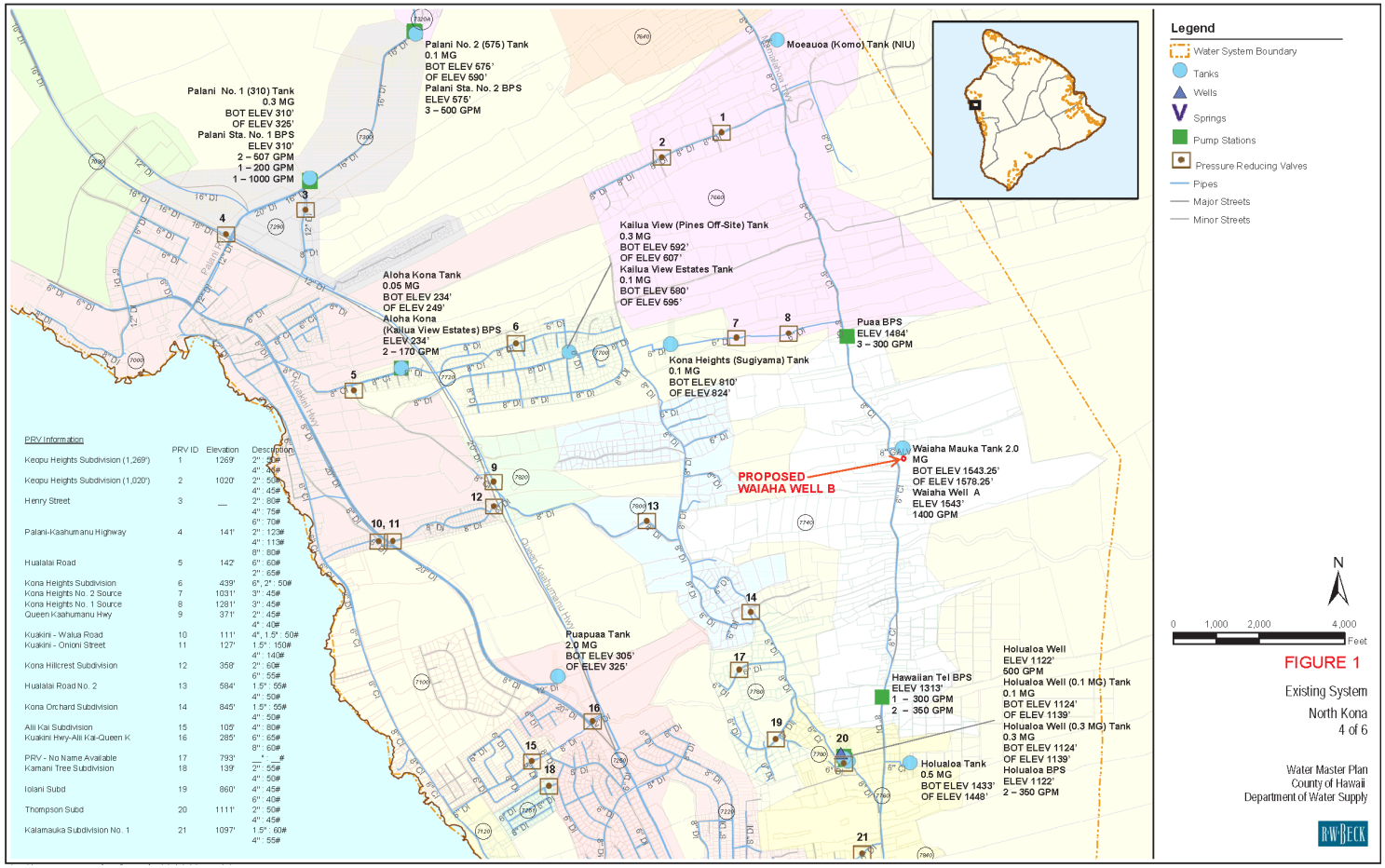


Source: Planning Solutions, Inc. (2019)

Figure 1.2 Vicinity Map

Source: Planning Solutions, Inc. (2019)

Figure 1.3 Existing North Kona Water System



Source: R.W. Beck, *20-Year Water Master Plan* (2006)

The sources of supply in the North Kona Water System are groundwater wells and a groundwater shaft (R.W. Beck, 2006). The distribution system is approximately bounded by Māmalahoa Highway and Queen Ka'ahumanu Highway from Keāhole Airport to the intersection of Māmalahoa Highway and Kuakini Highway. The North Kona Water System is not isolated; it is connected to the South Kona Water System. This water system is broken into three areas, Area I, Area II and Kaloko Mauka. Rapid growth in the area served by this system require continuous planning and development to ensure that water demands, water quality, operational requirements, and ongoing maintenance needs are met. Relevant aspects of the North Kona Water System are summarized in Table 1.1 below.

Table 1.1 Summary of the North Kona Water System

HDOH System ID	HI0000131
Connections[1]	11,122
Average Production[1]	11.4 MGD
Wells	13
Shaft Wells	1
Type of Water Treatment	Disinfection (Chlorination)
Operational Zones	56
Tanks	65
Booster Pump Stations	25
Pressure-Reducing Valves	84
Miles of Pipe	280
Source: *Hawai'i County Department of Water Supply 2018 Audit* (2018)	

1.3 NEED FOR THE PROPOSED ACTION

Table 1.2 below summarizes the rapid growth in the resident population of the North Kona District since 1980. In its *Hawai'i County General Plan* (County of Hawai'i, 2005) the County of Hawai'i predicts that, under assumptions of moderate growth, the resident population of North Kona will increase to 42,275 by 2020. In retrospect, and in consideration of the population as of 2016, the actual number may be considerably higher. Consequently, the *General Plan* specifically calls for the development of additional capacity in the project area:

> *"11.2.4.7.2 Courses of Action (North Kona)*
> *(a) Continue to pursue groundwater source investigation, exploration and development in areas that would provide for anticipated growth and an efficient and economic system operation.*
> *(b) Continue to evaluate growth conditions to coordinate improvements as required to the existing water system in accordance with the North Kona Water System Master Plan.*
> *(c) Explore and develop a well in Wai'aha."*

Consistent with these directives, the Wai'aha Well B Project is intended to address the concomitant increase in demand for drinking water.

Table 1.2 Resident Population in North Kona: 1980-2016

Date	*Resident Population*	*Increase*
April 1, 1980	13,748	n/a
April 1, 1990	22,284	8,536
April 1, 2000	28,543	6,259
April 1, 2010	37,875	9,332
April 1, 2016	41,662	3,787
Source: Dept. of Business, Economic Development and Tourism (DBEDT), *2017 State of Hawai'i Data Book* (2017)		

Currently, DWS relies on four drilled wells and one inclined shaft at Kahalu'u, and one well each at the following sites: Hōlualoa, Keahuolū, Honokōhau, Keōpū, Wai'aha, Palani, Hualālai, Makalei Estates, and North Kalaoa to supply potable water for the North Kona Water System. In order to satisfy the rising demand, DWS needs additional sources of potable water so that it can reduce the load placed on the existing sources within the system.

1.4 OBJECTIVES OF THE PROPOSED ACTION

DWS' objectives for the Wai'aha Well B Project are summarized in Table 1.3 below.

Table 1.3 Summary of Wai'aha Well B Project Objectives

No.	*Objective*
1	To create an additional source of potable water for use in the North Kona Water System.
2	To reduce the load on the existing water sources in the North Kona Water System.
3	To build redundancy into the North Kona Water System.
Source: Compiled by Planning Solutions, Inc. (2019)	

1.5 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 initially considered but ultimately rejected, from further evaluation.
- Chapter 3 describes the existing environment and analyzes the potential impacts on natural, cultural, and socioeconomic resources. It also outlines strategies for minimizing and mitigating unavoidable adverse effects.
- Chapter 4 discusses the consistency of the proposed well with relevant plans, policies, and controls at local, regional, state, and federal levels.

- Chapter 5 provides the justification for the 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 list the references cited and parties consulted, respectively, during the preparation of this EA.

THIS PAGE INTENIONALLY LEFT BLANK

2.0 PROPOSED ACTION AND ALTERNATIVES CONSIDERED

2.1 DESCRIPTION OF THE PROPOSED ACTION

DWS proposes to construct a new production well within the DWS-owned Wai'aha Well and Reservoir facility in the North Kona District of the Island of Hawai'i. If DWS obtains all the necessary permits and approvals, construction and operation of the proposed project will include:

- Drilling, casing, and testing a new, 20-inch diameter production well ("Wai'aha Well B") with a 700 GPM, 400 HP submersible pump.
- Constructing a new, approximately 700 square foot control building housing chlorination equipment and a Supervisory Control and Data Acquisition (SCADA) system with additional space for ancillary equipment and systems.
- Building a 6-foot high chain link security fence for both the Wai'aha Well B and new control building.

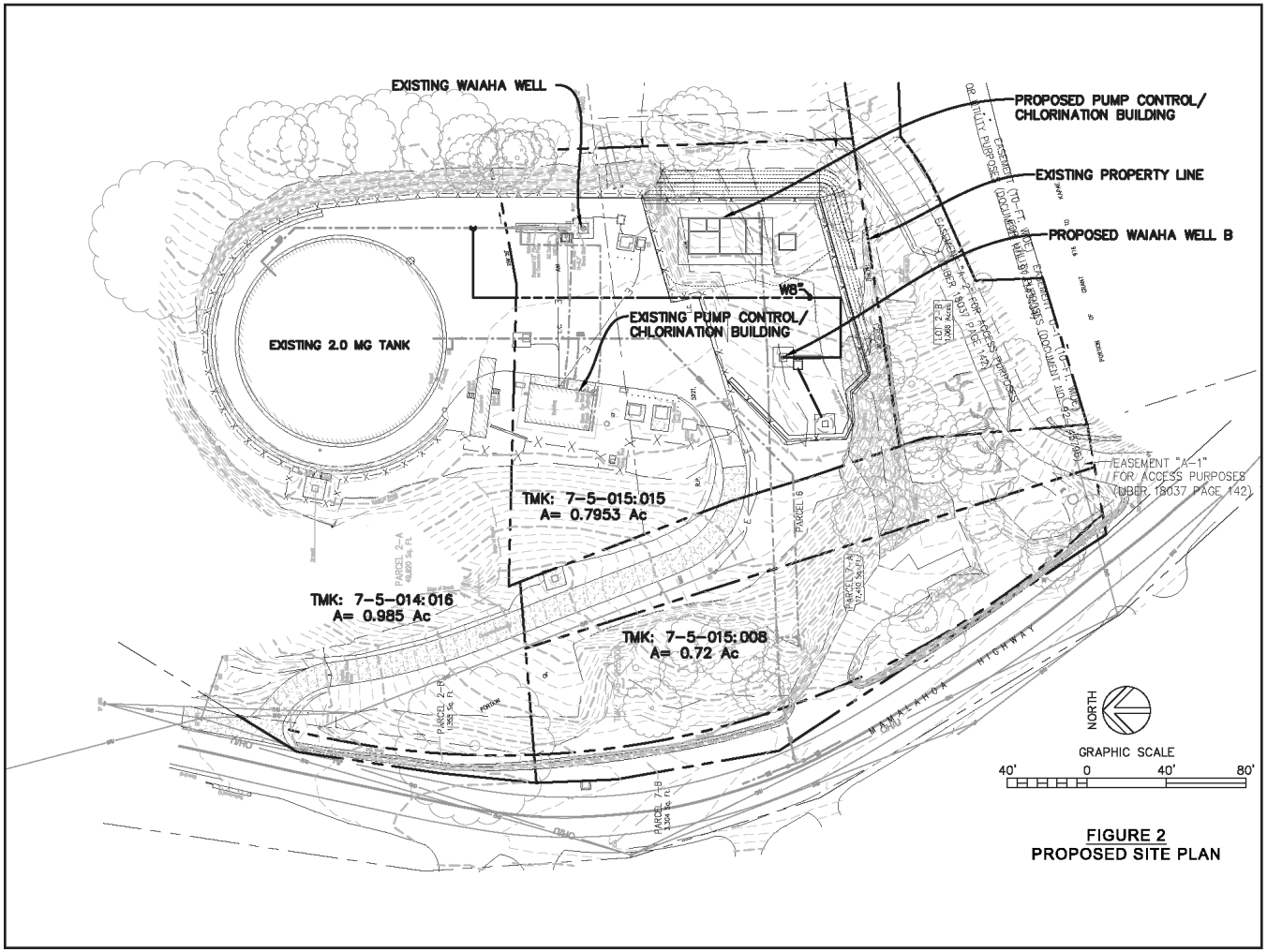
The existing 2.0-million-gallon reservoir on the site provides adequate storage capacity to accommodate both wells functioning at 700 GPM; no new water storage is proposed as part of this project. Figure 2.1 provides a general site plan showing the proposed layout of the project within the existing Wai'aha Well and Reservoir facility; Figure 2.2 provides a detailed plan of the proposed new construction. Figure 2.3 and Figure 2.4 provide well and pump sections. Figure 2.5 and Figure 2.6 depict plan and elevation views of the proposed pump control and chlorination building. Figure 2.7 provides pictures of existing conditions on the project site. Details concerning the various project elements are provided in the following subsections. The existing pump control and chlorination building for Wai'aha Well will remain in place.

2.1.1 SITE PREPARATION

Figure 2.1 and Figure 2.2 depict the existing Wai'aha Well and Reservoir facility and the areas that will be cleared, grubbed, and graded using a backhoe, trucks, and other construction equipment. If it becomes necessary to use a jackhammer or other unusually loud piece of construction equipment, DWS or its contractor will be required to obtain the appropriate approvals (i.e., a Noise Permit) from the State of Hawai'i's Department of Health, Indoor and Radiological Health Branch. The work will produce a limited amount of construction debris; this will be trucked from the site and disposed of at an approved construction and demolition waste site. Some portions of the existing fence line will be incorporated or retrofitted and incorporated into the enclosure around the proposed Wai'aha Well B facilities.

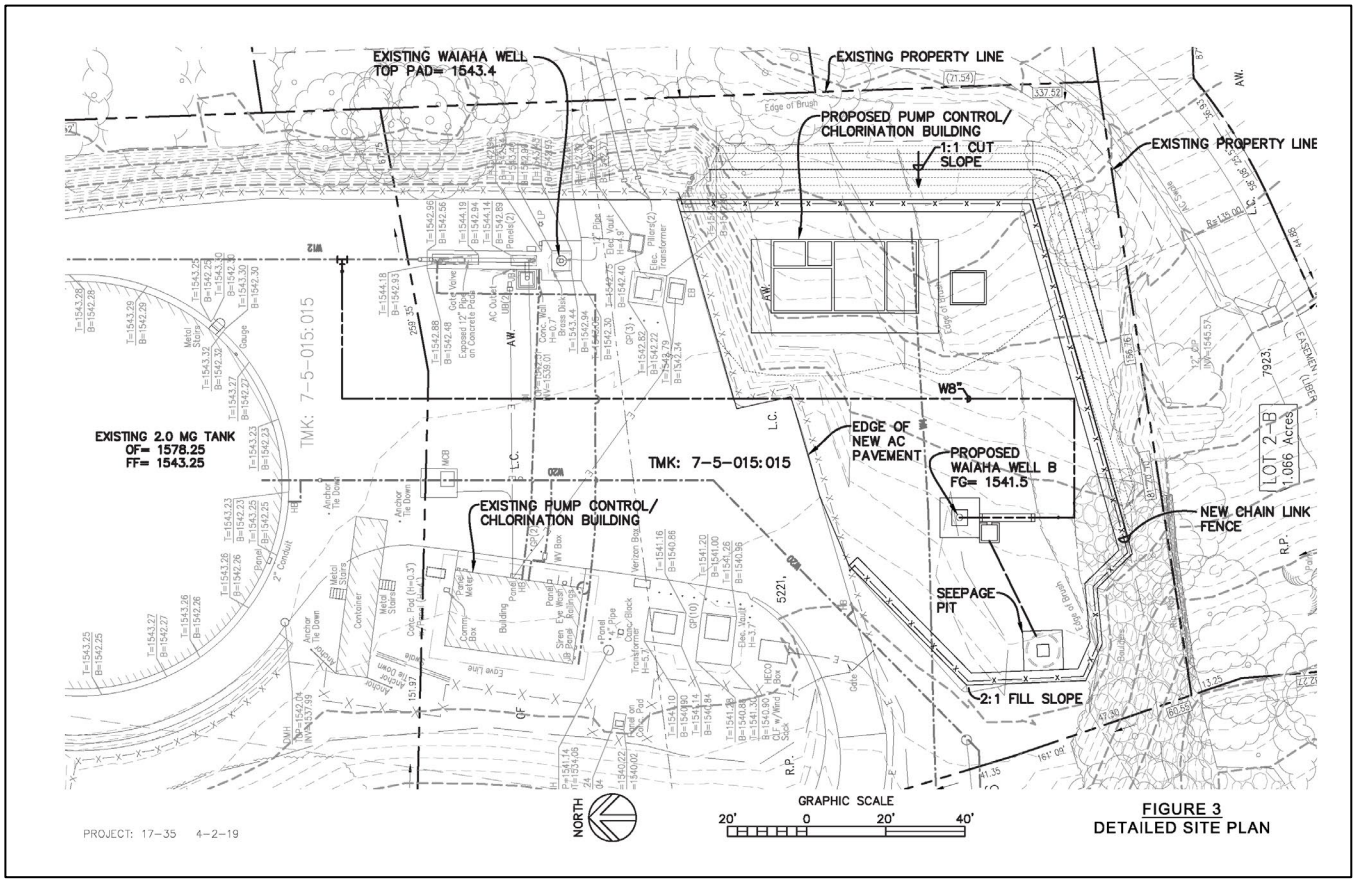
Once DWS has obtained all necessary permits and approvals it would begin site preparation activities by removing brush and approximately 6 trees from the site and clearing, grading, and grubbing approximately 0.25 acres of land to make room for the new construction (see Figure 2.2). DWS estimates that site grading would require the excavation of 2,180 cubic yards of soil, with 5 cubic yards reused on site as fill. In addition, a small amount of select fill (i.e., gravel) may need to be trucked to the site and emplaced in certain areas. The proposed project site will then be compacted and paved for efficient installation and operation of the well, pump, pump control and chlorination building, and other ancillary equipment. The paved areas will be given a 2-inch AC pavement surface treatment on a 6-inch compacted base course. The proposed site will be surrounded with a concrete swale equipped with a seepage pit for onsite drainage.

Figure 2.1 General Site Plan



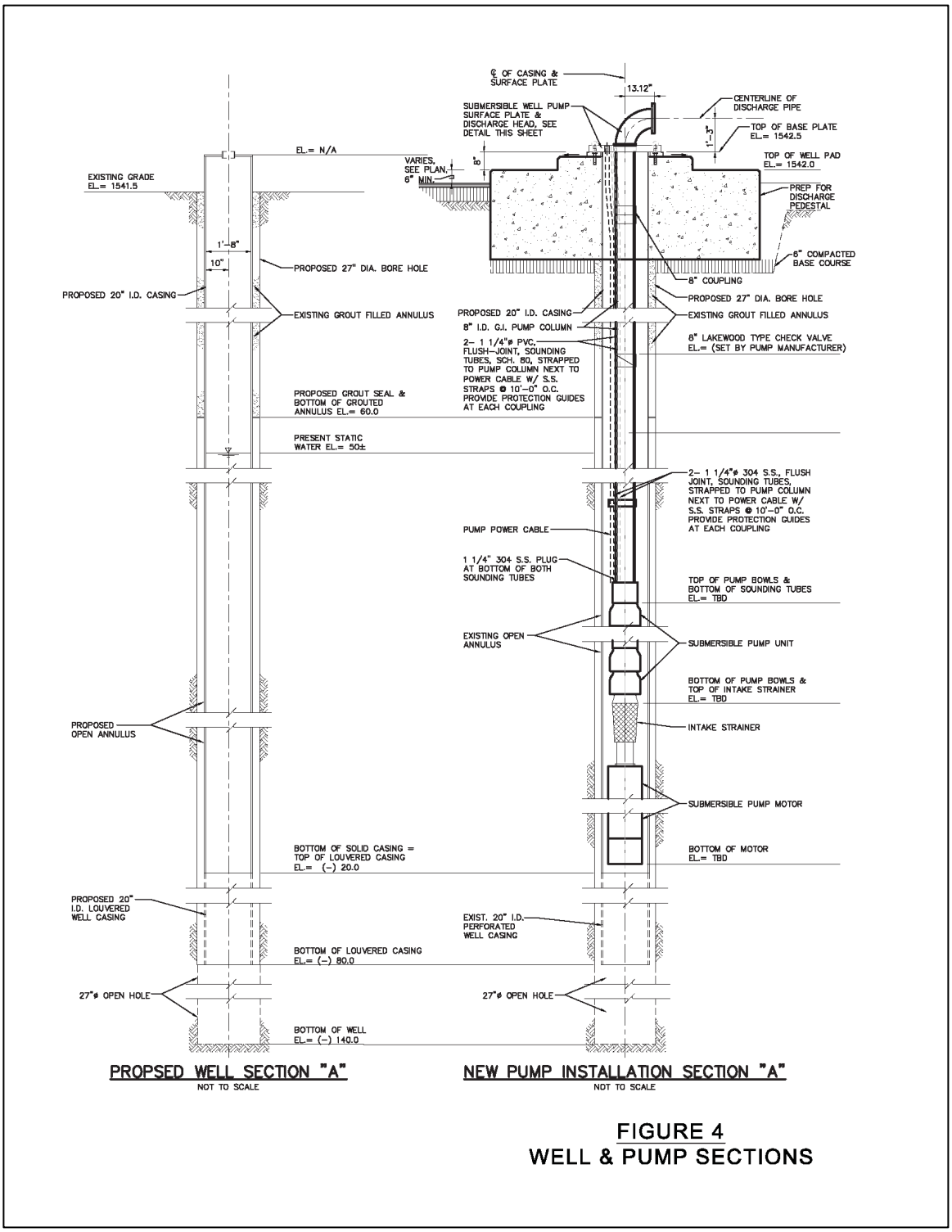
Source: TNWRE (2019)

Figure 2.2 Site Plan Detail



Source: TNWRE (2019)

Figure 2.3 Section View of Proposed Wai'aha Well B Shaft



Source: TNWRE (2019)

Figure 2.4 Section View of Proposed Wai'aha Well B Head

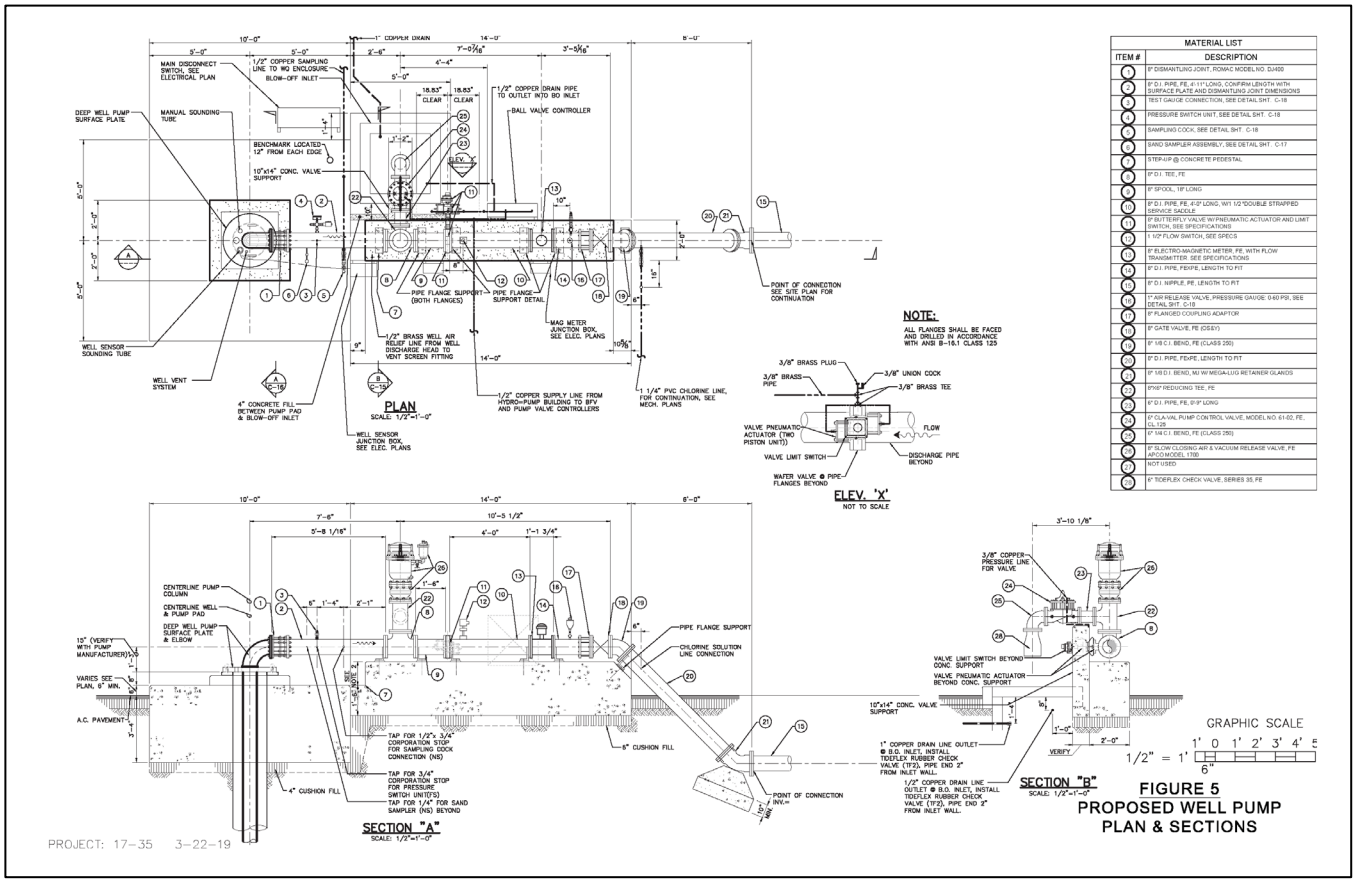
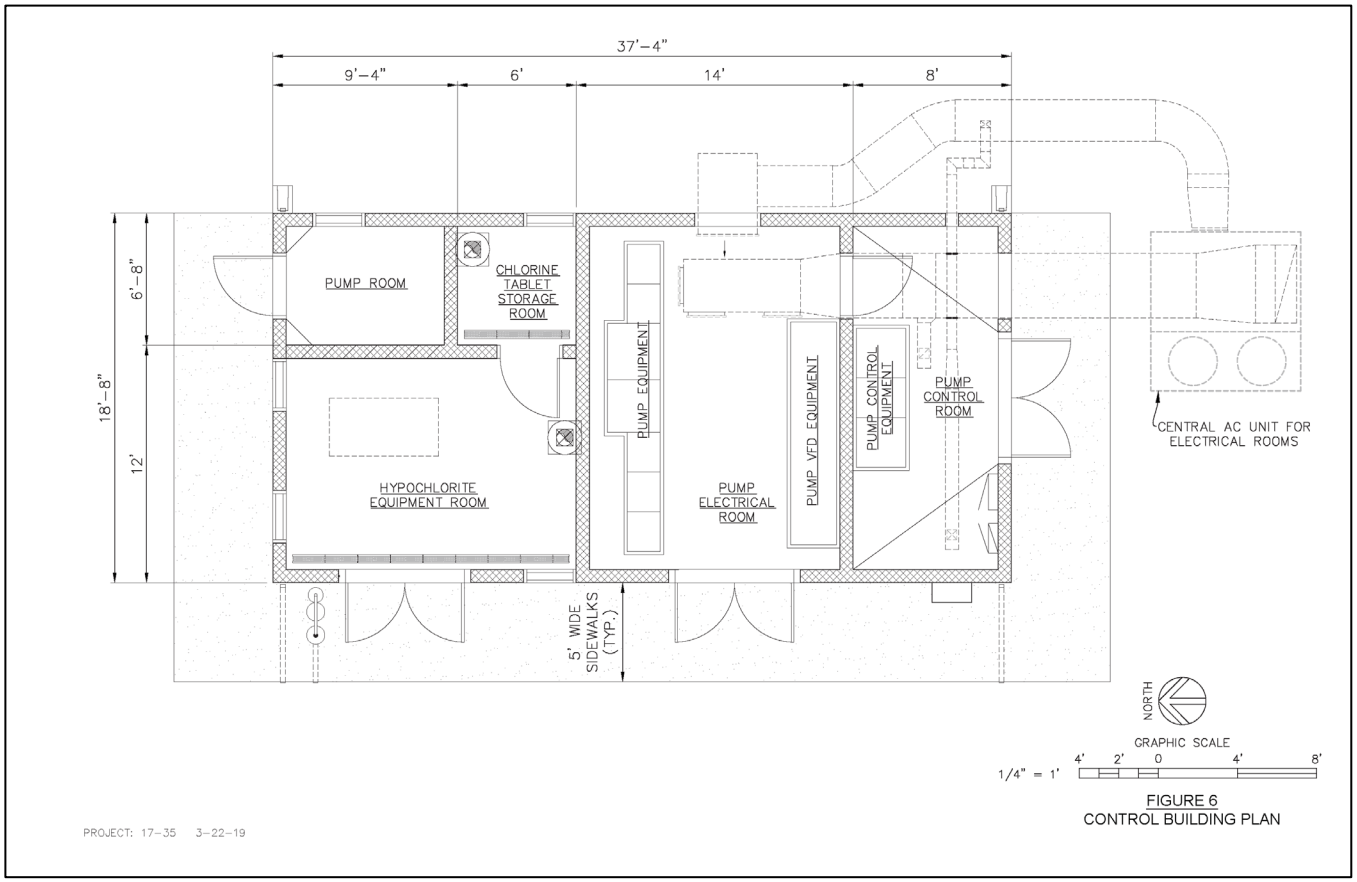


FIGURE 5
PROPOSED WELL PUMP
PLAN & SECTIONS

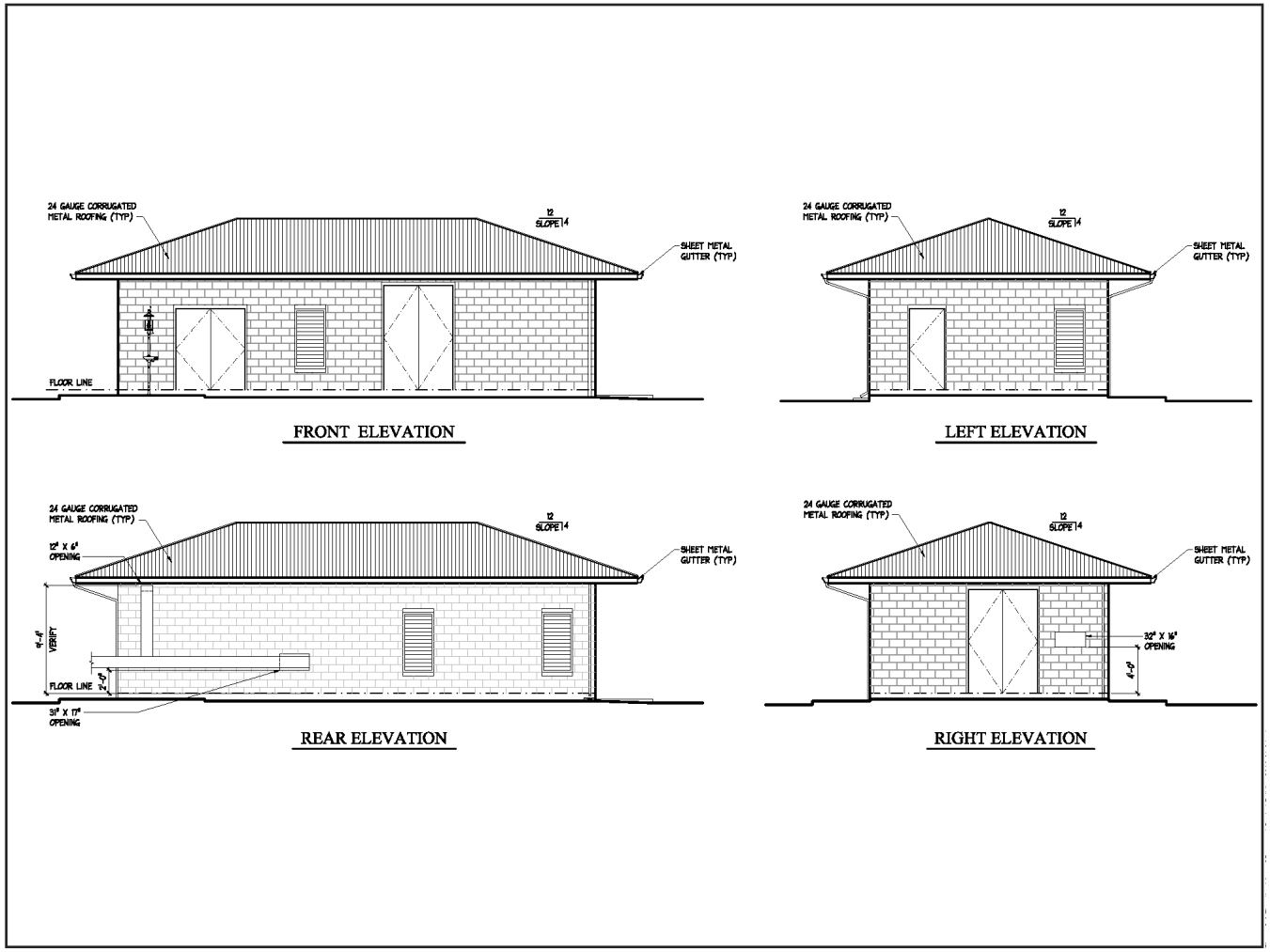
Source: TNWRE (2019)

Figure 2.5 Plan View of Proposed Pump Control and Chlorination Building



Source: TNWRE (2019)

Figure 2.6 Elevation View of Proposed Pump Control and Chlorination Building



Source: TNWRE (2018)

Figure 2.7 Existing Conditions on the Project Site

View north toward existing Wai'aha Well and Reservoir.

View northwest toward the existing Wai'aha Well and Reservoir.

View south toward the proposed Wai'aha Well B site.

View west toward the existing access drive from Māmalahoa Highway.

Source: Rana Biological Consulting (2019)

2.1.2 WAI'AHA WELL B

The proposed Wai'aha Well B would be drilled from the project site elevation of +1,542 feet above mean sea level (+MSL), to an elevation of 140 below mean seal level (-MSL), or a depth of approximately 1,682 feet below ground level. The upper 1,562 feet of the well shaft will have a solid steel casing with a 20-inch internal diameter and a total bore size of 27 inches (see Figure 2.3). Below that, the remaining approximately 60 feet will have a louvered casing with a 20-inch internal diameter, with an additional 60 feet of open hole below that. The annulus between the outside of the bore hole and the solid steel casing will be filled with cement grout. Table 2.1 summarizes the dimensions of the proposed Wai'aha Well B. Once the well has been drilled and cased, DWS will install a 700 GPM, 400 HP submersible pump.

Table 2.1 Dimensions of Proposed Wai'aha Well B

Description	*Dimension*
Basic Well Parameters	
Casing Diameter (inches)	20
Ground Elevation (feet MSL)	1,542
Total Well Depth (feet)	1,682
Elevation at Bottom	-140
Solid Casing	
Length Below Ground (feet)	1,542
Elevation at Bottom (feet MSL)	-20
Louvered Casing	
Length (feet)	60
Elevation at Bottom (feet MSL)	-80
Open Hole	
Diameter (inches)	27
Length (feet)	60
Static Water Level	
Depth Below Ground (feet)	1,492
Elevation (feet MSL)	50
Source: TNWRE (2019)	

2.1.3 PUMP CONTROL AND CHLORINATION BUILDING

The proposed design for the pump control and chlorination building includes a single-story, approximately 700 square foot, concrete block structure with a finished floor elevation of approximately 1,540 feet +MSL; the building will be naturally ventilated except for the electrical rooms which will be air conditioned The structure will house: (*i*) the SCADA, (*ii*) hypochlorite equipment, (*iii*) chlorine tablet storage, (*iv*) electrical control panels, (*v*) variable frequency drive equipment, and (*vi*) an alarm system. A plan view of the proposed pump control and chlorination building is shown in Figure 2.5; an elevation view is shown in Figure 2.6.

The SCADA system will be installed in the control building; it will be integrated into the existing SCADA located within the facility. This new SCADA system will allow DWS to continuously monitor and control the operation of the proposed facilities remotely from the DWS control center in Kona.

The chlorination system the Wai'aha Well B Project proposes to install is a DWS-standard which complies with the State of Hawai'i, Department of Health, Safe Drinking Water Branch (SDWB) requirements. This system utilizes hypochlorite tablets to sterilize the source water and ensure that it is potable. It would mix with pressurized water and then inject the mixture into the source water as it is pumped into the existing 2.0 MG storage tank. The chlorination occurs in the "hypochlorite equipment room," as shown in Figure 2.5, and the chlorine tablets are stored in a closet adjacent to that room. The chlorination system is designed to comply with requirements established by: (*i*) the County of Hawai'i, (*ii*) the IBC, and (*iii*) the Uniform

Fire Code (UFC) of the National Fire Prevention Association (NFPA). Each room of the control building is designed to have a minimum 1-hour fire rating. All windows inside the chlorination room have dampers in order to meet this requirement.

Electrical power will be utilized for general power and lighting and for powering the pump motor and other infrastructure described in the preceding subsections. Utility metering will conform to HELCO standards and design requirements.

2.1.4 ADDITIONAL INFRASTRUCTURE

Because the Wai‘aha Well B Project is proposed for development within the existing Wai‘aha Well and Reservoir facility, very little additional infrastructure is required. The existing 2.0 MG storage tank is adequate storage to provide for both wells functioning at 700 GPM. Electrical power will be utilized for general power (i.e., powering the pump motor and other infrastructure described in the preceding subsections) and lighting. While there is power to the site already, upgrades to the existing overhead electrical service will be made by HELCO to deliver the three-phase power for the Wai‘aha Well B pump. Utility metering will conform to HELCO standards and design requirements. The new well pump control system will be designed to include a backup generator connection should electric power be lost at the site. The approximate cost for these improvements, included in the overall project cost estimate provided later in this chapter, will be $100,000. Substation improvements will not be required for this project.

Telephone service by Hawaiian Telcom is already available onsite at the existing pump control building servicing Wai‘aha Well. This system will be extended to the new pump control and chlorination building for a backup alarm system which connects to the SCADA system.

Access to the site will be via the existing driveway serving the Wai‘aha Well and Reservoir facility off of Māmalahoa Highway. The Wai‘aha Well B site and the pump control and chlorination building will be secured by a 6-foot chain link security fence and locked gates at its entrance. DWS will keep the entrance gates locked when not in use and post “No Trespassing” signage.

2.1.5 WATER TESTING

Water from the existing Wai‘aha Well is routinely tested and found to meet all applicable standards for potable water. DWS will incorporate this information into the engineering report that it will submit to SDWB. The engineering report will address all the requirements set forth in Hawai‘i Administrative Rules (HAR) §11-20-29. Before placing the well into service, DWS will obtain approval from SDWB, as required by these regulations.

2.2 PROJECT SCHEDULE

Table 2.2 provides a summary of the preliminary schedule for the Wai‘aha Well B Project. As indicated, DWS anticipates that preparing the site, drilling and outfitting the well, constructing the pump control and chlorination building, and other project related activities will take approximately 42 months.

Table 2.2 Preliminary Project Schedule

Task	*Approximate Duration*	*Estimated Completion Date*
Final EA - HRS Chapter 343 Review	5 months	Jan 2020
Permitting & Final Design – Well Construction	17 months	Feb 2021
Pump Outfitting Design	6 months	Jun 2021
Agency Design Review & Approval	5 months	Nov 2021
Bid Solicitation, Contracting, Notice-to-Proceed	2 months	Jan 2022
Well Pump Outfitting	12 months	Jan 2022
Source: TNWRE (2019)		

2.3 PROJECT BUDGET

Table 2.3 presents preliminary estimates of construction costs associated with the Wai'aha Well B Project. The project would be funded by DWS. The proposed production well's development and pump testing have been authorized and identified by DWS as *Job No. 2017-1069 Wai'aha Source Development – Site Selection and Exploratory Phase*. The project may also be partially funded with federal money through the State of Hawai'i DWSRF program (see Section 1.1), which would constitute a federal action and would require the project to meet all the Hawai'i DWSRF program requirements.

Table 2.3 Preliminary Project Cost Estimate

Item	*Estimated Cost*
Exploratory Well	$2,062,285
Well Pump Site Work	$458,000
Pump, Control Building, and Electrical Work	$3,165,000
Project Design and CM	$624.813
Contingency (Approx. 10%)	$570,902
Total Cost	$6,881,000
Source: TNWRE (2019)	

2.4 FRAMEWORK FOR CONSIDERATION OF ALTERNATIVES

Title 11, Chapter 200 of the Hawai'i Administrative Rules (HAR §11-200) contains the DOH Environmental Impact Statement (EIS) 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 the environmental factors and available alternatives and disclose these in an Environmental Assessment (EA) or EIS. HAR §11-200-9 requires the proposing agency, in this case DWS, to analyze alternatives in addition to the proposed action in an EA. HAR §11-200-10 establishes the content requirements of an EA. Among the requirements listed, HAR §11-200-10 (6) calls for the identification and

summary of impacts and alternatives to the proposed action which were considered during project planning.

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 the possibility of a No Action Alternative, enhanced water conservation, reduced scale action, alternate locations, and delayed action. DWS concluded that only two of these alternatives merit full evaluation in the impact analysis portion of this EA. They are the Proposed Action (i.e., the Wai'aha Well B Project) as described in Section 2.1 and the No Action Alternative, as recommended by HRS Chapter 343.

The remainder of this chapter describes the alternatives considered during preparation of this EA, including those alternatives that were initially considered by ultimately rejected because they would not meet the project objectives summarized in Table 1.3. It also identifies the criteria DWS used to decide whether to include them in the impact analysis present in Chapter 3.

2.5 ALTERNATIVES ADDRESSED IN DETAIL

2.5.1 PROPOSED ACTION: WAI'AHA WELL B PROJECT

This alternative consists of the Proposed Action as described in Section 2.1 above. DWS has concluded that constructing and operating these facilities at the proposed site on its present timeline would enable it to continue to provide adequate, reliable, and affordable drinking water to its customers in the North Kona community, meeting the objectives summarized in Table 1.3. Thus, the Proposed Action represents its preferred alternative.

2.5.2 NO ACTION ALTERNATIVE

The No Action Alternative consists of not implementing the Proposed Action described in Section 2.1. Under the No Action Alternative, DWS would not drill, case, test, or place into service a new potable water source for use in the North Kona Water System.

Further, DWS would not take full advantage of the efficiency and cost benefits of developing additional capacity from a proven source within an existing installation. Furthermore, the No Action Alternative would not be consistent with the provisions of the *Hawai'i County General Plan*, as discussed in Section 2.1, nor the *Hawai'i County Water Use and Development Plan Update* (2010), both of which specifically call for the development of capacity at Wai'aha.

Thus, the DWS has concluded that the No Action Alternative is not a viable alternative and would meet neither the project objectives summarized in Table 1.3 nor the recommendations of Hawai'i County's water resource planning documents. It is included in this EA to fulfill the content requirements of NEPA, HRS Chapter 343, and HAR 11-200. It also provides a baseline against which to measure the potential environmental and social impacts of the Proposed Action.

2.6 ALTERNATIVES ELIMINATED FROM DETAILED ANALYSIS

2.6.1 ALTERNATE LOCATIONS

During the preliminary planning of the Wai'aha Well B Project, DWS evaluated a number of potential alternative locations. This was reasonable because the substantial groundwater flux

through the general area made it likely that well(s) drilled in other location in the region would also be productive. However, DWS ultimately concluded that the Proposed Action possessed several characteristics that made 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 production well in place. Other possible well locations would require the acquisition of property and drilling of an exploratory well in addition to development of the production well facilities that are part of the Proposed Action. It would also require construction of new storage infrastructure. The duplication of these existing assets at an alternate location would unnecessarily burden DWS with additional cost and would inject the risk of drilling an unsuccessful exploratory well into the undertaking.
- The proposed well's strategic location, approximately at the center and top of the North Kona Water System would provide additional flexibility and reliability into the water distribution system.
- The proposed site's proximity to existing water transmission and distribution infrastructure avoids the need for substantial new water line construction.

In brief, alternate locations would be likely to incur greater risk, greater environmental impacts, at greater cost, and with less potential benefit than the Proposed Action. A detailed analysis of potential alternative project sites and the environmental impacts which development of such alternatives might entail is beyond the scope of this EA. However, in the absence of any clear advantage of doing so and considering the clear advantages that the proposed site possesses, DWS has concluded that it is unlikely that other well locations might be preferable from a system or environmental impact standpoint.

2.6.2 DELAYED ACTION

As noted in Section 1.3, the North Kona Water System, where the Wai'aha Well B Project would be located, depends on a limited number of wells; many of these wells are at relatively low elevations. Continuing to rely on these low-level wells at current levels of withdrawal threaten to contaminate the aquifer via salt-water intrusion. Once such an intrusion of saline waters into the aquifer occurs, there can be irreparable damage done to the aquifer, rendering it useless as a source of potable water. Because of the long lead-time necessary to develop production wells, DWS considers it undesirable to delay development of additional water sources at higher levels, which could result in salinity levels in existing wells approaching unacceptably high levels and threaten DWS' mandate to provide adequate supplies of potable water to meet demand.

In order to satisfy the rising demand for potable water in the area without threatening the low-level aquifer, DWS needs additional sources of supply so that it can reduce the load placed on the existing sources in the system. The Wai'aha Well and Reservoir facility is not currently being used to its full potential. Thus, insofar as the proposed Wai'aha Well B project can allow DWS to take full advantage of the site's demonstrated, and currently realized, potential the Proposed Action already represents a form of delayed or remedial action. Further delay in moving forward would only continue the system's vulnerability into the future.

Finally, there are no existing activities or conditions on the proposed project site or in the area that would make delaying the Wai'aha Well B Project desirable or that would appreciably reduce the potential for impacts associated with it. DWS wants to act promptly to ensure that it develops adequate supplies of safe drinking water in the area. Finally, a delayed action

would not achieve any of the objectives summarized in Table 1.3. Therefore, DWS does not consider a Delayed Action Alternative to be a viable alternative to the Proposed Action.

2.6.3 ENHANCED WATER CONSERVATION ALTERNATIVE

The County of Hawai'i has already adopted measures to promote water conservation. For example, *Hawai'i County Code* (HCC), Section 29-1 addresses water use and development. It acknowledges that the waters of the State are held for the benefit of the citizens of Hawai'i and that the State's citizens have a right to have those waters protected for their use. HCC, Chapter 29 commits the County to actions needed to comply with the provisions of the *State Water Code*, which is codified into law as HRS, Chapter 174C. Accordingly, DWS has prepared a *Water Use and Development Plan* and updates the plan periodically.

Chapter 17 of the HCC establishes specific design standards intended to promote water conservation. These include requirements that:

- Water supply faucets or valves have approved flow control devices which limit flow to a maximum three gallons per minute.
- Shower heads and kitchen faucets have approved flow control devices which limit flow to a maximum of 2.5 gallons per minute at 80 pounds per square inch (psi).
- Lavatory faucets have flow control devices which limit flow to a maximum of 2.0 gallons per minute at 60 psi.
- Tank-type water closets and urinals have volume limiting devices or methods which will limit the discharge to 1.6 gallons and 1 gallon per flush, respectively.
- New installations of equipment for cooling that use potable water for cooling at a rate exceeding one gallon per minute or operate more than 10 hours in a 24-hour period recirculate or reuse the cooling water.
- New decorative water features using potable water be designed to recirculate the water.

Implementation of these conservation measures has already reduced water use substantially. However, the greatest savings from these measures have already been realized, and DWS believes that it is very unlikely that further measures to eliminate or substantially reduce the need for new facilities that it is proposing as part of the Wai'aha Well B Project. Consequently, DWS has determined that enhanced water conservation is not a viable alternative to the Proposed Action.

3.0 EXISTING ENVIRONMENT AND PROBABLE IMPACTS

3.1 TOPOGRAPHY, GEOLOGY, AND SOILS

3.1.1 EXISTING CONDITIONS

The Waiʻaha Well B Project site is situated at an elevation of 1,542 feet +MSL on the southwestern flank of Hualālai. Most of the surface area of this volcano is composed of geologically young but prehistoric lava flows. Geologists believe the volcano emerged above sea level some 300,000 years ago, while the oldest rocks found on the surface are from approximately 128,000 years ago. Over the last 3,000 years, Hualālai has erupted near its summit, along with the northwest and south-southeast rift zones, and from vents on the north flank of the volcano. Other major eruptions occurred about 300 and 700 years ago. A large flow from the 700-year-old eruption forms the north side of Keauhou Bay, south of Kailua-Kona. Twenty-five percent of the volcano is covered by flows less than 1,000 years old (Macdonald, Abbott, and Peterson 1983). No commercially useful minerals are present.

Hualālai last erupted between 1800 and 1801. Flows originated at the northwestern ridge of the mountain at elevations of about 6,000 feet (the Kaʻūpūlehu flow) and 1,500 feet (the Huʻehuʻe flow). Both flows traveled down slope to the west and north. The Kaʻūpūlehu flow entered the ocean just to the west of Kīholo Bay, while the Huʻehuʻe flow entered the ocean just north of Keāhole Point (McDonald, Abbott, and Peterson 1983; Moore et al. 1987). Of these two historic flows, the Huʻehuʻe flow came closest to the Waiʻaha site, but was never nearer than eight to ten miles away.

The U.S. Geological Survey has divided the island into zones based on the probability of coverage by future lava flows; Zone 1 represents the greatest hazard and Zone 9 the least. All Hualālai is in Zone 4. About 5 percent of the land surface in areas classified as Zone 4 has been covered by lava since 1800, and 15 percent has been covered by lava in the last 750 years. Hualālai's flanks do not have a distinctly lower hazard than its rift zones because the distance from the vents to the coast is short and the slopes are steep. Hualālai erupts less often than Kīlauea and Mauna Loa but flows typically cover large areas. Other direct hazards from eruptions, such as tephra fallout and ground cracking and settling, tend to be greatest in the areas of highest hazard from lava flows.

The Waiʻaha Well B Project parcels slope from east to west, with an elevation of about 1,490 feet +MSL on the west side fronting Māmalahoa Highway and about 1,560 feet +MSL on the eastern boundary (see Figure 2.1). The average slope across the site is about 20 to 25 percent, but the existing Waiʻaha Well and Reservoir are on a graded level area that occupies much of the eastern half of the site.

The soil is aptly classified as "Kona extremely rocky muck" by Sato et. al. (1973). The soil is thin in most spots, generally between 5 and 12 inches thick, and overlies pāhoehoe lava bedrock. Soil permeability is quite high, and water rapidly runs through the soil and into cracks in the lava bedrock. Consequently, the erosion hazard is relatively low. The site and adjacent properties are not designated as Important Agricultural Lands by the State of Hawaiʻi.

3.1.2 POTENTIAL IMPACTS: PROPOSED ACTION

Construction of the proposed Waiʻaha Well B, pump control and chlorination building, and other ancillary facilities will require the clearing, grubbing, and grading of approximately 0.25

acres. Grading and other land disturbance for the proposed project would require the excavation of approximately 2,180 cubic yards of material; some of the soil (5 cubic yards) will be used as fill on embankments of the well and control building site. Any remaining cut will be used elsewhere on the property or disposed of properly at an appropriate offsite location. The grading will modify the topography moderately within the existing Wai‘aha Well and Reservoir facility, creating flat areas for the new well, control building, and other infrastructure but will not change the overall slope across the site.

As noted above, the Kona extremely rocky muck soil-type is not classified as prime agricultural soil. While development of the proposed production well, control building, and other facilities will preclude its use for agriculture unless and until it is removed, these areas are within the existing Wai‘aha Well and Reservoir site and are not in agricultural use at the present time. Beyond areas occupied by new infrastructure, the project will not affect adjacent agricultural uses in the vicinity. Neither will the proposed action substantially change exposure to geological hazards or bar the use of any significant geological resources.

The No Action Alternative does not have the potential to result in any impacts to soils, geology, or topography.

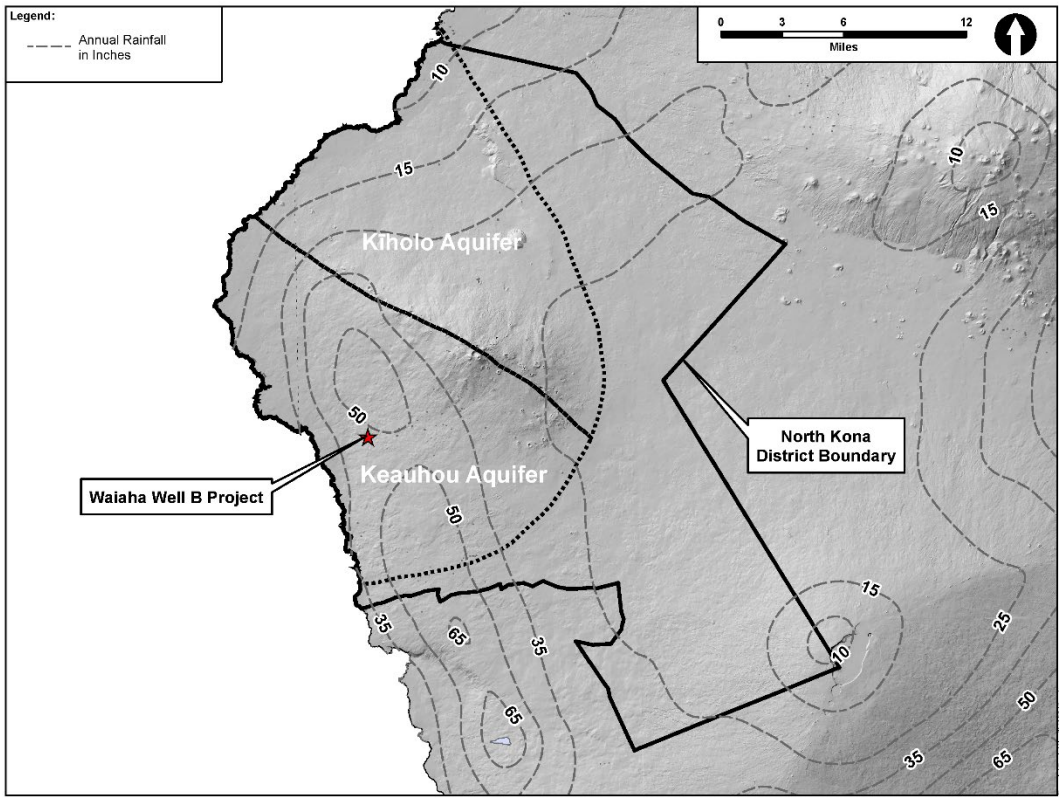
3.2 HYDROLOGY

3.2.1 EXISTING CONDITIONS

3.2.1.1 Surface Water

The Wai‘aha Well B Project site is located with the Keauhou Aquifer System Area. According to *The Rainfall Atlas of Hawai‘i* (Giambelluca et al., 2016) rainfall on the western slopes of Hualālai between 2,000 feet +MSL and the summit is the principal source of groundwater recharge in the area. Average rainfall in the Keauhou Aquifer System Area ranges from less than 20 inches along the northwest coast to about 125 inches in the Kahalu‘u Forest Reserve. As shown in Figure 3.1 below, average rainfall ranges in the project vicinity can approach 50 inches per year.

Figure 3.1 Rainfall in the Project Area



Source: Rainfall Atlas of Hawai'i (2016)

The Wai'aha Well B site is adjacent to the Wai'aha Stream (see Figure 1.2). According to the *Hawai'i County Water Use and Development Plan Update* (DWS, 2010), Wai'aha Stream is the only perennial stream in the area, due to the high permeability of the basaltic lava flows from Mauna Loa and Hualālai volcanoes. In the wettest part of the rainbelt, a few small springs may occur, such as Wai'aha Springs. The high permeability of the soils in this area means that surface runoff enters the ocean only during substantial storm events. Water that does not run off is either lost to the atmosphere through evapotranspiration or percolates downward and recharges the Keauhou Aquifer System Area. The few small springs which do occur, such as Wai'aha Springs, occur as seepage of groundwater perched on soil and ash beds. Such springs, however, are minor and intermittent and suitable only for nominal needs. According to the State Commission on Water Resource Management (CWRM), the estimated groundwater recharge of the Keauhou Aquifer System Area from rainfall in 87 MGD. More recently, the USGS estimated that this recharge is actually 152 MGD (Engott, 2011).

The State Department of Health classifies the Wai'aha Stream as Class 2 Inland Waters (DOH, 2000). Data from U.S. Geological Survey Gaging Station 167593001 indicate that the Wai'aha Stream flows only intermittently. While there is measurable flow at the gaging station on approximately two-thirds of the days of the year, there is no flow more than two-thirds of the days during the winter months (see Table 3.1). Storm peak flow measurements collected over the same 9- year period show a maximum storm peak rate of 3,100 cubic feet per second (cfs).

Wai'aha Stream flows only intermittently. While there is measurable flow at the gaging station on approximately two-thirds of the days of the year, there is no flow more than two-thirds of the days during the winter months (see Table 3.1). Storm peak flow measurements collected over the same 9- year period show a maximum storm peak rate of 3,100 cubic feet per second (cfs).

Table 3.1 Daily Average Flow Rates in Wai'aha Stream at 2,850 +MSL

Month	*% Days with No Flow*	*Average Flow Rate (cfs)*		
		Mean	*Median*	*Max*
January	69.9	0.55	0.00	28
February	70.5	0.31	0.00	29
March	44.1	1.21	0.01	57
April	28.5	1.66	0.08	84
May	13.9	1.03	0.19	69
June	11.3	0.85	0.15	54
July	12.3	0.68	0.09	30
August	7.1	1.54	0.11	119
September	3.0	0.82	0.12	22
October	21.5	1.49	0.05	224
November	56.7	0.84	0.00	60
December	72.4	0.25	0.00	19
TOTAL	***33.0***	***0.96***	***0.03***	***224***
Note: Data condensed from all available (N = 3,440) daily records between 5/1/1960 and 9/30/1969.				
Source: USGS Gaging Station No. 16759300.				

3.2.1.2 Basal Water

Prior to 1990, only basal groundwater was known to occur in North Kona. Existing drilled wells at that time indicated that the basal lens extended approximately 1.5 to 4.5 miles inland from the coast, with a maximum head (i.e., water level elevation +MSL) of about four to five feet at Kahalu'u and Hōlualoa.

3.2.1.3 High-Level Groundwater

In 1990, high-level groundwater was encountered almost simultaneously in the southern and northern regions of North Kona. In 1991, Keauhou-Kam 2 (State Well No. 3355-01), located 7 miles south of Kailua-Kona, encountered high-level groundwater at approximately 275 feet +MSL. Three weeks later the County's Kalaoa Well (State Well No. 4358-01) encountered high-level groundwater at an elevation of 242 feet +MSL, later confirmed at 236 feet +MSL. These two exploratory wells were drilled at the then-unprecedented elevations of 1,620 +MSL and 1,800 +MSL, respectively. Less than a year later, in 1991, high-level groundwater was again discovered in the County's Honokōhau Well (State Well No. 4158-02), located 2.5 miles north of the Keōpū Well. The Honokōhau Well (ground elevation of 1,675 feet +MSL) encountered groundwater at 109 feet +MSL.

By 1993, high-level groundwater had been found in a total of 14 wells, confirming that high-level groundwater is present mauka of Māmalahoa Highway from Kalaoa to Ke'ei, a linear distance of 19 miles. The nature of the confining geologic structure or formation is considered conjectural at this time. Based entirely upon water levels in the 14 wells, the hydrologic

discontinuity between the high-level and basal water aquifers roughly aligns with Māmalahoa Highway, and the piezometric head in wells tapping the high-level groundwater ranges from 42 feet and 490 feet +MSL. These widely different water levels suggest compartmentalization in the high-level groundwater.

3.2.1.4 Keauhou Aquifer System Area

The Keauhou Aquifer System Area delineated by CWRM in 1990 comprises the southern half of the Hualālai Hydrologic Sector, which is defined by the exposed rocks of Hualālai Volcano (Mink and Lau 1993). The Keauhou Aquifer System Area extends over the western and southwestern flank of Hualālai and the entire coastline from Mahai'ula to Keikiwaha Point. Having been delineated prior to the discovery of high-level groundwater, the Keauhou Aquifer System Area was described as a basal water system in the coastal area with the possibility of having high-level, dike-confined groundwater near the rift zones of Hualālai. The sustainable yield of the Hualālai Aquifer System Area was estimated by CWRM to be 38 MGD, based on recharge estimate of 87 MGD and assuming the groundwater occurs as an unconfined, thin basal lens.

The general direction of groundwater flow in the high-level aquifer was originally assumed to be directly seaward into the basal aquifer. The direction of groundwater flow in the basal aquifers is generally presumed to be oriented more or less directly toward the coastline where it becomes increasingly brackish.

The high-level groundwater of North Kona is of pristine quality, largely the result of recharge by high elevation rainfall and the lack of saltwater intrusion. The chloride content (a measure of freshness of Hawai'i's groundwater) in the high-level wells range between 3 and 10 mg/L, similar to the chloride content of high elevation rainfall.

3.2.1.5 Sustainable Yield

Rainfall and fog drip are the principal sources of recharge to the high-level and basal water components of the Keauhou Aquifer System Area. The CWRM estimated recharge to the Keauhou Aquifer System Area in 1990 was 87 MGD, and, assuming an entirely unconfined basal aquifer, the sustainable yield for the area would be 38 MGD (CWRM, 2008). As noted above, a more recent study by the USGS using more sophisticated methods (Engott, 2011) estimates the recharge rate at 152 MGD. Thus, together with the now proven existence of high-level groundwater, the actual sustainable yield is considerably greater than 38 MGD.

At the present time, the total usage in the Keauhou Aquifer System Area is approximately 14 MGD (TNWRE, pers. comm., 2014). According to the *Hawai'i County Water Use and Development Plan Update-Keauhou Aquifer System Area,* DWS' projections for the future potable water demand in this aquifer system area is approximately 22.9 MGD by 2035 (DWS, 2017). The existing wells near the Wai'aha Well B Project are listed in Table 3.2 below. These wells include municipal, industrial, and irrigation wells. As shown in this table, five of these wells are high level production wells.

Table 3.2 Existing Wells in the Project Vicinity

Well No.	*Well Name*	*Owner/User*	*Year Drilled*	*Elev. (ft +MSL)*	*Depth (ft.)*	*Static Head (ft. +MSL)*
3858-001	Keōpū 1 Monitor Deep	CWRM	2001	736	1,310	2.5
3858-002	Keōpū 2 Deep Monitor	CWRM	2017	736	1,210	3.6
3957-001	Keōpū Well A	DWS	1993	1,672	1,704	47
3957-002	Komo Monitor	USGS	1991	1,601	1,623	40
3957-004	Doutor Coffee I	Doutor Coffee Co.	2001	1,445	1,462	43
3957-005	Keōpū Well IV	HHFDC	2003	1,600	1,780	50.62
3959-001	Kamakana	Forest City Hawai'i Kona, LLC	2011	542	1,773	2.5
4057-001	QLT	DWS	1994	1,762	1,787	187.8
4158-002	Honokōhau Deepwell	DWS	1991	1,675	1,735	109.5
4158-003	Palani Ranch Deepwell	DWS	2007	1,672	1,747	95.3
Source: TNWRE (2018)						

3.2.2 POTENTIAL IMPACTS

3.2.2.1 Surface Water

The project parcels are adjacent to Wai'aha Stream, as noted in Section 3.2.1.1 and depicted in Figure 1.2, the only stream in the North Kona district classified as perennial. However, the proposed Wai'aha Well B Project does not involve any activities that would alter existing stream channels, wetlands, or other surface water bodies. Earthmoving for the various proposed facilities will disturb the existing ground cover and create temporary potential for increased soil erosion in a relatively modest area of approximately 0.25 acres. DWS will require its contractor(s) to employ Best Management Practices (BMPs) as necessary during construction to stabilize surface soils and prevent contaminants such as sediment, petroleum products, and debris from leaving the site via storm water runoff. They will also attempt to schedule earthwork during periods of minimal rainfall, and to place permanent erosion control measures on lands denuded of vegetation as quickly as possible. In addition, the very high permeability of the soils in the project area will limit the potential for storm water to transit offsite.

Because the total disturbed area is not expected to exceed one acre, DWS does not intend to apply for a National Pollutant Discharge Elimination System (NPDES) Notice of Intent – Construction (NOI-C) from the Department of Health's Clean Water Branch (CWB).

During pump tests of the proposed well, the well water produced will be discharged into the onsite seepage pit (see Figure 2.2). The BMPs the contractor will implement during design and construction of the seepage pit will minimize the potential for sediment entrainment or contamination of these discharges and storm water runoff. Once the well is placed into production, it will also discharge approximately 3,500 gallons of water into the seepage pit each time the pump starts. This procedure helps to ensure that only high-quality potable water reaches DWS' customers. The seepage pit will be designed to hold this volume of discharge

and allow it to percolate into the subsurface without discharging to the surrounding soil or offsite.

The No Action Alternative would not have any effect on surface water resources.

3.2.2.2 Ground Water

As originally put into operation, the existing Wai'aha Well was outfitted with a 1,400 GPM pump. Operation at this pumping rate has had no adverse impact on high-level groundwater. The existing Wai'aha Well is now being rehabilitated and will ultimately have a smaller, 700 GPM pump installed. The addition of Wai'aha Well B with a 700 GPM pump will bring the total pumping capacity up to the original 1,400 GPM rate. However, having two wells rather than one will provide greater reliability and expected longer useful life.

The No Action Alternative would not have any effect on the region's groundwater.

3.2.2.3 Impact to Basal Ground Water

DWS began pumping high-level wells in 1994 and has slowly increased this process over time. Currently, across DWS' seven high-level wells drawing from the Keauhou Aquifer, from Kalaoa Well (State Well No. 4358-001) in the north to Wai'aha Deepwell (No. 3857-004) to the south, the total pump rate is between 5 and 6 MGD. Monitoring of water levels and salinity profiles in the Kamakana Well (State Well No. 3959-001) and Kaloko II (State Well No. 4160-002) by TNWRE, two downgradient basal wells, has shown no identifiable impact in the nominally down-gradient basal lens as a result of this high-level pumpage.

The Keōpū I Monitoring Well (State Well No. 3858-001) hit fresh artesian groundwater at a depth below the basal lens and the saline groundwater beneath the basal lens in 2001, although the specific depth of its occurrence was not established at that time. Then, in 2011, fresh artesian groundwater was encountered at approximately 1,100 feet -MSL in the Kamakana Well. Tests indicated that the groundwater body had a substantial tidal influence but that the supply could not be developed at that location.

The Keōpū II Monitoring Well (State Well No. 3858-002) was completed about 60 feet away from Keōpū I in 2018. It was configured to isolate the fresh artesian groundwater. The well is open to this water body from 400 to 457 -MSL. It established the following:

- Its piezometric head stands 28 feet +MSL and has a significant tidal response;
- Pump-testing at 820 GPM showed the artesian groundwater to be developable at this location; and
- The pumped water salinity was essentially identical to that of the upgradient high-level wells (i.e., the specific conductance of 135 micro-Siemens per centimeter (µS/cm) and chlorides of 3 to 4 milligrams per liter (mg/L).

Findings at Keōpū I, Kamakana, and Keōpū II, the ongoing monitoring of basal groundwater downgradient of the pumping at these high-level wells, and the anomalously low temperatures and high salinity in the basal groundwater all suggest that the geological structure creating the high-level groundwater appears to be poorly permeable lava flows lying conformably within lava flows above and below it of greater permeability. In that case, it is likely that most of the high-level groundwater flows at depth below the basal lens and discharges offshore rather than flowing into the nominally downgradient basal lens. As a result of these conditions, pumpage of the proposed Wai'aha Well B project is not expected to have a detectable impact on the basal lens.

The No Action Alternative would not have any effect on the basal groundwater.

3.2.3 POTENTIAL CONTAMINATION

3.2.3.1 Affected Environment

Since the recharge areas of the Keauhou Aquifer System Area are on the slopes of Hualālai (see Section 3.1), the area is predominantly comprised of shrub and forest lands. Land uses in the immediate vicinity of the proposed Wai'aha Well B site consist of rural residential homes, minor agricultural endeavors, and vacant lands. None of these land uses are generators of major potential contaminants. No large-scale commercial agricultural operations, which may use significant quantities of pesticides and herbicides, are present in the upslope from the project site, and the nearest landfill is in South Kohala more than 20 miles away. The nearest commercial and industrial facilities are concentrated in and around Kailua-Kona, approximately 3 miles away.

The County of Hawai'i does not have any wastewater collection system in the uplands of North Kona or along Māmalahoa Highway. Consequently, wastewater disposal in the region is primarily conducted using Individual Wastewater Systems (IWS). Historically, these predominantly consisted of cesspools. However, strict government regulations now prohibit the installation of new cesspools on the island, and as a result, homeowners are opting for septic tanks as an alternative. These IWSs collect and hold effluent, allowing the unit to separate and biodegrade the fluid before allowing it to decant via overflow into a drain field for disposal. Over time, these will eventually replace the existing cesspools as well. The stricter wastewater disposal regulations are designed to protect the watersheds as valuable recharge areas.

The project area is located above the Underground Injection Control (UIC) line established by the DOH. This line marks the area of the island wherein there are strict limits on the types of injection wells that can be installed under a UIC Permit. Injection wells are typically used by individual wastewater treatment facilities to dispose of their treated wastewater effluent in ground pits. The UIC control line is approximately 1.45 miles downslope of the proposed project area. This means that no injection wells can be installed close to the proposed Wai'aha Well B Project.

As part of the pump testing process described above, the DWS will test the water quality for potential contaminants.

3.2.3.2 Potential Impacts

The DOH has strict requirements for new sources of drinking water that are intended to serve the public water system. In conformity with those requirements, the DWS will submit an engineering report to SDWB for approval prior to placing the Wai'aha Well B project online with DWS' North Kona Water System. The report will identify all potential sources of contamination and evaluate alternative control measures which could be implemented to reduce or eliminate potential contamination, including treatment of the water source.

Because of the location of the Wai'aha Well B Project site, far above the UIC line, the generally high quality of water produced at the original Wai'aha Well and other nearby sources, and the lack of potential sources of contamination near the well, no significant impacts due to contamination of well water are anticipated.

The No Action Alternative does not have the potential to cause any contamination of water resources.

3.3 CLIMATE, CLIMATE CHANGE, AND SEA LEVEL RISE

3.3.1 EXISTING CONDITIONS

According to the *Rainfall Atlas of Hawai'i* (Giambelluca et al., 2013), the nearest active rain gauging station to the proposed project is the Wai'aha Stream Station, located at 1,511 feet +MSL just below the Wai'aha Well and Reservoir site. The mean rainfall at this station from 1991 to the present is 48.2 inches (1225 mm) and the wettest month of the year was June, with an average rainfall of 5.38 inches (137 mm). The driest month of the year during this period was December, with an average of 2.67 inches (68 mm) of rainfall. Rainfall varies significantly according to the time of day as well as time of year, with midday tending to be much drier than the nighttime.

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. 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 down-slope 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 volcanic activity are usually carried to the southwest around the island and are not likely to affect the project site. Consequently, air quality is generally excellent.

The global community of climate scientists has concluded that sea levels are currently rising and that this trend is expected to continue for the foreseeable future. The Intergovernmental Panel on Climate Change (IPCC) has predicted (Church et al., 2013; IPCC, 2013) that the average temperature in the Hawaiian Islands is likely to increase by 0.5 to 1.5 C (0.9-1.7 F) by 2100, rainfall is likely to decrease by, at most 10 percent, and sea level could rise between 0.26 and 0.98 m (0.85 to 3.2 feet). Given this likelihood, it is incumbent upon planners to look at the potential effects this trend could have on development and examine ways in which project designs can accommodate these changes.

3.3.2 POTENTIAL IMPACTS

This small predicted temperature change and modest decrease in rainfall would not significantly affect the proposed project. Because the project involves only upland areas, well above sea level, a rise in average sea level of even 3.2 feet (1 m) would not affect the project's design or function. Neither would it affect the homes that water from the well is intended to serve.

The No Action Alternative does not have the potential to affect the climate, regional micro-climate, or to contribute to climate change or sea level rise.

3.4 AIR QUALITY

3.4.1 EXISTING CONDITIONS

Air quality in North Kona is generally good, but it is frequently degraded by the naturally occurring volcanic emissions from Kīlauea Volcano. The emissions are known locally as "vog", a portmanteau of "volcanic fog," and include carbon dioxide, particulate matter, and sulfur dioxide (SO_2). SO_2 is a colorless gas that easily combines with water vapor, forming sulfuric acid. Emissions of sulfur dioxide are commonly associated with the burning of fossil fuels such as coal or oil. However, on the Island of Hawai'i, the principal source of SO_2 is Kīlauea Volcano. Under normal circumstances, the effects of this vog can be noticeable, but generally do not cause ambient air quality to exceed State of Hawai'i or federal air quality standards. There are no substantial sources of anthropogenic air emissions and very little chance for the development of air inversions on the mountain slope.

According to the State of Hawai'i *Annual Summary of Air Quality Data 2016*, the most recent year for which data was available, the daily averages at the DOH Special Purpose Monitoring Station in Kailua-Kona did not exceed a value of 0.021 parts per million (ppm) for SO_2 and 33 $\mu g/m^3$ for fine particulate matter ($PM_{2.5}$).[1] The State 24-hour standards for these pollutants are, respectively, 0.14 ppm and 35 $\mu g/m^3$.

Finally, the latest eruption of Kīlauea Volcano, beginning on May 3, 2018 has led to substantial emissions of SO_2, hydrogen sulfide (H_2S), carbon dioxide (CO_2), and particulate matter. These emissions can cause breathing difficulties, irritation to the eyes, nose, and throat, and exacerbate existing conditions like pulmonary disorders. While the recent activity of Kīlauea Volcano has declined in recent months, the behavior of the volcano is unpredictable, and there is no clear indication of if or when these conditions will reoccur.

3.4.2 POTENTIAL IMPACTS

3.4.2.1 Construction Period Impacts

Construction period activities will result in short-term air quality impacts, including the generation of dust from earthmoving activities and emissions from construction vehicles and equipment. To mitigate these impacts, DWS will require the contractor to comply with the DOH's regulations for controlling fugitive dust, contained in HAR, §11-60.1 *Air Pollution Control*. Compliance with state regulations will require adequate measures to control fugitive dust by such methods as:

- Planning different phases of construction, focusing on minimizing the amount of dust generating materials and activities, and limiting onsite vehicular traffic;
- Frequent watering of exposed dirt areas;
- Rapid covering or landscaping of bare areas, including slopes;
- Controlling dust from debris being hauled away from the project site; and
- Constructing a dust barrier or fence.

As noted above, grading and excavation related to the Wai'aha Well B Project will disturb only a modest area of land. No more than a few pieces of construction equipment would operate on the site at any one time. Moreover, the work would be limited to a period of

[1] The special purpose stations on Hawai'i Island were established to monitor ambient air concentrations of $PM_{2.5}$ from volcanic emissions.

approximately 2 to 3 months. The site's relatively high rainfall, generally moderate wind speeds, and distance from sensitive receptors mean that fugitive dust is unlikely to be a problem during construction.

The No Action Alternative does not involve any construction activity and would not affect air quality.

3.4.2.2 Operational Period Impacts

Operation of the proposed production well and other facilities will not entail the on-site emission of regulated pollutants. Electrical power will be required to operate the pump and other equipment installed as part of the Wai'aha Well B Project; that power will be obtained from the HELCO grid. HELCO provides power generated by various sources, some of which requires the combustion of fossil and/or biofuels and that combustion will result in the release of air pollutant emissions. However, the energy use will be fairly small relative to the island-wide production and will not have the potential to significantly alter air quality. Consequently, pollutant emissions from construction of the proposed project do not have the potential to substantially affect local or regional air quality.

3.5 BIOLOGICAL RESOURCE

3.5.1 EXISTING CONDITIONS

In order to characterize the existing biological resources present on the project site and assess any potential for impacts implementation of the proposed action might have, a biologist from Rana Biological Consulting, Inc. conducted a biological survey of the site on September 6, 2019. The information in this section is drawn from the resulting *Biological Surveys Conducted for the Wai'aha Well B Project, North Kona, Island of Hawai'i* (David, 2019); the complete report is contained in Appendix A.

The proposed Wai'aha Well B Project is located within DWS' existing Wai'aha Well and Reservoir facility (see Figure 2.1). There is little vegetation of any stature within the proposed project area. Vegetation within that area is growing on crushed lava and is dominated by a ground cover of artillery plant (*Pilea microphylla*), hairy horseweed (*Conyza candensis*), and a scattering of garden spurge (*Chamaesyce hirta*). Close to the property line on the north, east, and south sides of the site there is relatively dense mixed secondary growth of non-native hedge that separates the DWS facility from the adjacent properties. Plants within that assemblage include: Christmas berry (*Schinus terebinthifolius*), Indian fleabane (*Pluchea indica*), lime (*Citrus aurantiifolia*), avocado (*Persea americana*), African tulip (*Spathodea campanulate*), strawberry guava (*Psidium cattleianum*), white ginger (*Hedychium coronarium*), split-leaf philodendron (*Monstera deliciosa*), and Ti leaf (*Cordyline fruticose*).

No listed native species of plants or animals were identified during the survey.

3.5.2 POTENTIAL IMPACTS

3.5.2.1 Botanical Resources

No rare or listed botanical species were observed during the course of the biological survey, nor were they anticipated as the site has been developed as a DWS well and reservoir facility for more than a decade. The existing development and vegetation on the site all but preclude sensitive native botanical resources; thus, no impacts to protected botanical resources are anticipated and no mitigation is required.

3.5.2.2 Avian Resources

The findings of the avian survey were consistent with the current habitats present within the project area. A total of 34 individual birds of 11 species, representing eight separate families, were recorded during the survey. All 11 species are alien species established in the Hawaiian Islands.

Although no native seabirds were detected during the survey, the threatened Newell's shearwater (*Puffinus newelli*) and the endangered Hawaiian petrel (*Pterodroma sandwichensis*) are known to overfly the general project area in small numbers during their annual nesting season, which runs from April through December. The primary cause of mortality in these resident seabirds is thought to be predation by alien mammalian species at the nesting colonies. Collision with manmade structures is considered to be the second most significant cause of mortality in locally nesting seabirds on the Island of Hawai'i. Nocturnally flying seabirds, especially fledglings on their way to sea in the summer often collide with manmade structures, and if they are not killed by the collision the dazed and injured birds are easy targets of opportunity for feral mammals.

The principal potential impact that construction and operation of the Wai'aha Well B Project could pose to protected seabirds is the increased threat that birds will be downed after becoming disoriented by lights associated with the proposed action during the nesting season. However, because no nighttime construction activities are proposed, and no outdoor lighting will be installed as part of the proposed facilities, it is not expected that construction and operation of the Wai'aha Well B Project will result in deleterious impacts to listed seabirds and no mitigation is required. If conditions do require any outdoor lighting during either the construction or operation of the proposed project, it is recommended that the lights be shielded to reduce the potential for harmful interactions between nocturnally flying seabirds and external lighting or manmade structures.

3.5.2.3 Mammalian Resources

Only one mammalian special was detected during the biological survey, Indian mongoose (*Herpestes auropunctatus*). No mammalian species currently listed, or proposed for listing, under either federal of state endangered species statutes were recorded within the survey area. The findings of the mammalian survey are consistent with the current habitats present on the site and the current land usage of the area surveyed. Although no other rodents were recorded during the survey, it is likely that one or more of the other four established alien Muridae found on Hawai'i are present: (*i*) European house mouse (*Mus musculus domesticus*); (*ii*) roof rat (*Rattus rattus*); (*iii*) brown rat (*Rattus norveigicus*); and (*iv*) black rat (*Rattus exulans hawaiiensis*). All these introduced rodents are deleterious to native ecosystems and the native faunal species dependent on them.

No Hawaiian hoary bats (*Lasiurus cinereus semotus*) were detected during the survey. The principal threat that construction could pose to bats is during the clearing and grubbing phase of construction. The trimming or removal of foliage and/or trees within the construction areas may temporarily displace individual bats, which may use the vegetation as a roosting location. As bats use multiple roosts within their home territories, the potential disturbance resulting from the removal of vegetation is likely to be minimal. During the pupping season, females carrying the pups may be less able to rapidly vacate a roost site while vegetation is cleared. Additionally, adult female bats sometimes leave their pups in the roost tree while they forage, and very small pups may be unable to flee a tree that is being felled. Potential adverse effects

from such disturbance can be avoided or minimized by not clearing woody vegetation taller than 15 feet (4.6 m) between June 1st and September 15th, the pupping season. As no trees or woody vegetation that is suitable bat roosting habitat will be removed as part of the Wai'aha Well B Project, no deleterious impacts to Hawaiian hoary bats are anticipated.

3.6 AQUATIC RESOURCES

3.6.1 EXISTING CONDITIONS

3.6.1.1 Wai'aha Stream

As noted in Section 3.2.1.1 and shown in Figure 1.2, the proposed Wai'aha Well B Project is within the Wai'aha Stream watershed; this stream has been classified as perennial. Wai'aha Stream is 16.2 miles long and its watershed has a total area of 15.8 square miles, with a maximum elevation of 8,258 feet +MSL. Wai'aha Stream is the only stream occurring in this watershed and the only perennial stream in North Kona. According to the *Atlas of Hawaiian Watersheds and Their Aquatic Resources* (Parham et al., 2008), approximately 67.5 percent of the watershed is in the State's Agricultura Land Use District, 27.9 percent is in the Conservation District, 4.5 percent is in the Urban District, and 0.1 percent is in the Rural District. The percentage of the stream's channel length in each reach type is provided in Table 3.3; land use within the Wai'aha Stream watershed is presented in Table 3.4. The Division of Aquatic Resources (DAR) has not assigned a cluster code to this watershed.

Table 3.3 Wai'aha Stream Percentage of Reach Types

Item	***Reach Type Category***				
Reach Type	*Estuary*	*Lower*	*Middle*	*Upper*	*Headwaters*
Percent of Total	0.0	0.0	3.2	16.7	80.1
Source: Atlas of Hawaiian Watersheds and Their Aquatic Resources (2008).					

Past surveys of Wai'aha Stream have identified the presence of a native species of damselfly, *Megalagrion xanthomelas*. Of the five separate assessments that have been conducted of Wai'aha Stream's biota, none have deemed the stream worthy of protection.[2] The native insect diversity does not exceed the threshold for special protection (i.e., 19 species), no native species are abundant, there are more than five introduced species present, and there is no habitat for the endangered Newcomb's Snail present in Wai'aha Stream.

[2] [2] http://www.hawaiiwatershedatlas.com/watersheds/hawaii/84002.pdf

Table 3.4 Land Use within the Wai'aha Stream Watersheds

Land Use Category	*Wai'aha Stream*	
	Percent	*Square Miles*
High Intensity Developed	0.2	0.03
Low Intensity Developed	2.4	0.37
Cultivated	0.5	0.09
Grassland	52.8	8.32
Scrub/Shrub	22.5	3.54
Evergreen Forest	18.8	2.96
Palustrine Forested	0.0	0.0
Palustrine Scrub/Shrub	0.0	0.0
Palustrine Emergent	0.0	0.0
Estuarine Forested	0.0	0.0
Bare Land	2.8	0.45
Unconsolidated Shoreline	0.0	0.0
Water	0.0	0.0
Unclassified	0.0	0.0
TOTAL	***100***	***15.8***

Source: *Atlas of Hawaiian Watershed and their Aquatic Resources* (2008)

3.6.2 POTENTIAL IMPACTS

The data that are available from the *Atlas of Hawaiian Watersheds & Their Aquatic Resources* indicate that Wai'aha Stream does not contain high-value aquatic habitat, particularly important native species, or other important aquatic fauna. As discussed above in Section 3.2.2.1, the withdrawal of water from the well operation would not substantially alter the flow in either stream as it is being withdrawn at 80 feet -MSL. Neither would it have the potential to introduce pollutants into the stream. Consequently, the proposed action would not have substantial direct or indirect effects on the aquatic communities in streams or nearshore waters. In view of the foregoing, the proposed project does not have the potential to have significant adverse impacts on aquatic biota.

The No Action Alternative would not result in any impacts to threatened, endangered, or otherwise sensitive biota.

3.7 NOISE

3.7.1 REGULATORY CONTEXT

Hawai'i Administrative Rules, Title 11, Chapter 46, Section 4 (HAR §11-46-4) defines the maximum permissible community sound levels in dBA. These differ according to the kind of land uses that are involved, as defined by zoning district, and time of day (i.e., daytime or nighttime). These limits are shown in Table 3.5 below. Definitions of two technical terms used in this discussion are as follows:

- *A-Weighted Sound Level (dBA).* The sound level, in decibels, read from a standard sound-level meter using the "A-weighted network". The human ear is not equally sensitive in all octave bands. The A-weighted network discriminates against the lower frequencies according to a relationship approximating the auditory sensitivity of the human ear.
- *Decibel (dB).* This is the unit that is used to measure the volume of a sound.[3] The decibel scale it logarithmic, which means that the combined sound level of 10 sources, each producing 70 dB will be 80 dB, not 700 dB. It also means that reducing the sound level from 100 dB to 97 dB requires a 50 percent reduction in the sound energy, not a 30 percent reduction. Perceptually, a source that is 10 dB louder than another source sounds about twice as loud. Most people find it difficult to perceive a change of less than 3 dB.

The maximum permissible sound levels specified in HAR §11-36-4(b) apply to any excessive noise source emanating from within the specified zoning district. They are measured at or beyond the property line of the premises from which the noise emanates. Mobile noise sources, such as construction equipment or motor vehicles are not required to meet the 70-dBA noise limit. Instead, construction noise levels above these limits are regulated using a curfew system whereby noisy construction activities are not normally permitted during nighttime periods, on Sundays, and on holidays. Construction activities which could typically exceed the limits established for fixed machinery are normally allowed during the normal daytime work hours on weekdays, and on Saturdays using a system involving the issuance of construction noise permits.

Table 3.5 Hawai'i Administrative Rules §11-46 Noise Limits

Zoning District	*Noise Limit (in dBA)*	
	Daytime (7:00 a.m. to 10:00 p.m.)	*Nighttime (10:00 p.m. to 7:00 a.m.)*
Class A: Areas equivalent to lands zoned residential, conservation, preservation, public space, open space, or similar type.	55	45
Class B: All areas equivalent to lands zoned for multi-family dwellings, apartment, business, commercial, hotel, resort, or similar type.	60	50
Class C: All areas equivalent to lands zoned agriculture, country, industrial, or similar type.	70	70
Source: Hawai'i Administrative Rules §11-46 *Community Noise Control*		

All the parcels which would be affected by the proposed project are zoned Ag-1a, Agricultural District, which places it in Class C, the lease restrictive for the purposes of noise limits. Thus, the 70-dBA noise limit will apply to all stationary noise sources related to the Wai'aha Well B Project.

3.7.2 EXISTING CONDITIONS

No noise study was conducted during the planning of this project but based on measurements made in other similar areas on the island, ambient noise levels during regular trade wind weather is probably near 55 dBA; noise levels during periods of calm winds and no traffic are

[3] [3] The sound pressure in decibels is equal to twenty times the logarithm to the base ten of the ration of the pressure of the sound measured to a reference pressure of 20 micropascals, or 0.0002 dynes per square centimeter.

probably less than 45 dBA. The predominant noise sources in the vicinity of the project site are traffic from Māmalahoa Highway and surrounding neighbors engaged in agricultural activities. Other noise sources include wind, bird calls, and aircraft. Much of the land above Māmalahoa Highway in the uplands of North Kona are undeveloped or in open space and do not harbor significant sources of noise-generating activity or noise sensitive activities.

3.7.3 POTENTIAL IMPACTS

3.7.3.1 Construction

Audible construction noise would be an unavoidable result of construction activity related to the proposed production well, control building, and associated infrastructure. Transport, excavation, and other activities will also entail the use of trucks with backup alarms and excavators (e.g., backhoes, which generate up to 84 dBA at a distance of 50 feet). As depicted in Table 3.6, some of this equipment is inherently noisy. Because the nearest residences are between 300 and 400 feet removed from the project site, some of the construction activity will be audible.

Table 3.6 Construction Equipment Noise Emissions Levels

Equipment	*Typical Noise Levels (dBA) 50 ft., U.S. Dept. of Trans. Study (1979)*	*Average Noise Level (dBA) 50 ft., CA/T Project Study (1994)*	*Typical Noise Level (dBA) 50 ft., U.S. Dept. of Trans. Study (1995)*	*Lmax Noise (dBA) 50 ft., CA/T Project Spec. 721.560*
Air Compressor	--	85	81	80
Backhoe	84	83	80	80
Chain Saw	--	--	--	85
Compactor	82	--	82	80
Compressor	82	--	82	80
Concrete Truck	--	81	--	85
Concrete Mixer	--	--	85	85
Concrete Pump	--	--	85	85
Concrete Vibrator	--	--	76	80
Crane, Derrick	86	87	88	85
Crane, Mobile	--	87	83	85
Dozer	88	84	85	85
Drill Rig	--	88	--	85
Dump Truck	--	84	--	84
Excavator	--	--	--	85
Generator	84	78	81	82
Gradall	--	86	--	85
Hoe Ram	--	85	--	90
Impact Wrench	--	--	85	85
Jackhammer1	--	89	88	85
Loader	87	86	85	80
Paver	80	--	89	85
Pile Driver, Impact	--	101	101	95
Pile Driver, Sonic	--	--	96	95
Pump	80	--	85	77
Rock Drill	--	--	98	85
Roller	--	--	74	80
Scraper	89	--	89	85
Slurry Machine	--	91	--	82
Slurry Plant	--	--	--	78
Truck	89	85	88	84
Vacuum Excavator	--	--	--	85
Note 1: There are 82 dBA at 7-meter rated jackhammers (90 lbs. class) available. This would be equivalent to 74 dBA at 50 ft. These are silenced with molded intricate muffler tools.				
Source: http://ops.fhwa.dot.gov/wz/workshops/accessible/Schexnayder_paper.htm				

Noise from the operation of the construction equipment is expected to exceed the property line noise limits (vis-à-vis Māmalahoa Highway and adjacent agricultural lots) during installation of portions of the project. Because of this, DWS or its contractor(s) anticipates seeking a Construction Noise Permit from the DOH Indoor and Radiological Health Branch in accordance with the provisions of HAR §11-46. The implementing regulations for a DOH Construction Noise Permit stipulate that noisy construction activities do not occur during the nighttime, Sundays, and holidays. These permit conditions, which are routinely applied to noisy construction activities, are intended to minimize the adverse impacts to residences and other sensitive noise receptors.

Night-time construction is not anticipated, but if such activity is necessary, a public informational meeting would be held for the affected residents and property owners. DOH's maximum permissible noise level for construction equipment during night hours in residential areas is 45 dBA. If the generated noise is expected to exceed the State's maximum permissible level, a noise variance will be sought from the DOH following consultation with adjacent residents.

Impacts associated with construction noise are not expected to affect public health or welfare, due in part to the fact that they will be temporary in nature and restricted to normally permitted work hours. To mitigate short-term construction-related noise impacts, the contractor will comply with the provisions of HAR §11-46, "Community Noise Control". It will be the contractor's responsibility to minimize noise by properly maintaining mufflers and other noise-attenuating equipment. If construction work is required during evenings, night, and weekend hours, a variance will be sought from the DOH.

Construction workers' vehicles traveling to and from the project site will also increase traffic volumes on Māmalahoa Highway. However, the addition of these relatively few construction workers required for the project will increase total traffic noise levels by no more than a few tenths of a decibel, which are not noticeable. Consequently, project-related construction worker vehicle-trips will not have a significant noise impact.

The No Action Alternative would not involve any activities with the potential to generate construction noise.

3.7.3.2 Operational Noise Impacts

There will be periodic monitoring inspections and maintenance work; otherwise, the proposed project will be an unmanned facility. Noise will be generated by the vehicle used to access the site, but this will be very brief and identical to the noise made from passing traffic along the highway. Noise from the pump is expected to be insignificant, since it is electrically operated and located deep within the well (see Figure 2.3). Also, the associated facilities will emit little or no sound. Thus, no significant adverse noise impacts are anticipated during the long-term operation of the Wai'aha Well B Project.

The No Action Alternative does not involve any operational phase and would not generate any noise.

3.8 ARCHAEOLOGICAL, HISTORIC, AND CULTURAL FEATURES

3.8.1 EXISTING CONDITIONS

The Wai'aha Well B Project, as noted throughout this report, is located within an existing DWS facility. During development of the site for the existing Wai'aha Well and Reservoir, DWS worked with its consultant, PHRI to conduct an Archaeological Reconnaissance Survey on September 9, 2002. The results of this survey confirmed that no surficial archaeological resources of any kind were present on the site. The results of this Archaeological Reconnaissance Survey were provided to the State of Hawai'i's State Historic Preservation Division (SHPD) for review and comment, and on September 16, 2002 two SHPD archaeologists for Hawai'i Island conducted a field visit to verify PHRI's findings. In a letter dated October 9, 2002 the SHPD concurred that, due to extensive prior disturbance of the site, no archaeological features are present and consequently issued a finding of "no effect" for that project. That letter is included as part of Appendix B of this report.

In addition to the Archaeological Reconnaissance Survey, PHRI also prepared a Cultural Impact Assessment for the Wai'aha _Production Well and Storage Tank Project, Land of Wai'aha 1st and 2nd, North Kona District, Island of Hawai'i, TMK (3) 7-5-014:016; 7-5-015:008, 015 (CIA) for the project (see Appendix B). The authors of the CIA concluded that the Wai'aha Well and Reservoir site: (*i*) had been extensively modified and developed for commercial-scale agriculture; (*ii*) had yielded no evidence of potentially significant archaeological or cultural resources (e.g. resources, practices, or beliefs) as part of the archaeological survey; and (*iii*) the site was closed to access by the public and/or any potential Native Hawaiian cultural practitioners. Based on these findings, PHRI concluded that that project would not have any short- or long-term adverse impacts on cultural resources.

3.8.2 POTENTIAL IMPACTS

In view of the findings produced during the original development of the Wai'aha Well and Reservoir Project, the archaeological survey and CIA which were prepared at that time, and SHPD's concurrence with a no historic properties affected determination for that project, DWS has concluded that the proposed Wai'aha Well B Project will have no impacts on cultural, archaeological, or historic properties. There is always the possibility that subsurface remains may be encountered during construction. Consequently, the construction contract for the proposed work will require that in the event that historic or archaeological resources, including iwi (i.e., skeletal remains), are identified during construction work, the contractor will immediately cease work in the vicinity of the find, protect the area from additional disturbance, and contact SHPD for subsequent guidance. In the absence of any known traditional native Hawaiian cultural practices, beliefs, or properties of any kind in the project area, no impacts to these resources are anticipated.

The No Action Alternative does not have the potential to affect any archaeological, historic, or cultural properties.

3.9 NATURAL HAZARDS

3.9.1 EXISTING CONDITIONS

3.9.1.1 Flooding

The Federal Emergency Management Agency (FEMA) has designated the entire project area as being in Flood Zone X. This designation corresponds to areas that are subject to flooding from a potential 500-year flood or from a 100-year flood with flood levels of less than one foot. Areas designated as Flood Zone X are outside of the 0.2 percent annual chance floodplain; because these areas are considered to have very low potential for flooding, no base flood elevations have been determined. Site planning for the well facilities have taken into account the location and extent of these identified flood zones.

3.9.1.2 Volcanic Hazards

The proposed Wai'aha Well B Project site is located on the western flank of Hualālai, one of five prominent volcanoes on the Island of Hawaii. The estimated lava production rate for Hualālai over the past 3,000 years is about 2 percent of the current rate for Kīlauea Volcano. The last volcanic eruption of Hualālai in the general project area occurred in the period 1800-1801. Lavas emerged from the northwest volcanic rift zone at about the 1,600-foot elevation, in the vicinity of Puhi-a-Pele Cinder Cone, just makai of Māmalahoa Highway, creating a flow that entered the ocean north of Keāhole Point.

The Lava Flow Hazard Map prepared by the USGS' Hawaiian Volcano Observatory shows the Island of Hawaiʻi being comprised of nine Lava Flow Hazard Zones (Zone 1 being the most hazardous and Zone 9 being the least), based on: (*i*) geologic criteria, including the frequency of past lava flows and coverage, (*ii*) distance from eruptive vents, and (*iii*) topography that currently protects certain areas from lava inundation. The summit of Mauna Loa and its rift zones, as well as Kīlauea Crater and its rift zones, are in Zone 1. The project site and the town of Kailua-Kona are in Zone 4, a moderately rated hazard zone. Thus, the likelihood of impacts to the project facilities from lava flows is low to moderate.

3.9.1.3 Seismic Hazards

Most earthquakes which occur in the State are localized around the Island of Hawaiʻi, and most are too small to be detected except by highly sensitive instruments. However, potentially destructive earthquakes do occur. The most powerful earthquake in Hawaiʻi on records occurred in 1868 beneath the Kaʻū District on the southeast flank of Mauna Loa, on the Island of Hawaiʻi. It had an estimated magnitude of between 7.5 and 8.1 and caused damage across all of Hawaiʻi Island.

Large earthquakes unrelated to volcanic activity also occur at irregular intervals on the island. At 7:07 a.m. on October 15, 2006, a relatively large earthquake registered a magnitude of 6.7 and caused more than $100 million dollars in damage. Numerous people suffered minor injuries, and over 1,100 buildings were damaged, in some cases extensively. Power outages occurred throughout the Hawaiian Islands. The earthquake was felt as intensity VII-VIII in northern and western Hawaiʻi.

More recently, on Friday, May 4, 2018, a magnitude 6.9 earthquake occurred with an epicenter near Fern Acres in Pāhoa on the east side of the island. This quake, associated with the eruption of Kīlauea Volcano, caused minor structural damage. HELCO estimated that this quake temporarily knocked out electrical service to approximately 14,000 customers.

The International Building Code (IBC) establishes minimum design criteria for structures to address the potential for damage resulting from seismic disturbances. The scale is from Seismic Zone 0 through Seismic Zone 4, with Zone 4 having the highest potential for seismically induced ground movement. The entire Island of Hawaiʻi, including the proposed project site, is in Zone 4. Defining hazard zones for the effects of earthquakes is more difficult than for eruptions and has not been attempted in detail in Hawaiʻi. For the most part, earthquakes on the island are concentrated beneath Kīlauea and Mauna Loa, and particularly beneath the south flanks of both volcanoes and in the Kaʻōiki region between them.

All of the proposed equipment and infrastructure incorporated in the proposed Waiʻaha Well B Project will conform to the IBC's Seismic Zone 4 Building Standards, and their construction and operation will not increase the seismic vulnerability of the area.

3.9.1.4 Tsunami Hazards

The proposed well project site is not located within a designated Flood Hazard Safety Area, nor is it within a Tsunami Evacuation area (Pacific Disaster Center, 2018).

3.9.2 POTENTIAL IMPACTS

As discussed above, the proposed Waiʻaha Well B project will not be subject to any significant hazards from volcanic flows, flooding, or tsunami, and the project does not include construction of any large, inhabited structures. The risk of earthquake damage is relatively

low, but not absent, given the seismic zone. Further, a failure of the proposed infrastructure which might result from an earthquake or volcanic flow would not affect surrounding uses or endanger people or property.

The No Action Alternative does not have the potential to be affected by any natural hazards.

3.10 SCENIC AND AESTHETIC RESOURCES

3.10.1 EXISTING CONDITIONS

The existing well, reservoir, and other infrastructure define the visual character of the site, with the remainder consisting of undeveloped, sloping land overgrown with vegetation. The proposed project area is only partially visible from Māmalahoa Highway and views of the site from adjacent properties are at least partially screened due to the intervening topography and vegetation. The Pacific Ocean and Kona coastline form the backdrop of views toward the makai lands from the site's upper elevations.

3.10.2 POTENTIAL IMPACTS

The proposed Wai'aha Well B and associated ancillary structures will be modest in size and unobtrusively located within an existing facility already occupied by water utility infrastructure. Potentially sensitive view planes from properties towards the sea and mountains in the vicinity will not be affected. There are no designated scenic viewpoints or vistas in the immediate vicinity of the proposed project, nor would any such viewpoints or vistas be affected.

The No Action Alternative does not have the potential to affect scenic or aesthetic resources.

3.11 TRAFFIC

3.11.1 EXISTING CONDITIONS

The proposed project site is accessed by an existing, gated driveway off Māmalahoa Highway. Māmalahoa Highway, a County right-of-way, serves as the primary access through the uplands of North Kona and the project site. Traffic volumes on this meandering rural road can be categorized as low.

3.11.2 POTENTIAL IMPACTS

During the construction period, activities at the proposed project site will generate some traffic. Specific activities with the potential to generate vehicle-trips on area roadways include the following: (*i*) construction workers' commutes to and from the project site; (*ii*) deliver of construction material and equipment to the property; and (*iii*) removal of construction waste and debris. Adequate space exists on the project site and alongside the roadway so that vehicle parking associated with construction activities will not interfere with the active traffic lanes along Māmalahoa Highway. A notable exception to this may briefly occur when large construction equipment and material are moved to and from the site. Any traffic delays resulting from these activities are anticipated to be intermittent and brief. In addition, the total volume of construction-related vehicle trips would be small and spread out throughout the day and would not necessarily be concentrated during the morning and afternoon peak-hour traffic.

Once built, the Wai'aha Well B Project will not require any staffing or generate any significant traffic. Typically, a monitoring technician will make near-daily inspection trips to the site,

while a maintenance crew would make periodic visits to the site to manage vegetation and conduct any needed repairs. These service vehicles will park in designated, on-site stalls, and will not interfere with traffic or contribute substantially to the volume of traffic on Māmalahoa Highway. In total, operation of the facility will generate less than one vehicle trip per day, too little to have a meaningful effect on area roadways. For these reasons, DWS has concluded that neither construction nor operation of the proposed facilities will lead to significant impacts to area traffic.

The No Action Alternative does not involve any construction or other activities and does not have the potential to impact traffic in any way.

3.12 LAND USE, SOCIOECONOMIC AND CULTURAL ENVIRONMENT

3.12.1 EXISTING CONDITIONS

As noted in the project description, the proposed Wai'aha Well B Project will take place across TMK Nos. 7-5-014:016 and 7-5-015:015. These two parcels have been in continuous use as a DWS well and reservoir facility for more than 15 years, and for a similar purpose for several decades prior to that. The site is in the State of Hawai'i's Agricultural Land Use District, and both parcels are zoned Ag-1a Agriculture by the County of Hawai'i. Surrounding land uses are largely limited to small-scale agriculture and single-family residences; there are no significant commercial, industrial, or other economic activities in the project's immediate vicinity.

The Wai'aha Well B Project site is located within the Hualālai Census Tract 215.02. Table 3.7 below summarizes relevant economic data for this area.

Table 3.7 Summary of Economic Data for Census Tract 215.2

Resident Population	4,445
Median Household Income	$59,977
Median Family Income	$60,343
Persons Below the Poverty Level	10.7%
Families Below the Poverty Level	8.2%
Civilian Unemployment Rate	14.2%
Population with a High School Degree or Higher	92.2%
Population with a Bachelor's Degree or Higher	24.0%
Foreign-Born Population	11%
Population Speaking Language Other than English	18.2%
Median Value for Owner-Occupied Housing Unit	$616,500
Source: U.S. Census Bureau, American Community Survey 5-Year Estimates (2011-2015)	

3.12.2 POTENTIAL IMPACTS

The proposed Wai'aha Well B Project, with its production well, control building, and related water utility infrastructure is an allowable use under the state and county land use designations identified above. The site's continued use as a DWS facility will not conflict with or otherwise

interfere with adjacent land uses or economic activities. The proposed project is compatible with, and ultimately intended to support, existing uses of the area. Aside from the temporary and relatively minor construction employment and expenditures, the proposed project would not stimulate or otherwise promote population growth or economic activity.

Aside from the temporary and relatively minor construction employment and expenditures, the project would not stimulate or otherwise promote population growth or economic activity. North Kona has been designated in the County of Hawaii's General Plan as an area that can accommodate population growth. By supplying water to the North Kona Water System, the proposed project will facilitate, but will not cause, additional population growth. Thus, the Waiʻaha Well B Project is not anticipated to have a significant effect on the socio-economic environment of the area and no mitigation is recommended.

No Action Alternative would not have any effect on the region's socioeconomics or land use.

3.13 UTILITIES AND PUBLIC INFRASTRUCTURE

3.13.1 EXISTING CONDITIONS

Electric Service. Electric service on the Island of Hawaii is provided by HELCO. The existing DWS facility on the site is already supplied with electrical power and this service is adequate to power the additional equipment proposed as part of the Waiʻaha Well B Project. The site is supplied by electrical power lines, both distribution and the site's service circuit, running along Māmalahoa Highway.

Telecommunications. Telecommunications service on Hawaiʻi Island is available from Hawaiian Telcom or Spectrum. The existing DWS facility present on the site is already equipped with telephone connection via aerial lines along Māmalahoa Highway; cellphone towers providing service to the area are also located in areas adjacent to the highway.

Water Supply. An 8-inch DWS water line currently connects the site to the existing distribution system running along Māmalahoa Highway. This line is part of the North Kona Water System that consists of high-level, mid-level, and shaft wells, storage tanks, and an interconnecting distribution system serving DWS customers from Keāhole to Keauhou. No new pipeline is required for the Waiʻaha Well B Project.

Sanitary Wastewater. The County of Hawaiʻi's sewer collection system currently services the town of Kailua-Kona, and the coastal properties along Aliʻi Drive, several inland subdivisions between Kailua-Kona and Keauhou, and new development above Queen Kaʻahumanu Highway, mauka of the County's Kealakehe Wastewater Reclamation Facility. However, the County system does not serve the upland homes and agricultural properties along Māmalahoa Highway, which are served by Independent Wastewater Systems, as discussed in Section 3.2.3.1.

Solid Waste. The County of Hawaiʻi provides solid waste collection service in some urban areas of the Island. Where collection service is not provided by the County, property owners or occupants hire private companies to haul their waste or self-haul their waste to the County's Puʻuanahulu Landfill in North Kona, or to the County's transfer stations in Kailua, Keauhou, Keʻei, Wailea, and Miloliʻi. Most self-hauled waste is taken to the transfer stations that are provided for use primarily by single-family residences. Most other solid waste, such as agricultural waste, does not enter the County's waste stream and is usually recycled or otherwise disposed of at the source.

3.13.2 POTENTIAL IMPACTS

Electrical Service. During construction of the proposed project, some electrical power needs may be supplied by field generators and/or by HELCO service. Once constructed, the project-related infrastructure (e.g., the pump, SCADA, and chlorination equipment) will require electrical power and telephone service, both of which are already present on the site and adequate to meet the needs of the new development. No modifications to HELCO systems are anticipated to be required.

Telecommunications. The SCADA telemetering equipment which will be installed in the control building will monitor the well's operations. An overhead line along the project's driveway will connect the SCADA with the existing Hawaiian Telcom or Spectrum lines along Māmalahoa Highway. No significant impact on telecommunications facilities is anticipated.

Water Supply. The water supplied by the Wai'aha Well B Project will connect to the existing PWS No. 131, North Kona Water System and provide its own water supply. Completion of this project will have a positive impact on the stability and capacity of the DWS water supply for the North Kona area.

Sanitary Wastewater. During construction, a portable sanitary toilet will be temporarily placed on site and serviced per provider recommendations. Once construction activity is complete, the facility will not generate any sanitary wastewater or require an IWS of its own.

Solid Waste. Solid waste generated by the proposed Wai'aha Well B Project, including construction and maintenance debris, is expected to be minimal and have no noticeable effect on County solid waste disposal facilities. The chlorination equipment, pump assembly, and piping would be shipped to Hawai'i and transported to the project side in reusable or recyclable containers and packaging. Packing materials will generally be recycled at an appropriate offsite location. What little construction waste and scrap is generated will either be sold to a dealer for recycling or disposed of at an approved offsite location.

The No Action Alternative does not involve any activities with the potential to affect public utilities.

3.14 PUBLIC SERVICES

3.14.1 EXISTING CONDITIONS

Police, Fire, and Emergency Medical Services. The project area is located within the Hawai'i County Police Department's Kona District, which is headquartered in Kealakehe. Substations are located in Captain Cook, Kailua-Kona, and Keauhou. A 24-hour fire station with fire, emergency medical service (EMS) and rescue capabilities is in Kailua-Kona. In addition, fire stations with regular fulltime fire and EMS services are in Keauhou, Captain Cook, and at the Makalei Fire Station. On-call volunteer services operate out of Kalaoa Mauka, Miloli'i Village, and Kona Paradise Subdivision.

Kona Community Hospital, which serves West Hawai'i, is a full-service hospital located in Kealakekua. Hospital services include acute inpatient medical/surgical, obstetrics, skilled nursing, intensive care, and outpatient surgery. Outpatient and ancillary series include a 24-hour emergency room, laboratory, radiology, pharmacy, occupational, physical, respiratory and speech therapy, and dietary services.

Schools. The Kona public school system is comprised of Konawaena and Kealakehe complexes. The Konawaena complex includes Konawaena High School, Konawaena Middle School, Konawaena Elementary School, Ho'okena Elementary School, and Honaunau Elementary School. The Kealakehe complex includes Kealakehe High School, Kealakehe Intermediate School, Kealakehe Elementary School, Hōlualoa Elementary School, and Kahakai Elementary School.

3.14.2 POTENTIAL IMPACTS

Police, Fire, and Emergency Medical Services. The proposed action would not measurably increase the burden on existing police, fire, or emergency medical services or facilities. Neither will it result in any changes that would measurably alter the level of police protection that is needed in the area. All of the aboveground facilities will be entirely surrounded by a security fence, and DWS monitors its facility with its own security systems and personnel. All facilities would comply with the National Fire Protection Association's (NFPA) recommendations, local codes, and other applicable fire protection regulations. Because the proposed project will not require any increase in staffing, its operation and maintenance will have no effect on the number of people present on the property that might require medical attention. The absence of any significant long-term increase in regional employment means that there is no potential to place additional demands on the area's healthcare services. A copy of this EA will be provided to both the County Police and Fire Departments with a request for review and comment.

Schools and Educational Facilities. The proposed project is not intended to promote or facilitate any increase in the population of the area. Thus, it will not impose any additional burden on the existing schools or educational facilities.

The No Action Alternative does not involve any activities with the potential to affect public services.

THIS PAGE INTENIONALLY LEFT BLANK

4.0 RELATIONSHIPS TO RELEVANT PLANS, POLICIES & CONTROLS

4.1 HAWAI'I COUNTY GENERAL PLAN

4.1.1 APPLICABLE GOALS, POLICIES AND RECOMMENDED ACTIONS

DWS operates and maintains over twenty separate water systems on the Island of Hawai'i. The *2005 Hawai'i County General Plan* ("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 it 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 General Plan identifies the following County policies with regard 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.*

The General Plan identifies actions to implement these policies in the North Kona District. Specifically, it directs DWS to:

- Continue to pursue groundwater source investigation, exploration and development in areas that would provide for anticipated growth and that would provide for an efficient and economic system operation.
- Increase the capacity of the booster pump stations as needed.
- Continue to evaluate growth conditions to coordinate improvements, as required, to the existing water system in accordance with the *North Kona Water System Master Plan*.

Thus, the Wai'aha Well B Project is consistent with these directives of the General Plan.

4.1.2 CONFORMANCE WITH THE 2005 HAWAI'I COUNTY GENERAL PLAN

The proposed project will improve the County's capacity to serve customers in the North Kona region by adding a much-needed additional water source. Thus, the Wai'aha Well B Project is consistent with these directives of the General Plan.

4.2 COUNTY OF HAWAI'I ZONING ORDINANCE

County zoning for the Wai'aha Well B Project site is Ag-1a. Operation of the well, control building, and other ancillary equipment are permitted uses in the state and county agricultural district(s) (see County Zoning Regulations, 25-4-11-9b). Thus, the project is compatible with the County of Hawai'i Zoning ordinance.

4.3 KEĀHOLE TO KAILUA DEVELOPMENT PLAN

In 1990, the County adopted the *Keāhole to Kailua Development Plan* to serve as a guide for future land use development and infrastructure in the region. The 20-year plan includes residential, resort, commercial, industrial, recreational, and public facility uses.

At its conception, the plan recognized that the development of potable water resources would be crucial for the continued development of the Keāhole to Kailua area and that the availability of potable water may become a limiting factor. In the plan's program policies, a series of wells above the 1,500- to 1,800-foot elevation was proposed for development. This project is completely consistent with this plan.

4.4 KONA COMMUNITY DEVELOPMENT PLAN

The *Kona Community Development Plan* (Kona CDP), adopted by the County in September 2008, translates the broad statements of the General Plan to specific actions as they apply to geographical areas of the region. Its vision for the future is:

> *A more sustainable Kona characterized by a deep respect for the culture and the environment and residents that responsively and responsibly accommodate change through an active and collaborative community.*

The Kona CDP's goal for public facilities, infrastructure, and services is a community where the public infrastructure and facilities are sustainably built and maintained with innovation and pride, promote a sense of community, and support a quality of life where visitors and residents feel safe, healthy, and inspired.

As a utility and a component of required infrastructure, the proposed Wai'aha Well B Project will support the planned growth of Kona as provided in the County's *General Plan Land Use Pattern Allocation Guide* and Kona CDP's *Official Kona Land Use Map*. The proposed project recognizes the identification of the Kona CDP and will comply with the workings of that program.

4.5 SPECIAL MANAGEMENT AREA

Under HRS Chapter 205A (Coastal Zone Management), the County is authorized to regulate land uses within the Special Management Area (SMA) of the island of Hawai'i. The SMA encompasses a defined area along the coast of the Big Island.

The proposed Wai'aha Well B Project is located outside of the SMA, and therefore, not subject to the SMA Rules and Regulations of the County of Hawai'i.

4.6 HAWAI'I STATE PLAN

4.6.1 PART I – OBJECTIVES AND POLICIES

The *Hawai'i State Plan* is intended to guide the long-range development of the State of Hawai'i by identifying goals, objectives, and policies for the State and its residents. The *Hawai'i State Plan*: (*i*) establishes a basis for determining priorities and allocating resources; (*ii*) provides a unified vision enabling coordination between the various counties' plans, programs, policies, projects, and regulatory activities; and (*iii*) assists them in developing their own county plans, programs, and projects with the State's long-range development objectives. HRS §226-04 states the goals for the *Hawai'i State Plan* as follows:

§226-4 In order to guarantee, for present and future generations, those elements of choice and mobility that ensure that individuals and groups may approach their desired levels of self-reliance and self-determination, it shall be the goals of the State to achieve:

(1) A strong viable economy, characterized by stability, diversity, and growth, that enables the fulfillment of the needs and expectations of Hawaii's present and future generations.

(2) A desired physical environment, characterized by beauty, cleanliness, quiet, stable natural systems, and uniqueness, that enhances the mental and physical well-being of the people.

(3) Physical, social, and economic well-being, for individuals and families in Hawaii, that nourishes a sense of community responsibility, of caring, and of participation in community life.

With these goals in mind, the *Hawai'i State Plan* is organized into major policy areas: (*i*) population; (*ii*) economy; (*iii*) physical environment; (*iv*) facility systems; and (*v*) socio-cultural advancement. While no aspect of the proposed Wai'aha Well B Project will conflict with the goals of the State Plan identified above, DWS has concluded that many of its provisions, such as those related to the visitor industry, housing, and education are not directly applicable to the proposed action because they do not contain goals and objectives which can be reasonably linked to public water infrastructure. Of the 107 sections that comprise HRS Chapter 226, four are directly applicable to the proposed project; the following subsections provide discussion related to these and the project's relative consistency with them.

4.6.1.1 HRS §226-13 Objectives and Policies for the Physical Environment – Land, Air, and Water Quality

(a) Planning for the State's physical environment with regard to land, air, and water quality shall be directed towards achievement of the following objectives:

(1)Maintenance and pursuit of improved quality in Hawaii's land, air, and water resources.

(2)Greater public awareness and appreciation of Hawaii's environmental resources.

(b) To achieve the land, air, and water quality objectives, it shall be the policy of the State to:

(2)Promote the proposed management of Hawaii's land and water resources.

(3) Promote effective measures to achieve desired quality in Hawaii's surface, ground, and coastal waters.

(6)Encourage design and construction practices that enhance the physical qualities of Hawaii's communities.

(7)Encourage urban developments in close proximity to existing services and facilities.

(8)Foster recognition of the importance and value of the land, air, and water resources in Hawaii's people, their cultures and visitors.

Discussion: The Wai'aha Well B Project will add a new source to the DWS water system. The long-term impact of the project will be to improve the County's capacity to serve customers in the North Kona Water System service area. No long-term detrimental impacts on the County's existing water supply system are anticipated. Thus, DWS has concluded that they proposed project is consistent with these provisions of the *Hawai'i State Plan*.

4.6.1.2 HRS §226-14 Objectives and Policies for Facility Systems – In General

(a) Planning for the State's facility systems in general shall be directed towards achievement of the objective of water, transportation, waste disposal, and energy and telecommunications systems that support statewide social, economic, and physical objectives.

(b) To achieve the general facility systems objective, it shall be the policy to this State to:

(1) Accommodate the needs of Hawaii's people through coordination of facility systems and capital improvement priorities in consonance with state and county plans.

(2) Encourage flexibility in the design and development of facility systems to promote prudent use of resources and accommodate changing public demands and priorities.

(3) Ensure that required facility systems can be supported within resource capacities and at reasonable cost to the user.

(4) Pursue alternative methods of financing programs and projects and cost-saving techniques in the planning, construction, and maintenance of facility systems.

Discussion: The proposed project fully supports the objectives and policies for "facility systems" as set forth in HRS §226-14. It is also consistent with the *Hawai'i County General Plan*, *Kona Community Development Plan*, and *Hawai'i County Water Use and Development Plan Update*. The proposed project will: (*i*) create a new source of potable water to contribute to the North Kona Water System, and (*ii*) improve the flexibility and redundancy of the system by restoring the existing Wai'aha Well to full function. The proposed project will be in the high-level zone of the Keauhou Aquifer System Area at about 1,600-foot elevation where previous exploratory wells have encountered favorable groundwater levels at 25 to 460 feet +MSL.

4.6.1.3 HRS §226-16 Objectives and Policies for Facility Systems – Water

(a) Planning for the State's facility systems with regard to water shall be directed towards achievement of the objective of the provision of water to adequately accommodate domestic, agricultural, commercial, industrial, recreational, and other needs within resource capacities.

(b) To achieve the facility systems water objectives, it shall be the policy of this State to:

(1) Coordinate development of land use activities with existing and potential water supply.

(2) Support research and development of alternative methods to meet future water requirements well in advance of anticipated needs.

(4) Assist in improving the quality, efficiency, service, and storage capabilities of water systems for domestic and agricultural use.

(5) Support water supply services to areas experiencing critical water problems.

Discussion: The County recognizes the Wai'aha Well B Project as a potential means to meet future water requirements in the North Kona Water System service area by improving the system's capacity, efficiency, and redundancy.

4.6.1.4 HRS §226-108 Sustainability

Sustainability. Priority guidelines and principles to promote sustainability shall include.

(1) Encouraging balanced economic, social, community, and environmental priorities;

(2) Encouraging planning that respects and promotes living within the natural resources and limits of the State;

(3) Promoting a diversified and dynamic economy;

(4) Encouraging respect for the host culture;

(5) Promoting decisions based on meeting the needs of the present without compromising the needs of future generations.

(6) Considering the principles of the ahupua'a system; and

(7) Emphasizing that everyone, including individuals, families, communities, businesses, and government has the responsibility for achieving a sustainable Hawaii.

Discussion: DWS shares in, and embraces the task, of achieving a sustainable future for the State of Hawai'i. The Wai'aha Well B Project is a long-planned initiative intended to sustainably balance the needs of the community for enhanced water infrastructure with the limits of the area's water resources. Thus, DWS has concluded that the proposed project is consistent with these provisions of the *Hawai'i State Plan*.

4.6.2 PART II – PLANNING AND COORDINATION

The purpose of *Part II – Planning and Coordination* (HRS §226-51 *et seq.*) of the *Hawai'i State Plan* is to establish a statewide planning system to coordinate and guide all major state and county activities and to implement the overall theme, goals, objectives, policies, and priority guidelines.

This EA is intended to promote the goals and objectives of the *Hawai'i State Plan*, as discussed in Section 4.6.1, and to serve as a mechanism for compliance with its theme of planning and coordination. Pursuant to that, this EA is being provided to all management agencies tasked with oversight responsibilities and made available to the public through the OEQC's bi-monthly bulletin, *The Environmental Notice* with a request for review and comments. All coordination and comments received on this EA will be included in the final version of the report. Finally, the discussion in this chapter is intended to confirm the project's consistency with the various state and county plans, policies, and controls.

4.6.3 PART III – PRIORITY GUIDELINES

The purpose of *Part III – Priority Guidelines* (HRS §226-101 *et seq.*) is to establish overall priority guidelines to address areas of statewide concern, across the following domains: (*i*) economy; (*ii*) crime and criminal justice; (*iii*) affordable housing; and (*iv*) quality education. The applicable provisions of Part III of the *Hawai'i State Plan* are contained in the discussion of economic priorities, HRS §226-103(e):

(e) Priority guidelines for water use and development:

> *(1) Maintain and improve water conservation programs to reduce the overall water consumption rate.*
>
> *(2) Encourage the improvement of irrigation technology and promote the use of non-potable water for agricultural and landscaping purposes.*
>
> *(3) Increase the support for research and development of economically feasible alternative water sources.*
>
> *(4) Explore alternative funding sources and approaches to support future water development programs and water system improvements.*

Discussion: The proposed Wai'aha Well B Project is not intended to increase the rate of water consumption but rather to meet the growing demand for freshwater for public use. It will accomplish this, in part, by restoring the operability of the existing Wai'aha Well. As such, it represents the development of an economically feasible alternative water source, consistent with the *Hawai'i State Plan* and the DWS' 2017 *Water Use and Development Plan* (see Section 4.1.2 and 4.6.1.2). It does not preclude, in any way, existing or enhanced water conservation programs to reduce overall water consumption in the County of Hawai'i.

4.7 HAWAI'I COASTAL ZONE MANAGEMENT PROGRAM

The State Office of Planning administers Hawai'i's Coastal Zone Management (CZM) Program. The objectives of the Hawai'i CZM Program are set forth in Hawai'i Revised Statutes, Chapter 205A. The program is intended to promote the protection and maintenance of valuable coastal resources. All lands in Hawai'i are classified as valuable coastal resources. A general discussion of the project's consistency with the objectives and policies of Hawai'i's CZM program follows.

4.7.1 §205A-2 (1) RECREATIONAL RESOURCES

Objective: *Provide coastal recreational opportunities accessible to the public.*

Policies:

A. *Improve coordination and funding of coastal recreational planning and management; and*

B. *Provide adequate, accessible, and diverse recreational opportunities in the coastal zone management area by:*

   i. *Protecting coastal resources uniquely suited for recreational activities that cannot be provided in other areas;*

   ii. *Requiring replacement of coastal resources having significant recreational value including, but not limited to, surfing sites, fishponds, and sand beaches, when such resources will be unavoidably damaged by development; or requiring reasonable monetary compensation to the State for recreation when replacement is not feasible or desirable;*

   iii. *Providing and managing adequate public access, consistent with conservation of natural resources, to and along shorelines with recreational value;*

   iv. *Providing an adequate supply of shoreline parks and other recreational facilities suitable for public recreation;*

   v. *Ensuring public recreational uses of county, state, and federally owned or controlled shoreline lands and waters having recreational value consistent with public safety standards and conservation of natural resources;*

   vi. *Adopting water quality standards and regulating point and nonpoint sources of pollution to protect, and where feasible, restore the recreational value of coastal waters;*

   vii. *Developing new shoreline recreational opportunities, where appropriate, such as artificial lagoons, artificial beaches, and artificial reefs for surfing and fishing; and*

   viii. *Encouraging reasonable dedication of shoreline areas with recreational value for public use as part of discretionary approvals or permits by the land use commission, board of land and natural resources, and county authorities; and crediting such dedication against the requirements of section 46-6.*

Discussion: The proposed project would have no effect on coastal recreational resources and the construction work will not be visible from any designated recreational area. The construction and operation of the proposed project will not disrupt ongoing use of any recreational resource, area parks, or access to the shoreline.

4.7.2 §205A-2 (2) HISTORIC RESOURCES

Objective: *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.*

Policies:

A. *Identify and analyze significant archaeological resources;*

B. *Maximize information retention through preservation of remains and artifacts or salvage operations; and*

C. *Support state goals for protection, restoration, interpretation, and display of historic resources.*

Discussion: The proposed work will occur in an area that has been extensively disturbed by commercial agriculture. Section 3.8 describes the potential for impacts to historic and pre-contact resources and discusses the steps that DWS and its contractors will take to preserve any resources that are inadvertently encountered during construction. SHPD will be provided with a copy of this EA with a request for review and comment. Finally, during the original development of the site, SHPD concluded that, due to the prior extensive disturbance of the site, no archaeological features are present and that site development would have "no effect".

4.7.3 §205A-2 (3) SCENIC AND OPEN SPACE RESOURCES

Objective: *Protect, preserve, and, where desirable, restore or improve the quality of coastal scenic and open space resources.*

Policies:

A. *Identify valued scenic resources in the coastal zone management area;*

B. *Ensure that new developments are compatible with their visual environment by designing and locating such developments to minimize the alteration of natural landforms and existing public views to and along the shoreline;*

C. *Preserve, maintain, and, where desirable, improve and restore shoreline open space and scenic resources; and*

D. *Encourage those developments that are not coastal dependent to locate in inland areas.*

Discussion: Coastal open space and scenic resources will not be affected by the proposed action. The proposed action will be constructed more than two miles inland of the nearest shoreline. Once work is completed, the only visible portion of the new construction will be the proposed control building. The proposed action does not require any significant or lasting alteration of major landforms and is located well away from public views of the shoreline.

4.7.4 §205A-2 (4) COASTAL ECOSYSTEMS

Objective: *Protect valuable coastal ecosystems, including reefs, from disruption and minimize adverse impacts on all coastal ecosystems.*

Policies:

A. *Exercise an overall conservation ethic, and practice stewardship in the protection, use, and development of marine and coastal resources;*

B. *Improve the technical basis for natural resource management;*

C. *Preserve valuable coastal ecosystems, including reefs, of significant biological or economic importance;*

D. *Minimize disruption or degradation of coastal water ecosystems by effective regulation of stream diversions, channelization, and similar land and water uses, recognizing competing water needs; and*

E. *Promote water quantity and quality planning and management practices that reflect the tolerance of fresh water and marine ecosystems and maintain and enhance water quality through the development and implementation of point and nonpoint source water pollution control measures.*

Discussion: The proposed action will not affect coastal ecosystems or any other water body, as described in Section 3.2.2.1.

4.7.5 §205A-2 (5) ECONOMIC USES

Objective: *Provide public or private facilities and improvements important to the State's economy in suitable locations.*

Policies:

A. *Concentrate coastal dependent development in appropriate areas;*

B. *Ensure that coastal dependent development such as harbors and ports, and coastal related development such as visitor industry facilities and energy generating facilities, are located, designed, and constructed to minimize adverse social, visual, and environmental impacts in the coastal zone management area; and*

C. *Direct the location and expansion of coastal dependent developments to areas presently designated and used for such developments and permit reasonable long-term growth at such areas, and permit coastal dependent development outside of presently designated areas when:*

   i. *Use of presently designated locations is not feasible;*

   ii. *Adverse environmental effects are minimized; and*

   iii. *The development is important to the State's economy.*

Discussion: The proposed project will not lead to any changes in the concentration or location of coastal development. The aboveground facilities would be located on parcels far from the coastline and which are already in use as a DWS facility; it will not alter the normal use of adjacent areas or roadways.

4.7.6 §205A-2 (6) COASTAL HAZARDS

Objective: *Reduce hazard to life and property from tsunami, storm waves, stream flooding, erosion, subsidence, and pollution.*

Policies:

A. *Develop and communicate adequate information about storm wave, tsunami, flood, erosion, subsidence, and point and nonpoint source pollution hazards;*

B. *Control development in areas subject to storm wave, tsunami, flood, erosion, hurricane, wind, subsidence, and point and nonpoint source pollution hazards;*

C. *Ensure that developments comply with requirements of the Federal Flood Insurance Program; and*

D. *Prevent coastal flooding from inland projects.*

Discussion: Section 3.9.1 confirms that the project site is outside a designated Special Flood Hazard Area and is not within a Tsunami Evacuation Zone.

4.7.7 §205A-2 (7) MANAGING DEVELOPMENT

Objective: *Improve the development review process, communication, and public participation in the management of coastal resources and hazards.*

Policies:

A. *Use, implement, and enforce existing law effectively to the maximum extent possible in managing present and future coastal zone development;*

B. *Facilitate timely processing of applications for development permits and resolve overlapping or conflicting permit requirements; and*

C. *Communicate the potential short and long-term impacts of proposed significant coastal developments early in their life cycle and in terms understandable to the public to facilitate public participation in the planning and review process.*

Discussion: DWS has initiated contact and continues to work cooperatively with all government agencies tasked with oversight responsibilities to facilitate efficient processing of permits and informed decision-making by the responsible parties.

4.7.8 §205A-2 (8) PUBLIC PARTICIPATION

Objective: *Stimulate public awareness, education, and participation in coastal management.*

Policies:

A. *Promote public involvement in coastal zone management processes;*

B. *Disseminate information on coastal management issues by means of educational materials, published reports, staff contact, and public workshops for persons and organizations concerned with coastal issues, developments, and government activities; and*

C. *Organize workshops, policy dialogues, and site-specific mediations to respond to coastal issues and conflicts.*

Discussion: Pursuant to the requirements of HAR §11-200, a notice of availability for the DEA will be published in the Office of Environmental Quality Control's (OEQC) bi-monthly bulletin *The Environmental Notice* for a 30-day review and comment period.

4.7.9 §205A-2 (9) BEACH PROTECTION

Objective: *Protect beaches for public use and recreation.*

Policies:

A. *Locate new structures inland from the shoreline setback to conserve open space, minimize interference with natural shoreline processes, and minimize loss of improvements due to erosion;*

B. *Prohibit construction of private erosion-protection structures seaward of the shoreline, except when they result in improved aesthetic and engineering solutions to erosion at the sites and do not interfere with existing recreational and waterline activities; and*

C. *Minimize the construction of public erosion-protection structures seaward of the shoreline.*

Discussion: The proposed project poses no risk to beaches. No structures are planned seaward of the shoreline, and no interactions with littoral processes would be involved in the Wai'aha Well B Project.

4.7.10 §205A-2 (10) MARINE RESOURCES

Objective: *Promote the protection, use, and development of marine and coastal resources to assure their sustainability.*

Policies:

A. *Ensure that the use and development of marine and coastal resources are ecologically and environmentally sound and economically beneficial;*

B. *Coordinate the management of marine and coastal resources and activities to improve effectiveness and efficiency;*

C. *Assert and articulate the interests of the State as a partner with federal agencies in the sound management of ocean resources within the United States exclusive economic zone;*

D. *Promote research, study, and understanding of ocean processes, marine life, and other ocean resources in order to acquire and inventory information necessary to understand how ocean development activities relate to and impact upon ocean and coastal resources; and*

E. *Encourage research and development of new, innovative technologies for exploring, using, or protecting marine and coastal resources.*

Discussion: The proposed project does not have the potential to affect marine resources.

4.8 STATE LAND USE LAW

The State Land Use District Maps, administered by the State Land Use Commission, designate the project site in the Agricultural District. The Agricultural District includes lands for the cultivation of crops, aquaculture, raising livestock, wind energy facility, timber cultivation, agriculture-support activities (i.e., mills, employee quarters, etc.) and land with significant potential for agriculture uses.

Uses permitted in the highest productivity agricultural categories are governed by statute. Uses in the lower-productivity categories – C, D, E or U – are established by the State Land Use Commission and include those allowed on A or B lands as well as those stated under HRS Section 205-4.5. Wai'aha Well B Project site is considered to be category C. As a water system that will serve a public purpose, the proposed facilities are permitted uses in the Agricultural District (HRS §205-4.5(a)(7)).

4.9 STATE ENVIRONMENTAL POLICY

The State Environmental Policy under HRS Chapter 344, established a policy that (1) encourages productive and enjoyable harmony between people and their environment; (2) promotes efforts that will prevent or eliminate damage to the environment and biosphere; (3) stimulates the health and welfare of humanity; and (4) enriches the understanding of the ecological systems and natural resources important to the people of Hawai'i.

HRS 344-3(1) states that it shall be the policy of the State, through its programs, authorities, and resources to:

> *Conserve the natural resources, so that land, water, mineral, visual, air and other natural resources are protected by controlling pollution, by preserving*

> *or augmenting natural resources, and by safeguarding the State's unique natural environmental characteristics in a manner which will foster and promote the general welfare, create and maintain conditions under which humanity and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of the people of Hawai'i.*

The new capacity which the Wai'aha Well B Project would produce would be a sustainable yield of up to 1.0 MGD. This supply would represent a substantial portion of the water needs of the North Kona Water System without a detrimental effect on the water resources of the district. The use of the island's water resource to fulfill the County's social, economic, and other requirements would be highly beneficial to the people of North Kona.

4.10 OTHER PERMITS AND APPROVALS

In addition to the HRS, Chapter 343 review of which this document is a part, construction of the Wai'aha Well B Project will require other permits and approvals from State and County, including but not necessarily limited to, the following: (*i*) a Well Construction and Pump Installation Permit from the Commission on Water Resource Management; (*ii*) a New Potable Water Source from the DOH Safe Drinking Water Branch; (*iii*) a Community Noise Permit from DOH Indoor and Radiological Health Branch; and (*iv*) a Building Permit from the County of Hawai'i, Planning Department.

The following is a summary of the required permits and approvals for the construction of the proposed well, well control building, and associated facilities.

Table 4.1 Summary of Required Permits and Approvals

Permits/Approvals	*Approving Agency*
Well Construction & Pump Installation Permits	Commission on Water Resource Management
Conditional Approval, New Potable Water Source	Dept. of Health Safe Drinking Water Branch
Community Noise Permit	Dept. of Health Indoor and Radiological Health Branch
Building Permit	Department of Public Works
Grubbing and Grading Permit	Department of Public Works
Source: Compiled by Planning Solutions (2019)	

5.0 DETERMINATION

5.1 SIGNIFICANCE CRITERIA

Hawai'i 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 (FONSI) 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. HAR §11-200-12 lists the following criteria to be used in making that determination:

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

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

5.2 FINDINGS

The potential effects of constructing the proposed project described throughout this document were evaluated using these significance criteria. The findings with respect to each criterion are summarized below.

5.2.1 IRREVOCABLE LOSS OR DESTRUCTION OF VALUABLE RESOURCE

The proposed project would be constructed on the site of an existing DWS facility. It does not involve the loss of any significant cultural or natural resource.

5.2.2 CURTAILS BENEFICIAL USES

Construction of the proposed production well, control building, and other ancillary facilities would not curtail any other beneficial uses of the remainder of the site and is intended to work in concert with the existing use of the site as a DWS installation. The development would affect only a small portion of the total property and will not preclude or disrupt future use of the adjacent 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, as expressed in HRS, Chapter 344 and elsewhere in state law.

5.2.4 SUBSTANTIALLY AFFECTS ECONOMIC OR SOCIAL WELFARE

The proposed new production well and other facilities are intended to remove some of the current burden on the existing water infrastructure and to create desirable redundancy in the North Kona Water System. It would not have any substantial adverse effect on economic or social welfare. Rather, the project is intended to provide access to an adequate supply of high-quality potable water for DWS' customers, consistence with the maintenance of environmental quality.

5.2.5 PUBLIC HEALTH EFFECTS

The proposed project would not have an adverse effect on air or water quality. Neither would it generate significant or ongoing quantities of solid waste or produce emissions that would have a significant effect on public health. Construction noise has the potential to exceed noise standards at the property line in some locations, but the potential for adverse effects resulting from construction activities can be mitigated by the noise abatement and attenuation measures that the County would require of the construction contractor.

5.2.6 PRODUCE SUBSTANTIAL SECONDARY IMPACTS

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

5.2.7 SUBSTANTIALLY DEGRADE ENVIRONMENTAL QUALITY

The proposed project would not have substantial long-term effects on the environment. Noise, dust, and other impacts related to construction activity will be brief and of limited duration. So long as adequate measures are taken to control the intensity of construction noise and the times of day during which equipment and materials are delivered to the site, the effects to nearby properties and infrastructure can be managed adequately.

5.2.8 CUMULATIVE EFFECTS OR COMMITMENT TO A LARGER ACTION

Construction and operation of the proposed production well, control building, and ancillary facilities do not constitute a commitment to a larger action and are not intended to facilitate substantial population growth. Instead, the project is intended to achieve the longstanding

objectives of the *Hawai'i County General Plan* to increase capacity and create redundancy in DWS' water system.

5.2.9 AFFECTS A RARE, THREATENED, OR ENDANGERED SPECIES

The proposed project would be constructed on a vacant portion of the DWS' existing Wai'aha Well and Reservoir facility. This area has been heavily disturbed by its long use for commercial-scale agriculture and its subsequent development as a DWS facility. It would not utilize any sensitive habitat or other 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 production well, control building, and other related facilities will not have a measurable effect on air or water quality over the long-term; neither would it have any long-term effect on noise levels. The project does have the potential to result in some construction related emissions and increased noise levels, but these would be brief and very limited in scope. Adequate mitigation measures would 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 is subject to certain geologic hazards, such as earthquakes, tsunami, and volcanic eruptions, the project site is in an area that has relatively low frequency of lava flows and is above the tsunami evacuation zone. All structures would be constructed in a manner consistent with the IBC and Hawai'i Code for Earthquake Zone 4.

5.2.12 AFFECTS SCENIC VISTAS AND VIEWPLANES

The proposed project would not affect vistas or viewplanes identified in planning documents or studies. Moreover, the appearance of the proposed project would not significantly alter the visual character of the site and adjacent areas or change any important views across it.

5.2.13 REQUIRES SUBSTANTIAL ENERGY CONSUMPTION

Construction and operation of the proposed project will require short-term consumption of energy related to construction activities. However, once in operation, the energy consumed by the well pump equipment will be relatively modest and partially offset by the gravity-driven delivery of water to the customers in the North Kona Water System.

5.3 DETERMINATION

In view of the foregoing, DWS has concluded that the proposed project would not have a significant adverse impact on the environment. Consequently, it is issuing a FONSI for the proposed action.

THIS PAGE INTENIONALLY LEFT BLANK

6.0 REFERENCES CITED

Beck, R.W., Inc. (2006) *20-Year Water Master Plan, County of Hawai'i Department of Water Supply*, 283 p.

Church, J.A., P.U. Clark, A. Cazenave, J.M. Gregory, S. Jevrejeva, A. Levermann, M.A. Merrifield, G.A. Milne, R.S. Nerem, P.D. Nunn, A.J. Payne, W.T. Pfeffer, D. Stammer and A.S. Unnikrishnan, (2013). Sea Level Change. In: *Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* [Stocker, T.F., D. Qin, G.-K. Plattner, M. Tignor, S.K. Allen, J. Boschung, A. Nauels, Y. Xia, V. Bex and P.M. Midgley (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.

County of Hawai'i (2005) *Hawaii County General Plan.* URL: http://www.hawaii-county.com/la/gp/2005/main.html

County of Hawai'i, Department of Water Supply, (2010). *Hawai'i County Water Use and Development Plan Update, Hawai'i Water Plan, Final Report* prepared by Fukunaga & Associates, Inc., August 2010.

CWRM (Commission on Water Resource Management) 2008. *Hawai'i Water Plan: Water Resource Protection Plan*. Prepared by Wilson Okamoto Corp., 1907 S. Beretania St., Suite 400, Honolulu, Hawaii. June 2008. 556 p. URL: http://files.hawaii.gov/dlnr/cwrm/planning/wrpp2008update/FINAL_WRPP_20080828.pdf

DLNR (State Department of Land and Natural Resources) (1998). *Indigenous Wildlife, Endangered and Threatened Wildlife and Plants, and Introduced Wild Birds*. Department of Land and Natural Resources, Hawai'i Administrative Rules §13-134-1 through §13-134-10, dated March 2, 1998.

DOH (State of Hawai'i Department of Health) (2008) *DWSRF Boilerplate Federal Requirements for DWSRF Projects*.

———(2006) *20-Year Water Master Plan,* June 2006.

Engott, J.A. (2011). *A Water-Budget Model and Assessment of Groundwater Recharge for the Island of Hawai'i.* Scientific Investigations Report 2011–5078. Prepared for U.S. Department of Interior, U.S. Geological Survey. URL: https://pubs.usgs.gov/sir/2011/5078/sir2011-5078.pdf

Giambelluca, T.W., Q. Chen, A.G. Frazier, J.P. Price, Y.L. Chen, P.S. Chu, J.K. Eischeid, and D.M. Delparte (2013). Online Rainfall Atlas of Hawai'i. *Bull. Amer. Meteor. Soc.* 94, 313-316, doi: 10.1175/BAMS-D-11-00228.1.

IPCC, (2013) Annex I: Atlas of Global and Regional Climate Projections [van Oldenborgh, G.J., M. Collins, J. Arblaster, J.H. Christensen, J. Marotzke, S.B. Power, M. Rummukainen and T. Zhou (eds.)]. In: *Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* [Stocker, T.F., D. Qin, G.-K. Plattner, M. Tignor, S.K. Allen, J. Boschung, A. Nauels, Y. Xia, V. Bex and P.M. Midgley (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.

Macdonald, G.A., A.T. Abbott, and F.L. Peterson. (1983). *Volcanoes in the Sea: The Geology of Hawai'i.* 2nd Edition. Honolulu: University Press, 517 p.

Mink, J.F. and L.S. Lau, 1993. *Aquifer Identification and Classification for the Island of Hawai'i: Groundwater Protection Strategy for Hawai'i*, Technical Report Number 191, May 1993, Water Resources Research Center, University of Hawai'i at Manoa, Honolulu, Hawai'i 96822. 116 p.

NOAA (National Oceanic and Atmospheric Administration) (2002) *CLIMATOGRAPHY OF THE UNITED STATES NO. 81: Monthly Station Normals of Temperature, Precipitation, and Heating and Cooling, Degree Days1971 - 2000* . 51 Hawai‘i. 21 p.

OEQC (Office of Environmental Quality Control, State of Hawai‘i). (1997). *Guidelines for Assessing Cultural Impacts*. Adopted by the Environmental Council; November 19, 1997.

Parham, Dr. James E., et al. (2008). *Atlas of Hawaiian Watersheds & Their Aquatic Resources.* URL: http://www.hawaiiwatershedatlas.com/index.html

Sato, H.H., W. Ikeda, R. Paeth, R. Smythe, and M. Takehiro, Jr. (1973) *Soil Survey of the Island of Hawaii, State of Hawai‘i*. U.S. Department of Agriculture, Soil Conservation Service and University of Hawai’i Agricultural Experiment Station, Washington, D.C.: Government Printing Office.

State of Hawai‘i (2002) *Hawaii Statewide GIS Program.* Office of Planning, Department of Business, Economic Development and Tourism. URL: http://www.hawaii.gov/dbedt/gis/

USDA (United States Department of Agriculture) (2008) *Web Soil Survey*. Natural Resources Conservation Service. URL: http://websoilsurvey.nrcs.usda.gov/app/HomePage.htm

USFWS (United States Fish and Wildlife Service) (2016) Endangered Species. URL: https://www.fws.gov/endangered/

−−−(1997b) *Lava Flow Hazard Zone Maps.* Compiled by USGS Staff Donal Mullineaux and Donald Peterson. URL: http://pubs.usgs.gov/gip/hazards/maps.html

−−−(1994). *Seismic Hazards on the Island of Hawai‘i.* URL: http://wwwhvo.wr.usgs.gov/volcanowatch/1994/94_08_05.html

U.S. National Park Service (2009) Nationwide Rivers Inventory, URL: http://www.nps.gov/ncrc/programs/rtca/nri/states/hi.html

7.0 CONSULTATION & DISTRIBUTION

The DWS has provided this EA to the parties listed in Table 7.1 with a request for review and comment.

Table 7.1 Preliminary Draft EA Distribution List

State Agencies	Elected Officials
Office of Environmental Quality Control (2 HC, 1 CD)	State Senator Josh Green (District 3)
Department of Agriculture	State Senator Lorraine R. Inouye (District 4)
Department of Accounting and General Services	State Representative Richard Creagan (District 5)
Department of Business, Economic Development, and Tourism (DBEDT)	State Representative Nicole Lowen (District 6)
DBEDT – Hawai'i State Energy Office	State Representative Cindy Evans (District 7)
DBEDT – Office of Planning	Mayor Harry Kim
Department of Defense	County Councilmember Maile Medeiros David (District 6)
Department of Education	County Councilmember Dru Mamo Kanuha (District 7)
Department of Hawaiian Home Lands	County Councilmember Karen Eoff (District 8)
DOH – Clean Air Branch	Kona Community Development Plan Action Committee
DOH – Safe Drinking Water Branch (O'ahu & Hilo)	**Utility Companies**
DOH – Wastewater Branch	Hawaiian Telcom
Department of Human Services	Spectrum
Department of Labor and Industrial Relations	Hawaii Gas
DLNR	Hawaii Electric Light Co., Inc.
DLNR State Historic Preservation Division	**Libraries and Depositories**
Department of Transportation – Highway Division	Hawai'i State Library Hawai'i Documents Center
Hawai'i Housing Finance and Development Corp.	Kailua-Kona Public Library
Office of Hawaiian Affairs	Kealakekua Public Library
UH Environmental Center	**New Media**
DLNR Commission on Water Resource Management	West Hawai'i Today
County of Hawai'i	Hawai'i Tribune Herald
Planning Department (1 HC, 1 CD)	
Department of Water Supply	
Department of Public Works	
Department of Research and Development	
Department of Environmental Management	
Department of Parks & Recreation	
Hawai'i Fire Department	
Hawai'i Police Department	
Department of Finance	
Department of Housing	
Source: Compiled by Planning Solutions, Inc. (2019)	

7.1 DISTRIBUTION OF THE FINAL EA

The notice of availability of the *Draft Environmental Assessment for the Wai'aha Well B Project* was published by the Office of Environmental Quality Control in the October 8, 2019 edition of *The Environmental Notice*. The 30-day comment period for the DEA ended on November 7, 2019. Table 7.2 lists the parties that submitted written comments on the project. The DWS is providing a copy of the Final Environmental Assessment to each of the organizations and individuals listed below. Copies of all comments received, and the responses provided, are reproduced at the end of this chapter.

Table 7.2 Comments on the Draft Environmental Assessment

No.	*Commenter*	*Organization*
1	David Yamamoto, Director	Department of Public Works
2	Thomas Giambelluca, Director	Water Resources Research Center
3	Craig K. Hirai, Executive Director	Housing Finance Development Corporation
4	William A. Kucharski, Director	Department of Environmental Management
5	Jade T. Butay, Director of Transportation	Department of Transportation
6	William J. Ailā, Jr., Chairman	Department of Hawaiian Home Lands
7	Scott Nakasone, Asst. Division Administrator	Department of Human Services
8	M. Kaleo Manuel, Deputy Director	Commission on Water Resource Management
Source: Compiled by Planning Solutions, Inc. (2020)		

Harry Kim
Mayor

Wil Okabe
Managing Director

David Yamamoto, P.E.
Director

Allan G. Simeon, P.E.
Deputy Director

County of Hawai'i
DEPARTMENT OF PUBLIC WORKS
Aupuni Center
101 Pauahi Street, Suite 7 · Hilo, Hawai'i 96720-4224
(808) 961-8321 · Fax (808) 961-8630
public_works@hawaiicounty.gov

October 16, 2019

Makena White, AICP
Planning Solutions, Inc.
711 Kapi'olani Blvd, Suite 950
Honolulu, HI 96813
(sent via email to makena@psi-hi.com)

SUBJECT: Draft Environmental Assessment for the Wai'aha Well B Project, North Kona, Island of Hawai'i
TMK: 7-5-014:016 and 7-5-015:015

We reviewed the subject application and have the following comments:

1. The work for the project, as depicted in Figure 2.1 – General Site Plan – and Figure 2.2 – Site Plan Detail – is located within Flood Zone X as designated by the Flood Insurance Rate Map (FIRM). A portion of TMK 7-5-014:016 is located within Special Flood Hazard Area AE-Floodway. Should any development take place in the floodplain, which include but are not limited to grading, new construction, and substantial improvement, the development will be subject to the requirements of Chapter 27 – Floodplain Management – of the Hawaii County Code.

2. All earthwork and grading shall conform to Chapter 10 – Erosion and Sedimentation Control – of the Hawaii County Code.

3. All development-generated runoff shall be disposed of on site and shall not be directed toward any adjacent properties or toward Waiaha Drainageway. A drainage study shall be prepared and the recommended drainage system shall be constructed meeting the approval of the Department of Public Works.

Should there be any questions concerning this matter, please feel free to contact Natalie Whitworth of our Kona Engineering Division office at 323-4850.

for BEN E. ISHII, Division Chief
Engineering Division

NW

c: Planning Department
DPW Engineering – Kona / Hilo

County of Hawai'i is an Equal Opportunity Provider and Employer.

PLANNING SOLUTIONS

January 23, 2020

Mr. David Yamamoto, P.E., Director
Department of Public Works
101 Pauahi Street, Suite 7
Hilo, Hawaii 96720-4224

Subject: Draft Environmental Assessment (DEA) for the Wai'aha Well B Project

Dear Mr. Yamamoto,

Thank you for your October 16, 2019 letter concerning the Department of Water Supply's (DWS) *Draft Environmental Assessment for the Wai'aha Well B Project* (DEA). We appreciate the time you spent reviewing the DEA and preparing your response. In order to simplify your review, we have reproduced your comments below in italics, followed by our response.

Comment 1:

The work for the project, as depicted in Figure 2.1 – General Site Plan – and Figure 2.2 – Site Plan Detail – is located within Flood Zone X as designated by the Flood Insurance Rate Map (FIRM). A portion of TMK 7-5-014:016 is located within Special Flood Hazard Area AE-Floodway. Should any development take place in the floodplain, which would include but are not limited to grading, new construction, and substantial improvement, the development will be subject to the requirements of Chapter 27 – Floodplain Management – of the Hawaii County Code.

Response:

Thank you for this information. No development will take place within the Special Flood Hazard Area AE Floodway as part of the Wai'aha Well B Project. DWS understands that if this changes, the project will be subject to the requirements of Hawai'i County Code (HCC), Chapter 27 – Floodplain Management.

Comment 2:

All earthwork and grading shall conform to Chapter 10 – Erosion and Sedimentation Control – of the Hawaii County Code.

Response:

DWS understands that all earthwork and grading conducted as part of the Wai'aha Well B Project must conform with HCC, Chapter 10 – Erosion and Sedimentation Control.

Comment 2:

All development-generated runoff shall be disposed of on site and shall not be directed toward any adjacent properties or toward Waiaha Drainageway. A drainage study shall be prepared

Pacific Park Plaza, Suite 950 • 711 Kapi'olani Boulevard • Honolulu, Hawai'i 96813-5213
Phone: 808-550-4483 • www.psi-hi.com

and the recommended drainage system shall be constructed meeting the approval of the Department of Public Works.

Response:

As noted in Section 3.2.2.1 of the DEA, DWS will ensure that all development-generated runoff will be disposed of on site. The well water produced during pump tests will be discharged into the onsite seepage pit (See Figure 2.2 in the DEA). The seepage pit will be designed to hold a discharge volume of approximately 3,500 gallons of water and allow it to percolate into the subsurface without discharging to the surrounding soil or offsite. DWS shall submit a drainage study to the Department of Public Works for review and approval prior to commencement of construction activity.

A copy of the FEA will be provided to you when it becomes available. In the meantime, if you have any questions or concerns in the future regarding this project, please contact me at (808) 550-4538.

Sincerely,

Makena

Makena White, AICP
Planner

cc: Shari Uyeno, DWS (via electronic mail only)
Greg Fukumitsu, TNWRE (via electronic mail only)

UNIVERSITY of HAWAI'I®
MĀNOA

Water Resources Research Center

October 14, 2019

To Whom It May Concern,

This is to acknowledge receipt of your letter requesting a review of an environmental assessment (EA) or environmental impact statement (EIS). The Environmental Center at the University of Hawai'i at Mānoa, which for a time was linked to the Water Resources Research Center (WRRC), has been discontinued. As a result of the closure of the Environmental Center, we regret that WRRC no longer has the capacity to review environmental documents.

Sincerely,

Thomas Giambelluca
Director

Attachment

2540 Dole Street, Holmes Hall 283
Honolulu, Hawai'i 96822
Telephone: (808) 956-7847
Fax: (808) 956-5044
An Equal Opportunity/Affirmative Action Institution

PLANNING SOLUTIONS

January 23, 2020

Mr. Thomas Giambelluca, Director
UH Water Resources Research Center
2540 Dole Street, Holmes Hall 283
Honolulu, HI 96822

Subject: Draft Environmental Assessment (DEA) for the Wai'aha Well B Project

Dear Mr. Giambelluca,

Thank you for your October 14, 2019 letter acknowledging receipt of the *Draft Environmental Assessment for the Wai'aha Well B Project*. The County of Hawai'i Department of Water Supply understands that the Environmental Center at the University of Hawai'i at Mānoa, formerly linked to the Water Resources Research Center (WRRC), has been discontinued and that, as a result of the closure, the WRRC no longer has the capacity to review environmental documents.

DWS will refrain from further correspondence regarding this project. If you have any questions or concerns in the future, please contact me at (808) 550-4538.

Sincerely,

Makena White, AICP
Planner

cc: Shari Uyeno, DWS (via electronic mail only)
Greg Fukumitsu, TNWRE (via electronic mail only)

Pacific Park Plaza, Suite 950 • 711 Kapi'olani Boulevard • Honolulu, Hawai'i 96813-5213
Phone: 808-550-4483 • www.psi-hi.com

DAVID Y. IGE
GOVERNOR

CRAIG K. HIRAI
EXECUTIVE DIRECTOR

STATE OF HAWAII
DEPARTMENT OF BUSINESS, ECONOMIC DEVELOPMENT & TOURISM
HAWAII HOUSING FINANCE AND DEVELOPMENT CORPORATION
677 QUEEN STREET, SUITE 300
HONOLULU, HAWAII 96813
FAX: (808) 587-0600

IN REPLY REFER TO:
19: DEV/154

October 22, 2019

Mr. Makena White, AICP
Planning Solutions, Inc.
711 Kapiolani Boulevard, Suite 950
Honolulu, Hawaii 96813

Dear Mr. White:

Subject: Draft Environmental Assessment for the Wai'aha Well B Project, North Kona, Island of Hawai'i

The State of Hawaii, Hawaii Housing Finance and Development Corporation wishes to express its Support for the proposed Wai'aha Well B Project. We understand that the proposed well addresses the increase in demand for potable water driven by the rapid growth of North Kona's resident population.

Just as demand for potable water has risen concurrently with the Kona region's development, so too has the demand for housing in the region. In particular, affordable housing. We are hopeful that development of the Wai'aha Well B will allow housing developments to proceed, which may include projects being developed by HHFDC's affordable housing partners.

Thank you for providing the opportunity to comment on the subject Draft Environmental Assessment. Should you have any questions, please contact Dean Minakami at 587-0518 or dean.minakami@hawaii.gov.

Sincerely,

Craig K. Hirai,
Executive Director

PLANNING SOLUTIONS

January 23, 2020

Mr. Craig K. Hirai, Executive Director
Hawaii Housing Finance and Development Corporation
677 Queen Street, Suite 300
Honolulu, HI 96813

Subject: Draft Environmental Assessment (DEA) for the Wai'aha Well B Project

Dear Mr. Hirai,

Thank you for your October 22, 2019 letter (Reference No. 19: DEV/154) concerning the Department of Water Supply's *Draft Environmental Assessment for the Wai'aha Well B Project* (DEA). We appreciate the time you spent reviewing the DEA and preparing your response.

DWS is grateful for your expression of support for the proposed Wai'aha Well B Project. A copy of the FEA will be provided to you when it becomes available. In the meantime, if you have any questions or concerns in the future regarding this project, please contact me at (808) 550-4538.

Sincerely,

Makena

Makena White, AICP
Planner

cc: Shari Uyeno, DWS (via electronic mail only)
Greg Fukumitsu, TNWRE (via electronic mail only)

Pacific Park Plaza, Suite 950 • 711 Kapi'olani Boulevard • Honolulu, Hawai'i 96813-5213
Phone: 808-550-4483 • www.psi-hi.com

Harry Kim
Mayor

Wilfred M. Okabe
Managing Director

William A. Kucharski
Director

Diane A. Noda
Deputy Director

County of Hawai'i
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
345 Kekūanāo'a Street, Suite 41 · Hilo, Hawai'i 96720
Ph: (808) 961-8083 · Fax: (808) 961-8086
Email: cohdem@hawaiicounty.gov

November 1, 2019

Via email: makena@psi-hi.com

Mr. Makena White, AICP
Planning Solutions, Inc.
711 Kapi'olani Boulevard, Suite 950
Honolulu, Hawai'i 96813

Subject: Draft Environmental Assessment for the Wai'aha Well B Project
North Kona, Island of Hawai'i
Tax Map Keys: (3) 7-5-014:016 and 7-5-015:015

Dear Mr. White:

Pursuant to your October 7, 2019, letter on the above subject, the Solid Waste Division and Wastewater Division of the County of Hawai'i Department of Environmental Management have reviewed the draft environmental assessment and have no comments on the proposed project.

Thank you for the opportunity to comment.

Sincerely,

William A. Kucharski
Director

WK:mef

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

PLANNING SOLUTIONS

January 23, 2020

Mr. William A. Kucharski, Director
Department of Environmental Management
County of Hawai'i
345 Kekūanāo'a Street, Suite 41
Hilo, Hawai'i 96720

Subject: Draft Environmental Assessment (DEA) for the Wai'aha Well B Project

Dear Mr. Kucharski,

Thank you for your November 1, 2019 letter concerning the Department of Water Supply's *Draft Environmental Assessment for the Wai'aha Well B Project* (DEA). We appreciate the time you spent reviewing the DEA and preparing your response.

We understand that your Department has no comments on the proposed project. A copy of the FEA will be provided to you when it becomes available. In the meantime, if you have any questions or concerns in the future regarding this project, please contact me at (808) 550-4538.

Sincerely,

Makena White, AICP
Planner

cc: Shari Uyeno, DWS (via electronic mail only)
Greg Fukumitsu, TNWRE (via electronic mail only)

Pacific Park Plaza, Suite 950 • 711 Kapi'olani Boulevard • Honolulu, Hawai'i 96813-5213
Phone: 808-550-4483 • www.psi-hi.com

DAVID Y. IGE
GOVERNOR

JADE T. BUTAY
DIRECTOR

Deputy Director
LYNN A.S. ARAKI-REGAN
DEREK J. CHOW
ROSS M. HIGASHI
EDWIN H. SNIFFEN

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

IN REPLY REFER TO:
DIR 1040
HWY-PS 2.1519

October 30, 2019

Mr. Makena White, AICP
Planning Solutions
711 Kapiolani Boulevard, Suite 950
Honolulu, Hawaii 96813

Dear Mr. White:

Subject: Draft Environmental Assessment for the Waiaha Well B Project
Department of Water Supply
North Kona, County of Hawaii, Hawaii
Tax Map Key: (3) 7-5-015:015

We received your request for comment on the subject document. The County of Hawaii, Department of Water Supply is proposing to construct a new production well, a new pump control and chlorination building, as well as various other related equipment at its existing Waiaha Well and Reservoir facility in North Kona. The project site is accessed from Old Mamalahoa Highway, which is under County jurisdiction. The site access is approximately 4.15 miles from Old Mamalahoa Highway's intersection with State Route 190.

Based on the scope and location of the project, it appears that there will be no impact to the nearest State roadway, Route 190. The Highways Division has no additional comments at this time.

If there are any questions, please contact Jeyan Thirugnanam, Systems Planning Engineer, Highways Division, Planning Branch at (808) 587-6336 or by email at jeyan.thirugnanam@hawaii.gov. Please reference file review number PS 2019-135.

Sincerely,

JADE T. BUTAY
Director of Transportation

PLANNING SOLUTIONS

January 23, 2020

Mr. Jade T. Butay, Director
Department of Transportation
State of Hawai'i
869 Punchbowl Street
Honolulu, Hawai'i 96813-5097

Subject: Draft Environmental Assessment (DEA) for the Wai'aha Well B Project

Dear Mr. Butay,

Thank you for your October 30, 2019 letter (your reference DIR 1040 HWY-PS 2.1519) concerning the Department of Water Supply's *Draft Environmental Assessment for the Wai'aha Well B Project* (DEA). We appreciate the time you spent reviewing the DEA and preparing your response.

We appreciate your confirmation that the proposed project will have no impact on the Department's facilities or programs, and that the Division has no additional comments at this time. A copy of the FEA will be provided to you when it becomes available. In the meantime, if you have any questions or concerns in the future regarding this project, please contact me at (808) 550-4538.

Sincerely,

Makena White, AICP
Planner

cc: Shari Uyeno, DWS (via electronic mail only)
Greg Fukumitsu, TNWRE (via electronic mail only)

Pacific Park Plaza, Suite 950 • 711 Kapi'olani Boulevard • Honolulu, Hawai'i 96813-5213
Phone: 808-550-4483 • www.psi-hi.com

DAVID Y. IGE
GOVERNOR
STATE OF HAWAII

JOSH GREEN
LT. GOVERNOR
STATE OF HAWAII

WILLIAM J. AILA, JR
CHAIRMAN
HAWAIIAN HOMES COMMISSION

TYLER I. GOMES
DEPUTY TO THE CHAIRMAN

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

November 7, 2019

In reply refer to:
PO-19-231

Mr. Mākena White, AICP
Planning Solutions, Inc.
711 Kapiʻolani Boulevard, Suite 950
Honolulu, Hawaiʻi 96813
makena@psi-hi.com

Dear Mr. White:

Subject: Draft Environmental Assessment for the Waiʻaha Well B Project, North Kona, Island of Hawaiʻi TMKs7-5-014:016 and 7-5-015:015

The Department of Hawaiian Home Lands (DHHL) acknowledges receiving the request for comments on the above-cited project. The project is in the vicinity of DHHL's Kona Moku land holdings, identified as West Hawaiʻi in the 2009 DHHL Hawaiʻi Island Plan Update. DHHL offers the following overview and specific comments.

Trust and Legal overview

DHHL holds approximately 920 acres in Trust in West Hawaiʻi. In order to develop our lands for the purposes identified by the Hawaiian Homes Commission in our Kealakehe-Laʻi ʻŌpua Regional and Hawaiʻi Island Plans, water is necessary.

As stated in Section 101 of the Hawaiian Homes Commission Act (HHCA) of 1920 it is required that there be "adequate amounts of water and supporting infrastructure, so that homestead lands will always be usable and accessible." Adoption and implementation of the HHCA was a condition of statehood imposed on the state of Hawaiʻi by Congress in §4 of the Admissions Act: "As a compact with the United States relating to the management and disposition of the Hawaiian home lands, the Hawaiian Homes Commission Act, 1920, as amended, shall be adopted as a provision of the Constitution of said State…" The County of Hawaiʻi (including its Department of Water Supply) are subdivisions of the state of Hawaiʻi (Hawaiʻi State Constitution Article VIII Section 1.). DHHL is not aware of any exemption in law allowing a County to avoid any obligations to the DHHL under the HHCA, the state Water Code (HRS 174C) or other relevant provision.

Because of this, the Draft Environmental Assessment (DEA) should assess the proposed project's potential impacts on Hawaiian Home Lands in the Kona Moku as well as DHHL's ability to implement its Kealakehe-Laʻi ʻŌpua Regional Plan and Hawaiʻi Island Plan. The Final EA should include an assessment of consistency with DHHL's Kealakehe-Laʻi ʻŌpua Regional and Hawaiʻi

Island Plans in section 4.0 Relationships to Relevant Plans, Policies & Controls, especially as it regards water.

Specific comments

Based on the above background, DHHL offers the following specific comments:

Regarding Page 2-14 "2.6.3 ENHANCED WATER CONSERVATION ALTERNATIVE":

- The text offers no data or justification for its claims that current conservation measures have "already reduced water use substantially," justifying dismissal of this option as a viable alternative.

Regarding Page 3-5 Section "3.2.1.5 Sustainable Yield".

- The text notes that "At the present time, the total usage in the Keauhou Aquifer System Area is approximately 14 MGD (TNWRE, pers. comm., 2014)." DHHL notes a private well driller is not the appropriate source to cite for total water usage, which is to be reported by all users to the Commission on Water Resource Management (CWRM). We also note that in any case the information is outdated.

Regarding Page 3-7 Sections "3.2.2.2 Ground Water" and 3.2.2.3 Impact to Basal Ground Water"

- The text claims that because the well at full pumping will bring withdrawals back to previous pumping levels, there will be no impact on ground water. The only manner in which to conclude that there would be no impact on ground water in the immediate area would be to report and analyze changes to ground water levels, which is not provided.
- The text concludes, based on a conjectural model of groundwater in the area, that there will be no impact on basal groundwater. Basal groundwater is a critical resource in traditional and customary practices, including those held by DHHL beneficiaries. This finding is inconsistent with modeling completed by the US Geological Survey in published, peer-reviewed work.

Regarding Page 3-9 Section " 3.3 CLIMATE, CLIMATE CHANGE, AND SEA LEVEL RISE"

- It is inconsistent that the section examines the non-impacts from sea level rise on this project, yet ignores the potential impacts on water availability to the well being built. These changes have been extensively examined by many scientists, including in the study cited elsewhere in this DEA (Engott 2011), which provided some scenarios in which climate change significantly reduced future recharge.

Regarding Page 3-18 Section "3.8.2 POTENTIAL IMPACTS"

- The word "`iwi" is used in discussing human remains. "iwi" (with an `okina) is a noun that can mean "Twitching of the eye, sometimes accompanied by contraction of the mouth. Iwi (no okina) means bone.

Overall comments

The Draft EA does not discuss DHHL's water reservations in the Keauhou Aquifer. State case law recognizes that DHHL water reservations and uses are a protected Public Trust purpose of water. Additionally, HRS 174C-101 (a) protects reservations of water "for current and foreseeable development and use" of water by DHHL, consistent with Section 221 of the Hawaiian Homes Commission Act. Current and foreseeable uses are part of the reservation and are required to have the full protections of being a Public Trust use of water.

The DEA provides no analysis of how development of this well will impact DHHL water reservations in the Keauhou Aquifer. It provides no description of how the County will help fulfill its Constitutional and statutory obligations to DHHL in this project. Further, as you move forward with securing well construction and pump installation permits from the CWRM, a discussion of this project's impact to DHHL's water rights under HRS 174C should be provided as part of your CWRM application.

The proposed project has the potential to impact DHHL's beneficiaries in the region including both existing homestead lessees and applicants who have been waiting for the State to provide more homesteading opportunities in North Kona. We highly encourage you to consult with Hawaiian Homestead community associations and other (N)native Hawaiian organizations to better assess potential impacts to cultural and natural resources, access and other rights of Native Hawaiians. A list of some of our DHHL homestead associations may be found at https://dhhl.hawaii.gov/homestead-associations/.

Mahalo for the opportunity to provide comments. If you have any questions, please call Malia Cox, at 620-9485 or contact via email at malia.m.cox@hawaii.gov.

Aloha,

William J. Ailā Jr., Chairman
Hawaiian Homes Commission

C: Villages of La'i 'Ōpua Association (Kaniohale Homestead)

PLANNING SOLUTIONS

DEPT. OF HAWAIIAN HOME LANDS
2019 OCT 10 A 9:02

October 7, 2019

Subject: Draft Environmental Assessment for the Wai'aha Well B Project, North Kona, Island of Hawai'i

Dear Participant:

On behalf of the County of Hawai'i, Department of Water Supply, Planning Solutions, Inc. transmits to you the *Draft Environmental Assessment for the Wai'aha Well B Project* (DEA). The report evaluates the potential environmental effects of constructing and operating a new production well at its existing Wai'aha Well and Reservoir facility in North Kona. The commitment of County funds for this project subjects this action to the environmental review requirements of Chapter 343, Hawai'i Revised Statutes; this DEA is intended to satisfy those requirements.

Enclosed is a DVD containing the DEA. The document is also available online at: http://oeqc2.doh.hawaii.gov. The State Office of Environmental Quality Control (OEQC) has indicated it will publish an announcement of availability for this DEA in the October 8, 2019 edition of *The Environmental Notice*.

The Department of Water Supply invites you to review this DEA and provide your comments to:

Mākena White, AICP
Planning Solutions, Inc.
711 Kapi'olani Boulevard, Suite 950
Honolulu, Hawai'i 96813

Alternatively, comments may be submitted electronically to: makena@psi-hi.com. The OEQC's deadline for comments on this DEA is November 7, 2019.

If you have any questions about this letter, or the enclosed DEA, please call me at (808) 550-4538. Thank you for your participation in this environmental review process.

Sincerely,

Mākena White

Enclosure: *DEA for the Wai'aha Well B Project* (DVD)

cc: Kurt Inaba, DWS (electronic copy only)
Shari Uyeno, DWS (electronic copy only)
Greg Fukumitsu, TNWRE (electronic copy only)

Pacific Park Plaza, Suite 950 • 711 Kapiolani Boulevard •Honolulu, Hawai'i 96813
Phone: 808-550-4483 • www.psi-hi.com

PLANNING SOLUTIONS

January 23, 2020

Mr. William J. Ailā, Jr., Chairman
Department of Hawaiian Home Lands
State of Hawai'i
P.O. Box 1879
Honolulu, Hawai'i 96805

Subject: Draft Environmental Assessment (DEA) for the Wai'aha Well B Project

Dear Mr. Ailā,

Thank you for your November 7, 2019 letter (Ref. No. PO-19-231) concerning the Department of Water Supply's *Draft Environmental Assessment for the Wai'aha Well B Project* (DEA). We appreciate the time you and your staff spent reviewing the DEA and preparing your response. To simplify your review, we have reproduced your comments in italics, followed by our response.

Comment 1:

DHHL holds approximately 920 acres in Trust in West Hawai'i. In order to develop our lands for the purposes identified by the Hawaiian Homes Commission in our Kealakehe-La'i 'Ōpua Regional and Hawai'i Island Plans, water is necessary.

As stated in Section 101 of the Hawaiian Homes Commission Act (HHCA) of 1920 it is required that there be "adequate amounts of water and supporting infrastructure, so that homestead lands will always be usable and accessible." Adoption and implementation of the HHCA was a condition of statehood imposed on the state of Hawai'i by Congress in §4 of the Admissions Act: "As a compact with the United States relating to the management and disposition of the Hawaiian home lands, the Hawaiian Homes Commission Act, 1920, as amended, shall be adopted as a provision of the Constitution of said State..." The County of Hawaii (including its Department of Water Supply) are subdivisions of the state of Hawaii (Hawaii State Constitution Article VIII Section 1.). DHHL is not aware of any exemption in law allowing a County to avoid any obligations to the DHHL under the HHCA, the state Water Code (HRS 174C) or other relevant provision.

Because of this, the Draft Environmental Assessment (DEA) should assess the proposed project's potential impacts on Hawaiian Home Lands in the Kona Moku as well as DHHL's ability to implement its Kealakehe-La'i 'Ōpua Regional and Hawai'i Island Plan. The Final EA should include an assessment of consistency with DHHL's Kealakehe-La'i 'Ōpua Regional and Hawai'i Island Plans in section 4.0 Relationships to Relevant Plans, Policies & Controls, especially as it regards water."

Response: The *Kealakehe-La'i 'Ōpua Regional Plan* was not published until October 2019, after the EA had already been submitted to the Office of Environmental Quality Control for publication, and thus was not available for review during preparation of the EA. Notwithstanding that, DWS has been and continues to work with La'i 'Ōpua 2020 and DHHL in support of their source development and infrastructure improvement plans to provide the region with the necessary drinking water for the Kealakehe-La'i 'Ōpua developments.

Pacific Park Plaza, Suite 950 • 711 Kapi'olani Boulevard • Honolulu, Hawai'i 96813-5213
Phone: 808-550-4483 • www.psi-hi.com

Comment 2:

Regarding Page 2-14 "2.6.3 ENHANCE WATER CONSERVATION ALTERNATIVE":

The text offers no data or justification for its claims that current conservation measures have "already reduced water use substantially," justifying dismissal of this option as a viable alternative.

Response: DWS continues to work on improving communication with its customers in helping them to understand the importance of providing safe drinking water in a financially responsible manner. While information on ways for existing customers to be more efficient and promoting conservation has been uploaded to the DWS website, DWS has also been working with the Planning Department on ways to include conservation measures in development's requirements that would be implemented as part of their land use applications in the drier locations. This project is not intended to promote the additional use of water as the existing well is intended to be down sized and in combination with this well, will provide approximately the same quantity (~2 MGD) as the original well. This should allow the DWS more flexibility in its operations and provide more resiliency when well repairs are required. DWS is also taking steps to reduce the use of its basal sources where water quality is not as desirable as the high level and mid-elevation deep wells with high quality water for consumption purposes. In doing so, building a more resilient system will be required to allow DWS to continue to serve its customers with high quality water. Reducing existing usage by conservation measures will allow DWS to have a more resilient system however, it will take time for DWS and its customers to implement changes that will have a significant impact to the overall water system. One large project that is anticipated to make a significant impact to non-consumptive water is the Kealakehe Wastewater Treatment Plant upgrade which should provide a substantial amount of reuse water for existing and future irrigation purposes.

Comment 3:

Regarding Page 3-5 Section "3.2.1.5 Sustainable Yield".

The text notes that "At the present time, the total usage in the Keauhou Aquifer System Area is approximately 14 MGD (TNWRE, pers. comm., 2014)." DHHL notes a private well driller is not the appropriate source to cite for total water usage, which is to be reported by all users to the Commission on Water Resource Management (CWRM). We also note that in any case the information is outdated.

Response: We would like to clarify that TNWRE is not a private well driller but a Civil Engineering and Hydrologist consulting firm who is also the prime consultant on this project. The *Hawai'i County Water Use and Development Plan Update for the Keauhou Aquifer* (WUDP Update) which has been preliminarily approved by CWRM and is to be subsequently approved by the County Council and finally adopted by CWRM states that the total pumpage within the Keauhou Aquifer at the time data was available was 14.86 MGD. Also, based on projected demands which included a DHHL reservation of 3.4 MGD, it is anticipated that pumpage will reach a maximum of 28.03 MGD in the foreseeable future. It should also be noted that the recently adopted 2019 WRPP continues to keep the Sustainable Yield for the Keauhou Aquifer at 38 MGD even though more recent recharge studies by the USGS suggest that the Sustainable Yield for this aquifer may be more than 70 MGD.

Comment 4:

Regarding Page 3-7 Section "3.2.2.2 Ground Water" and 3.2.2.3 Impact to Basal Ground Water"

The text claims that because the well at full pumping will bring withdrawals back to previous pumping levels, there will be no impact on ground water. The only manner in which to conclude that there would be no impact on ground water in the immediate area would be to report and analyze changes to ground water levels, which is not provided.

The text concludes, based on a conjectural model of groundwater in the area, that there will be no impact on basal groundwater. Basal groundwater is a critical resource in traditional and customary practices, including those held by DHHL beneficiaries. This finding is inconsistent with modeling completed by the US Geological Survey in published, peer-reviewed work.

Response: The intent of this project is to provide a second well capable of pumping 1 MGD while reducing the existing well from 2 MGD down to 1 MGD; thus, there is effectively no change in impacts to the aquifer. DWS continues to monitor groundwater levels in its wells as well as groundwater levels in monitoring wells available for our use. DWS is also in the process of installing a monitoring well near the bottom of Hinalani St. (approximate elevation of 125′) and has authorized a monitoring well to be constructed by CWRM at the DWS reservoir site on Hinalani St. at an approximate elevation of 630′.

As part of its contract with DWS, TNWRE has been monitoring potential changes to the basal groundwater that may be attributable to the pumping of DWS' high level wells. The monitoring is at two locations; the Kamakana Well (State No. 3959-001) which is downgradient of DWS' QLT (State No. 4057-001) and Honokōhau (State No. 4158-002) high level wells, and Kaloko 2 (State No. 4160-002) which is downgradient of DWS' Palani (State No. 4158-003) and Hualālai (State No. 4258-003) high level wells. Both wells are ideally situated to track potential changes in the basal groundwater resulting from pumping DWS' high level wells.

The monitoring has included recorded water levels and salinity profiling, the latter to document potential changes in basal water salinity and the thickness of the basal lens. Monitoring in the Kamakana Well began in April 2010. Water level monitoring in the Kaloko Well began in October 2014 but its salinity profiling data extends back to March 1996. To date, the monitoring data from the two wells establish that basal groundwater levels have not declined, that the salinity of the basal groundwater has not increased, and that the thickness of the basal lens has remained essentially unchanged.

Comment 5:

Regarding Page 3-9 Section "3.3 CLIMATE, CLIMATE CHANGE, AND SEA LEVEL RISE"

It is inconsistent that the section examines the non-impacts from sea level rise on this project, yet ignores the potential impacts on water availability to the well being built. These changes have been extensively examined by many scientists, including in the study cited elsewhere in this DEA (Engott 2011), which provided some scenarios in which climate change significantly reduced future recharge.

Response: DWS agrees that each well needs to be monitored for sustainability and will continue to monitor water levels in its wells. Studies, including Engott (2011) have fortunately shown that the Keauhou Aquifer, as well as the Kīholo and Kealakekua Aquifer System Areas all had significantly greater recharge than the

amount used in defining the sustainable yields. However, CWRM has elected to keep the initial sustainable yields as adopted in 1998.

Comment 6:

Regarding Page 3-18 Section "3.8.2 POTENTIAL IMPACTS"

The word "'iwi" is used in discussing human remains. "iwi" (with an 'okina) is a noun than can mean "Twitching of the eye, sometimes accompanied by a contraction of the mouth. Iwi (no okina) mean bone.

Response: Thank you for this information, DWS has corrected the spelling of iwi in the forthcoming FEA.

Comment 7:

The Draft EA does not discuss the DHHL's water reservations in the Keauhou Aquifer. State case law recognizes that DHHL water reservations and uses are a protected Public Trust purpose of water. Additionally, HRS 174C-101(a) protects reservations of water "for current and foreseeable development and use" of water by DHHL, consistent with Section 221 of the Hawaiian Homes Commission Act. Current and foreseeable uses are part of the reservation and are required to have the full protections of being a Public Trust use of water.

The DEA offers no analysis of how development of this well will impact DHHL water reservations in the Keauhou Aquifer. It provides no description of how the County will help fulfill its Constitutional and statutory obligations to DHHL in this project. Further, as you move forward with securing well construction and pump installation permits from the CWRM, a discussion of this project's impact to DHHL's water rights under HRS 174C should be provided as part of your CWRM application.

The proposed project has the potential to impact DHHL's beneficiaries in the region including both existing homestead lessees and applicants who have been waiting for the State to provide more homesteading opportunities in North Kona. We highly encourage you to consult with Hawaiian Homestead community associations and other (N)native Hawaiian organizations to better assess potential impacts to cultural and natural resources, access and other rights of Native Hawaiians. A list of some of our DHHL homestead associations may be found at https://dhhl.hawaii.gov/homestead-associations/.

Response: DWS recognizes that DHHL water reservations and uses are a protected Public Trust purpose and will include a brief narrative acknowledging this and its inclusion in the WUDP Update. DHHL's request for a reservation is included in the WUDP Update in its calculations for anticipated demand, which addresses, "current and foreseeable development and use" of water, which CWRM has reviewed and accepted.

DWS anticipates that the Wai'aha Well B Project will not impact DHHL's water reservations and is consistent with the WUDP Update in that development of this proposed site will avoid having a concentration of wells in too-localized an area. DWS will also continue to monitor well levels to ensure that the sustainability of the wells remains stable. This source development by DWS will not only help with providing water to some of DHHL's anticipated developments but will also be a vital part of the

infrastructure that will allow DWS to continue to provide existing DHHL customers with potable water, including the Kealakehe-La'i 'Ōpua homestead developments.

A copy of the FEA will be provided to you when it becomes available. In the meantime, if you have any questions or concerns in the future regarding this project, please contact me at (808) 550-4538.

Sincerely,

Makena

Makena White, AICP
Planner

cc: Shari Uyeno, DWS (via electronic mail only)
Greg Fukumitsu, TNWRE (via electronic mail only)

DAVID Y. IGE
GOVERNOR

PANKAJ BHANOT
DIRECTOR

CATHY BETTS
DEPUTY DIRECTOR

STATE OF HAWAII
DEPARTMENT OF HUMAN SERVICES
Benefit, Employment and Support Services Division
1010 Richards Street, Suite 512
Honolulu, Hawai'i 96813

November 2, 2019

Re: 19-0455

Planning Solutions
711 Kapiolani Boulevard, Suite 950
Honolulu, Hawaii 96813
Attn: Makena White

Dear Mr. White:

SUBJECT: Draft Environmental Assessment for the Wai'aha Well B Project, North Kona, Island of Hawaii

The Department of Human Services has reviewed the project site for Wai'aha Well B Project and has no comment at this time.

If you should have any question regarding this matter, please contact Ms. Lisa Galino, Child Care Program Specialist at (808) 586-5712.

Sincerely,

Scott Nakasone
Assistant Division Administrator

c: Pankaj Bhanot, Director

AN EQUAL OPPORTUNITY AGENCY

PLANNING SOLUTIONS

January 23, 2020

Mr. Scott Nakasone, Assistant Division Administrator
Benefit, Employment, and Support Services Division
Department of Human Services
State of Hawai'i
1010 Richards Street, Suite 512
Honolulu, Hawai'i 96813

Subject: Draft Environmental Assessment (DEA) for the Wai'aha Well B Project

Dear Mr. Nakasone,

Thank you for your November 2, 2019 letter (Ref. No. 19-0455) concerning the Department of Water Supply's *Draft Environmental Assessment for the Wai'aha Well B Project* (DEA). We appreciate the time you spent reviewing the DEA and preparing your response.

We understand that your Department has no comments on the proposed project at this time. A copy of the FEA will be provided to you when it becomes available. In the meantime, if you have any questions or concerns in the future regarding this project, please contact me at (808) 550-4538.

Sincerely,

Makena White, AICP
Planner

cc: Shari Uyeno, DWS (via electronic mail only)
Greg Fukumitsu, TNWRE (via electronic mail only)

Pacific Park Plaza, Suite 950 • 711 Kapi'olani Boulevard • Honolulu, Hawai'i 96813-5213
Phone: 808-550-4483 • www.psi-hi.com

DAVID Y. IGE
GOVERNOR OF HAWAII

SUZANNE D. CASE
CHAIRPERSON

BRUCE S. ANDERSON, PH.D.
KAMANA BEAMER, PH.D.
MICHAEL G. BUCK
NEIL J. HANNAHS
WAYNE K. KATAYAMA
PAUL J. MEYER

M. KALEO MANUEL
DEPUTY DIRECTOR

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

November 4, 2019

REF: RFD.5259.8

TO: Makena White, AICP
Planning Solutions, Inc.

FROM: M. Kaleo Manuel, Deputy Director
Commission on Water Resource Management

SUBJECT: Draft Environmental Assessment for the Waiaha Well B Project, North Kona, Island of Hawaii

FILE NO.: RFD.5259.8
TMK NO.: 7-5-014:016, 7-5-015:015

Thank you for the opportunity to review the subject document. The Commission on Water Resource Management (CWRM) is the agency responsible for administering the State Water Code (Code). Under the Code, all waters of the State are held in trust for the benefit of the citizens of the State, therefore all water use is subject to legally protected water rights. CWRM strongly promotes the efficient use of Hawaii's water resources through conservation measures and appropriate resource management. For more information, please refer to the State Water Code, Chapter 174C, Hawaii Revised Statutes, and Hawaii Administrative Rules, Chapters 13-167 to 13-171. These documents are available via the Internet at http://dlnr.hawaii.gov/cwrm.

Our comments related to water resources are checked off below.

[X] 1. We recommend coordination with the county to incorporate this project into the county's Water Use and Development Plan. Please contact the respective Planning Department and/or Department of Water Supply for further information.

[ ] 2. We recommend coordination with the Engineering Division of the State Department of Land and Natural Resources to incorporate this project into the State Water Projects Plan.

[ ] 3. We recommend coordination with the Hawaii Department of Agriculture (HDOA) to incorporate the reclassification of agricultural zoned land and the redistribution of agricultural resources into the State's Agricultural Water Use and Development Plan (AWUDP). Please contact the HDOA for more information.

[ ] 4. We recommend that water efficient fixtures be installed and water efficient practices implemented throughout the development to reduce the increased demand on the area's freshwater resources. Reducing the water usage of a home or building may earn credit towards Leadership in Energy and Environmental Design (LEED) certification. More information on LEED certification is available at http://www.usgbc.org/leed. A listing of fixtures certified by the EAP as having high water efficiency can be found at http://www.epa.gov/watersense.

[ ] 5. We recommend the use of best management practices (BMP) for stormwater management to minimize the impact of the project to the existing area's hydrology while maintaining on-site infiltration and preventing polluted runoff from storm events. Stormwater management BMPs may earn credit toward LEED certification. More information on stormwater BMPs can be found at http://planning.hawaii.gov/czm/initiatives/low-impact-development/

[ ] 6. We recommend the use of alternative water sources, wherever practicable.

[ ] 7. We recommend participating in the Hawaii Green Business Program, that assists and recognizes businesses that strive to operate in an environmentally and socially responsible manner. The program description can be found online at http://energy.hawaii.gov/green-business-program.

[ ] 8. We recommend adopting landscape irrigation conservation best management practices endorsed by the Landscape Industry Council of Hawaii. These practices can be found online at http://www.hawaiiscape.com/wp-content/uploads/2013/04/LICH_Irrigation_Conservation_BMPs.pdf.

[ ] 9. There may be the potential for ground or surface water degradation/contamination and recommend that approvals for this project be conditioned upon a review by the State Department of Health and the developer's acceptance of any resulting requirements related to water quality.

[ ] 10. The proposed water supply source for the project is located in a designated water management area, and a Water Use Permit is required prior to use of water. The Water Use Permit may be conditioned on the requirement to use dual line water supply systems for new industrial and commercial developments.

[X] 11. A Well Construction Permit(s) is (are) are required before the commencement of any well construction work.

[X] 12. A Pump Installation Permit(s) is (are) required before ground water is developed as a source of supply for the project.

[ ] 13. There is (are) well(s) located on or adjacent to this project. If wells are not planned to be used and will be affected by any new construction, they must be properly abandoned and sealed. A permit for well abandonment must be obtained.

[ ] 14. Ground-water withdrawals from this project may affect streamflows, which may require an instream flow standard amendment.

[ ] 15. A Stream Channel Alteration Permit(s) is (are) required before any alteration can be made to the bed and/or banks of a steam channel.

[ ] 16. A Stream Diversion Works Permit(s) is (are) required before any stream diversion works is constructed or altered.

[ ] 17. A Petition to Amend the Interim Instream Flow Standard is required for any new or expanded diversion(s) of surface water.

[ ] 18. The planned source of water for this project has not been identified in this report. Therefore, we cannot determine what permits or petitions are required from our office, or whether there are potential impacts to water resources.

[X] OTHER:

- The proposed development is located in the Keauhou Aquifer System Area (ASYA), which has a sustainable yield of 38 million gallons per day (mgd). On February 14, 2017, the Commission accepted the County of Hawaii's Water Use and Development Plan (WUDP), Phase 2 draft, for the Keauhou ASYA for the purposes of packaging Phases 1 and 2 into one complete document that still requires formal adoption by the county council and Commission. The Commission noted that authorized planned use in the WUDP for the Keauhou ASYA was calculated to be 28.07 mgd or about 74% of the established sustainable yield. The State Water Code provides for the designation of a water management area when authorized planned use (the use or projected use of water by developments that have received the proper state land use designation and county development plan/community plan approvals) reaches 90% of an area's sustainable yield. Should this project, or any new planned developments, cumulatively result in an increase in authorized planned use to 90% or more of the Keauhou ASYA's sustainable yield, the Commission may initiate water management area designation proceedings. If designated as a water management area, water use permits from the Commission would be required.
- The Phase 2 draft plan also includes a map showing Hawai'i County Department of Water Supply's (HDWS) completed and future CIP projects (Figure 4-1) and a list of HDWS' proposed 5-year CIP projects (page 4-5, section 4.2.3). Included on the list is a "North Kona Well (Waiaha Well #2)". However, based on Figure 4-1, Waiaha Well #2 does not appear to be on the same parcel nor in the same general location as that shown for Waiaha Well B in the draft DEA. The Phase 2 draft also includes a proposed HDWS Well Development Area which the location of Waiaha Well B appears to be consistent with.
- Page 3-4, section 3.2.1.3 High Level Groundwater

Please correct: ".....Keauhou Well 2..." to ".....Keauhou-Kam 3"

- Page 3-4, section 3.2.1.3 High Level Groundwater

Please correct: "....DLNR's Kalaoa Well..." to "County's Kalaoa Well..."
Kalaoa Well, State Well No. 4358-001 is owned by the Department of Water, County of Hawaii.

- Page 3-6, Table 3.2 Existing Wells in the Project Vicinity

Please update table with the following data:
3858-001 Keōpū 1 Monitor Deep(Well Name)
3858-002 Keōpū 2 Deep Monitor(Well Name), 1,210 (Depth (ft.)), 3.6 (Static Head (ft. +MSL))
3957-002 USGS(Owner/User)
3959-001 1,773 (Depth (ft.)), 2.5 (Static Head (ft. +MSL))

If you have any questions, please contact Lenore Ohye of the Planning Branch at 587-0216 or W. Roy Hardy of the Regulation Branch at 587-0225.

PLANNING SOLUTIONS

RECEIVED
COMMISSION ON WATER
RESOURCE MANAGEMENT
2019 OCT -9 PM 1:25

October 7, 2019

Subject: Draft Environmental Assessment for the Wai'aha Well B Project, North Kona, Island of Hawai'i

Dear Participant:

On behalf of the County of Hawai'i, Department of Water Supply, Planning Solutions, Inc. transmits to you the *Draft Environmental Assessment for the Wai'aha Well B Project* (DEA). The report evaluates the potential environmental effects of constructing and operating a new production well at its existing Wai'aha Well and Reservoir facility in North Kona. The commitment of County funds for this project subjects this action to the environmental review requirements of Chapter 343, Hawai'i Revised Statutes; this DEA is intended to satisfy those requirements.

Enclosed is a DVD containing the DEA. The document is also available online at: http://oeqc2.doh.hawaii.gov. The State Office of Environmental Quality Control (OEQC) has indicated it will publish an announcement of availability for this DEA in the October 8, 2019 edition of *The Environmental Notice*.

The Department of Water Supply invites you to review this DEA and provide your comments to:

Mākena White, AICP
Planning Solutions, Inc.
711 Kapi'olani Boulevard, Suite 950
Honolulu, Hawai'i 96813

Alternatively, comments may be submitted electronically to: makena@psi-hi.com. The OEQC's deadline for comments on this DEA is November 7, 2019.

If you have any questions about this letter, or the enclosed DEA, please call me at (808) 550-4538. Thank you for your participation in this environmental review process.

Sincerely,

Mākena White

Enclosure: *DEA for the Wai'aha Well B Project* (DVD)

cc: Kurt Inaba, DWS (electronic copy only)
Shari Uyeno, DWS (electronic copy only)
Greg Fukumitsu, TNWRE (electronic copy only)

FILE ID: RFD.5259.8
DOC ID: 21957

PLANNING SOLUTIONS

January 23, 2020

Mr. Kaleo Manuel, Deputy Director
Commission on Water Resource Management
Department of Land and Natural Resources
State of Hawai'i
P.O. Box 621
Honolulu, Hawai'i 96809

Subject: Draft Environmental Assessment (DEA) for the Wai'aha Well B Project

Dear Mr. Manuel,

Thank you for your November 4, 2019 letter (Ref. No. RFD.5259.8) concerning the Department of Water Supply's (DWS) *Draft Environmental Assessment for the Wai'aha Well B Project* (DEA). We appreciate the time you and your staff spent reviewing the DEA and preparing your response. To simplify your review, we have reproduced your comments in italics, followed by our response.

Comment 1:

We recommend coordination with the county to incorporate this project into the county's Water Use and Development Plan. Please contact the respective Planning Department and/or Department of Water Supply for more information.

Response: DWS has provided a copy of the DEA to the Hawai'i County Planning Department with a request for review and comment and will continue to coordinate with all relevant agencies throughout planning and implementation of the proposed Wai'aha Well B Project.

Comments 2 and 3:

A Well Construction Permit(s) is (are) require before the commencement of any well construction work.

A Pump Installation Permit(s) is (are) required before ground water is water is developed as a source of supply for the project.

Response: DWS understands that it will need to obtain Well Construction and Pump Installation Permits from the Commission on Water Resource Management (CWRM) prior to construction of the Wai'aha Well B and before any ground water withdrawals are made from it.

Comment 4:

The proposed development is located in the Keauhou Aquifer System Area (ASYA), which has a sustainable yield of 38 million gallons per day (mgd). On February 14, 2017, the Commission accepted the County of Hawaii's Water Use and Development Plan (WUDP), Phase 2 draft, for the Keauhou ASYA for the purposes of packaging Phases 1 and 2 into one complete document that still required formal adoption by the County Council and Commission. The Commission

noted that authorized planned use in the WUDP for the Keauhou ASYA was calculated to be 28.07 mgd or about 74% of the established sustainable yield. The State Water Code provides for the designation of a water management area when authorized planned use (the use or projected use of water by developments that have received the proper state land use designation and county development plan/community plan approvals) reaches 90% of an area's sustainable yield. Should this project, or any new planned developments, cumulatively result in an increase in authorized planned use to 90% or more of the Keauhou ASYA's sustainable yield, the Commission may initiate water management area designation proceedings. If designated as a water management area, water use permits from the Commission would be required.

Response: DWS acknowledges that should the authorized planned use of water in the Keauhou ASYA reach or exceed 90 percent of the Keauhou ASYA's sustainable yield, CWRM may initiate water management area designation proceedings and, should that occur, water use permits from the Commission may be required.

Comment 5:

The Phase 2 draft plan also includes a map showing Hawaii County Department of Water Supply's (HDWS) completed and future CIP projects (Figure 4-1) and a list of HDWS' proposed 5-year CIP projects (page 4-5, section 4.2.3). Included on this list is a "North Kona Well (Waiaha Well #2)" However, based on Figure 4-1, Waiaha Well #2 does not appear to be on the same parcel nor in the same general location as that shown for Waiaha Well B in the draft DEA. The Phase 2 draft also includes a proposed HDWS Well Development Area which the location of Waiaha Well B appears to be consistent with.

Response: Originally, DWS intended to develop Wai'aha Well No. 2 at the location you cite, identified in its proposed Five-Year CIP Projects, Page 4-5, Section 4.2.3. Subsequent investigation by DWS concluded that there was adequate space available within the existing Wai'aha Well and Reservoir site to accommodate the proposed Well B, and consequently that the potential time and expense related to land acquisition of the original Wai'aha Well No. 2 site was not justified. The proposed Wai'aha Well B Project is, as your letter notes, within the proposed DWS Well Development Area and is consistent with the *Water Use and Development Plan Update for the Keauhou Aquifer* approved by Commission.

Comment 6:

Page 3-4, section 3.2.1.3 High Level Groundwater

Please correct: "…..Keauhou Well 2…" to "…..Keauhou-Kam 3"

Response: Our data indicates that the correct reference should be to Keauhou-Kam 2 (State No. 3355-01) and we have amended the Final Environmental Assessment (FEA) to reflect that understanding.

Comment 7:

Page 3-4, section 3.2.1.3 High Level Groundwater

Please correct: ."….DLNR's Kalaoa Well…" to "County's Kalaoa Well…"

Response: Thank you for this correction, it will be reflected in the forthcoming FEA.

Comment 8:

Page 3-6, Table 3.2 Existing Wells in the Project Vicinity

Please update table with the following data:

3858-001 Keōpū 1 Monitor Deep (Well Name)

3858-002 Keōpū 2 Deep Monitor (Well Name), 1,210 (Depth(ft.)), 3.6 (Static Head (ft. +MSL))

3957-002 USGS (Owner/User)

3959-001 1,773 (Depth (ft.)), 2.5 (Static Head (ft. +MSL))

Response: These revisions have been incorporated into the forthcoming FEA for the Wai'aha Well B Project.

A copy of the FEA will be provided to you when it becomes available. In the meantime, if you have any questions or concerns in the future regarding this project, please contact me at (808) 550-4538.

Sincerely,

Makena

Makena White, AICP
Planner

cc: Shari Uyeno, DWS (via electronic mail only)
Greg Fukumitsu, TNWRE (via electronic mail only)

APPENDIX A BIOLOGICAL SURVEYS

Biological Surveys Conducted for the Waiʻaha Well B Project, North Kona District, Island of Hawaiʻi

Prepared by:
Reginald E. David
Rana Biological Consulting
P.O. Box 1371
Kailua-Kona, Hawaiʻi 96745

Prepared for:
Planning Solutions, Inc.
711 Kapiʻolani Boulevard, Suite 950
Honolulu, HI 96813

September 12, 2019

Table of Contents

Introduction **2**
General Project and Site Description 2
Methods 3
Avian Survey Methods 3
Mammalian Survey Methods 4

Results **4**
Vegetation 4
Avian Survey 5
Mammalian Survey 6

Discussion **6**
Botanical Resources 6
Avian Resources 7
Mammalian Resources 7

Potential Impacts to Protected Species **8**
Botanical Resources 8
Seabirds 8
Hawaiian Hawk 8
Hawaiian hoary bat 8

Critical Habitat **9**

Glossary **10**

List of Acronyms **10**

Literature Cited **11**

Introduction

The County of Hawai‘i’s Department of Water Supply (DWS) is proposing to construct a new production well within the DWS-owned Wai‘aha Well and Reservoir facility in the North Kona District of the Island of Hawai‘i. The proposed project will be constructed on Tax Map Key (Nos. 7-5-015:015) (Figure 1).

This report describes the methods used, and the results of the biological surveys conducted on the proposed project site in support of the environmental disclosure process associated with the project.

The primary purpose of the surveys was to determine if there are any botanical, avian or mammalian species currently listed, or proposed for listing under either federal or State of Hawai‘i endangered species statutes within or adjacent to the study area. The federal and State of Hawai‘i listed species status follows species identified in the following referenced documents: Department of Land and Natural Resources (DLNR) 2015; U. S. Fish & Wildlife Service (USFWS) n.d.. Fieldwork was conducted on September 6, 2019.

Hawaiian and scientific names are *italicized* in the text. A glossary of technical terms and acronyms used in the document, which may be unfamiliar to the reader, are included at the end of the narrative text.

General Project and Site Description

The proposed action includes the following components:

1. Drilling, casing, and testing a new, 20-inch diameter production well (“Wai‘aha Well B”) with a 700 GPM, 400 HP submersible pump.

2. Constructing a new, approximately 700 square foot control building housing chlorination equipment and a Supervisory Control and Data Acquisition (SCADA) system with additional space for ancillary equipment and systems.

3. Building a 6-foot high chain link security fence for both the Wai‘aha Well B and new control building. The existing 2.0-million-gallon reservoir on the site provides adequate storage capacity to accommodate both wells functioning at 700 GPM; no new water storage is proposed as part of this project.

4. The existing pump control and chlorination building for Wai‘aha Well will remain in place.

The site is currently developed (Figure 1); there is little vegetation of any stature within the proposed clearing and grading area. Vegetation within that area is growing on crushed lava, and is dominated by a ground cover of artillery plant (*Pilea microphylla*) and hairy horseweed (*Conyza canadensis*). Close to the property line on the north, east and south sides of the sites there is relatively dense mixed second growth non-native dominated vegetated hedge that separates the DWS facility from the adjacent farms.

Figure 1 - Tank and Well Site

Source: Planning Solutions, Inc. (2019)

Methods

The avian phylogenetic order and nomenclature used in this report follows the AOU *Check-List of North and Middle American Birds* 2018, and the 60th supplement to the *Check-List* (Cheeser et al., 2018, 2019). Mammal scientific names follow (Wilson and Reeder, 2005). Plant names follow (Wagner et al, 1990, 1999 and Staples and Herbst, 2005). Place names follow (Pukui et al., 1976).

Avian Survey Methods

One avian point count station was sited roughly in the center of the site. A single eight-minute avian point count was made at each count station. Field observations were made with the aid of Leica 8 X 42 binoculars and by listening for vocalizations. The point count was conducted early in the morning, the period when birds are most active and vocal. Time not spent counting the point count stations was used to search the rest of the site for species and habitats not detected during the point counts.

Mammalian Survey Methods

Except for the endangered Hawaiian hoary bat (*Lasiurus cinereus semotus*), or *ʻōpeʻapeʻa* as it is known locally, all terrestrial mammals currently found on the Island of Hawaiʻi are alien species, and most are ubiquitous. The survey of mammals was limited to visual and auditory detection, coupled with visual observation of scat, tracks, and other animal sign. A running tally was kept of all terrestrial vertebrate mammalian species detected within the project area during the time spent on the site.

Results

Vegetation

Vegetation within the site is growing on crushed lava and is dominated by a ground cover of artillery plant (*Pilea microphylla*) and hairy horseweed (*Conyza bonariensis*) (Figure 2). Within that assemblage there is a scattering of garden spurge (*Chamaesyce hirta*) and large mats of cyanobacteria *Nostoc commune*, a very slippery species of blue-green algae. Close to the property line on the north, east and south sides of the site there is a border comprised of non-native decorative and fruit trees and shrubs separating the site from the adjacent farms. Plants within this assemblage include: Christmas berry (*Schinus terebinthifolius*), Indian fleabane (*Pluchea indica*), a lime tree (*Citrus aurantiifolia*), avocado (*Persea americana*), African tulip (*Spathodea campanulata*), strawberry guava (*Psidium cattleianum*), Heliconia sp. (*Heliconia* sp.), Kāhili ginger (*Hedychium gardenerianum*), white ginger (*Hedychium coronarium),* split-leaf philodendron (*Monstera deliciosa*) and Ti leaf (*Cordyline fruticosa*). None of these plants are native to the Hawaiian Islands, and none-are listed under either the federal or State of Hawaiʻi endangered species statutes (DLNR 2015; USFWS, n. d.).

Figure 2 - Artillery plant and hairy horseweed, the dominant vegetation on the site.

Source: Rana Biological Consulting (2019)

Avian Survey

A total of 34 individual birds of 11 species, representing eight separate families, were recorded during the point count. All 11 species recorded are established alien species (Table 1). No additional avian species were detected while transiting the site.

Table 1 – Avian Species Detected During Point Counts for the Wai'aha Well B Project – September 2019

Common Name	*Scientific Name*	*ST*	*#*
	COLUMBIFORMES		
	COLUMBIDAE – Pigeons & Doves		
Spotted Dove	*Streptopelia chinensis*	A	1
Zebra Dove	*Geopelia striata*	A	2
	PSITTACIFORMES		
	PSITTACIDAE – African and New World Parrots		
	Arinae – New World Parakeets, Macaws & Parrots		
Red-masked Parakeet	*Psittacara erythrogenys*	A	7

Table 1 – continued

Common Name	Scientific Name	ST	#
	PASSERIFORMES		
	ZOSTEROPIDAE – White-eyes		
Japanese White-eye	*Zosterops japonicus*	A	9
	LEIOTHRICHIDAE - Babblers		
Chinese Hwamei	*Garrulax canorus*	A	2
Red-billed Leiothrix	*Leiothrix lutea*	A	4
	STURNIDAE – Starlings		
Common Myna	*Acridotheres tristis*	A	3
	FRINGILLIDAE – Fringilline and Carduline Finches & Allies		
	Carduelinae – Carduline Finches and Hawaiian Honeycreepers		
House Finch	*Haemorhous mexicanus*	A	1
	CARDINALIDAE – Cardinals & Allies		
Northern Cardinal	*Cardinalis cardinalis*	A	1
	ESTRILDIDAE – Estrildid Finches		
Common Waxbill	*Estrilda astrild*	A	2
Scaly-breasted Munia	*Lonchura punctulata*	A	2

KEY TO TABLE 2

ST Status

A Alien – Introduced to the Hawaiian Islands by humans

EE Endangered Endemic – native and unique to the Hawaiian Islands, listed as an endangered species

Number of birds detected

Mammalian Survey

Only one terrestrial mammalian species was recorded on the site, a pair of Indian mongooses (*Herpestes javanicus auropunctatus*) were heard squabbling.

No mammalian species currently proposed for listing or listed under either the federal or State of Hawaiʻi endangered species statutes was recorded on this site (DLNR 2015; USFWS, n. d.).

Discussion

Botanical Resources

No botanical resources listed as threatened or endangered under either federal or State of Hawaiʻi endangered species statutes were recorded on the site (DLNR 2015; USFWS, n. d.).

Avian Resources

The findings of the avian survey are consistent with the highly developed and disturbed nature of the site. All avian species detected during this survey are common established alien species (Table 1).

Although not detected during this survey, the endangered Hawaiian Petrel (*Pterodroma sandwichensis*), Band-rumped Storm-Petrel (*Hydrobates castro*)[1], and the threatened endemic Newell's Shearwater (*Puffinus newelli*) may over-fly the general Project area between April and the end of November each year. The petrel and storm-petrel are listed as endangered, and the shearwater as threatened under both federal and State of Hawaiʻi endangered species statutes. The primary cause of mortality for these three ground-nesting seabirds is thought to be predation by alien mammalian species at the nesting colonies (USFWS, 1983; Simons and Hodges, 1998; Ainley et al., 2001). Collision with man-made structures is considered to be the second-most significant cause of mortality of these seabirds in Hawaiʻi. Nocturnally flying seabirds, especially fledglings on their way to sea in the summer and fall, can become disoriented by exterior lighting. When disoriented, seabirds can collide with man-made structures and, if not killed outright, dazed or injured birds become prey to feral mammals (Hadley, 1961; Telfer, 1979; Sincock, 1981; Reed et al., 1985; Telfer et al., 1987; Cooper and Day, 1998; Podolsky et al., 1998; Ainley et al., 2001; Hue et al., 2001; Day et al., 2003). Neither nesting colonies nor appropriate nesting habitat for any seabird species occurs within, or close to, the current Project site.

Mammalian Resources

The findings of the mammalian survey are consistent with the current habitat present within the site. The lone mammalian species detected is a common established alien species.

Although, no rodents were recorded during the course of this survey, it is likely that one or more of the other four established alien Murida*e* found on Hawaiʻi - European house mouse (*Mus musculus domesticus*), roof rat (*Rattus rattus*), brown rat (*Rattus norvegicus*), and black rat (*Rattus exulans hawaiiensis*) - use various resources found within the general project area on a seasonal basis. These human commensal species are drawn to areas of human habitation and activity. All of these introduced rodents are deleterious to native ecosystems and the native faunal species dependent on them.

No Hawaiian hoary bats were detected during this survey. It is within the realm of possibility that this species may use resources within the general project area on a seasonal basis, though there are no suitable bat roost trees within the project site.

[1] The American Ornithological Society has recently transferred all *Oceanodroma* storm-petrels to the genus *Hydrobates* (Cheeser et al. 2019).

Potential Impacts to Protected Species

Botanical Resources

No botanical resources listed as threatened or endangered under either federal or State of Hawaiʻi endangered species statutes were recorded on the site (DLNR 2015; USFWS, n. d.). Thus, the proposed action will not result in deleterious impacts to listed plant species.

Seabirds

The principal potential impact that the construction of the project poses to protected seabirds is the increased threat that birds will be downed after becoming disoriented by lights associated with the proposed action during the nesting season. The two main areas that outdoor lighting could pose a threat to these nocturnally flying seabirds is if; a) during construction, if it is deemed expedient, or necessary to conduct night-time construction activities – currently no nighttime construction is anticipated; b) following build-out, the potential use of streetlights or other exterior lighting during the seabird fledging season which runs from September 15th through December 15th. As no outdoor lighting will be installed as part of this project, and no nighttime construction is being proposed, it is not expected that the proposed action will result in deleterious impacts to protected seabirds.

Hawaiian Hawk

Hawaiian Hawk (*Buteo solitarius*) is an endangered species; they are present in the general project area (David, 2019). They are regularly seen soaring over the landscape in *mauka* Kona. There are no trees within the project site that are suitable as nest trees for this raptor. As there is no suitable nesting habitat for this species within the project disturbance area, it is not expected that the proposed action will result in deleterious impacts to Hawaiian Hawks.

Hawaiian hoary bat

The principal potential impact that construction could pose to bats is during the clearing and grubbing phase of the construction. The trimming or removal of foliage and/or trees within the construction areas may temporarily displace individual bats, which may use the vegetation as a roosting location. As bats use multiple roosts within their home territories, the potential disturbance resulting from the removal of the vegetation is likely to be minimal. During the pupping season, female carrying their pups may be less able to rapidly vacate a roost site while vegetation is cleared. Additionally, adult female bats sometimes leave their pups in the roost tree while they themselves forage, and very small pups may be unable to flee a tree that is being felled. Potential adverse effects from such disturbance can be avoided or minimized by not clearing woody vegetation taller than 4.6 meters (15-feet), between June 1 and September 15, the pupping season. As no trees or woody vegetation that is suitable bat roosting substrate will be removed as part of this action – it is not expected that the proposed action will result in deleterious impacts to Hawaiian hoary bats.

Critical Habitat

There is no federally delineated Critical Habitat for any avian or mammalian species on, or close to, the proposed project site. Thus, further modifications of habitat on the site will not result in impacts to federally designated Critical Habitat. There is no equivalent statute under state law.

Glossary

Alien – Introduced to Hawai‘i by humans
Commensal – Animals that share humans’ food and lodgings, such as rats and mice.
Endangered – Listed and protected under the Endangered Species Act of 1973, as amended (ESA) as an endangered species
Mauka – Upslope, towards the mountains
Nocturnal – Night-time, after dark
‘Ōpe‘ape‘a – Endemic endangered Hawaiian hoary bat (Lasiurus cinereus semotus)
Threatened – Listed and protected under the ESA as a threatened species

List of Acronyms

DLNR – Hawai‘i State Department of Land & Natural Resources
DWS - The County of Hawai’i’s Department of Water Supply
ESA – Endangered Species Act of 1973, as amended
GPM – Gallons per minute
HP – Horsepower
SCADA - Supervisory Control and Data Acquisition
USFWS – United State Fish & Wildlife Service

Literature Cited

Ainley, D. G, R. Podolsky, L. Deforest, G. Spencer, and N. Nur. 2001. The Status and Population Trends of the Newell's Shearwater on Kaua'i: Insights from Modeling, *in*: Scott, J. M, S. Conant, and C. Van Riper III (editors) *Evolution, Ecology, Conservation, and Management of Hawaiian Birds: A Vanishing Avifauna.* Studies in Avian Biology No. 22: Cooper's Ornithological Society, Allen Press, Lawrence, Kansas. (Pg. 108-123).

Chesser, R. T., K. J. Burns, C. Cicero, J. L. Dunn, A. W. Kratter, I. J. Lovette, P. C. Rasmussen, J. V. Remsen, Jr., D. F. Stotz, B. M. Winger, and K. Winker. 2018. *Check-List of North and Middle American Birds* (online). American Ornithological Society. http://checklist.aou.org/taxa

Chesser, R. T., K. J. Burns, C. Cicero, J. L. Dunn, A. W. Kratter, I. J. Lovette, P. C. Rasmussen, J. V. Remsen, Jr., D. F. Stotz, and K. Winker. 2019. Sixtieth Supplement to the *Check-list of North American Birds*. The Auk Ornithological Advances. Vo. 136:1-23.

Cooper, B. A and R. H. Day. 1998. Summer Behavior and Mortality of Dark-rumped Petrels and Newells' Shearwaters at Power Lines on Kauai. Colonial Waterbirds, 21 (1): 11-19.

David, R. E. 2019. Unpublished field notes – Island of Hawai'i: 1983-2019.

Day, R. H., B. Cooper, and T. C. Telfer. 2003. Decline of Townsend's (Newell's Shearwaters (*Puffinus auricularis newelli*) on Kauai, Hawaii. The The Auk 120: 669-679.

Hawaii Department of Land and Natural Resources (DLNR). 2015. Chapter 124. Indigenous Wildlife, Endangered, Injurious Wildlife, Introduced Wild Birds, and Introduced Wildlife. Department of Land and Natural Resources. State of Hawaii. Administrative Rule under Title 13. Subtitle 5, Part 2, dated February 17, 2015.

Hadley, T. H. 1961. Shearwater calamity on Kauai. Elepaio 21:60.

Hue, D., C. Glidden, J. Lippert, L. Schnell, J. MacIvor and J. Meisler. 2001. Habitat Use and Limiting Factors in a Population of Hawaiian Dark-rumped Petrels on Mauna Loa, Hawai'i. , *in:* : Scott, J. M, S. Conant, and C. Van Riper III (editors) *Evolution, Ecology, Conservation, and Management of Hawaiian Birds: A Vanishing Avifauna*. Studies in Avian Biology No. 22. Cooper's Ornithological Society, Allen Press, Lawrence, Kansas (Pg. 234-242).

Podolsky, R., D.G. Ainley, G. Spencer, L. de Forest, and N. Nur. 1998. "Mortality of Newell's Shearwaters Caused by Collisions with Urban Structures on Kaua'i". Colonial Waterbirds 21:20-34.

Reed, J. R., J. L Sincock, and J. P. Hailman 1985. Light Attraction in Endangered Procellariform Birds: Reduction by Shielding Upward Radiation. The Auk 102: 377-383.

Simons, T. R., and C. N. Hodges. 1998. Dark-rumped Petrel (*Pterodroma phaeopygia*). *In* A. Poole and F. Gill (editors). The Birds of North America, No. 345. The Academy of Natural Sciences, Philadelphia, PA. and the American Ornithologists Union, Washington, D.C.

Sincock, J. L. 1981. Saving the Newell ʻ s Shearwater. Pages 76-78 in Proceedings of the Hawaii Forestry and Wildllife Conference, 2-4 October 1980. Department of Land and Natural Resources, State of Hawaii, Honolulu.

Staples, G. W. and D. R. Herbst. 2005. *A Tropical Garden Flora. Plants Cultivated in the Hawaiian Islands and other Tropical Places*. Bishop Museum, Honolulu. 908 pp.

Telfer, T. C. 1979. Successful Newell's Shearwater Salvage on Kauai. ʻElepaio 39:71

Telfer, T. C. , J. L. Sincock, G. V. Byrd, and J. R. Reed. 1987. Attraction of Hawaiian seabirds to lights: Conservation efforts and effects of moon phase. Wildlife Society Bulletin 15:406-413.

U.S. Fish & Wildlife Service (USFWS) 1983. Hawaiian Dark-Rumped Petrel & Newell's Manx Shearwater Recovery Plan. USFWS, Portland, Oregon. February 1983.

_____. undated websites (nd). USFWS Endangered Species. Available online at URL: https://www.fws.gov/endangered/; Last visited on February 5, 2019 and Environmental Conservation Online System (ECOS), online at URL: https://ecos.fws.gov/ecp/species-reports; last visited on February 5, 2019.

Wagner, W. L., D. R. Herbst and S.H. Sohmer. 1990. *Manual of the Flowering Plants of Hawaiʻi*: Volume I and II. Bishop Museum Special Publication 83. University of Hawaiʻi Press. 1853 pp.

Wagner, W. L., and D. R. Herbst. 1999. Supplement to the Manual of the flowering plants of Hawaiʻi, pp. 1855-1918. In: Wagner, W.L., D.R. Herbst, and S.H. Sohmer, *Manual of the flowering plants of Hawaiʻi*. Revised edition. 2 vols. University of Hawaii Press and B.P. Bishop Museum.

Wilson, D.E., and D. M. Reeder, (Editors), 2005. *Mammal species of the world: a taxonomic and geographic reference.* 3rd edition. 2 vols. John Hopkins University Press. Baltimore, Maryland. 2142 pp.

APPENDIX B PRIOR ARCHAEOLOGICAL STUDIES AND CORRESPONDENCE

PHRI **Paul H. Rosendahl, Ph.D., Inc.**
Archaeological • Historical • Cultural Resource Management Studies & Services
224 Waianuenue 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 2282-092402 September 2002

CULTURAL IMPACT ASSESSMENT FOR DRAFT ENVIRONMENTAL ASSESSMENT

WAI'AHA PRODUCTION WELL AND STORAGE TANK PROJECT

Land of Wai'aha 1st and 2nd, North Kona District
Island of Hawai'i (TMK: (3) 7-5-14:16; 7-5-15:08,15)

Prepared by
Paul H. Rosendahl, Ph.D.
for
Planning Solutions, Inc.

The purpose of this cultural impact assessment is 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 Hawaii. This inclusiveness, however, is generally understated, and the emphasis—as indicated by a background review (PHRI 1998:5-8) of the cultural impact assessment issue, and the intent and evolution of both the legislative action and the guidelines—is clearly meant to be primarily upon aspects of Native Hawaiian culture—particularly traditional and customary access and use rights.

The scope of work and methodology for the Wai'aha Production Well and Storage Tank 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 Wai'aha Production Well and Storage Tank 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, 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 reconnaissance 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 review process (i.e., from Draft to Final Environmental Assessment).

On September 9, 2002, PHRI Principal Archaeologist Dr. Paul H. Rosendahl and PHRI Supervisory Archaeologist Alan B. Corbin, M.A., conducted an archaeological reconnaissance survey of the 2.827-acre project site. The pedestrian inspection of the project site revealed that–with the exception of a heavily overgrown small area of steep slope on the seaward side of the project site, immediately inland and above the paved access road–the entire project site had been altered and extensively modified during the middle of the 20th century by the construction of a water treatment facility and several large water storage tanks. No archaeological resources of any kind were identified. Furthermore, those small portions of the project site not occupied by existing DWS facilities (i.e., water tanks, abandoned water treatment facility, etc.) are overgrown with vegetation consisting of a variety of historically introduced species, principally including fig (Ficus sp.), guava (Psidium sp.), Christmas-berry (Schinus terebinthifolius Raddi), and Indian ginger (Hedychium sp.) No surviving evidence of any prehistoric or early historic period occupation or use of the project area was encountered, nor was any evidence of any potentially significant cultural properties, features, natural resources, practices, or beliefs within the project site.

The proposed Wai‘aha Production Well and Storage Tank project site has been extensively modified and developed during historic times, as indicated by (a) the existing modified condition of the property, and (b) the negative findings of the archaeological reconnaissance survey which yielded no evidence of the presence of any potentially significant cultural resources–properties, features, natural resources, practices, or beliefs—either within or related to the project site. Furthermore, there is no indication of any kind that 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.

Based on the negative results of the recently completed archaeological reconnaissance survey and the absence of any evidence that the project area is currently being used for legitimate traditional cultural purposes by either Native Hawaiian cultural practitioners or individuals of any other cultural affiliation, it can be concluded that the proposed Wai‘aha Production Well Project should have no significant effects—much less any adverse impacts— upon any cultural resources, and that no mitigation measures of any kind are needed.

REFERENCES CITED

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.)
1998 Cultural Impact Assessment Study: Identification of Native Hawaiian Cultural Practices Associated with Wa’ahila Ridge. HECO Kamoku-Pukele 138-kv Transmission Line Project. Lands of Manoa, Palolo, and Waikiki; Honolulu (Kona) District; Island of O’ahu. Technical Report for Environmental Impact Study. PHRI Report 1872-091498. Prepared for Hawaiian Electric Company, Inc. (November)

106 - N2

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII

STATE OF HAWAII

DEPARTMENT OF LAND AND NATURAL RESOURCES

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

GILBERT S. COLOMA-AGARAN, CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCES MANAGEMENT

DEPUTIES
ERIC T. HIRANO
LINNEL NISHIOKA

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND RESOURCES ENFORCEMENT
CONVEYANCES
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
LAND
STATE PARKS

October 9, 2002

Mr. Charles Morgan
Planning Solutions
1210 Auahi Street
Honolulu, Hawaii 96814

LOG NO: 30752
DOC NO: 209MM12

Dear Mr. Morgan:

SUBJECT: **Wai`aha Well and Reservoir Draft Environmental Assessment: Impacts on Historic Resources Land of Waiaha, North Kona, Island of Hawaii**
TMK (3) 7-5-14:26

This is in response to your September 12, 2002 inquiry regarding the County of Hawaii Department of Water Supply proposal to convert an existing exploratory well to production and to construct a 2-million gallon storage tank on the subject property. We understand that the project would also include removal of two old storage tanks and other obsolete equipment.

A site visit was conducted on Tuesday, September 16 by MaryAnne B. Maigret and Jeanne Knapp, Assistant Archaeologists for Hawaii Island. They agree with Dr. Paul Rosendahl's assessment that due to previous extensive disturbance of the site, no archaeological features are present. Therefore, the proposed project will have "no effect" on historic sites.

If you have any further questions, please feel free to contact Dr. Pat McCoy, Archaeologist for Hawaii Island at (808) 692-8029, or MaryAnne B. Maigret, Assistant Archaeologist, at (808) 933-0482.

Aloha,

GILBERT COLOMA-AGARAN
State Historic Preservation Officer

MM:ak