DEPARTMENT OF PLANNING AND PERMITTING
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET, 7TH FLOOR • HONOLULU, HAWAII 96813
PHONE: (808) 768-8000 • FAX: (808) 768-6041
DEPT. WEB SITE: www.honolulu.gov/dpp

RICK BLANGIARDI
MAYOR

DAWN TAKEUCHI APUNA
DIRECTOR DESIGNATE

JIRO A. SUMADA
DEPUTY DIRECTOR

January 23, 2022 2022/ED-29(ZS)

Mr. Scott Glenn
Director
State of Hawaii Office of Planning and Sustainable Development
Environmental Review Program
235 South Beretania Street, Room 702
Honolulu, Hawaii 96813

Dear Ms. Evans:

SUBJECT: Anticipated Finding of No Significant Impact
Hawaii Revised Statutes Chapter 343
Draft Environmental Assessment (EA) for Ono Vista Condominium
Wastewater Treatment System Replacement
68-024 Apuhihi Street - Waialua
Tax Map Key 6-8-011: 058

The Ono Vista Condominium Association of Apartment Owners is proposing to replace an existing wastewater treatment system in Waialua. The Department of Planning and Permitting is the approving agency for the action. We have considered every phase of the proposed action, the expected impacts, and the proposed mitigation measures; and we anticipate a finding of no significant impact.

We have uploaded electronic copies of this letter and the draft EA to your online submittal site. The Applicant's agent (who will be provided a copy of this letter) must transmit one paper copy of the draft EA and this determination to the nearest State Library (Waialua Public Library) and to the Hawaii Documents Center (at the Hawaii State Public Library) in accordance with Hawaii Administrative Rules Section 11-200.1-5(e), and must provide documentation of compliance with this requirement.

Should you have any questions, please contact Zack Stoddard, of our staff, at (808) 768-8019 or via email zachary.stoddard@honolulu.gov.

Very truly yours,

for Dawn Takeuchi Apuna
Director Designate

cc: Ono Vista AOAO
Environmental Science International (Stephanie Davis)

From: webmaster@hawaii.gov
Sent: Friday, January 27, 2023 1:48 PM
To: DBEDT OPSD Environmental Review Program
Subject: New online submission for The Environmental Notice

Follow Up Flag: Follow up
Flag Status: Flagged

Action Name
Replacement Wastewater System for Ono Vista Condominiums
Type of Document/Determination
Draft environmental assessment and anticipated finding of no significant impact (DEA-AFNSI)
HRS §343-5(a) Trigger(s)
• (9)(A) Propose any wastewater treatment unit, except an individual wastewater system or a wastewater treatment unit serving fewer than fifty single-family dwellings or the equivalent
Judicial district
Waialua, Oʻahu
Tax Map Key(s) (TMK(s))
(1) 6-8-011:058
Action type
Applicant
Other required permits and approvals
Major Special Management Area Use Permit, Underground Injection Control Permit, HFD Tank Installation Permit, Building and Grading Permits
Discretionary consent required
Major Special Management Area Use Permit
Approving agency
City and County of Honolulu Department of Planning and Permitting
Agency contact name
Zack Stoddard
Agency contact email (for info about the action)
zachary.stoddard@honolulu.gov
Agency contact phone
(808) 768-8019
Agency address
650 South King Street 7th Floor Honolulu, HI 96813 United States Map It
Applicant
Ono Vista AOAO

Applicant contact name

Ginger Gertsch

Applicant contact email

sdavis@esciencei.com

Applicant contact phone

(808) 261-0740

Applicant address

737 Bishop Street
Suite 3100
Honolulu, HI 96713
United States
Map It

Was this submittal prepared by a consultant?

Yes

Consultant

Environmental Science International

Consultant contact name

Stephanie Davis

Consultant contact email

sdavis@esciencei.com

Consultant contact phone

(808) 261-0740

Consultant address

354 Uluniu Street
Suite 304
Kailua, HI 96734
United States
Map It

Action summary

The Ono Vista Condominiums Association of Apartment Owners (AOAO) is proposing to replace their existing wastewater treatment system. The existing system was installed in the 1970s and is beyond the typical service life of 40 years. The existing injection wells are limited in capacity, so wastewater is currently pumped and hauled offsite multiple times a week. An environmental assessment is required for proposing a wastewater system serving at least 50 single-family dwellings or the equivalent, and is also required as a prerequisite to applying for a Major Special Management Area Use Permit.

Reasons supporting determination

The Department of Planning and Permitting has considered every phase of the proposed action, the expected impacts, and the proposed mitigation measures, and we anticipate a finding of no significant impact.

Attached documents (signed agency letter & EA/EIS)

- 122067-Ono-Vista-WWTW_Draft-EA_121522_Submitted-to-DPP.pdf
- unnamed-file.DOC.pdf

Action location map

- OneDrive_2023-01-27.zip

Authorized individual

Zack Stoddard

Authorization

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

Draft
ENVIRONMENTAL ASSESSMENT

In Support of a Special Management Area Use Permit Application

Ono Vista Condominiums
Wastewater Treatment System Replacement
68-024 Apuhihi Street
Waialua, HI 96791

TMK No. (1) 6-8-011:058

Environmental Science International, Inc.
354 Uluniu Street, Suite 304
Kailua, Hawaii 96734
(808) 261-0740

Draft
ENVIRONMENTAL ASSESSMENT

In Support of a Special Management Area Use Permit Application

Ono Vista Condominiums
Wastewater Treatment System Replacement
68-024 Apuhihi Street
Waialua, HI 96791

TMK No. (1) 6-8-011:058

Prepared for:

Ono Vista Condominiums AOAO
68-024 Apuhihi Street
Waialua, HI 96791

Prepared by:

Environmental Science International, Inc.
354 Uluniu Street, Suite 304
Kailua, Hawaii 96734

Project No. 122067

December 15, 2022

PROJECT SUMMARY

Project Name:	**Ono Vista Condominiums Wastewater Treatment System Replacement**
Applicant/Fee Owner:	**Ono Vista Condominiums Association of Apartment Owners [AOAO]** **Point of Contact: Ginger Gertsch** **Community Association Manager – Oahu** **Pacific Guardian Center – Mauka Tower** **737 Bishop Street, Suite 3100** **Honolulu, HI 96713** **(808) 260-6003**
Approving Agency:	**City and County of Honolulu** **Department of Planning and Permitting** **650 South King Street, 7th Floor** **Honolulu, Hawaii 96813**
Tax Map Key Parcels and Roads Potentially Affected:	**(1) 6-8-011:058 (Ono Vista Condominiums), 1.1859 acres** **Waialua Beach Road, Apuhihi Street, Au Street**
State Land Use District:	**Urban**
Existing County Zoning:	**A-2 Medium Density Apartment**
City Development Plan:	**North Shore Sustainable Communities Plan**
Special Designation:	**Special Management Area [SMA]**
Anticipated Determination:	**Finding of No Significant Impact [FONSI]**

EXECUTIVE SUMMARY

This EA was prepared on behalf of the Ono Vista Condominiums AOAO for replacement of the wastewater treatment system at the Ono Vista Condominiums, referred to as the Property. The Property is located at 68-024 Apuhihi Street, Waialua, Hawaii. The Property is identified as TMK No. (1) 6-8-011:058. The proposed project consists of replacing the existing wastewater treatment system with a new WWTW that will be connected to the existing injection wells disposal system. The purpose of the EA is to determine whether or not the project has the potential to cause significant environmental impacts. The EA was conducted in accordance with the requirements of the Hawaii EIS Law (HRS Chapter 343 and HAR Chapter 11-200.1).

The applicant for construction of the WWTW is the Ono Vista Condominiums AOAO. The approving agency for the proposed activity is the City and County of Honolulu DPP Land Use Permits Division, which is responsible for administering the Land Use Ordinance and other regulations pertaining to land use within the City. The EA is necessary because the project is within the SMA and requires an SMA Use Permit. In accordance with ROH Chapter 25, an EA and FONSI are required prior to applying for the SMA Use Permit.

The Property is zoned as *Urban* by the State and as *A-2 Medium Density Apartment* by the County and is located within the North Shore District of Oahu. The area is developed with condominiums and single-family residences. The Property is below the UIC line, at a surface elevation of approximately 4 feet amsl. The Property is located approximately 300 feet south of the Pacific Ocean. Locally, the topographic surface gradient is relatively flat.

For wastewater treatment, Ono Vista Condominiums currently utilizes a system consisting of an influent lift (pump) station, grease trap/preloader, sludge and aeration tank, clarifier tank, and chlorine contact chamber. Treated effluent is then discharged by gravity into three (3) active injection wells. The existing wastewater treatment system was installed in the 1970s and is beyond the typical service life of 40 years. The injection wells are limited in capacity and operators have resorted to contracting a pumping company to haul wastewater offsite multiple times a week.

The proposed WWTW will consist of the following:

- Existing Wet Well/Lift Station
- Preloader/Equalization Basin
- Primary Treatment Tank/System
    - Integrated Clarifier Tank
    - Integrated Sludge Holding Tank
    - Electromagnetic Flowmeter
- UV Disinfection System
- Multiple Injection Well Disposal System (one (1) primary and one (1) 100% backup well and a third well for redundancy)

The new WWTW will be constructed in the current location of the existing wastewater treatment system, in the central portion of the Property. The system was designed based on the total amount of wastewater generated by Ono Vista Condominium's residents. The new WWTW is designed to accommodate a design maximum daily flow of 22,400 gpd and 1.5 factor for safety, which is a total of 35,000 gpd. The existing permitted injection wells will be upgraded and used for effluent disposal.

Most of the impacts for the proposed project are expected to be short-term and related to construction activities, such as storm water, noise, dust, and traffic. Efforts to minimize such impacts will be taken to the extent practicable. Long-term impacts are improved environmental conditions related to upgraded wastewater treatment, including a reduction in potential wastewater overflows.

Findings and Conclusions

Based on the analysis of information in this EA, it has been determined that the proposed WWTW will have no significant impacts to the natural, built, or social environment. The results of the EA were compared with the significance criteria established by the State under HRS 343 (HAR Chapter 11-200.1-13). It is concluded that the construction and operation of the proposed WWTW do not meet any of the thirteen criteria. By not meeting these criteria, it is appropriate that the proposed project be issued a FONSI and that an EIS not be required.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

APPENDICES

LIST OF ACRONYMS AND ABBREVIATIONS

Acronym	Definition
amsl	above mean sea level
AOAO	Association of Apartment Owners
BFE	base flood elevation
BMP	Best Management Practice
CRM	Cement rubble masonry
CWB	Clean Water Branch
CZM	Coastal Zone Management
dBA	A-weighted decibel
DOH	State of Hawaii Department of Health
DPP	Department of Planning and Permitting
EA	Environmental Assessment
EIS	Environmental Impact Statement
ERP	Environmental Review Program
ESI	Environmental Science International, Inc.
FONSI	Finding of No Significant Impact
GIS	Geographic Information System
gpd	gallons per day
HAR	Hawaii Administrative Rules
HECO	Hawaiian Electric Company
HRS	Hawaii Revised Statutes
iPaC	Information for Planning and Consultation
LSB	Land Study Bureau
LUO	Land Use Ordinance
mg/L	milligram per liter
MBBR	Moving Bed Biofilm Reactor
MBR	Membrane Bioreactors
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
NSSCP	North Shore Sustainable Community Plan
O&M	Operation and Maintenance
OEQC	Office of Environmental Quality Control
ROH	Revised Ordinances of Honolulu
SAAQS	State Ambient Air Quality Standards
SDWB	Safe Drinking Water Branch
SHPD	State Historic Preservation Division
SMA	Special Management Area
TMK	Tax Map Key
TSS	total suspended solids
UIC	Underground Injection Control
USACE	U.S. Army Corp of Engineers
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service

SECTION 1 INTRODUCTION

This report describes the Environmental Assessment [EA] performed by Environmental Science International, Inc. [ESI], on behalf of the Ono Vista Condominiums Association of Apartment Owners [AOAO] for replacement of the wastewater treatment system at the Ono Vista Condominiums, which is located at 68-024 Apuhihi Street in Waialua, Hawaii, hereinafter referred to as the "Property" (Figure 1). The Property is owned by Ono Vista and is identified by the City and County of Honolulu Property Assessment Division as Tax Map Key [TMK] No. (1) 6-8-011:058 (Figure 2). It is located on land zoned as *Urba*n by the State of Hawaii (Office of Planning, 2022) (Figure 3a). Under the City and County of Honolulu's Land Use Ordinance [LUO], the Property is zoned as *A-2 Medium Density Apartment* (Figure 3b).

1.1 PURPOSE

This assessment was undertaken to determine whether the project has the potential to cause significant environmental impacts. The assessment was conducted in accordance with the requirements of the Hawaii Environmental Impact Statement [EIS] Law, which are contained in Hawaii Revised Statutes [HRS] Chapter 343 (HRS 343; State of Hawaii Department of Health [DOH], 1974a) and in Hawaii Administrative Rules [HAR] Title 11, Chapter 200.1 (HAR 11-200.1; DOH, 2019b).

1.2 GENERAL INFORMATION

The replacement project consists of replacing the existing wastewater treatment system with a new wastewater treatment works [WWTW] that will be connected to the existing permitted injection wells disposal system. The approving agency for the proposed activity is the City and County of Honolulu Department of Planning and Permitting [DPP] Land Use Permits Division, which is responsible for administering the LUO and other regulations pertaining to land use within the City. The EA is necessary because the project is located within the Special Management Area [SMA] and requires an SMA Use Permit. An EA and Finding of No Significant Impact [FONSI] are required prior to applying for the SMA Use Permit.

1.3 PROPERTY DESCRIPTION

Ono Vista Condominiums consists of two residential condominium buildings, containing 32 living units per building. The buildings were built in 1973 and each building includes five floors. The two buildings (Ono Vista West and Ono Vista East) are on the east and west of a shared parking lot and pool (Figure 4). Photographs depicting the current site conditions are provided in Appendix A.

The Property occupies 1.19 acres of land on the northern side of Oahu, and it lies within the SMA (Figure 4). The Property is bordered by residential properties on the north and south sides, to the west is Apuhihi Street and to the east is Au Street (Figures 2 and 4). Agricultural land is located to the south across Waialua Beach Road. A site plan depicting the layout of the Property is provided in Figures 5a and 5b.

1.4 PROPERTY LOCATION AND SETTING

The Property is located at latitude 21°35'11"N, longitude 158°08'21"W, within a residential, mixed-use area in the Waialua District of Oahu. The area is developed with condominiums and single-family residences. The Property is below the underground injection control [UIC] line, on the northern coast of Oahu, at a surface elevation of approximately 4 feet above mean sea level [amsl] (Figure 6). The Property is approximately 300 feet from the Pacific Ocean to the north. Locally, the topographic surface gradient is relatively flat.

The Property is located in flood hazard area Zone VE (Office of Planning, 2022) (Figure 10). This area is subject to inundation by the 1% annual chance flood event, with increased risk due to storm waves. Flood Zone VE is a Special Flood Hazard Area where homeowners are required to buy flood insurance if they have a federally backed mortgage. More information on the flood hazard zone is provided in Section 4.6.2.2.

1.5 PROJECT BACKGROUND

For wastewater treatment, Ono Vista Condominiums currently utilizes a system consisting of an influent lift (pump) station, grease trap/preloader, sludge and aeration tank, clarifier tank, and chlorine contact chamber, before conveying treated effluent to three injection wells located in the Ono Vista East parking lot. The current system was installed in the 1970s and is beyond the typical service life of 40 years. The injection wells are limited in capacity and operators have resorted to contracting a pumping company to haul wastewater offsite multiple times a week. Ono Vista Condominiums initiated this project to evaluate various alternatives to upgrade/replace its existing wastewater treatment system. The recommendation is to replace the existing wastewater treatment system with a new, larger and robust WWTW and use the existing injection wells disposal system (after upgrading the wells).

1.6 DESCRIPTION OF EXISTING FACILITY

According to the DOH Wastewater Branch records, Ono Vista Condominiums generates 22,400 gallons per day [gpd] of average daily flow of domestic wastewater by residents of the Property.

The existing wastewater system receives influent from 6-inch sewer laterals from each building, and wastewater is collected by an existing 6-foot diameter wet well equipped with dual submersible lift pumps (i.e., lift station). The wet well/lift station functions as a trash tank for preliminary treatment of the wastewater influent before it is pumped to a grease trap/preloader, then flows into a sludge and aeration tank, followed by the clarifier and chlorine contact tank. Treated, chlorinated effluent is then discharged into three injection wells in the east parking lot. The existing wastewater treatment system and injection wells are near the Property's pool, which is in the middle of the property (Figures 5a and 5b).

The three existing injection wells were permitted through the DOH Safe Drinking Water Branch [SDWB] UIC Program, Permit No. UO-1305. Each injection well is a 4-inch diameter shallow injection well (approximately 29 to 50 feet deep) that operates under gravity head. Effluent data shows that treated effluent from the existing wastewater treatment system complies with UIC permit effluent standards (<

60 milligrams per liter [mg/L] biochemical oxygen demand and total suspended solids [TSS]). The most recent UIC Injection Well Status Report is provided in Appendix C.

1.7 AGENCIES CONTACTED DURING THE PRE-CONSULTATION PROCESS

Pre-consultation letters were mailed to the following agencies in October 2022 to request initial comments on the proposed project:

City and County of Honolulu

- DPP*
- Board of Water Supply*
- Department of Environmental Services
- Office of Climate Change, Sustainability and Resiliency
- Honolulu Fire Department*
- Honolulu Police Department
- Department of Emergency Management
- Department of Transportation Services
- Department of Design and Construction*
- Council Member Heidi Tsuneyoshi - Honolulu City Council District 2
- Office of the Mayor

State of Hawaii

- DOH, Environmental Management Division
  - o Clean Water Branch*
  - o Safe Drinking Water Branch
  - o Wastewater Branch
  - o Clean Air Branch
- Department of Land and Natural Resources
  - o Division of Aquatic Resources*
  - o Engineering Division*
  - o Land Division – Oahu District
  - o Division of Forestry and Wildlife*
  - o Office of Conservation and Coastal Lands
  - o State Historic Preservation Division [SHPD]
  - o Commission on Water Resources Management
- Office of Hawaiian Affairs
- Office of Planning and Sustainable Development*
- Department of Transportation, Highways Division

Federal Agencies

- U.S. Fish and Wildlife Service [USFWS]*
- U.S. Army Corps of Engineers
- National Marine Fisheries Service
- U.S. Department of Agriculture [USDA]

Community Organizations

- North Shore Neighborhood Board No. 27*

Responses/comments were received from the agencies marked with an asterisk (*). Copies of their formal letters are included in Appendix D. Comments received from the agencies were either addressed during preparation of the Draft EA or will be addressed during the design and permitting phases of the project. Copies of the Draft EA will be distributed to the same agencies and organizations listed above to provide an opportunity for their review and comment. A copy will also be provided to the Waialua Public Library for public review and comment. Additional copies will be distributed to other agencies and organizations if requested.

SECTION 2 PROPOSED PROJECT DESCRIPTION

The proposed WWTW will consist of the following:

- Existing Wet Well/Lift Station
- Preloader/Equalization Basin
- Primary Treatment Tank/System
    - Integrated Clarifier Tank
    - Integrated Sludge Holding Tank
    - Electromagnetic Flowmeter
- UV Disinfection System
- Multiple Injection Well Disposal System
    - One (1) Primary Deep Injection Well
    - One (1) 100% Backup Well
    - One (1) Well for Redundancy (A primary backup and the other for redundancy)

The new WWTW components will all be constructed in the current location of the existing wastewater treatment system (Figures 5a and 5b). The system was designed based on the total amount of wastewater generated by Ono Vista Condominium's residents. The system will be designed to accommodate a design maximum daily flow of 22,400 gpd and 1.5 factor for safety, which is a total of 35,000 gpd. The wastewater computations are provided in the *Basis of Design and Engineering Report* included as Appendix B.

The new preloader/equalization tank will be an 8,000 gallon two-compartment fiber reinforced plastic [FRP] tank with dual submersible pumps. The sediments/solids will settle in the first compartment of the tank and the second compartment will act as an equalization basin for flow equalization. The wastewater will then be pumped directly to the Kubota Technologies Johkasou System.

The Kubota Johkasou Package Treatment System incorporates the use of membrane bioreactors [MBRs] and by immersing membrane cartridges in an activated sludge basin, MBRs combine membrane technology with the biological process. High-standard treatment is completed in a single basin, replacing the traditional clarifier and filters required for tertiary treatment. Microorganisms are captured by the membranes' pore apertures, which range from 0.01 to 0.1 microns, lowering their concentration in the effluent. The membrane sheet for the Kubota Johkasou system is made from chlorinated polyethylene and features high porosity to enable high flow and is thicker than other membranes to provide durability. The Kubota Johkasou system will include a sludge holding tank at the end of the multi-stage process. The Kubota treatment system meets the requirements of HAR Chapter 11-62, Subchapter 2 WWTW. Effluent from the Kubota system will be treated to a maximum of 30 mg/L in Biochemical Oxygen Demand, 5-day concentration and 30 mg/L in TSS. Manufacturer's literature for the Kubota Johkasou system is provided as an attachment in Appendix B.

The existing wet well and preloader will continue to separate inorganics as well as solids from the process flow. A regular recurring schedule for pumping of the wet well and sludge holding tank is recommended.

Adjacent to the recreation building, a utility enclosure will be constructed to include a new emergency generator (to replace the existing generator) which operates the blowers. The enclosure will be a non-occupied structure and will house the primary/standby blowers and the WWTW control panels. The existing 6-foot-high wooden fence with a locking access door will be retained and reinstalled around the perimeter of the WWTW tanks to limit access to the public.

Water conservation improvements, such as installation of low flow water fixtures and toilets in several units, have already been initiated by the Ono Vista AOAO. These conservation improvements will continue to be implemented in the remaining units in conjunction with the proposed WWTP.

2.1 ELECTRICAL SUPPLY

The electrical service will be provided by Hawaiian Electric Company [HECO] through a branch circuit from the Ono Vista Condominiums Circuit. The electrical components of the new WWTW will be connected to the existing onsite 208-volt three phase electrical lines.

There will be a new diesel generator or equivalent equipment that will provide emergency power. The new generator will get its fuel from a separate fuel tank. The new generator will provide backup power to the WWTW blowers, and existing wet well/lift station.

2.2 WASTEWATER DISPOSAL AND SAMPLING

Based on an average daily flow of 22,400 gpd and an estimated 469 gallons of sludge produced a day, the sludge holding tank of 1,550 gallons of total volume can retain 5 days of sludge for the WWTW with a sludge concentration of 1.1%. Local pump companies will be contracted to extract and haul away sludge from the sludge holding tank to the nearest wastewater treatment plant.

There will be one (1) primary injection well (IW1), one (1) 100% backup well (IW2), and one (1) redundancy well (IW3). All three wells will be connected to the WWTW and all can be controlled using gate valves. Treatment system operators and technicians can easily test the effluent by taking wastewater samples via an access point included in all the injection wells. Per HAR Chapter 11-62 requirement (DOH, 2016), each injection well should be designed to handle the peak flow. The primary injection well is designed to accommodate the total daily flow of 22,400 gpd. The two backup wells are designed to provide 100% backup disposal. A 100% redundancy is required by HAR Chapter 11-62 (DOH, 2016).

The DOH Safe Drinking Water Branch UIC Program has granted “approval to construct” for upgrading of the three existing injection wells by redrilling. A copy of the approval is provided in Appendix E.

2.3 ESTIMATED COST AND TIMING PHASE OF CONSTRUCTION

The estimated cost for the proposed WWTW is $1.5 to 2 million (depending on contractor costs), including professional services. The source of funding for the project will be provided through loans obtained by the Ono Vista AOAO and a supplemental grant through the USDA Water & Environmental Program (application in progress). The proposed project will take approximately eight months after completion of the EA and receipt of the SMA Use Permit and all agency approvals.

2.4 ALTERNATIVES TO THE PROPOSED PROJECT

2.4.1 No Action

The “no action” alternative would consist of leaving the existing wastewater treatment system as is. However, as described in Section 1.5, the existing system is beyond its useful life and not functioning is intended, which could lead to a risk of future wastewater spills and impaired water quality. If no upgrades are made to the existing wastewater treatment system to replace ageing components, nearby communities, water quality, and public health in this area will be impacted. This alternative was not selected due to the negative impacts.

2.4.2 Postponed Action

The “postponed action” alternative would consist of postponing replacement of the existing wastewater treatment system until a future date. As with the “no action” alternative, this would increase the risk of future wastewater spills and resulting environmental and public health problems. Postponing construction of the project could result in fines from the DOH; therefore, this is not a feasible option.

2.4.3 Alternative Wastewater Treatment Systems

The following two alternative, available wastewater treatment systems were evaluated, and a comparative analysis was performed prior to the selection of the proposed WWTW. For comparison purposes, the estimated cost for the proposed Kubota MBR wastewater treatment system is $635,000.

1. Smith & Loveless FAST® fixed-film, aerobic wastewater treatment system (fixed bed biological reactor). The system consists of an above grade pre-engineered, factory-built packaged treatment plant, approximately 40 feet long by 12 feet wide by 9 feet high. The FAST® media creates a high surface area-to-volume ratio, which, combined with internal settling zones, maintains contestant bacterial growth during low-flow and peak usage. Cost for parts only is estimated at $1,235,000. This system was not selected due to the prohibitive capital costs, building footprint flexibility, and O&M complexity.

2. World Water Works Moving Bed Biofilm Reactor (MBBR™) fixed-film, aerobic wastewater treatment system. The MBBR™ system consists of a tank with submerged, but freely moving, specially designed bio-media, an aeration manifold providing both dissolved oxygen and mixing, and a sieve to retain the bio-media in the tank. The tank is approximately 37.5 feet long by 8

feet wide by 8 feet high. Cost for parts only is estimated at $1,430,000. This alternative was not selected due to the prohibitive capital costs and O&M life cycle costs.

2.4.4 Alternative Onsite or Offsite Locations

Due to the existing condominium buildings, pool, and parking lots, there is insufficient space for an alternative onsite location for the proposed WWTW. The adjacent properties are developed with condominiums and single-family residences; therefore, no offsite locations were considered.

SECTION 3 PLANS, PERMITS, POLICIES, AND CONTROLS

The proposed project is in compliance with required government and community plans, permits, policies, and controls. These are described below.

3.1 ENVIRONMENTAL POLICIES, PLANS, PERMITS, AND CONTROLS

3.1.1 Environmental Review Policy

The requirements for performing an EA are contained within the Hawaii EIS Law, which is set forth in HRS 343 (DOH, 1974a) and HAR Chapter 11-200.1 (DOH, 2019b). According to HRS 343, the purpose of the Hawaii EIS Law is to establish a system of environmental review to ensure that environmental concerns are considered in decisions made by the State of Hawaii. The intent of the law was to implement the requirements under the federal National Environmental Policy Act.

The Hawaii EIS Law is administered and regulated by the State of Hawaii Environmental Review Program [ERP], formerly known as the Office of Environmental Quality Control [OEQC]. The ERP oversees the implementation of these regulations in order to assess the environmental, social, and economic consequences of a proposed development project prior to allowing construction to begin. The Hawaii EIS Law ensures the public the right to participate in planning projects that may affect their communities. The OEQC has issued guidelines for the environmental review process (OEQC, 2012).

Nine types of actions trigger the environmental review process under the Hawaii EIS Law. The proposed WWTW is subject to an environmental review under HRS Section 343-5(a)(9)(A): Propose any wastewater treatment unit, except an individual wastewater system or a wastewater treatment unit serving fewer that fifty single-family dwellings or the equivalent." In addition, development within the SMA is subject to the regulations of Chapter 25, Revised Ordinances of Honolulu [ROH], related to the SMA. In accordance with Section 25-3.3(c)(1), "any proposed development within the special management area requiring a special management area use permit shall be subject to an assessment by the agency in accordance with the procedural steps set forth in HRS Chapter 343" (City and County of Honolulu, 2021a). The project is a wastewater treatment unit and also requires an SMA Use Permit; therefore, the project is subject to the requirements of the Hawaii EIS Law.

3.1.2 Project Consistency with City and County of Honolulu Department of Planning and Permitting Land Use Ordinance

The following discussion includes an analysis of the proposed project consistency with the applicable City and County of Honolulu LUO included in Chapter 21, ROH: *Land Use Ordinance*.

Article 3: Establishment of Zoning Districts and Zoning District Regulations

Section 21-3.80 of the ROH establishes the purpose and intent of the Residential Districts. The Property is zoned for A-2: medium density apartment use. According to ROH 21-3.80(c), "[t]he intent of the A-2 medium density apartment district is to provide areas for medium density and multifamily dwellings. It is intended primarily for concentrated urban areas where public services are centrally located and infrastructure capacities are adequate" (City and County of Honolulu, 2021a). The proposed WWTW

upgrades would not affect the existing residential unit density or land use at the Property, or within the surrounding area. Therefore, the proposed project would be consistent with ROH Section 21-3.80(c).

Section 21-3.80-1 of the ROH establishes apartment district uses and development standards. Table 21-3.3 establishes the apartment development standards. The proposed project would not include any changes to the existing lot area, lot width or depth, and would not include any changes to the existing yard sizes. The project would not include additional improvements that would result in a total building area greater than the maximum allowed building area for A-2 zoning included in Table 21-3.3 (40 percent of zoning lot). The proposed project would not exceed the allowable height, height setbacks, or maximum floor area ratio density established for A-2 zoning. Figure 5a shows how the proposed development components would comply with the provisions of the ROH Section 21-3 standards.

Article 4. General Development Standards

The proposed project would comply with applicable sections of ROH 21-4: General Development Standards. The proposed project components are planned to be sited within a fenced area within the Property (same location of existing wastewater treatment system), with the injection wells in the parking lot, and would not encroach into yard or street setbacks, or conflict with any landscaping requirements. All proposed structures would comply with the maximum height allowed under A-2 zoning. Figure 5a shows how the proposed development components would comply with the provisions of the ROH Section 21-4 standards.

Articles 5 through 8 of the ROH are not applicable to the proposed project.

Article 9. Special District Regulations

The Property is located in the SMA and flood hazard area Zone VE. This area is subject to inundation by the 1% annual chance flood event, with increased risk due to storm waves. Flood Zone VE is a Special Flood Hazard Area where homeowners are required to buy flood insurance if they have a federally backed mortgage. More information on the flood hazard zone is provided in Section 4.6.2.2. The permit application for the proposed project improvements will be submitted to DPP and reviewed for compliance with the flood hazard areas ordinance in accordance with ROH 21-9.10: Developments in Flood Hazard Areas.

3.1.3 Special Management Area

The SMA is administered and regulated by the City and County of Honolulu DPP. The requirements and regulations can be found in HRS 205A and Chapter 25, ROH. The purpose of these requirements is to regulate development along shorelines to avoid permanent losses of valuable resources and to ensure that access to publicly owned and publicly used beaches, recreational areas, and natural reserves is provided. As noted above, projects within the SMA must undergo the procedural steps set forth in HRS 343 prior to an SMA Use Permit being issued.

Ono Vista Condominiums is in the process of preparing an SMA major permit application for the proposed WWTW described in Section 2. The permit application will be submitted following acceptance of the Final EA and issuance of a FONSI.

3.1.3.1 Special Requirements Applicable to Shoreline Lots

Construction or activity on land within the shoreline area is subject to the regulations of Chapter 23, ROH, related to Shoreline Setbacks. In accordance with Section 23-1.2(b), "it is the specific purpose of this chapter to establish standards and to authorize the department of land utilization to adopt rules pursuant to HRS Chapter 91, which generally prohibit within the shoreline area any construction or activity which may adversely affect beach processes, public access along the shoreline, or shoreline open space" (City and County of Honolulu, 2021a). The shoreline setback waiver line established by Chapter 23, ROH is defined as 75 feet inland from the presumed shoreline. The WWTW system will be approximately 300 feet from the shoreline (see Figure 4). The project is not within 75 feet of the presumed shoreline and therefore meets the shoreline setback requirements.

In accordance with ROH Section 25-6.3(a), "All exterior lighting on a shoreline lot shall be shielded to reduce the possibility that seabirds and other marine life forms may become disoriented and harmed by the lighting. Shielded exterior lighting shall be implemented both during and after any construction work on a shoreline lot. Any wall-mounted exterior lighting on buildings on a shoreline lot shall be shielded by wall directors or other acceptable shielding, and all shielding shall be specified on building permit plans. Artificial light from exterior lighting fixtures, including, but not necessarily limited to floodlights, uplights, or spotlights used for decorative or aesthetic purposes on a shoreline lot shall be prohibited if the light directly illuminates or is directed to project across property boundaries toward the shoreline and/or ocean waters, except as may otherwise be permitted by HRS Section 205A-71(b)" (City and County of Honolulu, 2021a). All exterior lighting associated with the project will be shielded and will be indicated on building permit plans. No artificial light will be directed to travel across the property boundary toward the shoreline.

In accordance with ROH Section 25-6.3(b), "All landscaped areas, landscaping, and irrigation on or for any shoreline lot shall be contained and maintained within the property boundaries of the shoreline lot of origin, and shall under no circumstances extend: (1) seaward of the shoreline as depicted on the current shoreline survey for the shoreline lot; or, in the event there is no current shoreline survey for the lot, seaward of the presumed shoreline; and (2) into any adjoining beach access right-of-way, public or private" (City and County of Honolulu, 2021a). The project does not include landscaping near the shoreline or a beach access right-of-way.

3.1.4 Water Pollution Control

Water pollution control requirements and regulations governing the Property are administered and regulated by the DOH Clean Water Branch [CWB]. The requirements and regulations are contained in HAR Chapters 11-54 and 11-55 (DOH, 2014b, 2019a). The purpose of these regulations is to prevent the discharge of contaminants into the navigable waters of the United States or adjoining shorelines.

The Property and the planned construction activities meet the State's *Antidegradation Policy* (HAR Section 11-54-1.1), which states that "existing uses and the level of water quality necessary to protect the existing uses shall be maintained and protected." By "existing uses," the policy refers to the existing uses of the receiving State water. In addition, the Property and the planned construction activities comply with the State's water quality standards (HAR Chapter 11-54), and the planned construction

activities will not adversely impact water quality. The project does not require a Section 401 Water Quality Certification (Title 40 CFR §122.2; HAR Chapter 11-54).

In addition to State water pollution control requirements and regulations, the City and County of Honolulu Rules Relating to Water Quality apply to all Development and Land Disturbing Activities within the City and County of Honolulu and establish minimum requirements for the selection, design, implementation and maintenance of Best Management Practices [BMPs] to protect the Municipal Separate Storm Sewer System and Receiving Waters from Pollutants that are associated with land disturbance, surface hardening, and land use activities. The pollutants of concern addressed by these Rules include, but are not limited to, sediment, nutrients, trash, pathogens, pesticides, oil, grease, hazardous waste, toxic waste, metals, and organic compounds (City and County of Honolulu, 2018a).

The project will comply with the prevailing Rules Relating to Water Quality. Appropriate BMPs will be used during construction of the WWTW to prevent the discharge of the aforementioned pollutants of concern into coastal waters. Specific mitigation measures to prevent pollution and protect water quality are discussed in Section 4.2.2. The project site is not connected to the City's Municipal Separate Storm Sewer System.

3.1.4.1 Water Quality

Water quality in the State of Hawaii is under the oversight of the DOH CWB. According to the CWB (State of Hawaii CWB, 2022), its mission is as follows.

> "The mission of the CWB is to protect the public health of residents and tourists who recreate in and on Hawaii's coastal and inland water resources, and to also protect and restore inland and coastal waters for marine life and wildlife. The mission is to be accomplished through statewide coastal water surveillance and watershed-based environmental management through a combination of permit issuance, monitoring, enforcement, sponsorship of polluted runoff control projects, and public education."

The objectives of the CWB are as follows.

1. Control point source discharges by issuing the appropriate National Pollutant Discharge Elimination System [NPDES] permits to maintain the designated uses of State receiving waters.
2. Ensure that permitted activities under Section 404 of the Clean Water Act will not adversely impact the designated uses of the State receiving waters.
3. Identify impaired water bodies and restore them to their designated uses.
4. Ensure expeditious compliance with the State water pollution rules.
5. Control polluted runoff through public and private partnerships.
6. Improve water quality in priority watersheds.
7. Develop appropriate Water Quality Standards.

The CWB is particularly concerned with the beneficial uses of State waters. Some examples include the capturing and re-use of storm water runoff so that (1) important groundwater resources can be replenished, rather than having storm water discharge directly to the ocean, and (2) landscaping and crops can be irrigated, rather than using potable water resources for irrigation. Other examples include the re-use of greywater and the protection of coastal waters from contamination caused by non-point source runoff.

Construction of the proposed project will be in accordance with State and Federal water quality regulations. The proposed project will not change the impervious surface area at the Property and therefore will not cause an increase in runoff quantities. The injection wells associated with the proposed project are already permitted by the DOH SDWB (see Section 3.1.4.3).

3.1.4.2 Storm Water Associated With Construction Activity

The project will not disturb more than an acre of land and, therefore, does not require an NPDES permit for discharges of storm water associated with construction activity.

3.1.4.3 Drinking Water Sources

The protection of Hawaii's drinking water sources is under the oversight of the DOH SDWB. According to the SDWB (State of Hawaii SDWB, 2022), its mission is as follows.

> "The mission of the SDWB is to safeguard public health by protecting Hawaii's drinking water sources (surface water and groundwater) from contamination and assure that owners and operators of public water systems provide safe drinking water to the community. This mission is accomplished through the administration of the Safe Drinking Water Program, UIC Program, Groundwater Protection Program, and the Drinking Water State Revolving Fund."

The UIC program serves to protect the quality of Hawaii's underground sources of drinking water from chemical, physical, radioactive, and biological contamination that could originate from injection well activity. Underground injection wells are wells used for injecting water or other fluids into a groundwater aquifer. HAR Chapter 11-23 (DOH, 1992) provides conditions governing the location, construction, and operation of injection wells so that injected fluids do not migrate and pollute underground sources of drinking water.

The Property is located below (makai of) the UIC line, indicating that the underlying shallow aquifer is not considered a drinking water source. Approval from the SDWB's UIC program was obtained for installation and operation of the three existing injection wells associated with the proposed project (UIC permit No. UO-1305).

According to the Mink and Lau Aquifer Classification, the property is located on two aquifers. Both aquifers are classified on the *North* aquifer sector of the *Waialua* aquifer system. The two aquifers are both currently in use, the upper aquifer is of ecological importance and the lower aquifer is for drinking water, both are irreplaceable and have low salinity. The Property is not located within the *North-Central Oahu Basal Aquifer*.

3.1.5 Wastewater System

Wastewater system requirements and regulations are administered and regulated by the DOH Wastewater Branch. The requirements and regulations can be found in HAR Chapter 11-62 (DOH, 2016). The purpose of these regulations is to ensure that the use and disposal of wastewater and wastewater sludge do not contaminate or pollute valuable water resources, do not give rise to public nuisance, and do not become a hazard or potential hazard to public health, safety, and welfare. The proposed WWTW design plans and specifications must be reviewed and approved by the DOH Wastewater Branch prior to construction and must conform to applicable provisions of HAR Chapter 11-62.

3.1.6 Air Quality Standards

Air quality standards are administered and regulated by the DOH Clean Air Branch. The requirements and rules can be found in HAR Chapters 11-59 (DOH, 2001) and 11-60.1 (DOH, 2014a). The purpose of these standards is to protect public health and welfare and to prevent significant deterioration of air quality.

The proposed project is not anticipated to be a significant source of air pollution. Construction and operation of the WWTW will be required to comply with all applicable air quality standards. The potential impacts to air quality are addressed in Section 4.4.

3.1.7 Coastal Zone Management

The purpose of the Hawaii Coastal Zone Management [CZM] Program (HRS 205A; Office of Planning, 1977) is to provide for the effective management, beneficial use, protection, and development of the coastal zone. The CZM area encompasses all lands of the State and the offshore area out to the limit of the State's police power and management authority. The CZM Program's objectives and policies include recreational resources, historic resources, scenic and open space resources, coastal ecosystems, economic uses, coastal hazards, development management, public participation, beach protection, and marine resources.

The Property is within the CZM area and the proposed project conforms to CZM Program objectives and policies, as it will not have any significant impacts or conflict with the resources and activities associated with the CZM program, as described below.

3.1.7.1 Recreational Resources

The proposed project will not generate additional demands on existing public parks or beaches. It will not restrict access to or adversely affect the existing coastal recreational resources or their uses by the public. Thus, the proposed WWTW is not in conflict with the State's objective of providing coastal recreational opportunities that are accessible to the public. The potential impacts to recreational resources are addressed in Section 5.5.

3.1.7.2 Historic Resources

The proposed project is not located in an area where there are man-made or natural historic resources. Thus, the proposed WWTW is not in conflict with the State's objective of protecting, preserving, and restoring historic and prehistoric resources that are significant in Hawaiian and American history and culture. The potential impacts to historical and cultural resources are addressed in Section 5.3.

3.1.7.3 Scenic and Open Space Resources

The proposed project is not located along the coastline and there are no open views to the ocean from the Property due to the presence of other existing buildings and homes in the area. The proposed WWTW is not in conflict with the State's objective of protecting, preserving, restoring, or improving the quality of coastal scenic and open space resources. The potential impacts to visual and aesthetic appeal are addressed in Section 5.4.

3.1.7.4 Coastal Ecosystems

The proposed project is not located in an area where there are sensitive coastal ecosystems that could be threatened. Operation of the proposed WWTW will mitigate future potential spills of wastewater that could possibly reach the nearby coastal waters. Thus, the proposed WWTW is not in conflict with the State's objective of protecting valuable coastal ecosystems from disruption and minimizing adverse impacts to coastal ecosystems. The potential impacts to coastal ecosystems are addressed in Section 4.3.

3.1.7.5 Economic Uses

The proposed project is not located in an area where there are economic uses that could be threatened. Thus, the proposed WWTW is not in conflict with the State's objective of providing public or private facilities and improvements important to the State's economy in suitable locations. Land use and economic issues are addressed in Sections 5.1 and 5.2.

3.1.7.6 Coastal Hazards

The proposed project is located in an area where there are coastal hazards and it potentially could be threatened by tsunamis or by potential hazards related to climate change, such as sea level rise. The proposed WWTW is unlikely to be threatened by storm waves, flooding, erosion, subsidence, or pollution from coastal sources. The proposed WWTW is not in conflict with the State's objective of reducing the hazards to life and property posed by tsunami, storm waves, stream flooding, erosion, subsidence, and pollution. The potential impacts posed by coastal hazards, including sea level rise, are addressed in Section 4.6.

3.1.7.7 Managing Development

The proposed project is located in an area where there is little ongoing development. The proposed WWTW is not a significant coastal development and is not in conflict with the State's objective of

improving the development review process, communication, and public participation in the management of coastal resources and hazards.

3.1.7.8 Public Participation

State and City permits and approvals required by the proposed project include provisions for public participation and ensure protection of coastal resources. The public will be provided the opportunity to participate in the review of the Draft EA and provide comments. Thus, the proposed WWTW is not in conflict with the State's objective of stimulating public awareness, education, and participation in coastal management. A list of the recipients who will be provided a copy of the Draft EA is provided in Section 1.7.

3.1.7.9 Beach Protection

The proposed project will not adversely impact beaches for public use and recreation. Thus, the proposed WWTW is not in conflict with the State's objective of protecting beaches for public use and recreation. The potential impacts to coastal waters and recreational resources are addressed in Sections 4.2 and 5.5.

3.1.7.10 Marine Resources

The proposed project is not anticipated to affect marine resources. The long-term impacts of the proposed project will be beneficial to near shore water quality and marine habitat. Thus, the proposed WWTW is not in conflict with the State's objective of promoting the protection, use, and development of marine and coastal resources to ensure their sustainability. The potential impacts to these resources are addressed in Sections 4.2 and 4.3.

3.1.8 State Environmental Policy

The State Environmental Policy was developed to establish a policy that will encourage productive and enjoyable harmony between people and their environment, promote efforts to prevent or eliminate damage to the environment and the biosphere, stimulate the health and welfare of humanity, and enrich the understanding of the ecological systems and natural resources important to the people of Hawaii (HRS 344; DOH, 1974b). One of the mandates of the policy is to conserve natural resources so that natural resources, such as land, water, mineral, visual, and air, are protected by controlling pollution, by preserving or augmenting natural resources, and by safeguarding the State's natural environmental characteristics.

The proposed project does not conflict with the State Environmental Policy. The proposed replacement of the existing wastewater treatment system will provide better protection of the natural resources and is anticipated to positively impact land, air, and water quality by mitigating potential pollution due to wastewater spills. The environmental resources identified in the area and the potential impacts to these resources are addressed in Section 4.

3.1.9 Flood Hazard Areas

Because the proposed project is located in a flood hazard area (Zone VE), it is subject to the provisions of Chapter 21A, ROH (Flood Hazard Areas), which imposes restrictions on construction in areas subject to flood hazards in order to protect life and property and reduce public costs for flood control, rescue, and relief efforts. The project will comply with the applicable provisions and development standards of Chapter 21A, ROH. Specific mitigation measures to minimize damage from flood hazards are discussed in Section 4.6.2.3.

3.1.10 Climate Change

The *Sea Level Rise Vulnerability and Adaptation Report* was mandated initially by Act 83 in 2014 and expanded by Act 32 in 2017 (Hawaii Climate Change Mitigation and Adaptation Commission, 2017). The initiative expands previous efforts to protect the State's economy, health, environment, and way of life from the impacts of climate change. The Hawaii Climate Commission is the State's body leading this initiative and the Climate Change Commission is the City's leading body.

In June 2018, the City and County of Honolulu adopted the *Sea Level Rise Guidance* document (City and County of Honolulu, 2018b), which provides findings and recommendations with regard to adapting to sea level rise. In July 2018, the Mayor issued a directive that establishes policies for the City and County to address, minimize the risks from, and adapt to the impacts of climate change and sea level rise (City and County of Honolulu, 2018c). The Mayor's directive notes that a 3.2-foot sea level rise would impact 9,400 acres of land, cause $12.9 billion in lost property values, and affect 13,300 residents, 3,880 structures, and 17.7 miles of roadways. The recommendations from the report and guidance are addressed in Section 4.6.

3.2 SOCIAL AND ECONOMIC POLICIES, PLANS, AND CONTROLS

3.2.1 Hawaii State Plan

The Hawaii State Plan, which is set forth in the *Hawaii State Planning Act* (HRS 226; Office of Planning, 1978), is a comprehensive, long-term plan that identifies the goals, objectives, policies, and priorities for the State. It provides guidelines for growth, development, and the allocation of State resources. The plan contains diverse policies and objectives on topics of State interest, including the population, the economy (e.g., agriculture, the visitor industry), the physical environment (e.g., natural resources, historic resources, quality of the environment), facility systems (e.g., solid and liquid wastes, water, energy), socio-cultural advancement (e.g., housing, health, culture), and sustainability.

The proposed project is consistent with the goals, objectives, policies, and priority guidelines listed in the Hawaii State Plan, and directly supports multiple objectives and policies of the Plan by decreasing the risk of wastewater spills and protecting environmental resources. The most relevant sections of the Hawaii State Plan in relationship to the proposed project include the following: land-based, shoreline, and marine resources (HRS 226-11); land, air, and water quality (HRS 226-13); and facility systems – solid and liquid wastes (HRS 226-15). These sections are described below.

3.2.1.1 Land-Based, Shoreline, and Marine Resources

The proposed project is not in conflict with the State's two objectives.

1. Prudent use of Hawaii's land-based, shoreline, and marine resources.
2. Effective protection of Hawaii's unique and fragile environmental resources.

The proposed project will have no long-term negative impact on land-based, shoreline, or marine resources. No unique and fragile environmental resources have been identified in the area. The potential impacts to these resources are addressed in Section 4.

3.2.1.2 Land, Air, and Water Quality

The proposed project is not in conflict with the State's two 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.

The proposed project will have no negative impact on land, air, or water resources. The potential impacts to these resources are addressed in Section 4.

3.2.1.3 Facility Systems - Solid and Liquid Wastes

The proposed project is not in conflict with the State's two objectives.

1. Maintenance of basic public health and sanitation standards relating to treatment and disposal of solid and liquid wastes.
2. Provision of adequate sewerage facilities for physical and economic activities that alleviate problems in housing, employment, mobility, and other areas.

The proposed project will replace the existing wastewater treatment system to provide improved treatment and disposal of solid and liquid wastes.

3.2.2 Hawaii State Land Use Controls and City and County of Honolulu Zoning Regulations

Land in the State of Hawaii is divided into the following four classifications: (1) urban, (2) agriculture, (3) rural, and (4) conservation. The project location is designated as an urban district. The urban district generally includes lands characterized by "city-like" concentrations of people, structures, and services. This district also includes vacant areas for future development. Generally, lot sizes and uses permitted in the district area are established by the respective county through ordinances or rules. The City and County of Honolulu zoning designation for the project location is *A-2 Medium Density Apartment*. According to the City and County of Honolulu LUO (Chapter 21, ROH), the intent of the A-2 medium density apartment district is to provide areas for medium density, multifamily dwellings. It is intended primarily for concentrated urban areas where public services are centrally located and infrastructure

capacities are adequate. The proposed project is consistent with the prescribed land use classification and zoning regulations for the area.

3.2.3 Oahu General Plan

The Oahu General Plan (City and County of Honolulu, 2021b) is a comprehensive statement of objectives and policies that sets forth the long-range aspirations of Oahu's residents and the strategies to achieve them. It is the first tier of and lays the foundation for a comprehensive planning process that addresses physical, social, cultural, economic, and environmental concerns affecting the City and County of Honolulu. The most recent version of the plan was adopted by the City Council on December 1, 2021, as Resolution 21-023, CD1, and signed by the Mayor on January 14, 2022.

The General Plan seeks to protect and enhance Oahu's natural beauty and environmental attributes by mitigating against the degradation of these assets. In addition, the objectives and policies for utility planning and development emphasize the need for environmentally sound waste disposal systems. The proposed project is consistent with the objectives of the General Plan and it will support the policy of increasing the use of environmentally sound waste disposal systems.

3.3 NORTH SHORE SUSTAINABLE COMMUNITIES PLAN

Oahu is divided into eight geographic planning areas and each area has developed a Development Plan or Sustainable Communities Plan that has been adopted by City Council ordinance. The North Shore Sustainable Communities Plan [NSSCP] (City and County of Honolulu, 2011) presents the vision for the North Shore region, which is to retain the unique qualities that have defined the region's attractiveness to locals and visitors alike and its natural, cultural, scenic, and agricultural resources. The NSSPC designates the project area as "Low Density Apartment" land use. The project area is also within the Community Growth Boundary, which was established to define, protect, and contain communities in areas that the General Plan designates "rural" and that exhibit the physical characteristics of rural lifestyles, as well as preserves the areas outside the boundary for agriculture, other resource, or open space values (City and County of Honolulu, 2011).

Guidelines for the Low Density Apartment developments include the following (Section 3.5.2.3; City and County of Honolulu, 2011):

- Maintain the existing apartment district boundaries.
- Densities range from 10 to 20 units per acre. Buildings should not be more than three stories or exceed 40 feet in height.
- Where possible, enhance the compatibility of development within apartment districts with adjacent residential uses.
- Employ building form, orientation, location of entries and landscape screening that reflects single-family residential character and provides greater privacy and individual identity for housing units.
- Ensure compatibility of building scale, roof form and the quality of materials with those of adjacent residential areas.

Overall, the proposed WWTW is consistent with the NSSPC's general policies and guidelines regarding land use. The proposed WWTW will have minimal impact on the area's rural character because it will be located adjacent to a current parking lot, in an area that already has two existing multi-story apartment buildings. The proposed WWTW is designed to have a height of approximately 11 feet above the level of the parking lot (concrete slab on grade plus tank height), which is well below the building height limit of 40 feet. A utility enclosure will be constructed next to the recreation building to include the new emergency generator. The existing 6-foot-high wooden fence with a locking access door will be retained and reinstalled around the perimeter of the WWTW tanks to screen the WWTW from public view.

The NSSCP establishes policies and guidelines for infrastructure, including wastewater treatment. The specific policies that are applicable to the proposed project include the following (Section 4.3; City and County of Honolulu, 2011):

- The highest priority is to provide adequate public and private wastewater treatment facilities and improve the existing wastewater management services on the North Shore to protect the North Shore's water resources and the health of the community.
- Support alternative wastewater technologies that reflect the community's values and rural character.

The specific guidelines that are applicable to the project include:

- Identify appropriate areas and technologies for future wastewater facilities that maintain the rural character and are proportionate to future population projections.
- Do not permit an ocean outfall for treated wastewater effluent in the North Shore area.

The proposed WWTW is consistent with the NSSPC's general policies and guidelines regarding wastewater treatment. The current wastewater treatment system is aged and deteriorating and is in need of replacement. The proposed WWTW uses newer technologies and will provide better wastewater treatment and will reduce the risk of wastewater spills to nearshore waters.

3.4 BUILDING, GRADING, AND FIRE PERMITS

Prior to construction of the replacement WWTW at the Property, the necessary permits will be obtained from the appropriate State of Hawaii and City and County of Honolulu Agencies.

DOH, SDWB:

- *UIC Permit* No. UO-1305 has previously been issued for the installation and operation of the three existing injection wells. Approval to construct has been granted for upgrading of the three existing injection wells by redrilling. A copy of the approval is provided in Appendix E.

DOH, Wastewater Branch:

- Review of *Basis of Design and Engineering Report and Plan Set for Wastewater Treatment Works* for the design and construction of the wastewater treatment system.

City and County of Honolulu, Honolulu City Council:

- *SMA Use Permit* for the construction of the wastewater treatment system. The project location is within the SMA area, which extends inland from and along the shoreline. It is the most sensitive area of the coastal zone.

City and County of Honolulu, DPP:

- *Building/Grading Permit* for the construction of the wastewater treatment system (includes review by HECO, BWS, and Honolulu Fire Department).

City and County of Honolulu Fire Department:

- *Tank Installation Permit* for the diesel tank associated with the emergency backup generator.

SECTION 4 PHYSICAL ENVIRONMENT AND POTENTIAL IMPACTS

Wastewater treatment facilities potentially can have negative impacts on the physical environment in which they are constructed and operated and on the surrounding area. One of the principal objectives of an EA is to assess whether such impacts could be significant. The areas of potential concern that have been identified regarding the construction and operation of the WWTW are as follows: (1) land impacts, (2) water impacts, (3) biological impacts, (4) air quality impacts, and (5) noise impacts. In addition, potential impacts related to climate change should be evaluated.

4.1 POTENTIAL LAND IMPACTS

4.1.1 Existing Topographic and Geological Conditions

The Property is located on a relatively flat coastal plain, at a surface elevation of approximately 4 feet amsl. There is no significant elevation change across the Property. No unique topographical features are located on the Property.

Oahu consists of the eroded remnants of three shield volcanoes, Kaena, Waianae, and Koolau. Kaena is the oldest of the three volcanoes and it was predominantly submarine (Sinton et al., 2014). The Property is located along the coastline on the western side of the Koolau volcanic shield (Koolau mountain range) and northeast of the Waianae volcanic shield (Waianae mountain range).

The principal lithologic unit underlying the Property consists of Holocene surficial beach deposits (Sherrod et al., 2007). These deposits consist of sand and gravel worked by surf into unconsolidated strand-line deposits along the coastline; chiefly cream-colored and calcareous in composition, derived from comminuted coral, shells, and foraminifera. They also contain minor sandstone, known in Hawaii as beach rock and typically form deposits parallel to the coast, in contrast to alluvium, that extends up drainages perpendicular to the coast.

The soil in the area of the Property belongs to the *Jaucas Series*, specifically *Jaucas sand,* which consists of excessively drained, calcareous soils that occur as narrow strips on coastal plains adjacent to the ocean. These soils developed in wind- and water-deposited sand from coral and seashells. They are nearly level to strongly sloping (Foote et al., 1972).

The Land Study Bureau (LSB) of the University of Hawaii prepared an inventory and evaluation of the State's land resources during the 1960s and 1970s. The Bureau grouped undeveloped lands in the State into homogeneous units of land types; described their condition and environment; rated the land on its overall quality in terms of agricultural productivity; appraised its performance for selected alternative crops; and delineated the various land types and groupings based on soil properties and productive capabilities. From these criteria, overall ratings of A through E were created; with A having the overall highest soil productivity rating and E having the lowest (University of Hawaii, 1972). The Property was omitted from the LSB study since it was already developed at the time of the study. Therefore, the Property does not contain any listed LSB rated soils. There are Type B rated LSB soils across Waialua Beach Road, well inland of the Property. The proposed project would not result in any disturbance to these or any other LSB rated soils (Office of Planning, 2022).

4.1.2 Potential Topographic and Geological Impacts and Mitigation

Figure 5a shows the work areas where soil disturbance will occur, which corresponds to the area of the existing system to be demolished. The only area of subsurface excavation will be for regrading of the existing footprint to install concrete slabs for each of the four WWTW tanks and a concrete slab for the enclosure that houses the emergency generator, blowers, and control panels. The area of disturbance is roughly a 30-foot by 14-foot area, or approximately 400 square feet. There will be no new trenches, as the existing sewer laterals will remain. Clean soil will be imported to backfill the area of the existing system following demolition. The project does not currently include offsite export of soil. However, if future plans entail partially burying the WWTW tanks, offsite soil export may be necessary.

Less than significant short-term impacts to ground topography and soils are anticipated from the proposed project. Minor short-term excavation and grading will be required during construction of the WWTW. *The City and County of Honolulu Stormwater Construction Best Management Practice Manual* will be followed during construction, in addition to the provisions of the grading permit that will need to be obtained. Adherence to these regulatory guidelines, which would include protecting exposed soils from runoff through the use of filter socks, silt and dust fences, tarping soil stockpiles, and other appropriate BMPs, would mitigate potential impacts of soil erosion and fugitive dust during grading or excavation.

Future operation of the proposed WWTW will mitigate future potential spills of wastewater to the soils of the Property. There would be no long-term adverse impacts to site soils, topography, or geological resources from the proposed WWTW upgrades.

4.1.3 Existing Storm Water Conditions

The area of the proposed WWTW is where the current system is in place. The current space is a landscaped area and paved parking lot. There are no storm drains located in the parking lot. Storm water runs off the Property via surface sheet flow, southeast towards Au Street.

4.1.4 Potential Storm Water Impacts and Mitigation

Less than significant short-term impacts from storm water runoff are anticipated during construction. BMPs will be used during construction of the WWTW to prevent soil generated by construction activities from discharging beyond the project site as storm water runoff. Upon completion of construction activities, the area surrounding the WWTW will be restored to its previous condition.

There will be no impact to long-term storm water runoff quantities at the Property or the surrounding area compared to existing conditions due to the proposed project. All areas disturbed during construction will be landscaped with vegetation or covered with concrete in accordance with the building permits. The project will not increase impervious surfaces, except for the addition of concrete slabs for each of the four WWTW tanks. No parking spaces will be lost and the proposed project will comply with the landscaping requirement of a minimum five-foot landscape strip adjacent to any adjoining street right-of-way (Section 21-4, ROH). There will be no changes to existing surface water drainage patterns.

4.2 POTENTIAL WATER IMPACTS

Waters of potential concern in the area of the Property include (1) shallow groundwater, (2) coastal waters, and (3) deep, basal, drinking water. Of these, shallow groundwater and the coastal waters adjacent to the Property are the principal concerns.

4.2.1 Existing Hydrogeological Conditions

Groundwater in Hawaii exists in two principal types of aquifers. The first and most important type, in terms of drinking water resources, is the basal aquifer. The basal aquifer exists as a lens of fresh water floating on and displacing seawater within the pore spaces, fractures, and voids of the basalt that forms the underlying mass of each Hawaiian island. In parts of Oahu, including the area of the Property, groundwater in the basal aquifer is confined by the overlying caprock and is under pressure. Water that flows freely to the surface from wells that tap the basal aquifer is referred to as *artesian*.

The second type of aquifer is the caprock aquifer, which consists of various kinds of unconfined and semi-confined groundwater. The nearly impermeable sediments that form the caprock separate the caprock aquifer from the basal aquifer. The impermeable nature of these materials and the artesian nature of the basal aquifer severely restrict the downward migration of groundwater from the upper caprock aquifer.

Groundwater in the area of the Property is part of a basal aquifer within the *Waialua Aquifer System* of the *North Aquifer Sector* (Mink and Lau, 1990). The upper aquifer is classified as an unconfined aquifer that occurs in sedimentary nonvolcanic lithology. It is currently used and is ecologically important, but is not used as a drinking water source. It is highly vulnerable to contamination, is irreplaceable, and has low salinity. The lower aquifer is classified as a confined aquifer that occurs in flank lavas. It is currently used as a drinking water source. It has low vulnerability to contamination, is irreplaceable, and has low salinity.

Based on a review of well logs for deeper wells installed nearby, the caprock extends to approximately 93 feet below ground surface (University of Hawaii, 2022). Therefore, it is assumed that the basal drinking water aquifer in the area of the Property occurs at a depth of 93 feet or greater. The direction of groundwater flow in the area is most likely to the north, towards the Pacific Ocean. Shallow groundwater at the Property may be tidally influenced based on its proximity to the ocean.

The nearest drinking water supply well is approximately 2 miles southeast and upgradient of the Property, and there are no water wells of any kind downgradient (Figure 6). Based on the distance and direction to the nearest drinking water supply wells and the depth to the basal (drinking water) aquifer, it is unlikely that contaminants originating at the Property have impacted or could impact drinking water sources.

The coastal waters adjacent to the Property are classified as Class A, which precludes any discharge which has not received the best degree of treatment or control compatible with the criteria established for this class. The specific criteria applicable to marine waters are included in HAR Chapter 11-54 (DOH, 2014b).

4.2.2 Potential Hydrogeological Impacts and Mitigation

The proposed WWTW is anticipated to have no adverse impacts on shallow groundwater or the basal (drinking water) aquifer. There will likely be beneficial water quality impacts since the new WWTW will retain and treat wastewater more effectively compared to the existing treatment system. The proposed WWTW will provide improved treatment of solid and liquid wastes. The effluent that will be disposed in the injection wells must meet the requirements of HAR Chapter 11-62, "Wastewater Systems" (DOH, 2016).

The proposed WWTW is anticipated to have no adverse impacts on coastal waters. The proposed project will not cause an increase in runoff quantities. Construction and operation of the WWTW will be conducted in accordance with the State's water quality standards (HAR Chapter 11-54). During construction, barriers (e.g., sediment fences, silt screens, bags, or environmental filter socks) will be used as needed to limit sediment and land-based sources of pollution from discharging into the coastal waters. Operation of the proposed WWTW will mitigate future potential spills of wastewater that could possibly reach the nearby coastal waters. Based on communication with the DOH Clean Water Branch, a NPDES permit is not required for the disposal of treated wastewater via the injection wells. Due to the oxygen supplied for the biological process within the treatment system, complete nitrification is anticipated based on the system design. The long-term impacts of the proposed project will be beneficial to near shore water quality and marine habitat.

4.3 POTENTIAL BIOLOGICAL IMPACTS

There are numerous recognized ecosystems in Hawaii. Because so many Hawaiian species are highly specialized, populations are small and many of Hawaii's plants and animals are listed as threatened or endangered species by the USFWS. For the purposes of this EA, the following three biological communities of potential concern in the area of the Property have been identified: (1) floral, (2) faunal, and (3) marine.

4.3.1 Existing Biological Conditions

4.3.1.1 Floral (Plant Communities)

The project site is situated within a coastline residential area of Waialua. The Property was entirely graded during its development in the mid-1970s. There are no native rare or endangered floral species found on the Property; therefore, the proposed project will not adversely affect endangered or threatened plant species. The State of Hawaii Geographic Information System [GIS] "threatened and endangered plants map" and "critical habitat map" show little to no threatened and endangered species are currently found within the Property (Office of Planning, 2022).

The USFWS Critical Habitat for Threatened and Endangered Species online GIS map was also reviewed. No critical habitats were present at or surrounding the Property (USFWS, 2022b). The USFWS Wetlands Inventory Mapper was also reviewed in order to determine if wetland species habitats may be present at or surrounding the Property. No inland wetlands were identified within the vicinity of the Property (USFWS, 2022c).

Based on a review of the USDA Natural Resources Conservation Services soil map and soil description for where the project site is located, the soil type present is *Jaucas sand*. *Jaucas sand* is not considered important farmland or wetland soil types. This type of soil has a slope of 0 to 15 percent, is excessively drained, and categorized as low runoff class.

4.3.1.2 Faunal (Animal Communities)

Wildlife in the area of the Property is limited to mammals and birds which have adapted to the urban environment. The State of Hawaii GIS critical habitat map shows no Federal or State listed or candidate threatened or endangered animal species currently within the Property (Office of Planning, 2022).

According to the USFWS' Information for Planning and Consultation [IPaC] tool, the USFWS noted that federal data indicate a federally endangered Hawaiian hoary bat (*Lasiurus cinereus semotus*), Band-rumped Storm-petrel (*Oceanodroma castro),* Hawaii Akepa (*Loxops coccineus),* Hawaiian Duck (*Anas Wyvilliana),* Hawaiian Common Gallinule (*Gallinula galeta sanvicensis)*, Hawaiian Coot (*Fulica americana alai),* Hawaiian Petrel (*Pterodroma sandwichensis),* Hawaiian Stilt (*Himantopus mexicanus knudseni)*, and the Newell's Townsend's Shearwater (*Puffinus auricularis newelli)* (USFWS, 2022a). However, there is no known habitat for these species on the Property (USFWS, 2022b).

4.3.1.3 Marine (Ocean Floral and Faunal Communities)

The offshore area north of the Property is characterized by expansive reefs. According to the State GIS benthic habitat map, just offshore, the benthic waters consist of a large 10-50% macroalgae zone. No live coral reefs are present in the shallow reef flat. The reef flats are classified as "Pavement" (Office of Planning, 2022) (Figure 7).

In addition, the Property is located approximately 300 feet from the Pacific Ocean; therefore, no threatened or endangered marine species are present in the vicinity of the Property, including the federally threatened green sea turtle (*Chelonia mydas*).

4.3.2 Potential Biological Impacts and Mitigation

There would be a less than significant impact to biological resources from the proposed project. None of the plants within the Property are known to be Federal or State threatened or endangered or candidate species. Since the Property is developed and mostly paved or covered by buildings, there is no known habitat for the Hawaiian hoary bat or protected seabird species. The following mitigation measures will be implemented to minimize potential impacts to biological resources:

1) Construction activities will be limited to daylight hours to avoid the use of construction work lights which may attract and disorient migrating seabirds. All exterior lighting associated with the project will be shielded (per Section 25-6.3(a), ROH). These mitigation measures will be implemented to avoid potential impacts to migrating seabirds.
2) To protect Hawaiian hoary bats or birds that may use the trees on the Property for roosting, (a) avoid trimming or removal of trees taller than 15 feet between June 1 and September 15 (Hawaiian hoary bat's pupping season), when juvenile Hawaiian hoary bat that are not yet

capable of flying may be roosting in the trees, and (b) restrict working at night under bright lights to avoid attracting insects that bats and birds feed on.

3) In order to reduce the presence of bird predators at the Property, feral cats will be removed from the Property, bait stations for rodents and mongoose will be installed, and covered trash receptacles should be used.

4) To reduce the possibility of spreading invasive species, pathogens, or pests, all equipment, materials, and personnel should be cleaned of excess soil and debris and the movement of plant or soil material between worksites should be avoided.

With these mitigation measures in place, the construction of the proposed WWTW is expected to result in no significant adverse impacts to existing plant species or native wildlife species or their habitat.

During operation of the proposed WWTW, the treated wastewater effluent will be discharged to the onsite injection wells disposal system. Of the three injection wells, the one nearest the ocean is located approximately 350 feet from the shoreline. Due to the distance from the shoreline, it is improbable that groundwater mixes with seawater at the Property location. However, the wastewater treatment process is anticipated to significantly reduce nitrogen and phosphorus levels in the effluent. Due to the oxygen supplied for the biological process within the treatment system, complete nitrification is anticipated based on the system design. With proper operation of the treatment system, no significant impact to marine wildlife species is anticipated.

4.4 POTENTIAL AIR QUALITY IMPACTS

Air pollution is caused by many different man-made and natural sources. To determine if emissions generated at the Property would adversely affect air quality conditions, potential air quality impacts were evaluated in accordance with national and state air quality standards.

4.4.1 Existing Air Quality Conditions

The DOH Clean Air Branch has established the State Ambient Air Quality Standards [SAAQS]. The DOH Clean Air Branch regularly samples ambient air quality at monitoring stations throughout the State, and annually publishes this information. On Oahu, there are four monitoring stations. The closest station to the Property that measures multiple parameters is located in Kapolei in the Kapolei Business Park. This station measures sulfur dioxide, carbon monoxide, nitrogen dioxide, lead, ozone, and particulate matter.

Air quality in the State of Hawaii continues to be one of the best in the nation, and criteria pollutant levels remain well below SAAQS. According to the *Annual Summary 2020 Hawaii Air Quality Data,* air quality monitoring data compiled by the DOH indicates that the established air quality standards for all monitored parameters are consistently met throughout the State and on the island of Oahu (DOH, 2021).

Present air quality in the vicinity of the Property is primarily affected by emissions from motor vehicles and residential and agricultural sources. Air quality data from the nearest monitoring stations suggest

that all National and State air quality standards are currently being met, although occasional exceedances of the more stringent State standards for carbon monoxide may occur near congested roadway intersections.

4.4.2 Potential Air Quality Impacts and Mitigation

Impacts on air quality are anticipated to be less than significant and short-term. Installation of the proposed WWTW may require machinery that generates dust, and emissions from construction equipment and vehicles may impact air quality in the immediate area. The prevailing northeasterly trade winds are expected to disperse emissions and prevent elevated concentrations.

The short-term effects on air quality during construction will be mitigated by compliance with the DOH rules on air pollution. Fugitive dust emission will be controlled by implementing BMPs, such as watering active work areas, keeping adjacent paved roads clean, covering open-bodied trucks, and limiting the area to be disturbed at any given time.

Long-term operation and maintenance of the WWTW is not expected to have any adverse impacts on air quality. The pumps and blowers associated with the WWTW are electric-powered and will not discharge air pollutants. There isn't a strong quantitative way to measure odors from any activated sludge plant. The process will be strictly aerobic, covered, and contain no zones where denitrification should occur. The likelihood of anything going septic and producing foul odors is very low as long as the plant is operated properly. Any well operated wastewater plant will have a faint lingering earthy scent, which would reasonably be expected for the proposed WWTW, but the proposed treatment system should not produce any strong odors.

4.5 POTENTIAL NOISE IMPACTS

Noise pollution can result from construction activities and heavy equipment operation. To determine if noise generated at the Property would adversely affect noise quality in the area, potential noise impacts were evaluated in accordance with state noise control standards of HAR Chapter 11-46 (DOH, 1996).

The maximum permissible sound level for areas zoned as residential is 55 A-weighted decibels [dBA] during the daytime (7 am to 10 pm) and 45 dBA during the nighttime (10 pm to 7 am) (DOH, 1996). The maximum permissible sound level can be exceeded for short periods but not for more than ten percent of the time within any twenty-minute period. The maximum permissible sound level for impulsive noise is 10 dBA above the maximum permissible sound level. Backup alarm devices on vehicles are exempt from the maximum permissible sound levels, where such devices are required by the Occupational Safety and Health Administration (DOH, 1996).

4.5.1 Existing Noise Conditions

Currently, noise levels in the vicinity of the Property are low, as land uses in the area are primarily residential. Sources of ambient noise are vehicular traffic, ocean waves, and periodic activity of the Ono Vista Condominium occupants.

4.5.2 Potential Noise Impacts and Mitigation

There will be less than significant short-term intermittent noise impacts generated during construction of the WWTW. However, noise levels are not expected to adversely affect residents at or near the project site. All work is anticipated to be done during the daytime hours, between 7:00 am and 6:00 pm. Construction activities must comply with the provisions of HAR Chapter 11-46, "Community Noise Control" (DOH, 1996). The contractor will be required to obtain a noise permit if the noise levels from construction activities are expected to exceed 55 dBA.

Blowers and pumps will be utilized during long-term operation of the WWTW and may generate low levels of noise. However, the noise from this system is not anticipated to exceed the maximum permissible sound levels. The noise generating equipment (i.e., blowers and pumps) will be housed in a utility enclosure constructed adjacent to the recreation building to include the new emergency generator which operates the blowers. Therefore, there would be less than significant long-term noise impacts from the proposed project.

Operation of the emergency generator is exempt from the rules of HAR Chapter 11-46.

4.6 CLIMATOLOGICAL CONDITIONS AND IMPACTS

4.6.1 Existing Climatological Conditions

Climatological conditions in the area of the Property consist of warm to moderate temperatures and moderate rainfall. The Property is on the North Shore of Oahu, which has prevailing northeasterly trade winds. The average annual precipitation in the area is approximately 31 inches, occurring mainly between November and April (Giambelluca et al., 2013). The evapotranspiration rate is approximately 37 inches (Giambelluca et al., 2014a). Average temperatures range from the low to high 70s (degrees Fahrenheit) (Giambelluca et al., 2014b).

4.6.2 Potential Impacts Related to Climate Change

The potential impacts of climate change on Hawaii's infrastructure and natural environment have become a significant concern. As a reflection of this concern, the December 2017 update to the Oahu General Plan (City and County of Honolulu, 2017) included new policies that emphasize the need to recognize and prepare for long-term impacts of climate change. The General Plan now also contains an objective on climate change and sea level rise. It calls for all public and private organizations to prepare for the future problems caused by rises in sea level, rises in groundwater levels, and more frequent and severe storms, shifts in local rainfall patterns, and higher urban temperatures. The Climate Change Adaptation Policy Guidelines of the Hawaii State Planning Act, HRS §226-109, support planning and preparing for future disruptions and dislocations due to climate change.

Two principal concerns have been identified that pose a potential hazard to the Property. First, a significant sea level rise due to climate change could impact coastal structures, infrastructure, and properties. Second, changing weather patterns in the Pacific Ocean could result in localized increased

precipitation severity and flooding. Although not directly related to climate change, tsunami and hurricane hazards and impacts are included below.

4.6.2.1 Sea Level Rise

Planning for sea level rise is challenging due to changing variables including some of which are unknown variables. In December 2013, the U.S. Army Corp of Engineers [USACE] issued Engineering Regulation 1100-2-8162 titled "*Incorporating Sea level Changes in Civil Works Programs*", which provided the "guidance for incorporating the direct and indirect physical effects of projected future sea level change across the project life cycle in managing, planning, engineering, designing, constructing, operating, and maintaining USACE projects and systems of projects". The guidance provided by the regulation can also be used in assessing the potential sea level rise which may be experienced at the Property.

Potential sea level rise at the Property has been predicted using the on-line Sea Level Change Calculator provided by USACE. The graph in Figure 8 shows the potential sea level rise from year 2000 to 2100 at the Honolulu mean sea level gauge (Station ID 1612340) located approximately 26 miles southeast from the Property. The graph shows the relative sea level rise which can be expected under differing prediction scenarios as determined by U.S. Department of Commerce National Ocean Service Center for Operational Oceanographic Products and Service (National Oceanic and Atmospheric Administration [NOAA] et. al., 2017). Included in the graph is the elevation of the proposed WWTW location.

According to USACE Sea Level Change Calculator, the proposed WWTW may be impacted by significant sea level rise by year 2060. The graph and table in Figure 8 illustrate that under the extreme climate change scenario, sea level rise could inundate the WWTW unless effective mitigative measures are implemented at the Property. A 4-foot sea level rise equal to the WWTW elevation may occur by year 2060; however, this is beyond the expected lifetime of the WWTW. The anticipated operational lifespan of the system/equipment is as follows: 1) Kubota Johkasou system (blowers, membrane cartridges, tank and media) has a typical life of 20 years; 2) emergency generator has a typical 20-year lifespan/warranty; 3) lift station tanks have a typical life of 40-50 years; and 4) pumps typically need to be replaced at 10-15 years.

Additionally, the *Hawaii Sea Level Rise Vulnerability and Adaptation Report* indicates that recent observations and predictions suggest that a 3.2-foot sea level rise could occur as early as year 2060 under more recently published highest-end scenarios (Hawaii Climate Change Mitigation and Adaptation Commission, 2017). According to the Hawaii Sea Level Rise Viewer, a 3.2-foot sea level rise would not impact the portion of the Property where the proposed WWTW will be located (Figure 9) (Office of Planning, 2022). Similarly, according to the City and County of Honolulu, Climate Ready Oahu Web Explorer (City and County of Honolulu, 2022), a 3.2-foot sea level rise would only impact the surrounding area north and east of the Property.

4.6.2.2 Flooding, Tsunami, and Hurricane Hazards

According to the State GIS flood hazard zones map, the Property is located in flood hazard area Zone VE (Figure 10), which is defined as a coastal area subject to inundation by the 1% annual chance flood event in any given year which exceeds the defined base flood elevation [BFE], with increased risk due to storm waves (Office of Planning, 2022). The WWTW will be located in Zone VE with a BFE of 12 feet amsl.

Tsunamis and inundations of the low-lying coastal areas are natural phenomena that occur infrequently in Hawaii. The location of the Islands in the Pacific Ocean exposes them to waves generated from geologic activity of the Pacific Ring of Fire. The Property is located in the County's Tsunami inundation evacuation zone.

According to sea level rise predictions, there is potential for a 3.2-foot sea level rise by 2060 and a 6.9-foot sea level rise by 2080 at the Property. The increase in sea level elevation and the potential for increase in monsoonal weather patterns brought by climate change will increase the chance of inundation by floodwaters at the Property.

According to the NOAA National Storm Surge Hazards Map (NOAA, 2022), the Property is not within an area of inundation due to storm surges associated with hurricanes (Figure 11).

4.6.2.3 Flood, Tsunami, and Sea Level Rise Impacts and Mitigation

The WWTW will be designed to withstand tsunami inundations as well as floods from inland. The WWTW will be designed, located, and constructed to minimize or eliminate flood damage, impairment, and/or contamination during and subsequent to flooding by the regulatory flood. The aboveground tanks housing the treatment system below the BFE will be constructed of FRP and will be watertight with walls impermeable to the passage of water. In addition, structural components will have the capability of resisting hydrostatic and hydrodynamic loads and effects of buoyancy due to the regulatory flood. The pumps and blower panels will be protected from potential flooding by having them installed in a weatherproof housing. By incorporating these project design features there would be less than significant impacts from flooding and tsunamis. The proposed WWTW improvements would result in beneficial impacts compared to existing conditions since the WWTW components would be more resilient to flood waters from land and sea.

Currently, the impacts of minor flooding events are minimal; however, the impacts of a major tsunami at the Property could be significant. The chance of impacts will increase with the increase in sea level rise and climate change. The combination of sea level rise compounded by increased precipitation associated with climate change will increase the chances of major flooding events at the Property. Major flooding could cause an overflow of the effluent disposal system (i.e., injection wells), which would result in a potential spill of treated wastewater to the Ono Vista Condominiums parking lot and Au Street. To reduce the threat of flooding to the injection wells, the following mitigation measures can be implemented as necessitated:

1) The effluent can be pumped directly to a temporary holding tank or removed using a pumping service.
2) Temporary or permanent flood barriers can be added around the wells.

By the year 2060, if the WWTW is still in operation, measures will be taken to protect the WWTW from rising sea water, or the WWTW will be decommissioned. Conditions of the UIC permit require annual inspection, testing, and monitoring of the injection wells to evaluate their performance and prevent injection well failures. These observations will be used to determine if sea level rise is compromising the performance of the injection well system.

If sea level rise impacts the performance of the treatment system components or the injection well system, all applicable regulations in place at the time will be followed. If it is determined that the WWTW should be decommissioned, it will be decommissioned in accordance with DOH Wastewater Branch regulations.

SECTION 5 SOCIAL ENVIRONMENT AND POTENTIAL IMPACTS

5.1 LAND USE

5.1.1 Existing Land Use

The Property and surrounding land are zoned as *Urban,* under State Land Use designations (Figure 3a). The City and County of Honolulu DPP zoning designates the Property as *A-2 Medium Density Apartment* (Figure 3b) and the NSSCP designates the project area as *low-density apartment* land use (City and County of Honolulu, 2011).

The Property is occupied by Ono Vista Condominiums, two residential condominiums with an asphalt paved parking lot, and pool. The area surrounding the Property is occupied by residential properties (Figure 4). Agricultural land is located across Waialua Beach Road to the south (Figure 3b).

The general area surrounding the Property is developed with condominiums, single-family residences, and agricultural farms. Based on available planning documents, the Property and surrounding area will continue to be used for residential and agricultural purposes for the foreseeable future.

5.1.2 Potential Land Use Issues

The Property and surrounding areas are zoned for residential, agricultural, and preservation uses, and its current and future use are consistent with the types of land use at surrounding properties. The Property has not had a significant impact on existing land use in the area. The proposed project does not involve changes to the Property's principal operations/land use and therefore, is not expected to have any impact to land use.

The proposed project will be located within a fenced area in the middle of the Property and will not affect any of the Property's parking stalls. The aboveground WWTW and concrete slab will be located a minimum of 10 feet from the property boundary (Figure 5a), in accordance with the 10-foot yard space requirement as set in LUO Section 21-3.80-1.

5.2 SOCIAL AND ECONOMIC ISSUES

5.2.1 Existing Social and Economic Conditions

The project site is located in Waialua, Oahu in Census tract 99.06. In 2020, the Census tract had a residential population of approximately 1,921, which was approximately 0.13% of Oahu's total population. The Waialua population in this Census tract is similar in age to the overall age of the Oahu population as a whole. The racial mix of the area is comprised of mostly Caucasians. The median income in 2020 for the Waialua household was $74,463 and 8.7% live below the poverty line. The areas near the Property consist primarily of condominium and single-family residences, and agricultural lands are present to the south across Waialua Beach Road. Waialua's small commercial area is located about 1 mile to the southeast.

5.2.2 Potential Social and Economic Impacts

The proposed project is anticipated to have no adverse impacts to socio-economic resources. The project will not result in an increase of dwelling units or the population of the Waialua area. Construction of the WWTW will generate short-term economic benefits through expenditures for construction materials and employment of workers.

5.3 HISTORIC, ARCHAEOLOGICAL, AND CULTURAL RESOURCES

5.3.1 Existing Historic, Archaeological, and Cultural Resources

No known archaeological or historic sites are located on the proposed WWTW project site. According to the Hawaii Cultural Resource Information System [HICRIS] database (State Historic Preservation Division [SHPD], 2022), there are no records of historical properties or archaeological assessments on or near the Property. Consultation with SHPD was initiated to determine if historic, archaeological, or cultural resources would be impacted by the proposed project. The SHPD requested submittal of the HRS §6E Form to formally begin their review process. The purpose of this review is to both identify historic resources and to avoid or mitigate potential negative affects to them. The form was submitted to SHPD on November 15, 2022, and a response from SHPD is pending.

A review of the ERP EA and EIS Library was performed to search for reports that contain information for historical, archaeological, or cultural resources in the vicinity of the Property. According to a Final EIS prepared for the Waialua-Haleiwa Wastewater Facilities Plan (Belt Collins & Associates, 1987), most of the readily accessible land within the Waialua District has been modified in the course of the urban and agricultural development that has taken place there over the past 150 years. These changes have resulted in the destruction of many of the physical remains of previous aboriginal Hawaiian settlements.

5.3.2 Potential Impacts to Historic, Archaeological, and Cultural Resources

The proposed project is not expected to result in adverse impacts to historical, archaeological, or cultural resources since the project is being constructed within the footprint of the existing wastewater treatment system (Figure 5a). The new WWTW system components will all be constructed aboveground, and the existing wet well/lift station and effluent disposal system (i.e., injection wells) are already in an area that has had extensive ground disturbance. The excavation activities to install concrete slabs are not anticipated to disturb any archaeological or cultural features. The existing wastewater treatment system will be demolished and removed, but this is an area that was previously disturbed when the system was installed.

If any archaeological or cultural resources, or burials, are inadvertently discovered during excavation, all construction work will cease immediately and subsequent work shall proceed only upon an archaeological clearance from the SHPD.

5.4 VISUAL AND AESTHETIC APPEAL

5.4.1 Existing Visual and Aesthetic Appeal

Ono Vista Condominiums is located within a residential area surrounded by other houses and condominiums. Trees and landscaping are in the area where the existing wastewater treatment system is located in the Ono Vista East Building parking lot. The existing wastewater treatment system is primarily visible only to Ono Vista residents but is surrounded by a fence. In the immediate area of the proposed WWTW there is not a scenic vista or an open view to the ocean due to the presence of the existing fence and surrounding buildings.

5.4.2 Potential Impacts to the Visual and Aesthetic Appeal

The proposed WWTW is designed to have a height of approximately 11 feet above the level of the parking lot (concrete slab on grade plus tank height). The current height limitation for areas zoned as *A-2 Medium Density Apartment*, which includes the Property, is 40 feet (City and County of Honolulu, 2021a). The proposed WWTW is well within the A-2 zone height limitation.

The dimensions of the proposed WWTW are approximately 14 feet wide by 30 feet long. The WWTW will be enclosed by a 6-foot-high wooden fence to screen the WWTW from public view. A utility enclosure will be located north of the WWTW, adjacent to the recreation building. The visual and aesthetic appeal of the rural area will be maintained by locating the WWTW within the existing footprint and retaining and reinstalling the existing 6-foot-high wooden fence. Therefore, the proposed project improvements will not result in significant impacts to visual and aesthetic resources.

5.5 RECREATIONAL ACTIVITIES AND AREAS

5.5.1 Existing Recreational Activities and Areas

Dole's private beach park is located approximately 150 feet east of the Property but is not visible from the Property due to other adjacent buildings. A public beach access is located further to the east, approximately 0.4 miles from the Property. Aweoweo Beach Park is located approximately 700 feet west-northwest of the Property.

5.5.2 Potential Impacts to Recreational Activities and Areas

Because of the presence of surrounding buildings and the distance to public/private beaches and parks, the proposed project will have no adverse impact on current recreational activities during the construction period, or during the long-term operation of the WWTW.

SECTION 6 INFRASTRUCTURE AND POTENTIAL IMPACTS

The Property has the potential to impact the following two public services: (1) transportation and (2) utilities. Owing to the location of the Property and the nature of its operations, it is not expected that other public services will be affected.

6.1 TRAFFIC AND ROADS

6.1.1 Existing Transportation Infrastructure

Waialua Beach Road is the main roadway serving the shoreline area of Waialua. Primary vehicle access to the Property is from Waialua Beach Road, Apuhihi Street, and Au Street. There are two driveways, one at the southwestern side of the Property from Apuhihi Street and one at the southeastern side of the Property from Au Street. The proposed WWTW is located in the central portion of the Property and would be accessed by the southeastern driveway (Figures 5a and 5b).

Bus service is provided to the Property by Route 521, which runs along Waialua Beach Road and Apuhihi Street. Generally, smooth traffic flow is characteristic along these routes. Traffic is typically busiest during weekday commuter periods and weekend afternoons.

6.1.2 Potential Impacts to Traffic and Roads and Mitigation

All construction activities associated with the proposed WWTW will take place within the Property boundaries. No work will be performed within the State Right-of-Way. Construction activities will not alter public roadways or affect bus service or bike/pedestrian access to the State Right-of-Way. There will be no modifications to site access/egress on Apuhihi Street or Au Street. While the project is not expected to have significant traffic impacts, traffic on and adjacent to the Property may be impacted on a short-term basis during transportation of construction equipment and supplies to the project site. Construction vehicles will add to the traffic on the roadways during these short periods. The following mitigation measures are recommended for optimal traffic conditions during construction:

- Construction activities and construction materials should be located and stored away from vehicular traffic. Sight lines for drivers on the roadway should be carefully maintained.
- Trucks delivering construction materials should be scheduled on weekdays during times of non-peak commuter periods (8:30 AM to 3:30 PM).

With these mitigation measures in place, the project would result in less than significant impacts to traffic and roads.

6.2 UTILITIES

6.2.1 Existing Utilities in the Area

6.2.1.1 Electrical Supply

Electrical power is provided to the Property by HECO overhead service lines along Apuhihi Street and a HECO-owned transformer located on the northeastern side of the parking lot within the Property. The electrical components of the proposed WWTW will be connected to the onsite 208 volts 3-phase electrical lines, through a branch circuit from the Ono Vista building circuit. In the event of a commercial power outage, the new emergency generator will be linked to an automatic transfer switch so that essential loads will automatically transfer to emergency power.

6.2.1.2 Water Supply

Potable water is provided to the Property by the Honolulu Board of Water Supply water line on Apuhihi Street. Daily water usage consists of domestic uses for the condominium residents and landscape irrigation. Fire suppression water supply is also provided on the Property.

6.2.2 Potential Impacts to Utilities in the Area

The proposed project is not anticipated to require any offsite improvements. Utility service, such as potable water and electricity, to the surrounding area will not be affected. However, onsite utilities may be affected during construction activities. Additional electricity needed for operation of the proposed WWTW will be supplied by the onsite transformer. Therefore, there would be short-term, less than significant impacts to utilities from the proposed project.

SECTION 7 DETERMINATION

Based on the analysis of information in this EA, it has been determined that the proposed Ono Vista Condominiums WWTW project will not have significant negative impacts to the natural, built, or social environment. Therefore, it is anticipated that a FONSI will be issued and an EIS will not be required.

7.1 FINDINGS AND REASONS SUPPORTING THE DETERMINATION

The potential effects of the proposed project were evaluated based on the thirteen *significance criteria* identified in HAR Title 11, Chapter 200.1-13. All phases and expected consequences of the proposed project have been evaluated, including potential primary, secondary, short-term, long-term, and cumulative impacts. Table 7.1 summarizes the significance criteria and the evaluation of the potential effects of the project.

It is concluded that the proposed project does not meet any of the thirteen criteria. By not meeting these criteria, it is appropriate that the proposed project be issued a FONSI and that an EIS not be required.

Table 7.1
Evaluation of Significance Criteria
Ono Vista Condominiums
Draft Environmental Assessment

No.	Significance Criterion	Yes	No	Reason for Determination
1	Irrevocably commits a natural, cultural, or historic resource?	☐	☑	The project is not expected to irrevocably commit any natural, cultural, or historic resource. The proposed WWTW will be installed in an area that has been previously disturbed by residential development and is the location of the existing wastewater treatment system. There are no known significant cultural or historic resources in the project area and recommendations by the SHPD will be followed to protect cultural or historic resources.
2	Curtails the range of beneficial uses of the environment?	☐	☑	The project will not permanently curtail the beneficial uses of the environment. The proposed WWTW conforms to the land use designation for the Property and will be located within the existing property boundary of the Ono Vista condominiums.
3	Conflicts with the State's environmental policies or long-term environmental goals established by law?	☐	☑	The project will be in conformance with the State's environmental policies and goals established by law. The proposed WWTW will provide better treatment of Ono Vista's wastewater and will accommodate present day flows. This is anticipated to reduce the risk of future wastewater spills.
4	Has a substantial adverse effect on the economic welfare, social welfare, or cultural practices of the community and State?	☐	☑	The project is not anticipated to have any adverse effects on the economic and social welfare or cultural practices of the community or state. Rather, it will benefit the residents of Ono Vista by providing an improved wastewater treatment system.
5	Has a substantial adverse effect on public health?	☐	☑	The project is not anticipated to have any adverse effects on public health. Rather, it will have a positive impact on public health by improving treatment of wastewater and reducing the risk of future wastewater spills.
6	Involves adverse secondary impacts, such as population changes or effects on public facilities?	☐	☑	The project is not anticipated to result in adverse secondary impacts. The project is designed only to accommodate present day wastewater flows at the Ono Vista condominium, and to reduce the risk of future wastewater spills.
7	Involves a substantial degradation of environmental quality?	☐	☑	The project is not anticipated to degrade environmental quality; it is anticipated to protect environmental quality by providing upgraded wastewater treatment. The project is intended to replace the existing wastewater treatment system to accommodate present day flows in order to reduce the risk of future wastewater spills.

No.	Significance Criterion	Yes	No	Reason for Determination
8	Is individually limited but cumulatively has substantial adverse effect upon the environment or involves a commitment for larger actions?	☐	☑	The project is not anticipated to result in a significant cumulative negative impact on the environment. The project site has already been developed and any adverse impacts related to the proposed project will be limited within the property boundary. Due to the rural nature of the general area, other significant development projects are not anticipated. Therefore, the incremental effects of the proposed project combined with the effects of other past, present, and reasonably foreseeable future actions will not be cumulatively substantial. The project does not involve a commitment for larger actions. In fact, it will replace Ono Vista's existing wastewater treatment system, which will help reduce the need for additional actions.
9	Has a substantial adverse effect on a rare, threatened, or endangered species, or its habitat?	☐	☑	The project is not anticipated to adversely affect any rare, threatened, or endangered species or habitat. There are no known significant biological resources or habitats in the project area.
10	Has a substantial adverse effect on air or water quality or ambient noise levels?	☐	☑	The project is not anticipated to adversely affect long term air quality, water quality, or ambient noise levels. The project may temporarily affect air, water, or noise quality during construction, but BMPs will be implemented to minimize any impacts.
11	Has a substantial adverse effect on or is likely to suffer damage by being located in an environmentally sensitive area such as a flood plain, tsunami zone, sea level rise exposure area, beach, erosion-prone area, geologically hazardous land, estuary, fresh water, or coastal waters?	☐	☑	The project is located within the SMA and appropriate permits will be obtained for the SMA. The proposed WWTW is located within the 100-year flood hazard area and in the County's Tsunami inundation evacuation zone. The WWTW will be designed, located, and constructed to minimize or eliminate flood damage, impairment, and/or contamination during and subsequent to flooding by the regulatory flood. In addition, structural components will have the capability of resisting hydrostatic and hydrodynamic loads and effects of buoyancy due to the regulatory flood or a tsunami. BMPs will be used during construction to minimize any impacts on coastal waters. The project is not located within the sea level rise exposure area.
12	Has a substantial adverse effect on scenic vistas and view planes, during day or night, identified in county or state plans or studies?	☐	☑	In the immediate area of the proposed WWTW there is not a scenic vista or an open view to the ocean due to the presence of the existing fence and surrounding buildings. The dimensions of the proposed WWTW are approximately 14 feet wide by 30 feet long, with a height of approximately 11 feet above the level of the parking lot. A fence will be used around the WWTW to maintain the visual and aesthetic appeal of the rural area. The proposed WWTW will not interfere with scenic vistas or view planes.
13	Requires substantial energy consumption or emits substantial greenhouse gases?	☐	☑	The project will not require substantial energy consumption. A slight increase in energy use will result from the proposed WWTW and will be accommodated by the existing HECO power supply on the Property. The project will not emit substantial greenhouse gases.

SECTION 8 REFERENCES

Belt Collins & Associates, 1987, Final Environmental Impact Statement Waialua-Haleiwa Wastewater Facilities Plan, prepared for Division of Wastewater management, Department of Public Works, City and County of Honolulu, May 1987.

City and County of Honolulu, 2011, North Shore Sustainable Communities Plan, Department of Planning and Permitting, City and County of Honolulu, May 2011.

City and County of Honolulu, 2018a, Rules Relating to Water Quality, Title 20, Chapter 3, Department of Planning and Permitting, City and County of Honolulu, amended September 17, 2018.

City and County of Honolulu, 2018b, Sea Level Rise Guidance: City and County of Honolulu, Climate Change Commission, June 5, 2018.

City and County of Honolulu, 2018c, City and County of Honolulu Actions to Address Climate Change and Sea Level Rise: City and County of Honolulu Memorandum, Directive No. 18-2, July 16, 2018.

City and County of Honolulu, 2021a, The ROH Online, City and County of Honolulu, Office of Council Services, updated March 19, 2021.

City and County of Honolulu, 2021b, Oahu General Plan, Department of Planning and Permitting, City and County of Honolulu, November 2021.

City and County of Honolulu, 2022 Climate Ready Oahu Web Explorer. Viewer: http://cchnl.maps.arcgis.com/apps/View/index.html?appid=6694193a396f40fb87f78e98fbad7d73 (Accessed November 21, 2022)

CFR, 2020, Title 40 - Protection of the Environment, Chapter I – Environmental Protection Agency, Subchapter D – Water Programs, Part 122 – EPA Administered Permit Programs: the National Pollutant Discharge Elimination System, Electronic Code of Federal Regulations as of June 15, 2020.

DOH, 1974a, Environmental Impact Statements: State of Hawaii Department of Health, Hawaii Revised Statutes, Chapter 343 (revised August 31, 1996).

DOH, 1974b, State Environmental Policy: State of Hawaii Department of Health, Hawaii Revised Statutes, Chapter 344 (revised 1993).

DOH, 1992, Underground Injection Control: State of Hawaii Department of Health, Hawaii Administrative Rules, Title 11, Chapter 23, November 12, 1992.

DOH, 1996, Community Noise Control: State of Hawaii Department of Health, Hawaii Administrative Rules, Title 11, Chapter 46, September 23, 1996.

DOH, 2001, Ambient Air Quality Standards: State of Hawaii Department of Health, Hawaii Administrative Rules, Title 11, Chapter 59, September 5, 2001.

DOH, 2014a, Air Pollution Control: State of Hawaii Department of Health, Hawaii Administrative Rules, Title 11, Chapter 60.1, June 20, 2014.

DOH, 2014b, Water Quality Standards: State of Hawaii Department of Health, Hawaii Administrative Rules, Title 11, Chapter 54, November 15, 2014.

DOH, 2016, Wastewater Systems: State of Hawaii Department of Health, Hawaii Administrative Rules, Title 11, Chapter 62, March 21, 2016.

DOH, 2019a, Water Pollution Control: State of Hawaii Department of Health, Hawaii Administrative Rules, Title 11, Chapter 55, Amended February 9, 2019.

DOH, 2019b, Environmental Impact Statement Rules: State of Hawaii Department of Health, Hawaii Administrative Rules, Title 11, Chapter 200.1, August 9, 2019.

DOH, 2021, State of Hawaii Annual Summary 2020 Air Quality Data, State of Hawaii Department of Health, Clean Air Branch, December 2021.

Foote, D. E., Hill, E. L., Nakamura, S. and Stephens, F., 1972, U.S. Department of Agriculture. Soil Survey of the Islands of Kauai, Oahu, Maui, Molokai, and Lanai, State of Hawaii: Soil Conservation Service in Cooperation with the University of Hawaii Agricultural Experiment Station, August 1972.

Giambelluca et al., 2013, 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 Hawaii. Bull. Amer. Meteor. Soc. 94, 313-316, doi: 10.1175/BAMS-D-11-00228.1.

Giambelluca et al., 2014a, Giambelluca, T.W., X. Shuai, M.L. Barnes, R.J. Alliss, R.J. Longman, T. Miura, Q. Chen, A.G. Frazier, R.G. Mudd, L. Cuo, and A.D. Businger. 2014. Evapotranspiration of Hawaii. Final report submitted to the U.S. Army Corps of Engineers—Honolulu District, and the Commission on Water Resource Management, State of Hawaii.

Giambelluca et al., 2014b, Giambelluca, T.W., X. Shuai, M.L. Barnes, R.J. Alliss, R.J. Longman, T. Miura, Q. Chen, A.G. Frazier, R.G. Mudd, L. Cuo, and A.D. Businger. 2014. Evapotranspiration of Hawaii. Final report submitted to the U.S. Army Corps of Engineers—Honolulu District, and the Commission on Water Resource Management, State of Hawaii.

Hawaii Climate Change Mitigation and Adaptation Commission, 2017, Hawaii Sea Level Rise Vulnerability and Adaptation Report. Prepared by Tetra Tech, Inc. and the State of Hawaii Department of Land and Natural Resources, Office of Conservation and Coastal Lands, under the State of Hawaii Department of Land and Natural Resources Contract No: 64064.

Mink, J. F. and Lau, L. S., 1990, Aquifer Identification and Classification for the Island of Oahu, Groundwater Protection Strategy for Hawaii: Water Resources Research Center Technical Report No. 179, February 1990.

National Oceanic and Atmospheric Administration et. al., 2017, Global and Regional Sea Level Rise Scenarios for the United States, NOAA Technical Report NOS CO-OPS 083, Silver Spring, Maryland, January 2017.

National Oceanic and Atmospheric Administration, 2022, NOAA National Weather Service, National Hurricane Center Storm Surge Unit, National Storm Surge Hazard Maps, Viewer: http://noaa.maps.arcgis.com/apps/MapSeries. Accessed October 2022.

OEQC, 2012, Guide to the Implementation and Practice of the Hawaii Environmental Policy Act: State of Hawaii Office of Environmental Quality Control, January 2012.

Office of Planning, 1977, Coastal Zone Management: State of Hawaii Office of Planning, Hawaii Revised Statutes, Chapter 205A, 1977 (revised January 2006).

Office of Planning, 1978, Hawaii State Planning Act: State of Hawaii Office of Planning, Hawaii Revised Statutes, Chapter 226, 1978 (revised 1986, 2011).

Office of Planning, 2022, State of Hawaii Office of Planning, Hawaii Statewide GIS Program website: http://planning.hawaii.gov/gis/. Accessed October 2022.

Sherrod, David R., Sinton, John M., Watkins, Sarah E., and Brunt, Kelly M., 2007, Geologic Map of the State of Hawaii, Sheet 3, Island of Oahu: U.S. Department of Interior, U.S. Geological Survey, Open File Report 2007-1089.

Sinton, John M., Eason, Deborah E. Eason, Tardona, Mary, Pyle, Douglas, van der Zander, Iris, Guillou, Herve, Clague, David A., and Mahoney, John J., 2014, Kaena Volcano – A Precursor Volcano of the Island of Oahu, Hawaii: Geological Society of America Bulletin, May 2, 2014.

State of Hawaii Clean Water Branch, 2022, History and Mission Statement, https://health.hawaii.gov/cwb/clean-water-branch-home-page/about-cwb/history-and-mission-statement/. Accessed September 20, 2022.

State of Hawaii State Historic Preservation Division, 2022, HICRIS Application, https://shpd.hawaii.gov/hicris. Accessed October 2022.

State of Hawaii Safe Drinking Water Branch, 2022, SDWB Home Page, https://health.hawaii.gov/sdwb/. Updated February 9, 2022.

University of Hawaii, 1972, Detailed land classification: Island of Oahu, Honolulu: Land Study Bureau, University of Hawaii, Jan. 1963 and Dec. 1972.

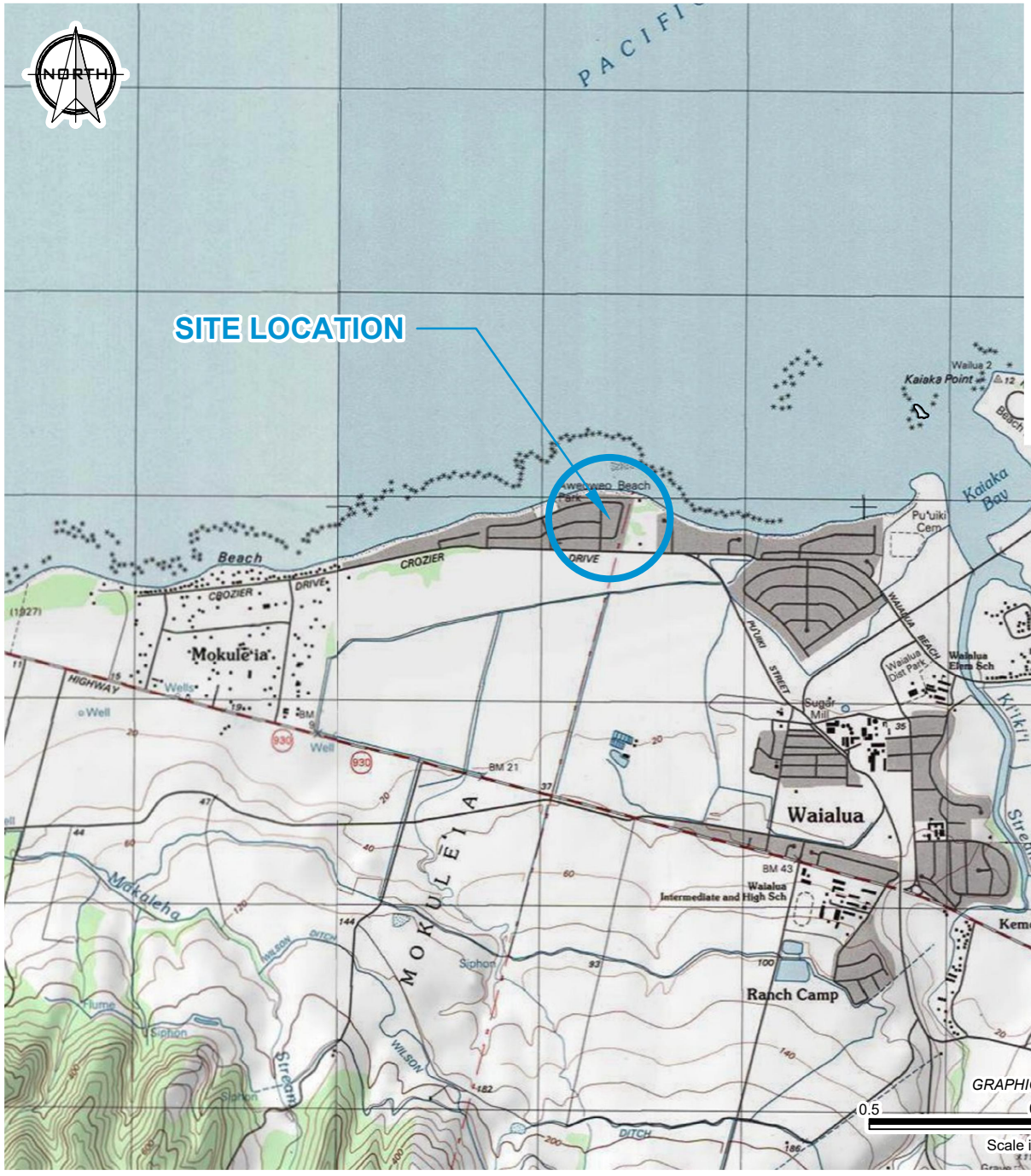
University of Hawaii, 2022, Hawaii Groundwater and Geothermal Resources Center, Hawaii State Water Wells, https://www.higp.hawaii.edu/hggrc/projects/hawaii-state-waterwells/. Accessed September 8, 2022.

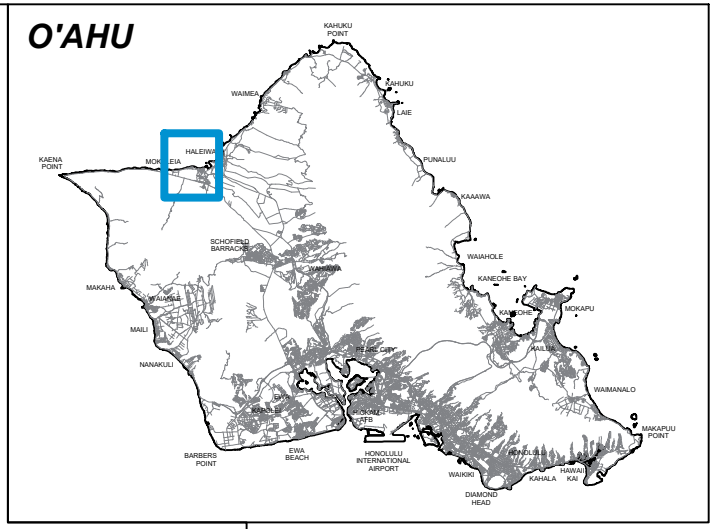
USFWS, 2022a, IPaC - Information for Planning and Consultation. Accessed at: https://ecos.fws.gov/ipac/

USFWS, 2022b, United States Fish and Wildlife Service Critical Habitat Mapper. Accessed at: https://fws.maps.arcgis.com

USFWS, 2022c, United States Fish and Wildlife Service National Wetlands Inventory Mapper. Accessed at: https://www.fws.gov/wetlands/data/mapper.html

FIGURES





NOTES

The accuracy of this document is limited to the quality and scale of the source information. This document is not a legal representation of an engineered survey.

SOURCES

ESRI USA Topo Maps. National Geographic Society, i-cubed. 2013.

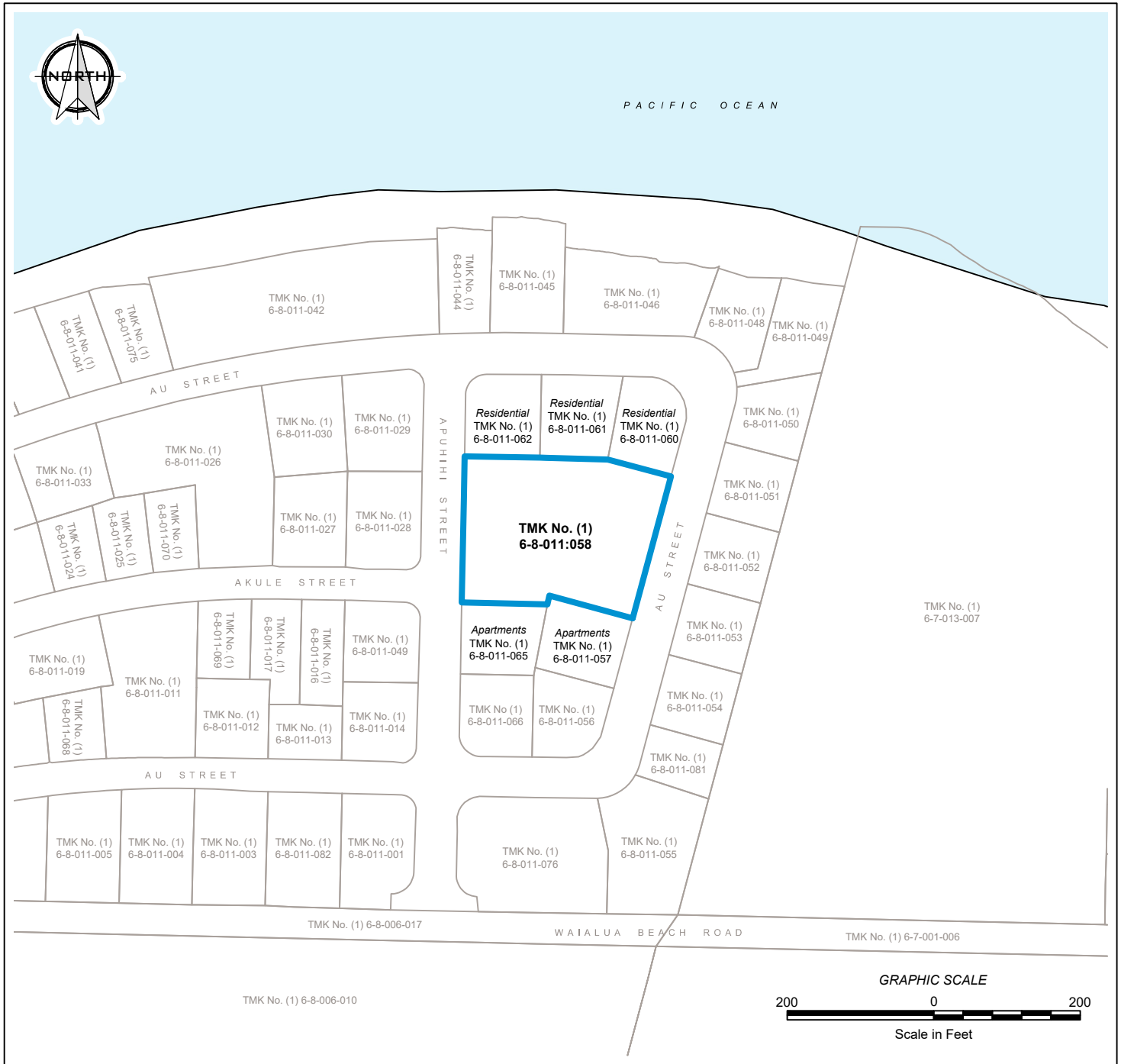
http://planning.hawaii.gov/gis, 2019.

FIGURE 1

REGIONAL LOCATION & TOPOGRAPHIC MAP

ENVIRONMENTAL ASSESSMENT
Wastewater Treatment System Replacement
68-024 Apuhihi Street, Waialua, Hawaii
TMK No. (1) 6-8-011:058

ENVIRONMENTAL SCIENCE INTERNATIONAL



LEGEND

ONO VISTA CONDOMINIUMS
TMK NO. (1) 6-8-011:058

TMK BOUNDARY

NOTES

The accuracy of this document is limited to the quality and scale of the source information. This document is not a legal representation of an engineered survey.

SOURCES

http://planning.hawaii.gov/gis/, 2022.

FIGURE 2

TAX MAP

[TMK No. (1) 6-8-011:058]

ENVIRONMENTAL ASSESSMENT
Wastewater Treatment System Replacement
68-024 Apuhihi Street, Waialua, Hawaii
TMK No. (1) 6-8-011:058

ENVIRONMENTAL SCIENCE INTERNATIONAL

LEGEND

ONO VISTA CONDOMINIUMS
TMK NO. (1) 6-8-011:058

NON-PERENNIAL STREAM

STATE LAND USE DISTRICT BOUNDARY CODE

AGRICULTURAL

URBAN

NOTES

The accuracy of this document is limited to the quality and scale of the source information. This document is not a legal representation of an engineered survey.

SOURCES

Aerial Map, 21°34'58.5"N 158°08'15.0"W, Imagery Date: April 21, 2021. Google Earth Pro, September 13, 2022.

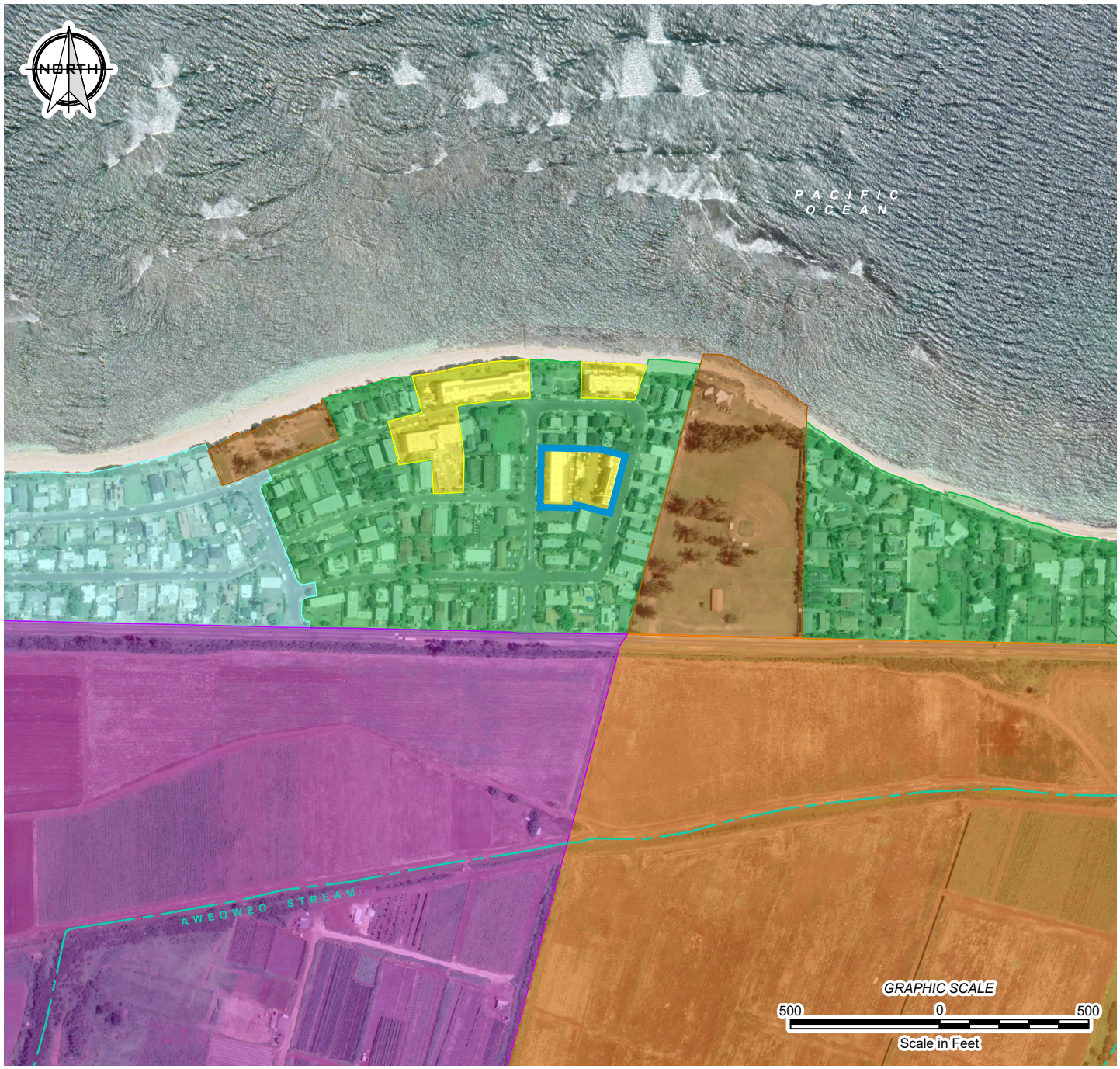
http://planning.hawaii.gov/gis/, 2022.

FIGURE 3

STATE LAND USE MAP

ENVIRONMENTAL ASSESSMENT
Wastewater Treatment System Replacement
68-024 Apuhihi Street, Waialua, Hawaii
TMK No. (1) 6-8-011:058

ENVIRONMENTAL SCIENCE INTERNATIONAL



LEGEND

ONO VISTA CONDOMINIUMS
TMK NO. (1) 6-8-011:058

NON-PERENNIAL STREAM

CITY & COUNTY OF HONOLULU
LAND USE ORDINANCE [LUO] ZONING CODE

- A-1, Low-density Apartment District
- A-2, Medium-density Apartment District
- AG-1, Restricted Agriculture District
- AG-2, General Agriculture District
- P-1, Restricted Preservation District
- P-2, General Preservation District
- R-5, Residential District
- R-7.5, Residential District

NOTES

The accuracy of this document is limited to the quality and scale of the source information. This document is not a legal representation of an engineered survey.

SOURCES

Aerial Map, 21°34'58.5"N 158°08'15.0"W, Imagery Date: April 21, 2021. Google Earth Pro, September 13, 2022.

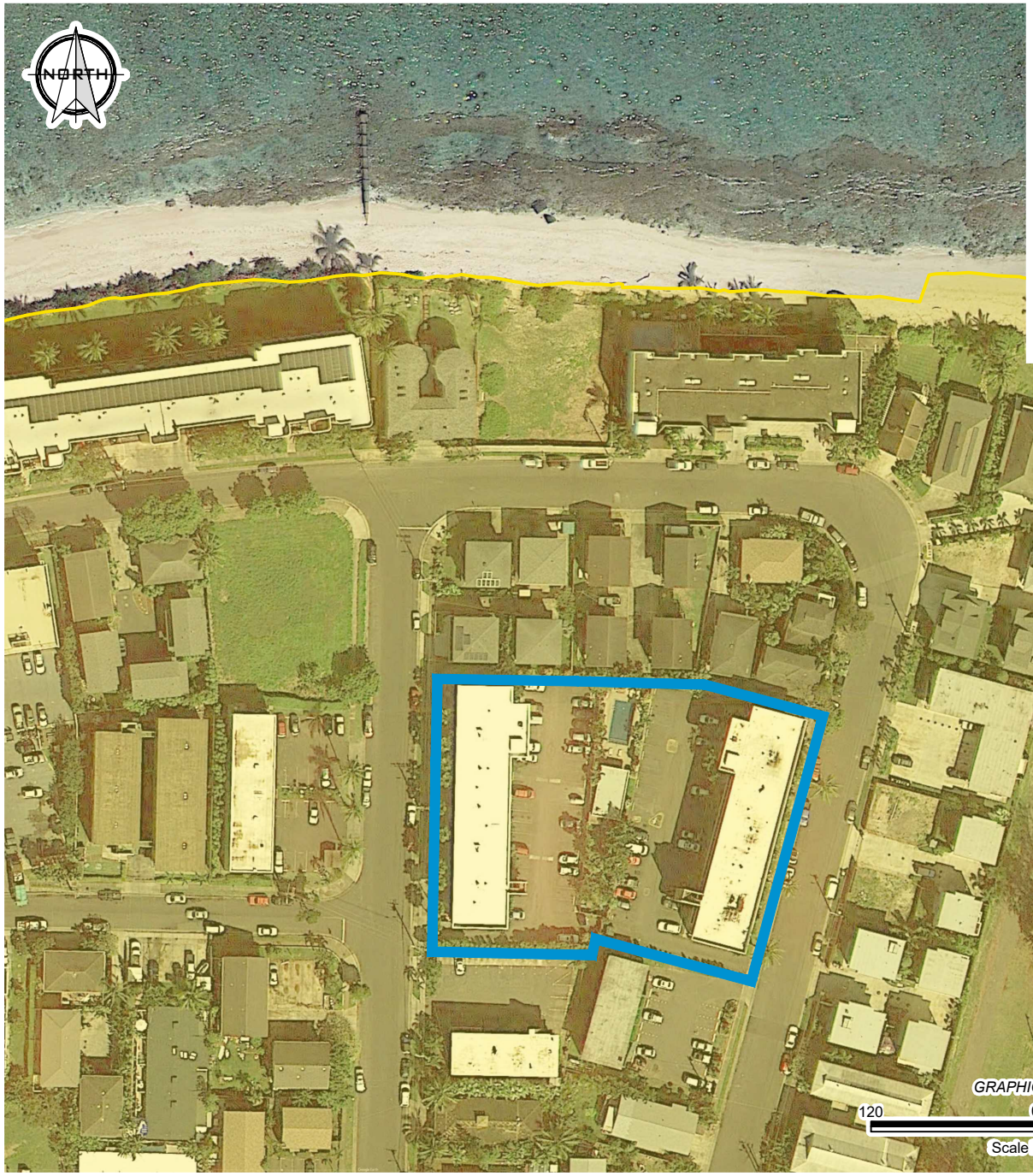
http://planning.hawaii.gov/gis/, 2022.

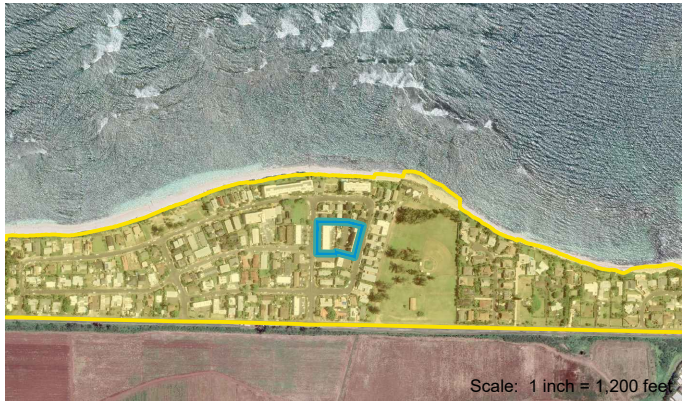
FIGURE 3b

CITY & COUNTY OF HONOLULU LUO ZONING MAP

ENVIRONMENTAL ASSESSMENT
Wastewater Treatment System Replacement
68-024 Apuhihi Street, Waialua, Hawaii
TMK No. (1) 6-8-011:058

ENVIRONMENTAL SCIENCE INTERNATIONAL





LEGEND

ONO VISTA CONDOMINIUMS
TMK NO. (1) 6-8-011:058

SPECIAL MANAGEMENT AREA
BOUNDARY

NOTES

The accuracy of this document is limited to the quality and scale of the source information. This document is not a legal representation of an engineered survey.

SOURCES

Aerial Map, 21°34'58.5"N 158°08'15.0"W, Imagery Date: April 21, 2021. Google Earth Pro, September 13, 2022.

Aerial Map, 21°34'58.5"N 158°08'15.0"W, Imagery Date: January 29, 2013. Google Earth Pro, September 13, 2022.

http://planning.hawaii.gov/gis/, 2022.

FIGURE 4
SITE LOCATION

ENVIRONMENTAL ASSESSMENT
Wastewater Treatment System Replacement
68-024 Apuhihi Street, Waialua, Hawaii
TMK No. (1) 6-8-011:058

ENVIRONMENTAL SCIENCE INTERNATIONAL

LEGEND

- ONO VISTA CONDOMINIUMS BOUNDARY, TMK NO. (1) 6-8-011:058
- BUILDING/STRUCTURE
- CONCRETE
- CRM WALL
- AREA OF NEW WWTP SYSTEM

NOTES

The accuracy of this document is limited to the quality and scale of the source information. This document is not a legal representation of an engineered survey.

SOURCES

Drawing - C-001 Ono Vista Condominium WWTW Replacement (Permanent), 68-90 Au Street, Waialua, Oahu, Hawaii 96791, TMK: (1) 6-8-001:058, Project Number 222023_22035, Date: October 10, 2022.

http://planning.hawaii.gov/gis/, 2022.

GRAPHIC SCALE

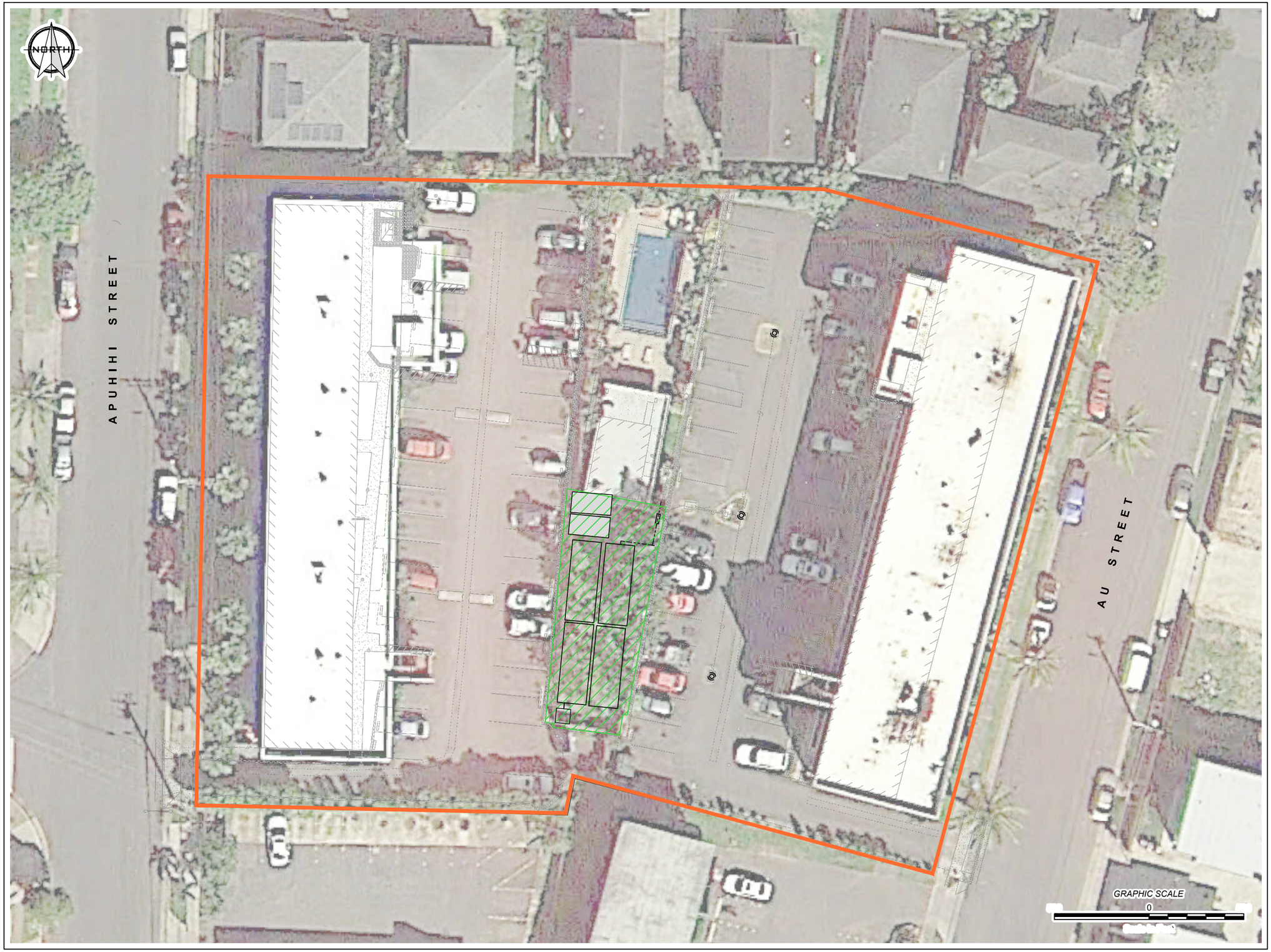
0

FIGURE 5a

SITE PLAN

ENVIRONMENTAL ASSESSMENT
Wastewater Treatment System Replacement
68-024 Apuhihi Street, Waialua, Hawaii
TMK No. (1) 6-8-011:058

ENVIRONMENTAL SCIENCE INTERNATIONAL



LEGEND

- ONO VISTA CONDOMINIUMS BOUNDARY, TMK NO. (1) 6-8-011:058
- BUILDING
- CONCRETE
- CRM WALL
- AREA OF NEW WWTP SYSTEM

NOTES

The accuracy of this document is limited to the quality and scale of the source information. This document is not a legal representation of an engineered survey.

SOURCES

Drawing - C-001 Ono Vista Condominium WWTW Replacement (Permanent), 68-90 Au Street, Waialua, Oahu, Hawaii 96791, TMK: (1) 6-8-001:058, Project Number 222023_22035, Date: October 10, 2022.

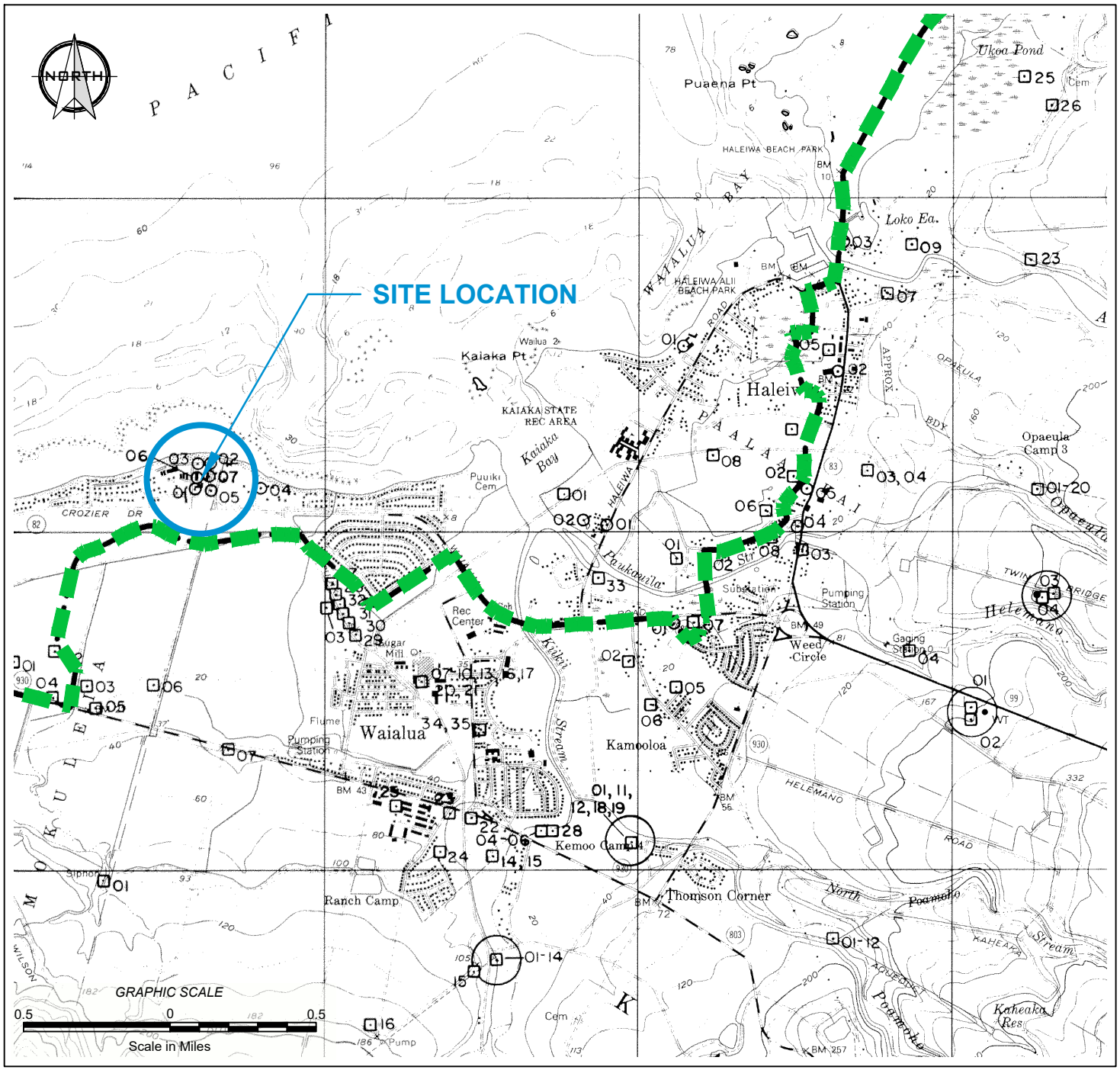
http://planning.hawaii.gov/gis/, 2022.

FIGURE 5b

SITE PLAN & AERIAL MAP

ENVIRONMENTAL ASSESSMENT
Wastewater Treatment System Replacement
68-024 Apuhihi Street, Waialua, Hawaii
TMK No. (1) 6-8-011:058

ENVIRONMENTAL SCIENCE INTERNATIONAL



LEGEND

- ONO VISTA CONDOMINIUMS TMK NO. (1) 6-8-011:058
- UNDERGROUND INJECTION CONTROL [UIC] LINE
- DRINKING SOURCE WELL
- INJECTION WELL
- OTHER WELL

NOTES

The accuracy of this document is limited to the quality and scale of the source information. This document is not a legal representation of an engineered survey.

SOURCES

O-4 Haleiwa, Hawaii, State of Hawaii, Department of Health, Underground Injection Control Program, Effective - July 6, 1984, U.S. Department of the Interior Geological Survey, 1984.

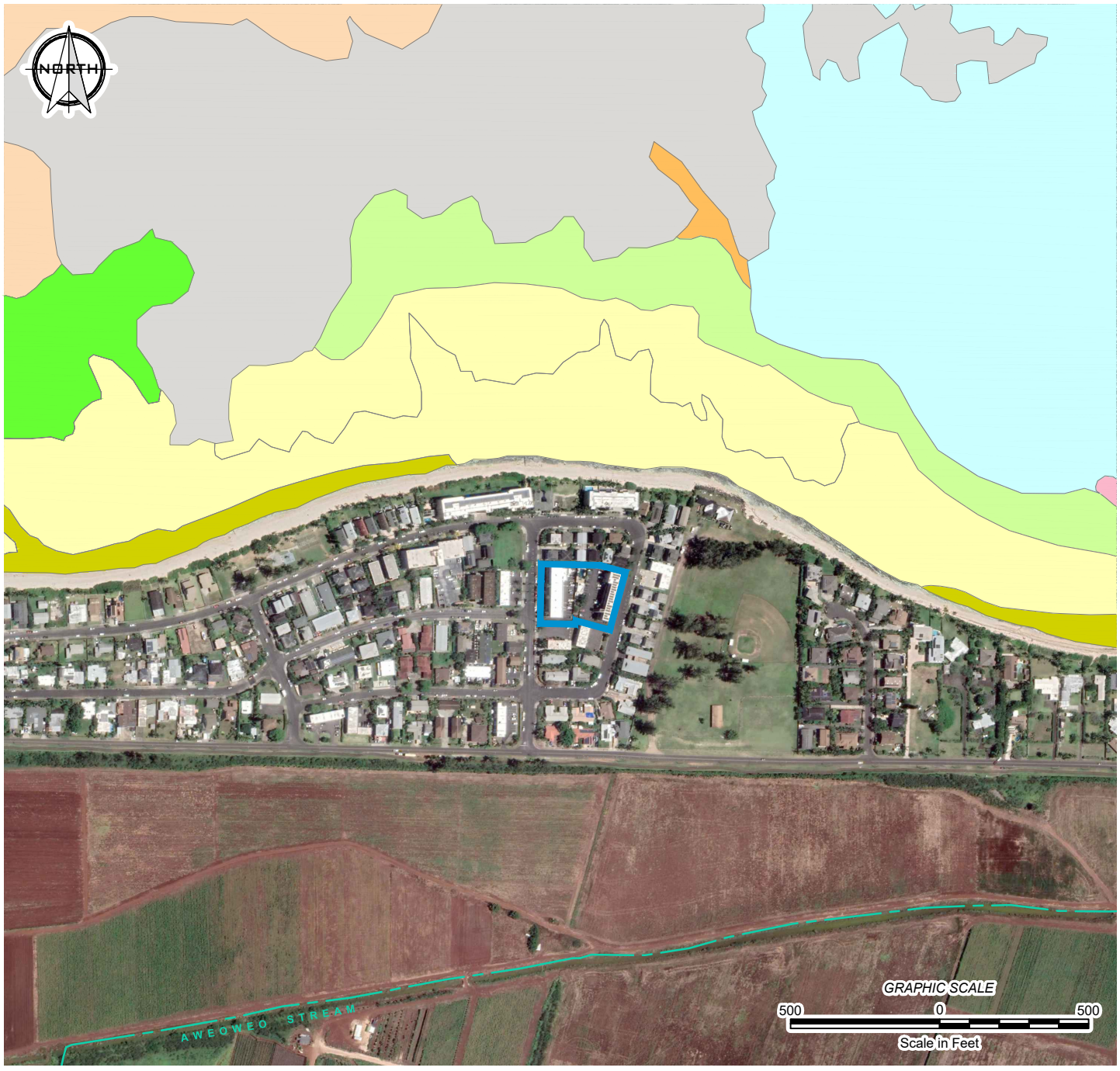
http://planning.hawaii.gov/gis/, 2019.

FIGURE 6

UIC LINE & WELL LOCATION MAP

ENVIRONMENTAL ASSESSMENT
Wastewater Treatment System Replacement
68-024 Apuhihi Street, Waialua, Hawaii
TMK No. (1) 6-8-011:058

ENVIRONMENTAL SCIENCE INTERNATIONAL



LEGEND

- ONO VISTA CONDOMINIUMS TMK NO. (1) 6-8-011:058
- NON-PERENNIAL STREAM
- BANK/SHELF, Uncolonized 90%-100%
- CHANNEL, TURF 50%-<90%
- FORE REEF, TURF 50%-<90%
- FORE REEF, UNKNOWN
- REEF CREST, CORALLINE ALGAE 10%-<50%
- REEF CREST, CORALLINE ALGAE 50%-<90%
- REEF FLAT, MACROALGAE 10%-<50%
- REEF FLAT, UNCOLONIZED 90%-100%
- UNKNOWN

NOTES

The accuracy of this document is limited to the quality and scale of the source information. This document is not a legal representation of an engineered survey.

SOURCES

Aerial Map, 21°34'58.5"N 158°08'15.0"W, Imagery Date: April 21, 2021. Google Earth Pro, September 13, 2022.

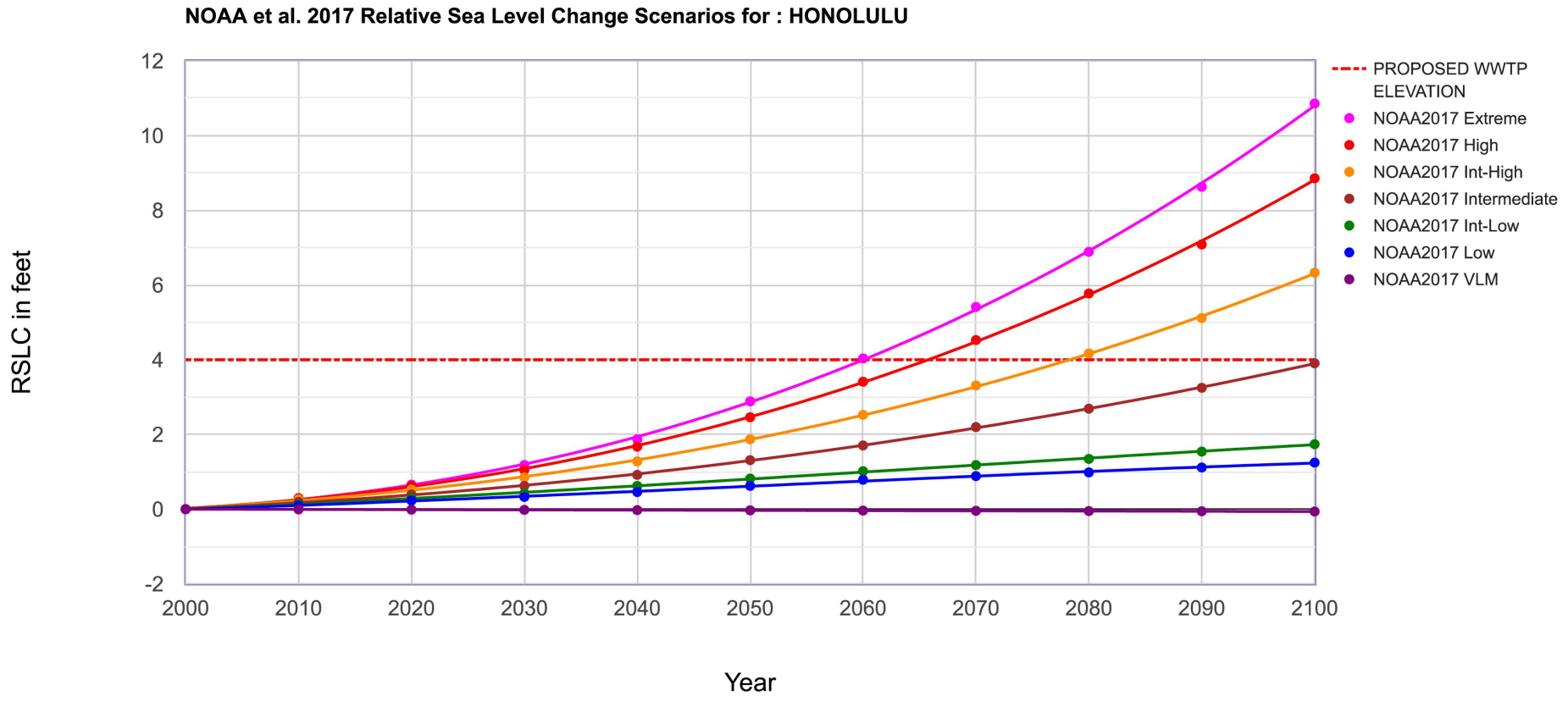
http://planning.hawaii.gov/gis/, 2022.

FIGURE 7

BENTHIC MAP

ENVIRONMENTAL ASSESSMENT
Wastewater Treatment System Replacement
68-024 Apuhihi Street, Waialua, Hawaii
TMK No. (1) 6-8-011:058

ENVIRONMENTAL SCIENCE INTERNATIONAL



ONO VISTA CONDOMINIUMS
Scenarios for HONOLULU
NOAA2017 VLM: -0.00062 feet/yr
All values are expressed in feet

Year	NOAA2017 VLM	NOAA2017 Low	NOAA2017 Int-Low	NOAA2017 Intermediate	NOAA2017 Int-High	NOAA2017 High	NOAA2017 Extreme
2000	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2010	-0.01	0.10	0.13	0.20	0.26	0.30	0.30
2020	-0.01	0.23	0.30	0.39	0.52	0.62	0.66
2030	-0.02	0.33	0.43	0.62	0.85	1.05	1.18
2040	-0.02	0.46	0.62	0.92	1.28	1.67	1.87
2050	-0.03	0.62	0.82	1.31	1.87	2.46	2.89
2060	-0.04	0.79	1.02	1.71	2.53	3.41	4.04
2070	-0.04	0.89	1.18	2.20	3.31	4.53	5.41
2080	-0.05	0.98	1.35	2.69	4.17	5.77	6.89
2090	-0.06	1.12	1.54	3.25	5.12	7.09	8.63
2100	-0.06	1.25	1.74	3.90	6.33	8.86	10.86

SOURCES: NOAA et. sl. 2017

USACE Sea level Change Curve Calculator (2022.60), https://cwbi-app.sec.usace.army.mil/rccslc/slcc_calc.html

NOTES:

1. Honolulu is a permanent service for mean sea level [MSL] station.
2. LMSL 83-01 is the local mean sea level from 1993 to 2001 which adjusts the MSL datum by 0.084 feet.
3. RSLC = Relative Sea Level Change
   VLM = Vertical Land Movement (feet/year)

FIGURE 8

RELATIVE SEA LEVEL CHANGE SCENARIOS FOR HONOLULU

ENVIRONMENTAL ASSESSMENT
Wastewater Treatment System Replacement
68-024 Apuhihi Street, Waialua, Hawaii
TMK No. (1) 6-8-011:058

ENVIRONMENTAL SCIENCE INTERNATIONAL

LEGEND

ONO VISTA CONDOMINIUMS
TMK NO. (1) 6-8-011:058

SEA LEVEL RISE EXPOSURE AREA - 3.2 FEET SCENARIO

NOTES

The accuracy of this document is limited to the quality and scale of the source information. This document is not a legal representation of an engineered survey.

SOURCES

Aerial Map, 21°34'58.5"N 158°08'15.0"W, Imagery Date: April 21, 2021. Google Earth Pro, September 13, 2022.

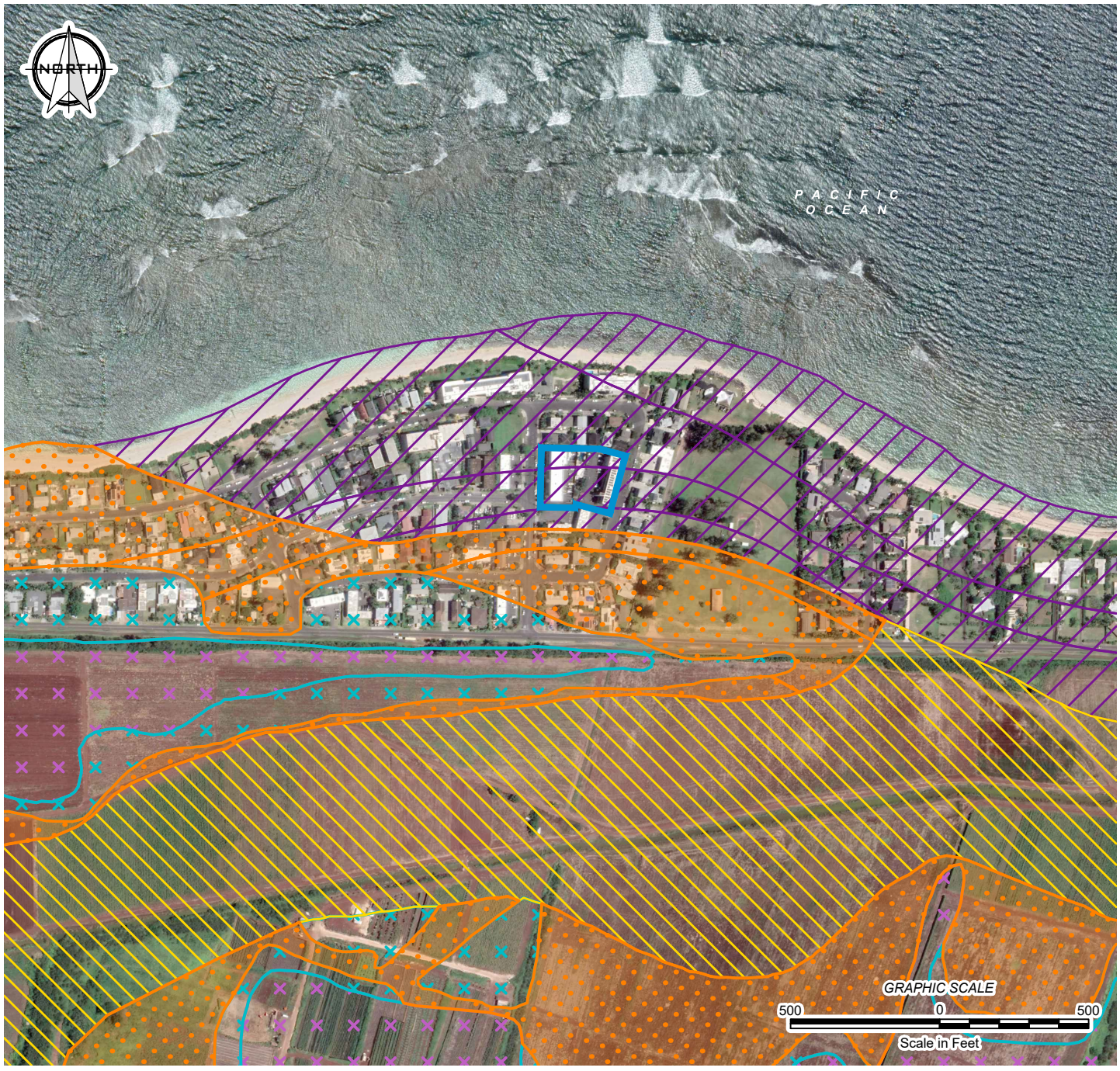
http://planning.hawaii.gov/gis/, 2022.

FIGURE 9

SEA LEVEL RISE EXPOSURE MAP

ENVIRONMENTAL ASSESSMENT
Wastewater Treatment System Replacement
68-024 Apuhihi Street, Waialua, Hawaii
TMK No. (1) 6-8-011:058

ENVIRONMENTAL SCIENCE INTERNATIONAL



LEGEND

ONO VISTA CONDOMINIUMS
TMK NO. (1) 6-8-011:058

AE - *Area subject to inundation by the 1%-annual-chance flood event for which Base Flood Elevations [BFEs] have been determined.*

AEF - *Floodway areas in Zone AE. The floodway is the channel of stream plus any adjacent floodplain areas that must be kept free of enroachment so that the 1% annual chance flood can be carried without increasing the BFE.*

VE - *Coastal flood zone with velocity hazard (wave action); BFE determined.*

X - *Areas determined to be outside the 0.2% annual chance floodplain.*

XS (X shaded) - *Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of <1 foot or with drainage areas <1 square mile; & areas protected by levees from 1% annual chance flood.*

NOTES

The accuracy of this document is limited to the quality and scale of the source information. This document is not a legal representation of an engineered survey.

SOURCES

Aerial Map, 21°34'58.5"N 158°08'15.0"W, Imagery Date: April 21, 2021. Google Earth Pro, September 13, 2022.

Flood hazard Assessment Tool, http://gis.hawaiinfip.org/FHAT/, 2022

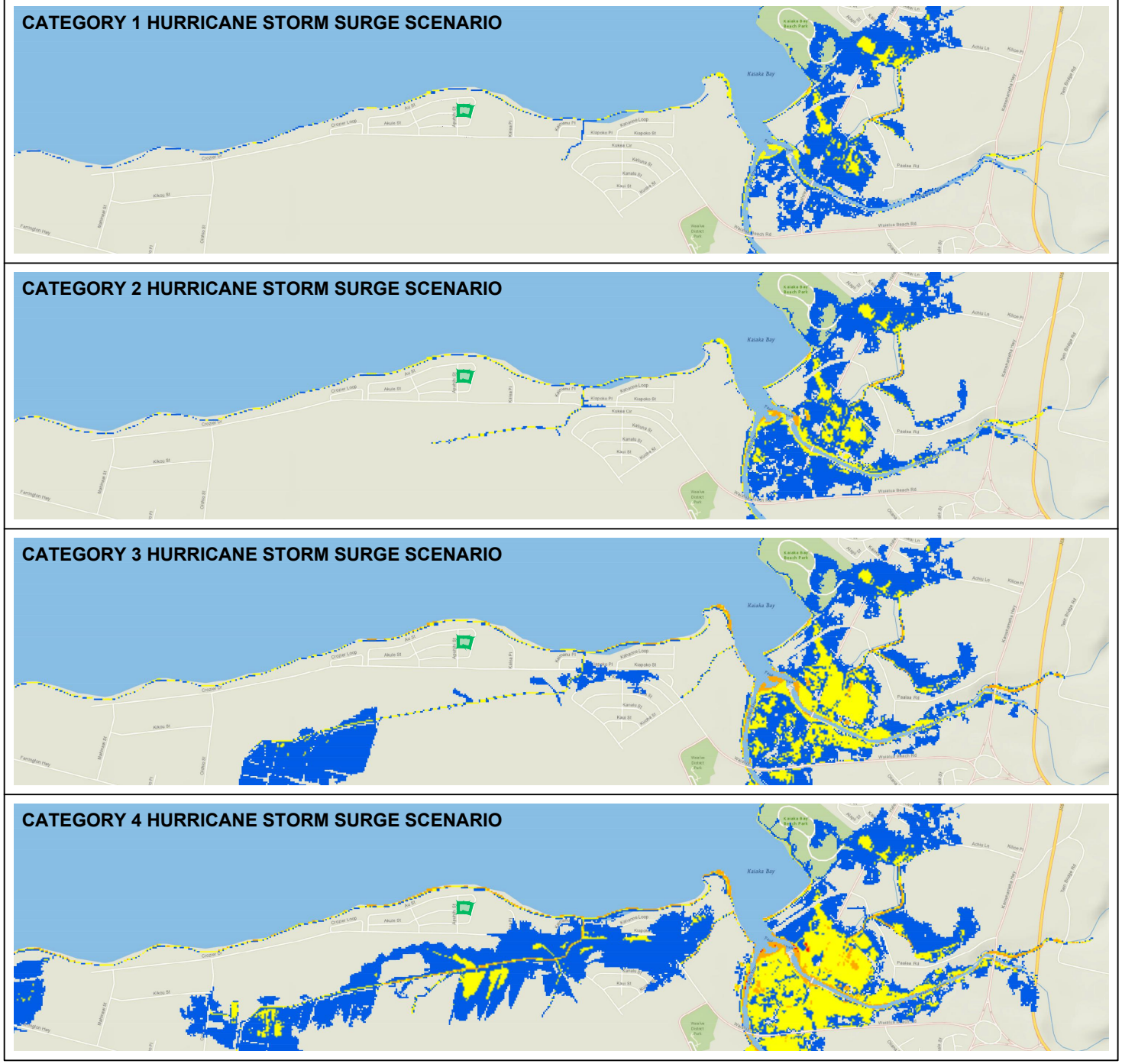
http://planning.hawaii.gov/gis/, 2022.

FIGURE 10

FLOOD HAZARD MAP

ENVIRONMENTAL ASSESSMENT
Wastewater Treatment System Replacement
68-024 Apuhihi Street, Waialua, Hawaii
TMK No. (1) 6-8-011:058

ESI
ENVIRONMENTAL SCIENCE INTERNATIONAL



LEGEND

ONO VISTA CONDOMINIUMS
TMK NO. (1) 6-8-011:058

HAWAII STORM SURGE INUNDATION HEIGHT

- UP TO 3 FEET ABOVE GROUND
- GREATER THAN 3 FEET ABOVE GROUND
- GREATER THAN 6 FEET ABOVE GROUND
- GREATER THAN 9 FEET ABOVE GROUND

NOTES

The accuracy of this document is limited to the quality and scale of the source information. This document is not a legal representation of an engineered survey.

SOURCES

Tile Layer - Category 1, 2, 3, & 4 Hurricane Storm Surge Risk Maps, NOAA/NWS/NHC/Storm Surge Unit, Map Date: 06/13/2022.

Basemap - National Geographic, Esri, Garmin, HERE, UNEP-WCMC, USGS, NASA, ESA, METI, NRCAN, GEBCO, NOAA, increment P Corp.

http://planning.hawaii.gov/gis/, 2022.

NORTH

GRAPHIC SCALE

3000 0 3000

Scale in Feet

FIGURE 11

STORM SURGE HAZARD MAP

ENVIRONMENTAL ASSESSMENT
Wastewater Treatment System Replacement
68-024 Apuhihi Street, Waialua, Hawaii
TMK No. (1) 6-8-011:058

ENVIRONMENTAL SCIENCE INTERNATIONAL

APPENDIX A

Site Photographs

Photo 1: Condo building.

Photo 2: East parking lot facing north.

Photo 3: East parking lot facing south.

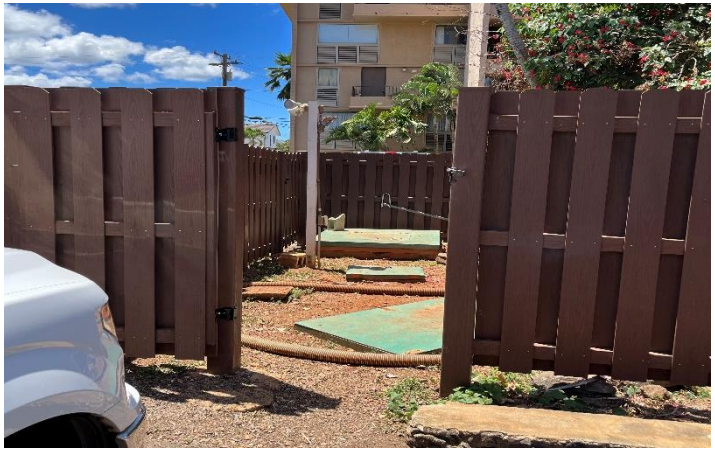


Photo 4: Gate to wastewater treatment system enclosure.

Photo 5: Inside current wastewater treatment system area - facing north.

Photo 6: North portion of wastewater treatment system enclosure - facing north.

Photo 7: Inside current wastewater treatment system enclosure - facing south.

Photo 8: Pump station in parking lot.

ESI	Attachment A – Site Photographs	Photos 5-8
	Ono Vista Condominium WWTP	Waialua, Hawaii
	Draft Environmental Assessment	ESI Project No. 122067

Photo 9: Interior of lift station.

Photo 10: Eastern parking lot where three injection wells are located – facing north.

Photo 11: In parking lot, injection well #2 - facing north.

Photo 12: Interior of injection well #2.

ESI	Attachment A – Site Photographs	Photos 9-12
	Ono Vista Condominium WWTP	Waialua, Hawaii
	Draft Environmental Assessment	ESI Project No. 122067

Photo 13: Interior of blower room.

Photo 14: Emergency back-up generator.

Photo 15: Driveway into east parking lot from Au Street - facing east.

Photo 16: Driveways of Ono Vista Condominium and adjacent property – facing west.

ESI	Attachment A – Site Photographs	Photos 13-16
	Ono Vista Condominium WWTP	Waialua, Hawaii
	Draft Environmental Assessment	ESI Project No. 122067

Photo 17: Street adjacent to east side of property (Au St.) - facing north.

Photo 18: Street adjacent to east side of property (Au St.) - facing south.

APPENDIX B

Basis of Design and Engineering Report

WASTEWATER TREATMENT WORKS
ONO VISTA CONDOMINIUMS
68-90 AU STREET, WAIALUA, HI 96791
TMK: (1) 6-8-001:058

Basis of Design and Engineering Report

Prepared For:
Ono Vista AOAO
737 Bishop Street, Suite 3100
Honolulu, HI 96813

Prepared By:

LAULEA
ENGINEERING, LLC
1019 Waimanu St #208
Honolulu, HI 96814

November 18, 2022

TABLE OF CONTENTS

ATTACHMENTS

Acronyms, Abbreviations, and Definitions

BOD5	Biochemical Oxygen Demand, 5-day
COD	Chemical Oxygen Demand
COTG	Clean-Out to Grade
DLIR	State of Hawai'i Department of Labor and Industrial Relations
DOH WWB	State of Hawai'i Department of Health Wastewater Branch
DOH SDWB	State of Hawai'i Department of Health Safe Drinking Water Branch
EPA	United States Environmental Protection Agency
F/M	Food to microorganism ratio
FOG	Fats, Oils, and/or Grease
ft²	Square foot or square feet
GI	Grease Interceptor
gpd	Gallon per day
HAR 11-62	Hawai'i Administrative Rules Title 11 Chapter 62
HIOSH	Hawai'i Occupational Safety and Health
L	Liter
lb	Pounds
mg	Milligrams
mpi	Minutes per inch
MSL	Mean Sea Level
OSHA	Occupational Safety and Health Administration
Owner	Subject property owner, which may be Owner(s), Trustee(s), Executor(s), etc.
pH	Potential of hydrogen; quantitative measure of the acidity or alkalinity of a solution
TMK	Tax Map Key
WWTW	Wastewater Treatment Works

1. PROJECT BACKGROUND

The project involves property with the following information:

Tax Map Keys ("TMK"): (1) 6-8-001:058
Project Address: 68-90 Au Street, Waialua, HI 96791
Total Land Area: 1.2 acres
Property Class: Condo Master

Ono Vista Condominiums is situated in Waialua on the northern coast of the island of Oahu. The real estate is bordered by residential properties on both north and south ends with Au Street to the east and Apuhihi Street to the east. Running north to south, adjacent to the streets, two buildings were built in 1975. There are forth-eight units that are two-bedrooms and sixteen units that are one-bedrooms for a total of 112 total bedrooms with direct sources of wastewater. There is a recreation building, which includes two restrooms, a sink and shower area, is centrally located on the property. Adjacent to the recreation building is a pool with hours of operation 7am to 10pm. There is no staff assigned to the pool. Approximately 20 patrons use the pool a day.

The current WWTW is beyond the typical service life of 40 years.

The injection wells are limited in capacity and operators have resorted to contracting a pumping company to haul wastewater offsite multiple times a week. The existing wastewater system receives influent from 6-inch sewer laterals from each building. A lift station pumps the raw wastewater to a grease trap/pre-loader then flows into a sludge and aeration tank. The clarifiers follows then subsequently the chlorinator before discharging into three injection wells in the east parking lot.

This project will replace the temporary WWTW with a new, larger and robust, permanent WWTW. The new WWTW will discharge treated effluent into the existing three injection wells after it has been modified by overdrilling to remove most of the plugging and injection use over the years. One well will have the capacity for total daily flow, second well will be 100% back-up leaving the final well for redundancy.

2. DESIGN CRITERIA

The daily average design flow is calculated in the table below:

Tenant	Units	GPD/bedroom	Total GPD
Condominium Bedroom Units*	112	200	22,400
Grand Total			22,400

*See as-builts for basis of design

Based on the table above an average design flow of 22,400 gpd was calculated. The owners of Ono Vista Condominiums have decided to purchase a wastewater treatment system to have a peak flow capacity of ***35,000 gpd for a 1.5 factor of safety***. Influent BOD5 and TSS

concentrations are assumed at 300 mg/l, while legal effluent limitations for disposal are set at 60 mg/l [HAR 11-62-26(b)(1)(D) & HAR 11-62-26(b)(2)(D)].

3. GENERAL WASTEWATER TREATMENT SYSTEM DESCRIPTION

The proposed wastewater treatment system will consist of the following:

- Existing Wet Well/Lift Station
- Preloader/Equalization Basin
- Primary Treatment Tank/System
  - Integrated Clarifier Tank
  - Integrated Sludge Holding Tank
  - Electromagnetic Flowmeter
- UV Disinfection System
- Multiple Injection Well Disposal System (One (1) Primary and one (1) 100% Backup Well and a third Well for Redundancy)

3.1 Existing Wet Well/Lift Station

The sewer lateral from the condominium conveys the domestic wastewater to an existing 6' diameter wet well which is equipped with dual submersible lift pumps that operate at 3 phase 208 volts power from a branch circuit from the existing wastewater treatment plant electrical power. The pumps will convey the wastewater via force main to the new equalization basin.

3.2 Preloader/Equalization tank

The new preloader/equalization tank will be a 8,000 gallon two-compartment FRP tank with dual submersible pumps. The first compartment of the tank will act as a preloader where sediment/solids will settle and the second compartment will act as an equalization basin for flow equalization. The wastewater will then be pumped directly to the Kubota Technologies Johkasou System.

3.3 Treatment System: Kubota Johkasou Package Treatment System

By immersing membrane cartridges in an activated sludge basin, MBRs combine membrane technology with the biological process. High-standard treatment is completed in a single basin, replacing the traditional clarifier and filters required for tertiary treatment. Microorganisms are captured by the membranes' pore apertures, which range from 0.01 to 0.1 microns, lowering their concentration in the effluent. MBRs typically operate with longer sludge ages and higher mixed liquor suspended solids (MLSS) concentrations. The design parameters for the MBR, the manufacturer's technical quotation, and an EPA bulletin that goes into more depth about the procedure are all found in Appendix XX.

Kubota's membrane sheet is made from chlorinated polyethylene, has an average pore size of 0.2 micron (maximum 0.4 micron), is much thicker than other membranes to provide long-lasting durability, and features high porosity to enable high flow. This pore size has been designed as the optimum balance between water quality and quantity. Kubota's membrane sheet has Title 22 approval for water reuse in California.

The Kubota treatment system does meet the requirements of the DOH-WWB HAR 11-62, Subchapter 2 WWTW. Effluent from the Kubota will be treated to a maximum of 30 mg/L in BOD5 concentration and 30 mg/L in Suspended Solids.

3.4 Utility Enclosure and WWTW Perimeter Fencing/Wall

A utility enclosure will be constructed adjacent to the recreation building to include the existing emergency generator which operates the blowers. The utility enclosure will house the primary/standby blowers and the WWTW control panels. The utility enclosure will be a non-occupied structure. Per the HAR, Title 11, Chapter 46, Community Noise Control Document, a 50 dBA noise level is to be met at the neighboring property lines. The noise generating equipment (i.e., blowers and pumps) will therefore all be housed in the utility enclosure. The blowers will be installed inside the room with individual sound enclosures reduce the noise level.

The existing wooden picket fence painted brown approximately 6 feet high with a locking access door will be retained and reinstalled around the perimeter of the WWTW tanks to limit public access.

3.5 Sludge Holding Tank

The existing wet well and preloader will continue to separate inorganics as well as solids from the process flow. It is recommended that the wet well and sludge holding tank, mentioned in the below paragraph, are pumped on regular recurring schedules.

The Kubota WWTW will include a sludge holding tank at the end of the multi-stage process to store the sludge holding capacity to an almost two-week retention time. Fine bubble aeration will be used to aerate the sludge tank. Close monitoring of the clarifier capacity will be necessary for the first few months. After monitoring steady state conditions, the operator will be able to provide an accurate estimated frequency/schedule to when the clarifier and wet well need to be pumped.

3.6 Electromagnetic Flowmeter

The new WWTW will reutilize the existing flowmeter used for the Temporary WWTW. The existing flowmeter is a MagFlux® 7200 Sensor 3” ANSI/150 psi w/Display. See Attachment C for the Flowmeter Specification and Details.

4. PROCESS PARAMETERS

The new wastewater treatment works design BOD5 and TSS loading is based on reasonable loading for residential sewage. The wastewater will be of residential strength and is expected to contain relatively low levels of fat, oils and grease due to the nature of the wastewater sources (residential).

WWTW Design Daily Flow	=	22,400 gallons/day
Design Influent BOD5 Concentration	=	300 mg/L
Design Influent TSS Concentration	=	300 mg/L
Wetwell/Trash Tank diameter	=	6 feet *(Existing)*
Tank 1 (1st EQ Tank)	=	24.1 feet
Tank 2 (2nd EQ Tank + Sludge Holding Tank)	=	24.1 feet
Tank 3 (Anoxic)	=	20.7 feet
Tank 4 (MBR Tank + Disinfection & Effluent Tank)	=	24.6 feet
Treatment System Length	=	93.5 feet
Tank 1 Dimensions	=	24.1'L x 8.2'W x 10.2'H
Tank 1 Operating Volume	=	11,900 gallons
Tank 2 Dimensions	=	24.1'L x 8.2'W x 10.2'H
Tank 2 Operating Volume	=	13,450 gallons
Tank 3 Dimensions	=	24.1'L x 8.2'W x 10.2'H
Tank 3 Operating Volume	=	5,950 gallons
Tank 4 Dimensions	=	24.1'L x 8.2'W x 10.2'H
Tank 4 Operating Volume	=	8,100 gallons
Daily Sludge Generation	=	43 lbs/day
Sludge Holding Capacity	=	1,550 gallons
Sludge Retention Time	=	5 days
Effluent BOD5 Concentration	=	<30 mg/L
Effluent TSS Concentration	=	<30 mg/L

4.1. Process Mass Balance

Design Flow = 22,400 gpd

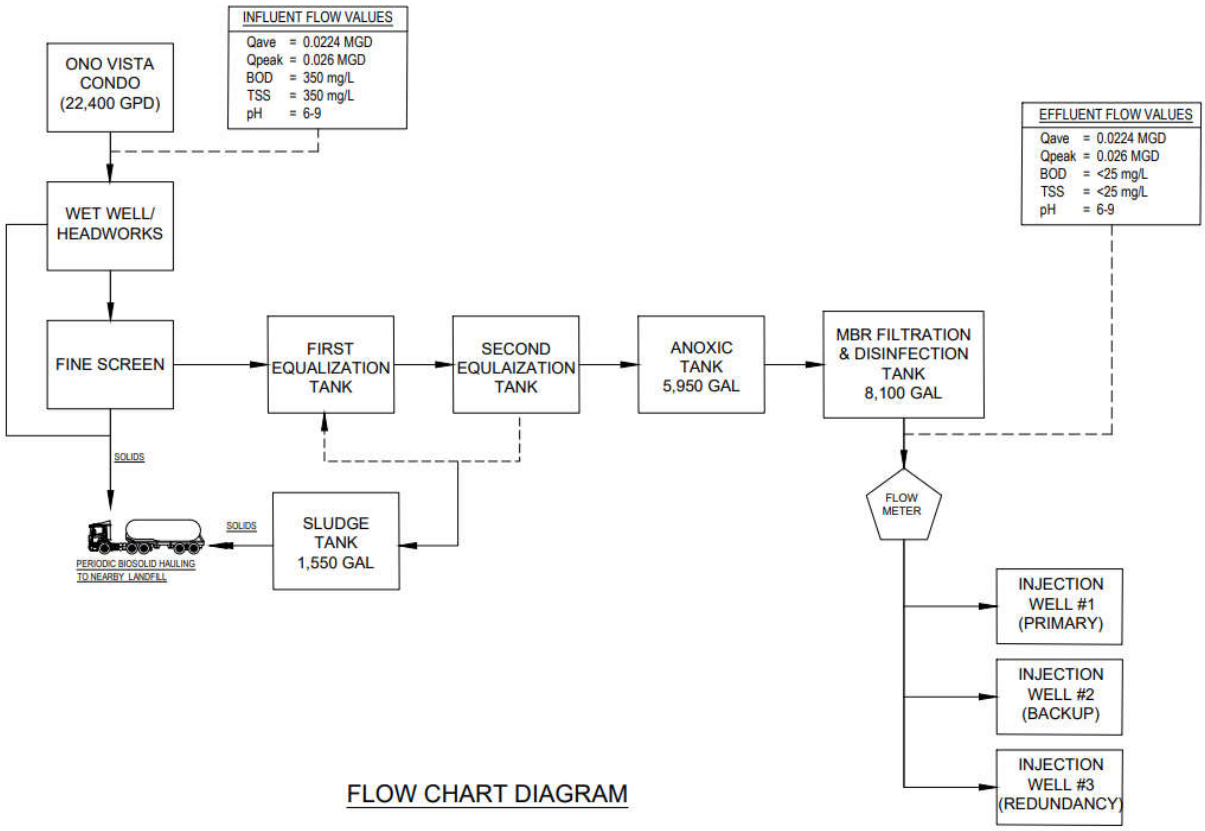


Figure 4.1- Process Flow Diagram (Hydraulic Loading and Organic Capacities Shown)

The wet well/trash tank is assumed to perform negligible treatment. Total after Johkasou:

% BOD5 Reduction from WWTW = 90%
% TSS Reduction from WWTW = 90%

5. ELECTRICAL AND EMERGENCY POWER

Electrical service will be provided by Hawaiian Electric Company (HECO) through a branch circuit from the Ono Vista building circuit. The electrical components of the new WWTW will be connected to the existing on-site 208 volts 3-phase electrical lines.

Emergency power will be provided by a diesel generator or equivalent equipment. The new generator will draw its fuel from a separate fuel tank. The new generator will provide backup power to the WWTW blowers, and existing Wet Well/Lift Station.

6. UV DISINFECTION

Disinfection processes selectively kill pathogens or render them incapable of reproduction or harm to humans. Disinfection at WWTWs is employed for the purposes of protection of public health, reduction of organic matter, inorganics, nutrients, odor, aesthetics, and maintaining waste-assimilative capacity of receiving water bodies. The protection of public health through the control of disease-causing microorganisms is the primary reason for wastewater disinfection (WEF, 1996). As the last barrier of protection from pathogenic organisms, disinfection at WWTWs is an important process. To address this, we will utilize a *UV disinfection* system that is recommended to integrate within the last tank.

Spare materials to include UV lamps, quartz sleeves, O-rings, cleaning solutions and operator's kit will be provided for the owner. See Attachment D for UV System Specification and Details.

7. EXISTING WASTEWATER EFFLUENT DISPOSAL AND SAMPLING

Ono Vista Condominium, located on the shoreline in Waialua, contains three (3) wells designated as Injection Wells (IW) 1-3, that receive intermittent wastewater effluent, treated by the wastewater treatment plant, from the center of the property. The site is used entirely for residential purposes.

After chlorination is accomplished by effluent passing over chlorine tablets in a basket, the effluent is pumped on demand by a mercury level switch to IW-1, IW-2 and IW-3 through piping with gate valves. Under UIC permit number UO-1305, each injection well is a 4-inch diameter shallow injection well (approximately 29 to 50 feet deep) that operates under gravity head. In the event of pump failure, an overflow pipe connects the contact chamber to IW-2. An overflow pipe connects IW-2 to IW-3. The average design flow rate for the system is 22,400 gpd and a historical actual flow rates that varied between 10,000 to 15,000 gpd.

The existing 4-inch diameter wells seemed to work fine for many years but an increased diameter is necessary to give us enough overdrilling to remove most of the plugging from the original construction and years of injection use. We should also drill deeper than the original wells to below the original injection zone to mitigate against the possibility of formation plugging. The proposed drilling for each 14-inch borehole and a 8-inch casing diameter for a total depth of 80-100 feet. These larger diameters are able to handle peak flow. Existing piping between wells that help transport overflows will be reutilized.

8. SCUM, FOG AND SLUDGE MANAGEMENT PLAN

Sludge, scum, FOG, and rubbish from the Wet Well/Lift Station and Kubota WWTW will be vacuumed and trucked to nearby disposal facilities on a bi-weekly schedule.

Ono Vista AOAO will contract local pumper companies to extract and haul away sludge from the sludge holding tank to the nearest municipal wastewater treatment plant retention availability yet to be determined.

9. CONTROLS AND INSTRUMENTATION

The Kubota supplier shall furnish a control system. The system shall include local control stations, motor starters, control switches, relays, and pilot lights. Control Panels shall be free standing, NEMA 4 enclosures. The panels shall be UL approved. Mounting pad and stand shall

be the responsibility of the Installing Contractor. Motor starters shall be 208V/3Ph/60Hz power shall be provided.

10. OPERATIONS AND MAINTENANCE (O&M)

O&M and electronic O&M manuals shall be furnished during start-up. The manuals shall include installation, operation and maintenance instructions for all equipment provided. For WWTW startup, field personnel from Kubota will perform a functional check of each item furnished and start-up of the process. During this time, the field representative will provide operation training, which shall include familiarization with the MBR process, and review of the O&M manuals. The Johkasou supplier to assist with the start-up process.

11. ESTIMATED PROCUREMENT AND CONSTRUCTION SCHEDULE

- Equipment Procurement (*Estimated 8 months*)
  - Kubota System and Utility Enclosure
- Mobilization of General Contractor (1 month)
- WWTW Construction (*Estimated 8 months*)
  - Three (3) Phases:
    - Installation of temporary WWT system, Demolition of Existing WWTW
    - Over-excavate, fill, concrete pad for WWTW, utility building, UV system and generator, install steel tank, electrical conduits/wiring, fencing, trenching, UV install, etc...
    - Seeding of newly installed WWTW, commissioning of new system
- DOH Approval to Operate (2 months)
- Removal of temporary WWTW and installation of Emergency Generator (2-3 months)

12. ESTIMATED EQUIPMENT PROCUREMENT ROM COSTS

- Kubota Johkasou Package Treatment System (approx. $635,000)
- Utility Enclosure (*pending*)
- Kubota Equipment Startup (*pending*)
- Kubota Freight (approx. $60,000)
- Emergency Generator (approx. $36,000)
- UV Disinfection System (*pending*)
- Electromagnetic Flowmeter (*pending*)

Note: excludes construction costs and additional design/permitting fees

13. REFERENCES

"Hawai‘i Administrative Rules", Department of Health, Chapter 62 of Title 11, Wastewater Systems, State of Hawai‘i, dated March 21, 2016 (hereafter called "HAR 11-62").

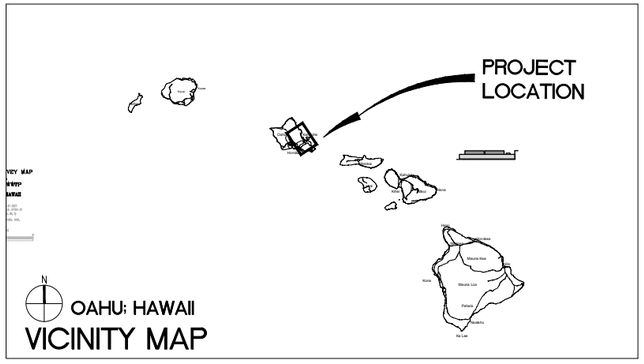
"Onsite Wastewater Treatment Systems Manual", Office of Water, Office of Research and Development, U.S. Environmental Protection Agency, dated February 2002 (hereafter called "EPA OWTSM").

ATTACHMENTS

Attachment A- Preliminary Design Plans

ONO VISTA WASTEWATER TREATMENT PLANT REPLACEMENT

PROJECT LOCATION
WAIALUA, OAHU
TMK: (1) 6-8-011: 058

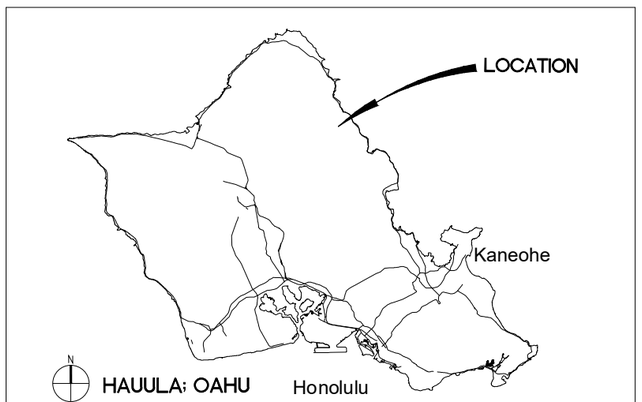


VICINITY MAP

Drawing Index	
T-1	TITLE SHEET
T-2	GENERAL NOTES
T-3	DESIGN DATA, FLOW DIAGRAM AND NOTES
C-1	GENERAL SITE PLAN
C-2	WWTW SITE PLAN- NORTH
C-3	WWTW SITE PLAN- SOUTH
C-4	PROCESS SCHEMATIC
C-5	MEDIA RACK LAYOUT

PREPARED FOR:
ONO VISTA CONDIMINIUM
68-90 AU STREET
WAIALUA, OAHU, HI 96791

PREPARED BY:
LAULEA ENGINEERING, LLC.
1019 WAIMANU ST #208
HONOLULU, HI 96814



LOCATION MAP

LAULEA ENGINEERING, LLC

Revision Number/ Description

Project Name
ONO VISTA CONDOMINIUM
WWTW REPLACEMENT
(PERMANENT)
68-90 AU STREET,
WAIALUA, OAHU, HAWAII 96791
TMK: (1) 6-8-011: 058

Drawing Title
TITLE SHEET

Project Number	Date
22023_22035	October 10, 2022

Drawn	Checked	Designed
RD	TK	RD

Drawing Number
T-001

Sheet No.____ of_____

NOT FOR CONSTRUCTION: PERMIT SET

Revised October 2014

10/20/2022 10:01:34
G:\...\shortcut-targets-by-id\1aiXTOOnifFhEcWYbtVKgJw9jcnrP4pcF\Business Accounts\22023_22035 Ono Vista WWTP Replacement\CAD\221010_60% SET\Civil Sheets.dwg

CONSTRUCTION NOTES:

1. ALL APPLICABLE CONSTRUCTION WORK SHALL BE DONE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS FOR PUBLIC WORK CONSTRUCTION, SEPTEMBER 1984, AS AMENDED, OF THE DEPARTMENT OF PUBLIC WORKS, CITY & COUNTY OF HONOLULU AND THE COUNTIES OF KAUAI, NAUI, AND HAWAII.

2. VERIFY AND CHECK ALL DIMENSIONS AND DETAILS SHOWN ON THE DRAWINGS PRIOR TO THE START OF CONSTRUCTION. ALL CONFLICTS SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE CONTRACTING OFFICER.

3. THE UNDERGROUND PIPES, CABLES OR DUCTING LINES KNOWN TO EXIST BY THE ENGINEER FROM HIS SEARCH OF RECORDS ARE INDICATED OF THE PLANS. THE CONTRACTOR SHALL VERIFY THE LOCATIONS AND DEPTHS OF THE FACILITIES AND EXERCISE PROPER CARE IN EXCAVATING IN THE AREA, WHEREVER CONNECTIONS OF NEW UTILITIES TO EXISTING UTILITIES ARE SHOWN ON THE PLANS. THE CONTRACTOR SHALL EXPOSE THE EXISTING LINES AT THE PROPOSED CONNECTIONS TO VERIFY THEIR LOCATIONS AND DEPTHS PRIOR TO EXCAVATION FOR THE NEW LINES.

4. NO CONTRACTOR SHALL PERFORM ANY CONSTRUCTION OPERATION AS TO CAUSE FALLING ROCKS, SOIL OR DEBRIS IN ANY FORM TO FALL, SLIDE OR FLOW INTO EXISTING CITY OR STATE DRAINAGE SYSTEMS, OR ADJOINING PROPERTIES, STREETS OR NATURAL WATERCOURSES. SHOULD SUCH VIOLATIONS OCCUR, THE CONTRACTOR MAY BE CITED AND THE CONTRACTOR SHALL IMMEDIATELY MAKE ALL REMEDIAL ACTIONS NECESSARY.

5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONFORMANCE WITH THE APPLICABLE PROVISIONS OF THE WATER QUALITY AND WATER POLLUTION CONTROL STANDARDS CONTAINED IN HAWAII ADMINISTRATIVE RULES, TITLE 11, CHAPTER 55, "WATER POLLUTION CONTROL", AS WELL AS CHAPTER 14 OF THE REVERSED ORDINANCES OF HONOLULU, AS AMENDED, BEST MANAGEMENT PRACTICES SHALL BE EMPLOYED AT ALL TIMES DURING CONSTRUCTION.

6. CONFINED SPACE

FOR ENTRY BY STATE PERSONNEL, INCLUDING INSPECTORS AND REPRESENTATIVES, INTO A PERMIT REQUIRED CONFINED SPACE AS DEFINED IN 29 CFR PART 1910.146(B), THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROVIDING:

I. ALL SAFETY EQUIPMENT REQUIRED BY THE CONFINED SPACE REGULATIONS APPLICABLE TO ALL PARTIES OTHER THAN THE CONSTRUCTION INDUSTRY, TO INCLUDE, BUT NOT LIMITED TO, THE FOLLOWING:

a. FULL BODY HARNESSES FOR UP TO TWO PERSONNEL
b. LIFELINE AND ASSOCIATED CLIPS
c. INGRESS/EGRESS AND FULL PROTECTION EQUIPMENT
d. TWO-WAY RADIOS (WALKIE-TALKIES) IF OUT OF LINE-OF-SIGHT,
e. EMERGENCY (ESCAPE) RESPIRATOR (10 MINUTE DURATION).
f. CELLULAR TELEPHONE TO CALL FOR EMERGENCE ASSISTANCE.
g. CONTINUOUS GAS DETECTOR (CALIBRATED) TO MEASURE OXYGEN, HYDROGEN SULFIDE, CARBON MONOXIDE AND FLAMMABLES (CAPABLE OF MONITORING AT A DISTANCE AT LEAST 20 FEET AWAY).
h. PERSOANL MULTI-GAS DETECTOR TO BE CARRIED BY INSPECTOR.

II. CONTINUOUS FORCED AIR VENTILATION ADEQUATE TO PROVIDE SAFE ENTRY CONDITIONS.

III. ONE ATTENDANT/RESCUE PERSONNEL TOPSIDE (TWO, IF CONDITIONS WARRANT IT).

IV. ALL SAFETY EQUIPMENT SHALL COMPLY WITH THE STANDARDS OF THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION AND ALL APPLICABLE FEDERAL, STATE, AND CITY LAWS AND REGULATIONS RELATING TO SAFETY.

8. ALL EXISTING UTILITIES TO REMAIN IN USE, WHETHER OR NOT SHOWN ON THE PLANS BY THE CONTRATOR DURING CONSTRUCTION. ALL DAMGES TO EXISTING UTILITIES SHALL BE REPAIRED AND PAID FOR BY THE CONTRACTOR.

9. WHEN TRENCH EXCAVATION IS CLOSE TO OR UNDER EXISTING STRUCTURES OR FACILITIES, THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROPERLY SHEETING, SHORING AND BRACING THE EXCAVATION AND STABILIZING THE EXISTING GROUND TO RENDER IT SAFE AND SECURE FROM POSSIBLE SLIDES, CAVE-INS AND SETTLEMENT AND FOR PROPERLY SUPPORTING EXISTING STRUCTURES AND FACILITIES WITH BEAMS, STRUTS OR UNDER-PINNING TO FULLY PROTECT THEM FROM DAMAGE.

10. THE CONTRACTOR SHALL RESTORE TO THEIR ORIGINAL CONDITION OR BETTER, ALL IMPROVEMENTS DAMAGED AS A RESULT OF THE CONSTRUCTION, INCLUDING PAVEMENTS, EMBANKMENTS, CURBS, SIGNS, LANDSCAPING, STRUCTURES, UTILITIES, WALLS, FENCES, ETC. UNLESS PROVIDED FOR SPECIFICALLY IN THE PROPOSAL. DEMOLITION AND RESTORATION OF EXISTING ITEMS SHALL BE INCIDENTAL AND INCLUDED WITHIN THE AMOUNT PAID FOR UNCLASSIFIED TRENCH EXCAVATION.

11. ALL CONCRETE AND A.C. PAVEMENT TO BE TRENCHED OR RECONSTRUCTED SHALL BE SAW-CUT TO THE REQUIRED WIDTH PRIOR TO THE CONSTRUCTION.

12. PURSUANT TO CHAPTER 6E, HRS, IN THE EVENT ANY ARTIFACTS OR HUMAN REMAINS ARE UNCOVERED DURING CONSTRUCTION OPERATIONS, THE CONTRACTOR SHALL IMMEDIATELY SUSPEND WORK AND NOTIFY THE HONOLULU POLICE DEPARTMENT AND THE STATE DEPARTMENT OF LAND AND NATURAL RESOURCES-HISTORIC PRESERVATION DIVISION (692-8015). IN ADDITION, FOR NON-CITY PROJECTS, THE CONTRACTOR SHALL INFORM THE CITY DEPARTMENT OF PLANNING PERMITTING, CIVIL ENGINEERING BRANCH.

13. THE CONTRACTOR AGREES THAT HE SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR THE JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THIS PROJECT, INCLUDING THE SAFETY OF ALL PERSONS AND PROPERTY; AND THAT THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS; AND THAT THE CONTRACTOR SHALL DEFEND, INDEMNIFY AND HOLD THE OWNER AND ENGINEER HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT, EXCEPT FOR LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF THE OWNER OR ENGINEER.

14. THE CONTRACTOR, AT HIS OWN EXPENSE, SHALL KEEP THE PROJECT AREA AND SURROUNDING AREA FREE FROM RUBBISH, DUST, NOISE, EROSION, ETC. THE WORK SHALL BE DONE IN CONFORMANCE WITH THE AIR AND WATER POLLUTION CONTROL STANDARDS AND REGULATIONS OF THE STATE DEPARTMENT OF HEALTH.

15. THE CONTRACTOR SHALL OBTAIN ALL REQUIRED PERMITS FROM APPROPRIATE GOVERNMENT AGENCIES.

SEWER NOTES: (PRIVATE)

1. ALL SEWER CONSTRUCTION SHALL BE PERFORMED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, SEPT. 1985, THE DEPARTMENT OF PUBLIC WORKS STANDARD DETAILS, SEPT. 1984, CURRENT CITY PRACTICES AND REVISE ORDINANCES OF HONOLULU, 1990 AS AMENDED, AND THE DESIGN STANDARDS OF THE DEPARTMENT OF WASTEWATER MANAGEMENT VOL. 1, JULY 198CRUSHED ROCK CRADLE IS PERMITTED WHERE SOIL IS STABLE. IN AREAS OF UNSTABLE SOIL, THE DESIGNER OF RECORDADN THE CONTRACTING OFFICER WILL DETERMINE THE PIPE SUPPORT REQUIRED.

2. THE UNDERGROUND PIPES, CABLES OR DUCTLINES KNOWN TO EXIST BY THE ENGINEER FROM HIS RESEARCH OF RECORDS ARE INDICATED ON THE PLANS. THE CONTRACTOR SHALL VERIFY THE LOCATION AND DEPTH OF THE FACILITIES, INCLUDING AND AFFECTING SEWER LINES, IN THE PRESENCE OF THE WASTEWATER INSPECTOR AND EXERCISE PROPER CARE IN EXCAVATING THE AREA. THE CONTRACTOR SHALL BE RESPONSIBLE AND SHALL PAY FOR ALL DAMAGED UTILITIES.

3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING CONTINUOUS SEWER SERVICE TO ALL AFFECTED AREAS DURING CONSTRUCTION.

4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CLEAN UP OF ANY SEWAGE SPILLS CAUSED DURING CONSTRUCTION. THE CONTRACTOR SHALL NOTIFY THE CONTRACTING OFFICER AND STATE DEPARTMENT OF HEALTH AND UTILIZE APPROPRIATE SAMPLING AND ANALYZING PROCEDURES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL PUBLIC NOTIFICATIONS AND PRESS RELEASES.

5. THE CONTRACTOR SHALL INSTALL "RAINSTOPPER" MANHOLE INSERTS IN ALL NEW SEWER MANHOLES WITH TYPE "SA" FRAME AND COVER.

6. GEOTEXTILE FABRIC SHALL ENVELOP THE PIPE CRADLE AND PIPE FOR ALL SEWER LINES.

PUBLIC HEALTH, SAFETY AND CONVENIENCE NOTES

1. THE CONTRACTOR SHALL OBSERVE AND COMPLY WITH ALL FEDERAL, STATE, AND LOCAL LAWS REQUIREDFOR THE PROTECTION OF THE PUBLIC HEALTH AND SAFETY AND ENVIRONMENTAL QUALITY.

2. THE CONTRACTOR, AT HIS OWN EXPENSE SHALL KEEP THE PROJECT AND ITS SURROUNDING AREAS FREEFROM DUST NUISANCE. THE WORK SHALL BE IN CONFORMANCE WITH THE AIR POLLUTION CONTROL STANDARDS AND REGULATIONS OF THE STATE DEPARTMENT OF HEALTH. THE CITY MAY REQUIRE SUPPLEMENTARY MEASURES AS NECESSARY.

3. NO CONTRACTOR SHALL PERFORM ANY CONSTRUCTION ACTIVITY SO AS TO CAUSE FALLING ROCK, SOIL OR DEBRIS IN ANY FORM TO FALL, SLIDE OR FLOW ONTO ADJOINING PROPERTIES, STREETS OR NATURAL WATERCOURSES. SHOULD SUCH VIOLATIONS OCCUR, THE CONTRACTOR SHALL IMMEDIATELY MAKE ALL REMEDIAL ACTIONS AS NECESSARY.

4. THE CONTRACTOR SHALL PROVIDE, INSTALL AND MAINTAIN ALL NECESSARY SIGNS, LIGHTS, FLARES, BARRICADES, MARKERS, CONES AND OTHER PROTECTIVE FACILITIES AND SHALL TAKE ALL NECESSARY PRECAUTIONS FOR THE PROTECTION, CONVENIENCE AND SAFETY OF THE PUBLIC. THE CONTRACTOR SHALL APPLY FOR A CONSTRUCTION PERMIT WITH A NOISE POLLUTION CONTROL PLAN IF NECESSARY.

EXCAVATION NOTES

1. PRIOR TO EXCAVATION, THE CONTRACTOR SHALL CONTACT HAWAII ONE CALL FOR VERIFICATION OF UNDERGROUND LINES, THE CONTRACTOR SHALL CALL THE HAWAII ONE CALL CENTER AT 866-423-7287 MINIMUM OF TEN (10) WORKING DAYS IN ADVANCE.

EROSION CONTROL AND BMP NOTES:

1. MEASURES TO CONTROL EROSION AND OTHER POLLUTANTS SHALL BE IN PLACE BEFORE ANY DEMOLITION OR EARTH MOVING WORK IS INITIATED. THESE MEASURES SHALL BE PROPERLY CONSTRUCTED AND MAINTAINED THROUGHOUT THE CONSTRUCTION PERIOD.

2. INSTALL PERIMETER PROTECTION (SILT FENCE) AS SHOWN ON THE EROSION CONTROL PLAN.

3. CONSTRUCT TEMPORARY STABILIZED CONSTRUCTION ENTRANCE/EXIT AT LOCATIONS SHOWN ON THE EROSION CONTROL PLAN. ALL VEHICLES EXITING THE SITE ARE TO SUFFICIENTLY CLEANED OFF SO THAT DIRT OR DEBRIS IS NOT TRACKED OFF THE CONSTRUCTION SITE.

4. LOCATE STOCKPILES, INCLUDING WASTE AND SOIL, AWAY FROM CONCENTRATED DRAINAGE FLOWS, DRAINAGE SWALES AND INLETS. INSTALL PERIMETER PROTECTION (SILT FENCE), BERMS OR TRENCHES AROUND ERODIBLE MATERIAL STOCKPILES.

5. ALL EROSION CONTROL MEASURES SHALL BE CHECKED AND REPAIRED AS NECESSARY, FOR EXAMPLE, WEEKLY IN DRY PERIODS AND WITHIN 24-HOURS AFTER ANY RAINFALL OF 0.5 INCHES OR GREATER WITHIN A 24-HOUR PERIOD. DURING PROLONGED RAINFALL, DAILY CHECKING IS NECESSARY. THE CONTRACTOR SHALL MAINTAIN RECORDS OF CHECKS AND REPAIRS.

6. IF HEAVY RAINS ARE PREDICTED DURING A WORKDAY, ALL CONTROL MEASURES SHALL BE INSPECTED IMMEDIATELY AND REINFORCED AS NECESSARY.

7. CONTRACTOR SHALL REMOVE SEDIMENT FILTERS DURING ABOVE-NORMAL RAINFALL EVENTS AND REPLACE FILTER AFTER THE EVENT HAS PASSED.

8. CLEARING AND GRADING SHALL BE HELD TO THE MINIMUM NECESSARY. GRADING SHALL BE SEQUENCED TO MINIMIZE THE EXPOSURE TIME OF THE CLEARED SURFACE AREA.

9. DUST CONTROL WITH WATER SPRAY (BY TRUCK OR TEMPORARY SPRINKLERS) SHALL BE APPLIED AS NEEDED. DO NOT OVERWATER.

10. A SPECIFIC INDIVIDUAL SHALL BE DESIGNATED TO BE RESPONSIBLE FOR EROSION AND SEDIMENT CONTROLS ON THE PROJECT SITE.

11. GOOD HOUSE KEEPING BEST MANAGEMENT PRACTICES:

11.1. MATERIAL MANAGEMENT PRACTICES SHALL BE USED TO REDUCE THE RISK OF SPILLS OR OTHER ACCIDENTAL EXPOSURE OF MATERIALS AND SUBSTANCES TO STORM WATER RUNOFF. AN EFFORT SHALL BE MADE TO STORE ONLY ENOUGH PRODUCT AS IS REQUIRED TO DO THE JOB.

11.2. ALL MATERIALS STORED ONSITE SHALL BE STORED IN A NEAT, ORDERLY MANNER IN THEIR APPROPRIATE CONTAINERS AND IF POSSIBLE, UNDER COVER OR IN AN ENCLOSURE.

11.3. SUBSTANCES SHALL NOT BE MIXED WITH ONE ANOTHER UNLESS RECOMMENDED BY THE MANUFACTURER.

11.4. WHENEVER POSSIBLE, THE ENTIRE CONTAINER CONTENTS WILL BE USED UP PRIOR TO DISPOSAL OF THE CONTAINER.

11.5. ALL HAZARDOUS MATERIALS, FUEL, OIL AND CHEMICAL SPILLS SHALL BE STOPPED AND CLEANED UP WITH PROPER ABSORBENT MATERIALS. ABSORBENT MATERIAL SPILL KITS SHALL BE MAINTAINED ON-SITE.

11.6. THE CONTRACTOR SHALL CONDUCT A DAILY INSPECTION TO ENSURE PROPER USE AND DISPOSAL OF MATERIALS ONSITE.

11.7. CONCRETE TRUCK CHUTE WASH WATER SHALL BE DISCHARGED TO A DESIGNATED AREA WHERE COMMINGLING WITH STORM WATER WILL BE PREVENTED BY LOCATING OUTSIDE OF DRAINAGEWAYS, CUT-OFF DITCH OR PERIMETER BERM. WATER SHALL NOT BE DISCHARGED INTO DRAINAGE SYSTEMS OR WATERS OF THE UNITED STATES. THE CONTRACTOR SHALL CLEAN THE DISPOSAL SITE AS REQUIRED.

12. SANITARY AND SEPTIC WASTES SHALL BE COLLECTED FROM ON-SITE FACILITIES ON A REGULAR BASIS BY A LICENSED HAULER. SANITARY AND SEPTIC FACILITIES SHALL NOT BE LOCATED IN OR NEAR WATERCOURSES.

13. VEHICLE AND EQUIPMENT MAINTENANCE AND FUELING SHALL BE DONE OFF-SITE (WHERE AT ALL POSSIBLE)

14. THE CONTRACTOR AND SUBCONTRACTORS SHALL BE TRAINED ON THE BEST MANAGEMENT PRACTICES.

15. PERIMETER PROTECTION (FILTER SOCK) SHALL BE CLEARED OF SILT IMMEDIATELY FOLLOWING THE END OF ANY RAINFALL THAT CAUSES SILT BUILDUP OR WHEN DEPTH REACHES 1/3 OF PERIMETER PROTECTION HEIGHT.

16. STABILIZATION SHALL BE ACCOMPLISHED BY PERMANENTLY PROTECTING THE DISTURBED SOIL SURFACE FROM RAINFALL IMPACTS AND RUNOFF WITH GRASSING. FOR STABILIZATION WITH GRASSING, TEMPORARY IRRIGATION SHALL BE INSTALLED TO FACILITATE GROWTH. DO NOT OVERWATER.

17. FERTILIZER AND PESTICIDE APPLICATION SHALL NOT OCCUR IF HEAVY RAINS ARE ANTICIPATED DURING THE WORKDAY, OR DURING HEAVY RAINS.

18. EROSION CONTROL MEASURES MAY BE REMOVED IN AREAS THAT ARE STABILIZED AND COMPLETED.

19. EROSION CONTROL AND BMPS ARE THE MINIMUM REQUIREMENTS FOR THE PROJECT. CONTRACTOR MAY INSTALL AND IMPLEMENT NEW/BETTER PRODUCTS TO CONTROL AND PREVENT EROSION AND POLLUTANTS FROM THE SITE.

20. CONTRACTOR SHALL NOT STOCKPILE MATERIALS IN CITY ROW.

Ø	DIAMETER	HTCo.	HAWAIIAN TELEPHONE COMPANY
A	AIR	ICV	IRRIGATION CONTROL VALVE
A.C.A.	ASPHALT CONCRETE	I.D.	INNER DIAMETER
A/C	AIR CONDITIONING	INV.	INVERT
APPROX.	APPROXIMATE	IRR	IRRIGATION
APT.	APARTMENT	L	LENGTH
ARV	AIR RELEASE VALVE	LAT	LATERAL
AVG.	AVERAGE	LB	POUND
AVE.	AVENUE	LF	LINEAR FOOT
B	BYPASS	LP.	LIGHT/LAMP POLE
BC	BOTTOM CURB	MAX.	MAXIMUM
BFP	BACK FLOW PREVENTER	MGD	MILLION GALLONS PER DAY
BLDG.	BUILDING	MH	MANHOLE
B.O.D.	BIOCHEMICAL OXYGEN DEMAND	MIN.	MINIMUM/MINUTE
BOT	BOTTOM	MON.	MONUMENT
BW	BOTTOM WALL	N	NORH
BWS	BOARD OF WATER SUPPLY	O/H	OVERHEAD ELECTRIC LINE
	CENTERLINE	O.C.	ON CENTER
C.L.	CHAIN-LINK	P/PAVT.	PAVEMENT
CMU	CONCRETE MASONRY UNIT	P	PROPERTY LINE
C.O.	CLEAN OUT	PSI	POUND PER SQUARE INCH
COL.	COLUMN	PVC	POLYVINYL CHLORIDE
COMM.	COMMUNICATION	Qo	PIPE CAPACITY
C/CONC.	CONCRETE	Qr	DESIGN PEAK FLOW
CONT.	CONTINUATION	RCP	REINFORCED CONCRETE PIPE
C.Y.	CUBIC YARD	S	SEWER
D	DIAMETER OR DRAIN	SDWB	SAFE DRINKING WATER BRANCH
DET.	DETAIL	SF	SQUARE FEET
D.I.	DRAIN INLET	SHT.	SHEET
D-BOX	DISTRIBUTION BOX	S.L.	SEWERLINE/STREETLIGHT
DPW	DEPARTMENT OF PUBLIC WORKS	SMH	SEWER MANHOLE
DWG.	DRAWING	ST.M.	STREET
E	EAST	STA.	STATION
E/ELEC.	ELECTRIC	STD.	STANDARD
ELEV/EL	ELEVATION	S.T.P.	SEWAGE TREATMENT PLANT
EMH	ELECTRIC MANHOLE	S/W	SIDEWALK
EP	ELECTRIC POLE	STRUCT.	STRUCTURAL
EXIST.	EXISTING	SYM.	SYMMETRICAL
FG	FINISH GRADE	TC	TOP CURB
FM	FORCE MAIN	TDH	TOTAL DYNAMIC HEAD
FRP	FIBERGLASS REINFORCE PLASTIC	T/TEL.	TELEPHONE
FT	FEET	TEMP.	TEMPORARY
G	GAS	TMK	TAX MAP KEY
GAL.	GALLONS	TMH	TELEPHONE MANHOLE
GND.	GROUND	TP	TOP PIPE
G.P.	GUY POLE/GATE POST	TS	TOP STEM
GPD	GALLONS PER DAY	T.S.S.	TOTSL SUSPENDED SOLIDS
GPM	GALLONS PER MINUTE	TV	TOP VALVE
GV	GATE VALVE	TW	TOP WALL
G.W.	GUY WIRE	TYP.	TYPICAL
HAR	HAWAII ADMINISTRATIVE RULES	U.P.	UTILITY POLE
H/HT.	HEIGHT	U.P./S.L.	UTILITY POLE W/ STREET LIGHT
H.B.	HOSE BUB	VFD	VARIABLE FREQUENCY DRIVE
HECO	HAWAIIAN ELECTRIC COMPANY	W	WATER/WIDTH
HDPE	HIGH-DENSITY POLYETHYLENE	WL	WATERLINE
HP	HORSEPOWER	WM	WATER METER
HPHA	HAWAII PUBLIC HOUSING AUTHORITY	WV	WATER VALVE BOX

LAULEA ENGINEERING, LLC

Revision Number/ Description

Project Name
ONO VISTA CONDOMINIUM WWTW REPLACEMENT (PERMANENT)
68-90 AU STREET,
WAIALUA, OAHU, HAWAII 96791
TMK: (1) 6-8-011: 058

Drawing Title
GENERAL NOTES

Project Number	Date	
22023_22035	October 10, 2022	
Drawn	Checked	Designed
RD	TK	RD

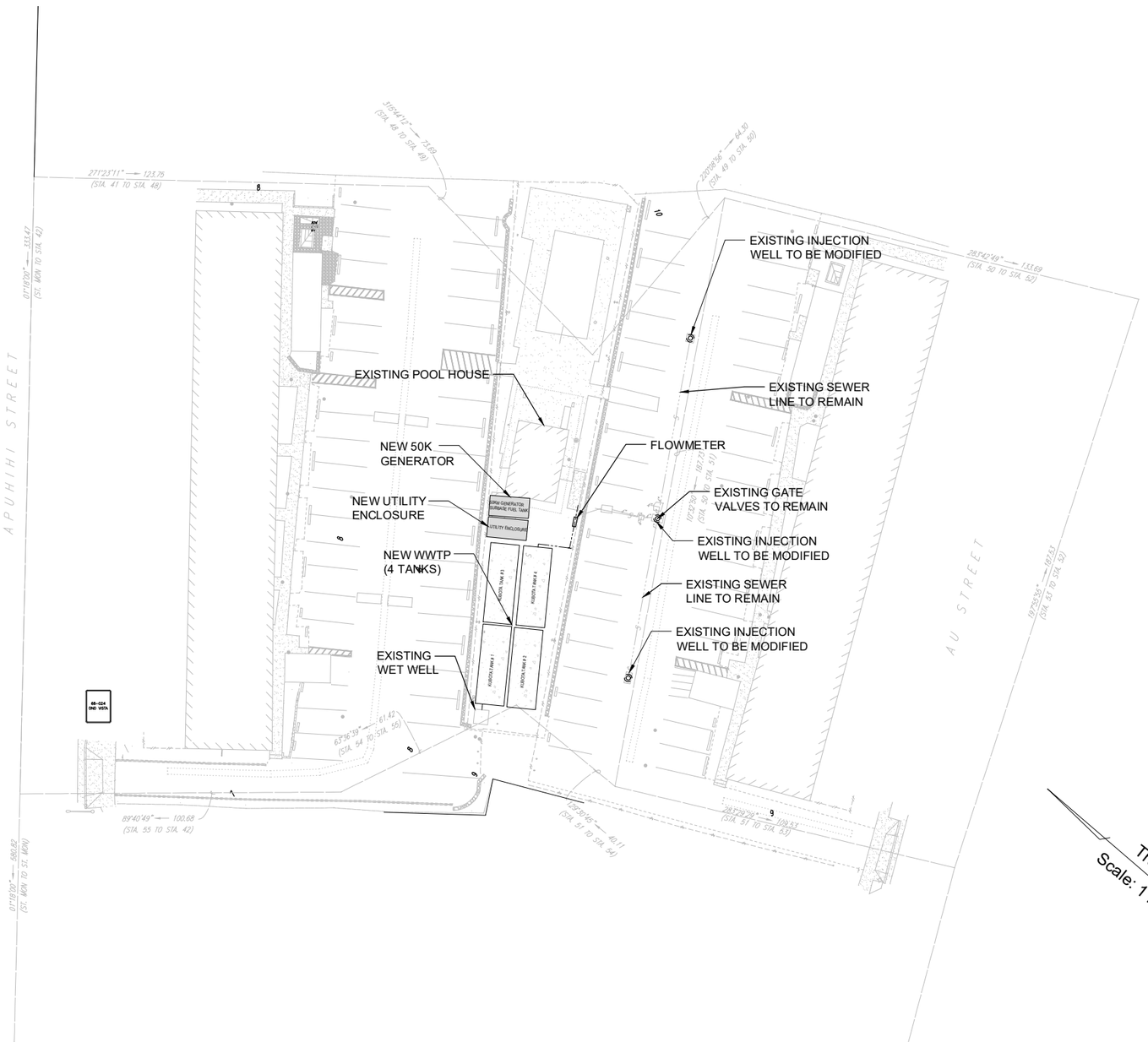
Drawing Number
T-002

Sheet No.____ of______

NOT FOR CONSTRUCTION: PERMIT SET

Revised October 2014

10/20/2022 10:01:58
G:\.shortcut-targets-by-id\1alXTOOmIFhiEcWYbIVKgJw8jcnrP4pcF\Business Accounts\22023_22035 Ono Vista WWTP Replacement\CAD\221010_60% SET\Civil Sheets.dwg



1
C-101
GENERAL SITE PLAN
NOT TO SCALE

Revised October 2014

12/7/2022 3:28:38 PM
G:\shortcut-targets-by-id\1atXTOOntFlnEoWYbfVKgJw8jcmP4pcF\Business Accounts\22023_22035 Ono Vista WWTP Replacement\CAD\22101 0_60% SET\Civil Sheets.dwg

LAULEA ENGINEERING, LLC

Revision Number/ Description

Project Name
ONO VISTA CONDOMINIUM
WWTW REPLACEMENT
(PERMANENT)
68-90 AU STREET,
WAIALUA, OAHU, HAWAII 96791
TMK: (1) 6-8-011: 058

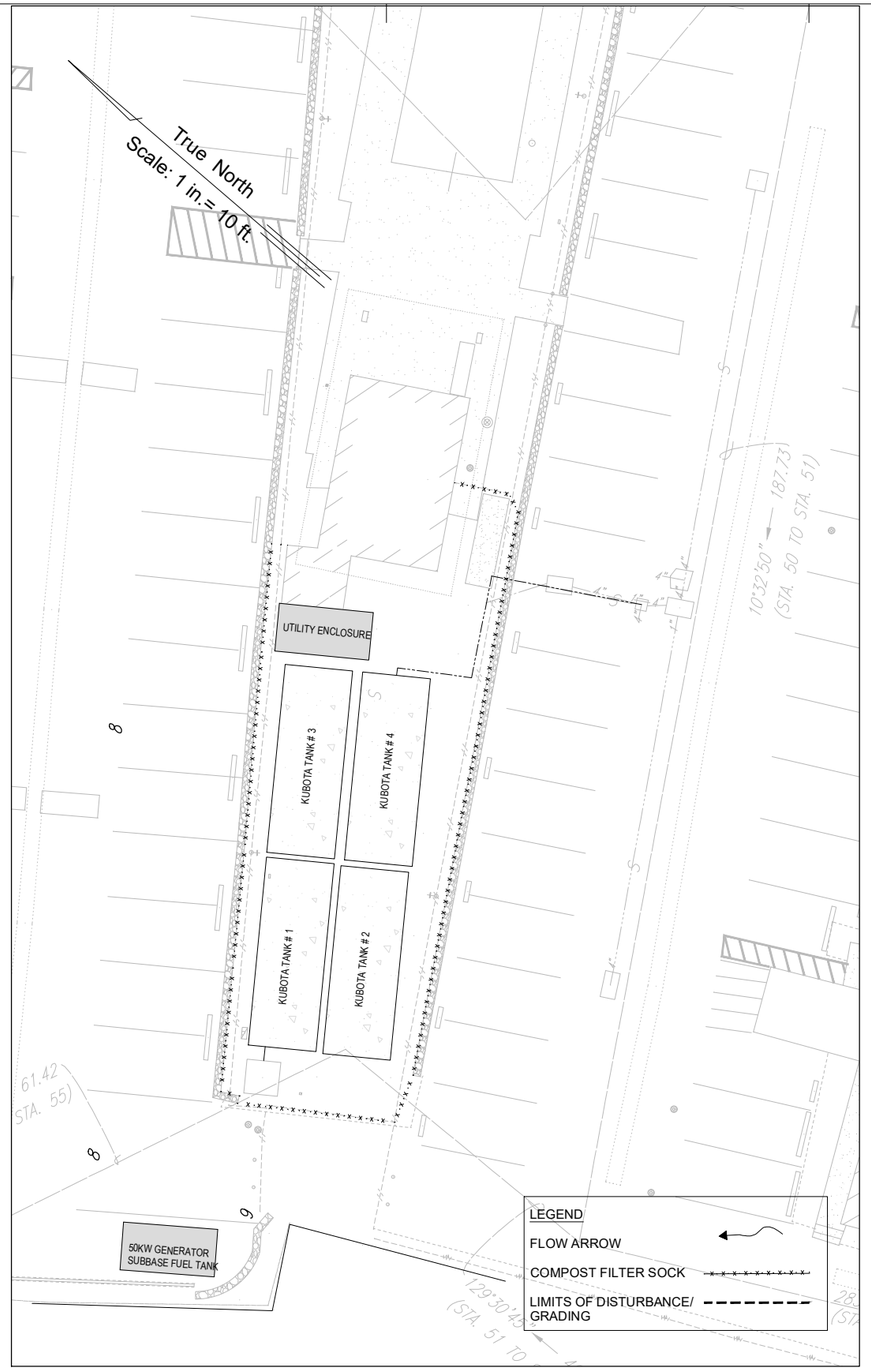
Drawing Title
GENERAL NOTES

Project Number	Date
22023_22035	October 10, 2022

Drawn	Checked	Designed
RD	TK	RD

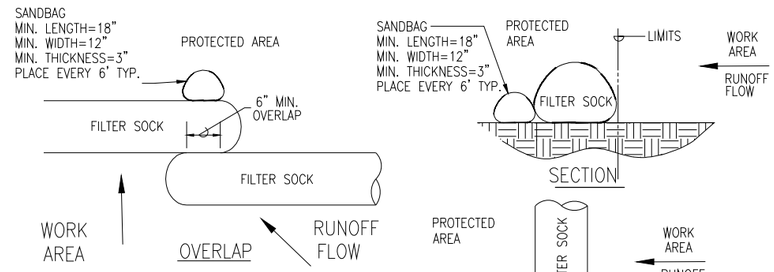
Drawing Number
C-001
Sheet No.____ of_____

NOT FOR CONSTRUCTION: PERMIT SET

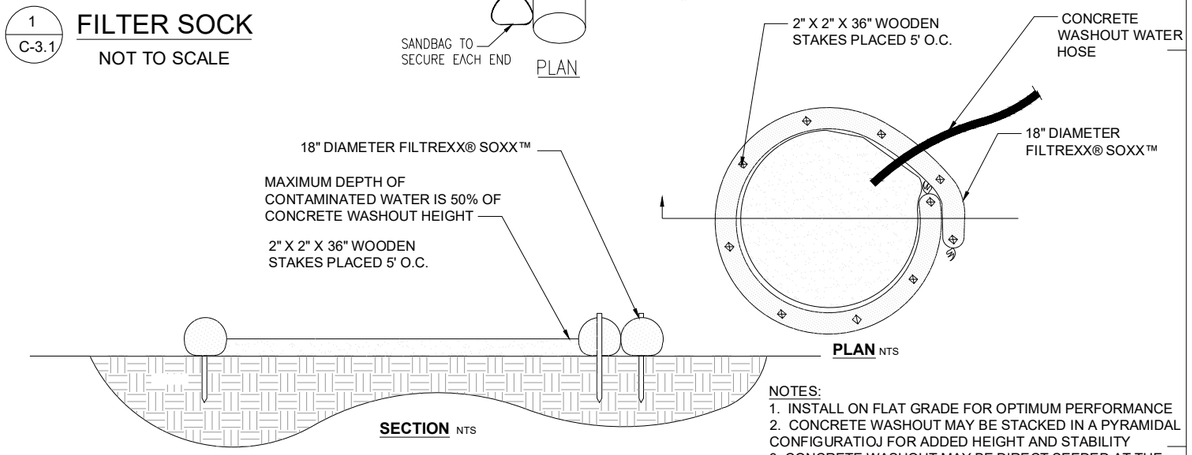


1 C-101 **EROSION AND SEDIMENT CONTROL PLAN**
NOT TO SCALE

10' 0 10' 20'
GRAPHIC SCALE
1" = 10'



1 C-3.1 **FILTER SOCK**
NOT TO SCALE



NOTES:
1. INSTALL ON FLAT GRADE FOR OPTIMUM PERFORMANCE
2. CONCRETE WASHOUT MAY BE STACKED IN A PYRAMIDAL CONFIGURATIOJ FOR ADDED HEIGHT AND STABILITY
3. CONCRETE WASHOUT MAY BE DIRECT SEEDED AT THE TIME OF INSTALLATION

1 C-3.1 **CONCRETE WASHOUT**
NOT TO SCALE

PRE-CONSTRUCTION STRUCTURAL CONTROL BMPS:
- COMPOST FILTER SOCK

DURING CONSTRUCTION STRUCTURAL CONTROL BMP:
- COMPOST FILTER SOCK (@STOCKPILE AREA AND AROUND PROPOSED CIP CONC. RETAINING WALL)
- CONCRETE WASHOUT

*CONTRACTOR SHALL INCLUDE THESE BMPS IN THE REVISED ESCP WHICH SHALL BE SUBMITTED TO CITY INSPECTORS FOR REFERENCE.

POST-CONSTRUCTION BMPS:
- PERMANENT STABILIZATION (GRASS, PAVEMENT, GRAVEL)

GOOD HOUSEKEEPING BMPS:
- SEE EROSION AND SEDIMENT CONTROL NOTES IN T-002.

LAULEA ENGINEERING, LLC

Revision Number/ Description

Project Name
ONO VISTA CONDOMINIUM WWTW REPLACEMENT (PERMANENT)
68-90 AU STREET,
WAIALUA, OAHU, HAWAII 96791
TMK: (1) 6-8-011: 058

Drawing Title
EROSION AND SEDIMENT CONTROL PLAN

Project Number	Date
22023_22035	October 10, 2022

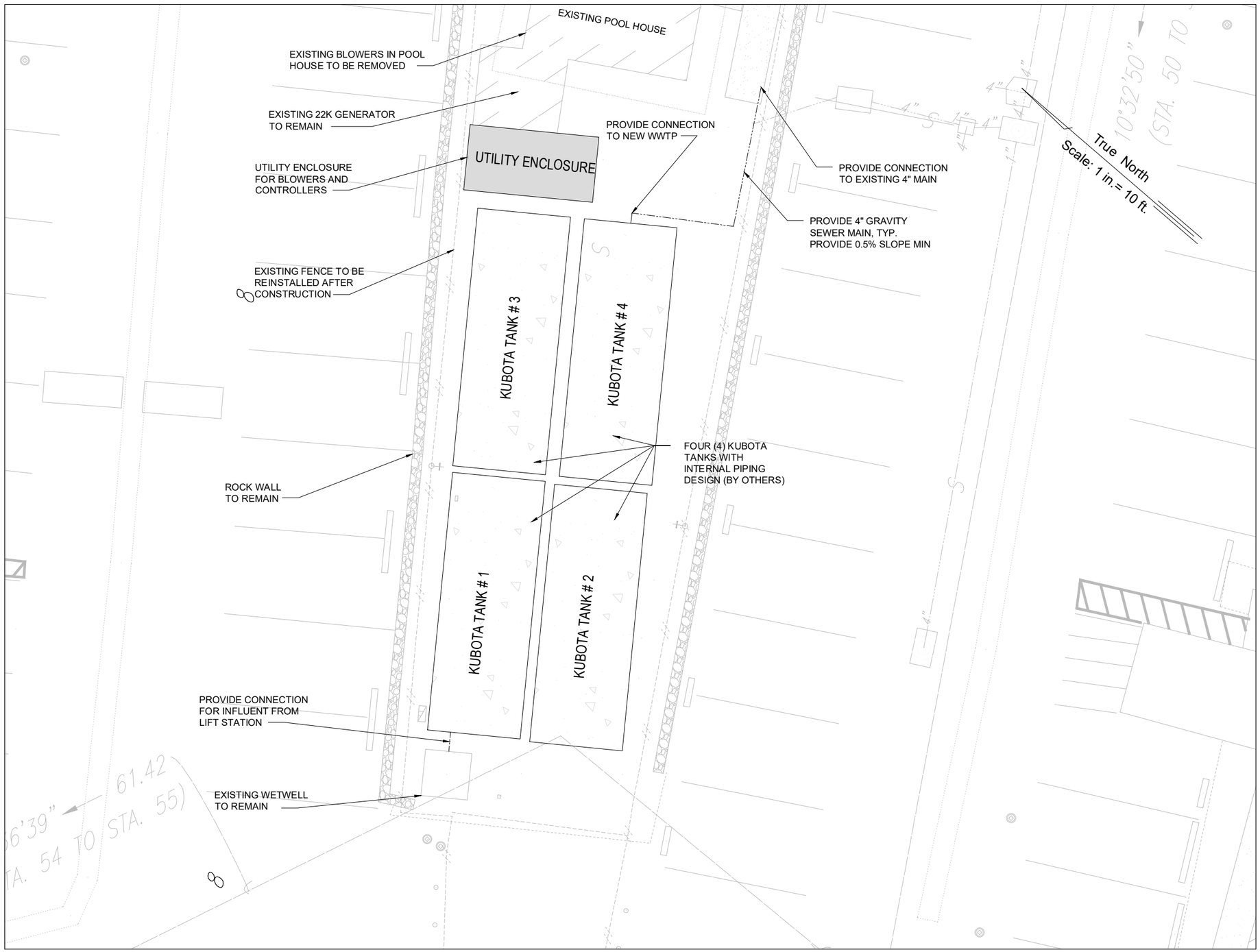
Drawn	Checked	Designed
RD	TK	RD

Drawing Number
C-002
Sheet No.____ of_____

NOT FOR CONSTRUCTION: PERMIT SET

Revised October 2014

10/20/2022 10:03:37
G:\shortcut-targets-by-id\1aiXTOOnIFbEoWYbfVKgJw8jcmP4pcF\Business Accounts\22023_22035 Ono Vista WWTP Replacement\CAD\221010_60% SET\Civil Sheets.dwg



1 / C-101 **WWTP SITE LAYOUT PLAN**
NOT TO SCALE

10' 0 10' 20'
GRAPHIC SCALE
1" = 10'

LAULEA ENGINEERING, LLC

Revision Number/ Description

Project Name
ONO VISTA CONDOMINIUM
WWTW REPLACEMENT
(PERMANENT)
68-90 AU STREET,
WAIALUA, OAHU, HAWAII 96791
TMK: (1) 6-8-011: 058

Drawing Title
WWTP SITE LAYOUT PLAN

Project Number	Date
22023_22035	October 10, 2022

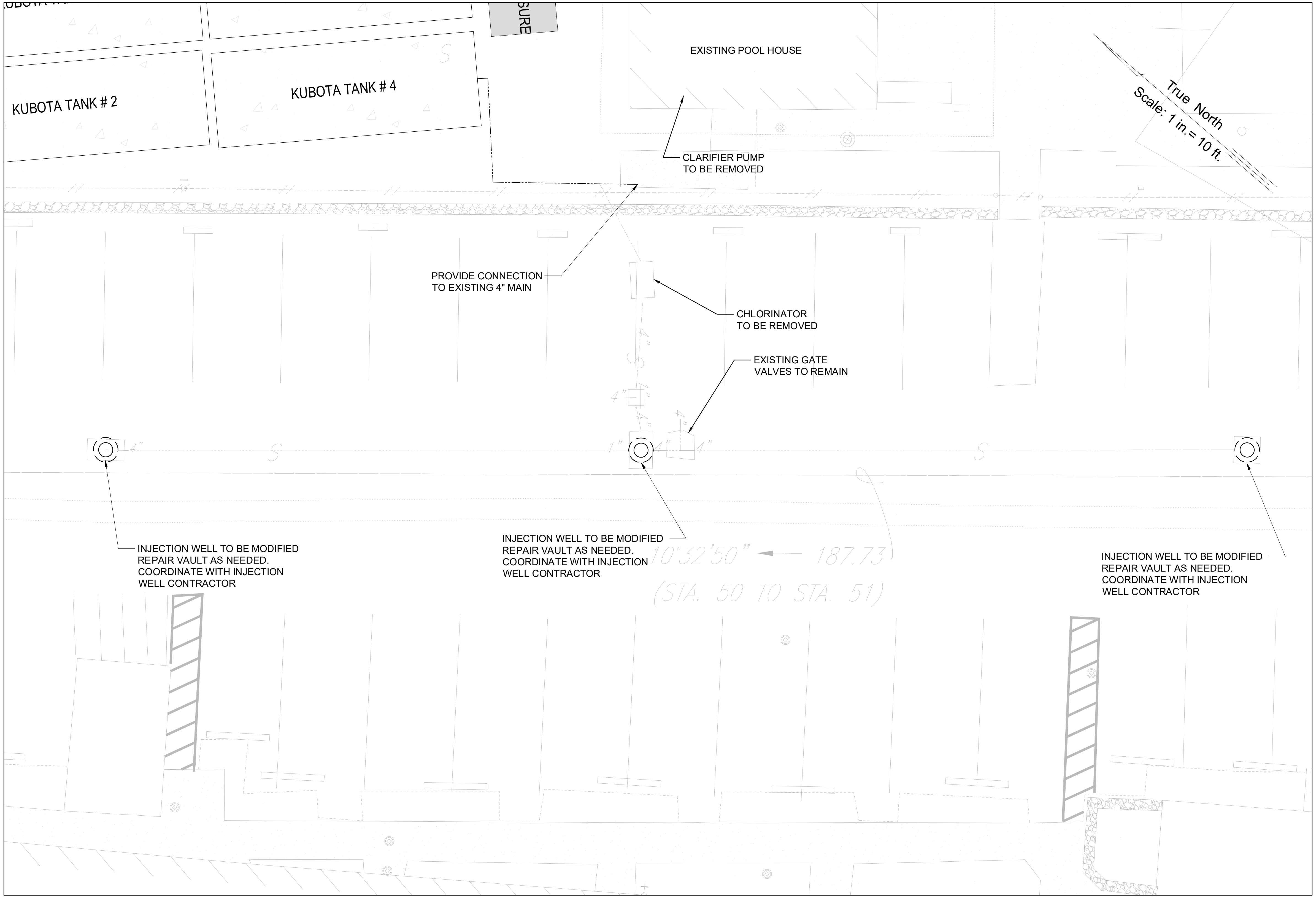
Drawn	Checked	Designed
RD	TK	RD

Drawing Number
C-003
Sheet No.____ of_____

NOT FOR CONSTRUCTION: PERMIT SET

Revised October 2014

10/24/2022 9:59:31
G:\shortcut-targets-by-id\1atXTOOnFtnEcWYbfVKgJw8jcmP4pcF\Business Accounts\22023_22035 Ono Vista WWTP Replacement\CAD\221010_60% SET\Civil Sheets.dwg



10' 0 10' 20'

GRAPHIC SCALE
1" = 10'

1
C-004

INJECTION WELL SITE LAYOUT PLAN

NOT TO SCALE

Revised October 2014

10/24/2022 10:10:00
G:\.shortcut-targets-by-id\1aXTOOnIFhEcWYbYKgJw8jcnrP4pcF\Business Accounts\22023_22035 Ono Vista WWTP Replacement\CAD\221010_60% SET\Civil Sheets.dwg

LAULEA
ENGINEERING, LLC

Revision Number/ Description

Project Name
ONO VISTA CONDOMINIUM
WWTW REPLACEMENT
(PERMANENT)
68-90 AU STREET,
WAIALUA, OAHU, HAWAII 96791
TMK: (1) 6-8-011: 058

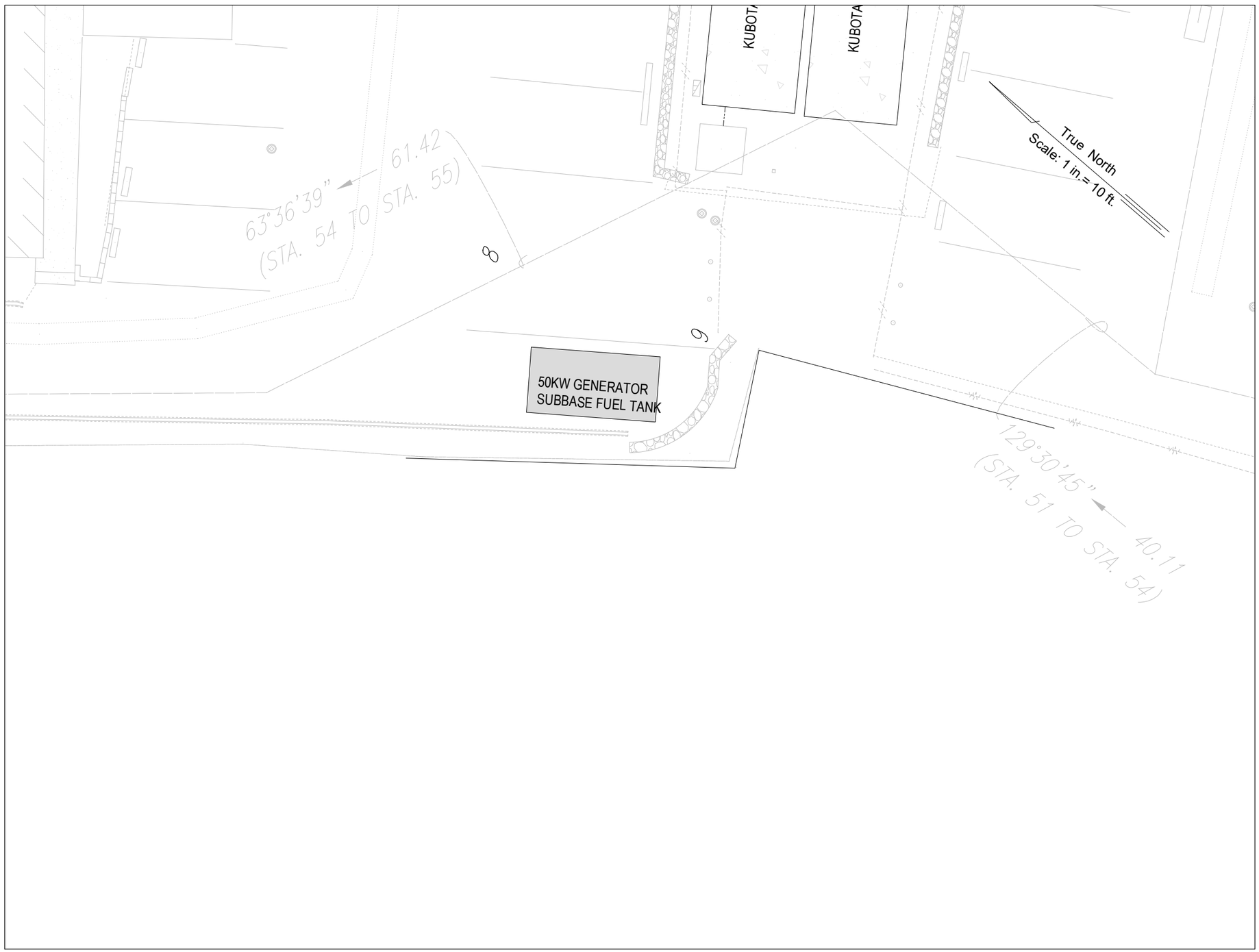
Drawing Title
INJECTION WELL SITE LAYOUT PLAN

Project Number	Date	
22023_22035	October 10, 2022	
Drawn	Checked	Designed
RD	TK	RD

Drawing Number
C-004

Sheet No.____ of______

NOT FOR CONSTRUCTION: PERMIT SET



1
C-005
GENERATOR LAYOUT PLAN
NOT TO SCALE

10' 0 10' 20'
GRAPHIC SCALE
1" = 10'

LAULEA
ENGINEERING, LLC

Revision Number/ Description

Project Name
ONO VISTA CONDOMINIUM
WWTW REPLACEMENT
(PERMANENT)
68-90 AU STREET,
WAIALUA, OAHU, HAWAII 96791
TMK: (1) 6-8-011: 058

Drawing Title
GENERATOR SITE LAYOUT PLAN

Project Number	Date
22023_22035	October 10, 2022

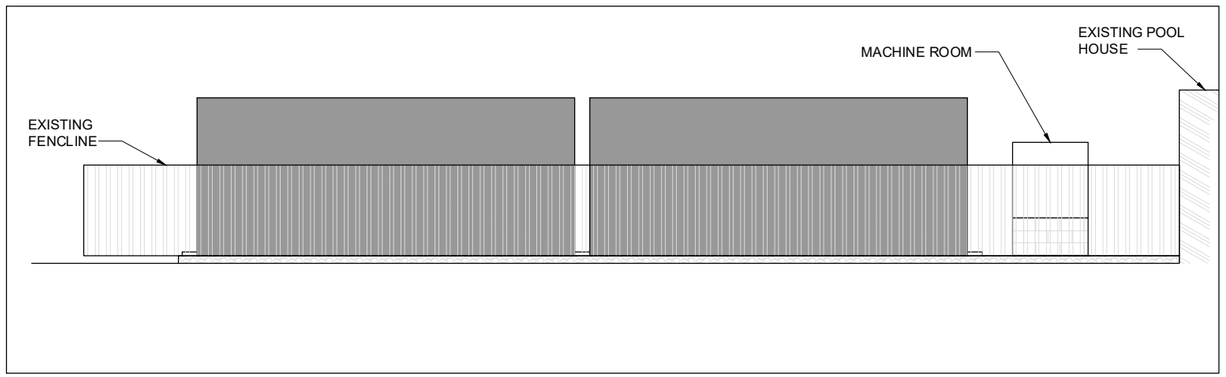
Drawn	Checked	Designed
RD	TK	RD

Drawing Number
C-005
Sheet No.___ of_____

NOT FOR CONSTRUCTION: PERMIT SET

Revised October 2014

10/20/2022 10:04:42
G:\.shortcut-targets-by-id\1atXTOOnfFlnEcWYbtVKgJw8jcnrP4pcF\Business Accounts\22023_22035 Ono Vista WWTP Replacement\CAD\221010_60% SET\Civil Sheets.dwg



1 C-005 WWTP ELEVATIONS
NOT TO SCALE

10' 0 10' 20'
GRAPHIC SCALE
1" = 10'

LAULEA ENGINEERING, LLC

Revision Number/ Description

Project Name
ONO VISTA CONDOMINIUM
WWTW REPLACEMENT
(PERMANENT)
68-90 AU STREET,
WAIALUA, OAHU, HAWAII 96791
TMK: (1) 6-8-011: 058

Drawing Title
WWTP ELEVATIONS

Project Number	Date
22023_22035	October 10, 2022

Drawn	Checked	Designed
RD	TK	RD

Drawing Number
C-006
Sheet No.___ of_____

NOT FOR CONSTRUCTION: PERMIT SET

Revised October 2014

10/20/2022 10:05:05
G:\shortcut-targets-by-id\1aIXTOOnfFlnEcWYbtVKgJw8jcnrP4pcF\Business Accounts\22023_22035 Ono Vista WWTP Replacement\CAD\221010_60% SET\Civil Sheets.dwg

Attachment B- Kubota Johkasou Treatment Package Preliminary Design/Equipment Summary

For Earth, For Life

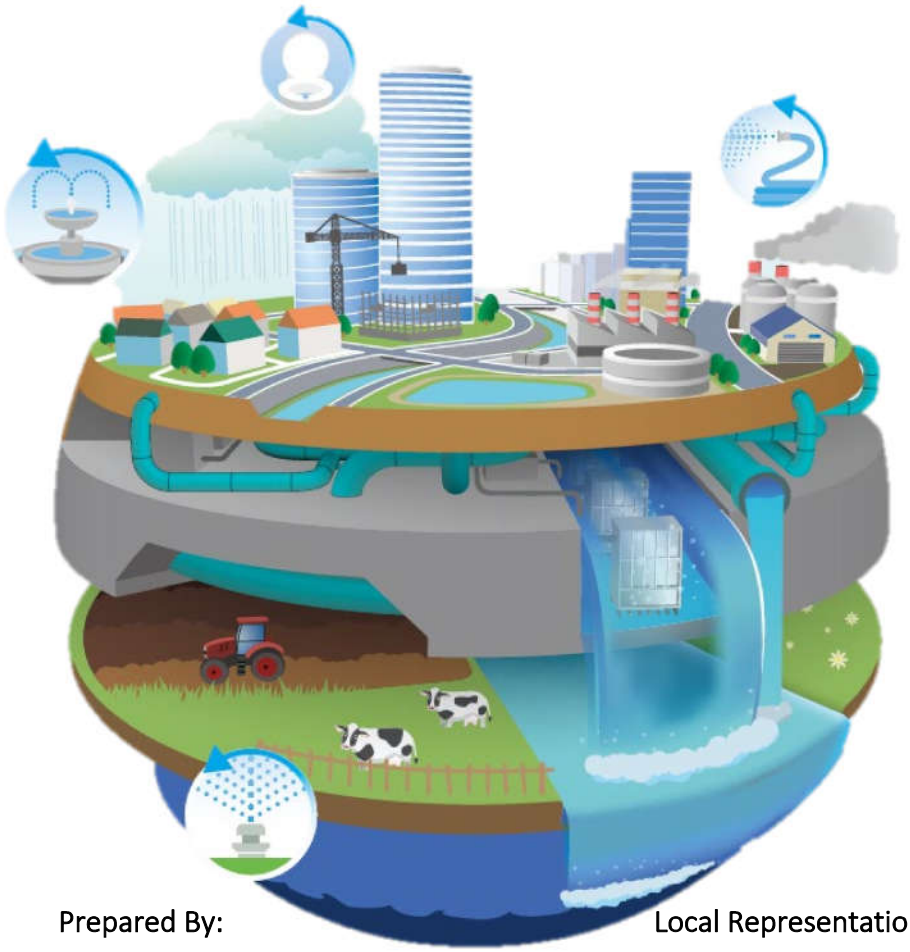
Kubota

Budgetary Proposal for the

Oahu Development Project, HI

Johkasou Package Treatment System

Kubota



Prepared By:

KUBOTA Membrane USA
11807 North Creek Parkway S., Suite B-109
Bothell, WA 98011
425-898-2858

Local Representation By:

Hawaii Engineering Services
Matt Moore
808-258-7182
matt@hiengineering.com

September 28, 2022

For Earth, For Life
Kubota

Attn: Toru Kumagai, P.E., Director of Engineering
Laulea Engineering, LLC
1019 Waimanu Street #208
Honolulu, HI 96814

We are pleased to present the attached material for your consideration regarding the proposed Kubota Johkasou package treatment system. The proposed system will use a combination of fiber reinforced plastic (FRP) tanks and membrane bioreactor (MBR) to provide high-quality effluent with reliably low effluent nutrient concentrations.

A compelling feature of the Kubota MBR system is the simplicity of daily operations and periodic maintenance. Both the membrane unit and the entire MBR system are designed for the operator's convenience. Cleaning is performed in place, with no routine membrane unit removal or tank draining required. Cleaning events are performed just two to four times per year, and each event can be completed in a matter of hours. The Kubota MBR system offers straightforward troubleshooting and easy replacement in the unlikely event that problems arise.

Kubota is the premier manufacturer of membranes for wastewater treatment with over 400 installations in North America and 5,970 installations worldwide. Kubota Membrane USA offers first class service. Our technicians have operational experience and are well trained in wastewater analysis and membrane inspection. This sets us apart from other membrane manufacturers who do not design, build, or operate treatment plants, and it sets us apart from system integrators who do not manufacture parts or operate plants. We are responsive to operator concerns and knowledgeable about the Kubota MBR System from top to bottom.

With the Kubota name comes a long history of excellence in MBR wastewater treatment, and we are responsive to operator concerns and knowledgeable about the Kubota MBR System from top to bottom. We are happy to put you in touch with operators and engineers who can share their experience with our product across the country. If you have any questions regarding the attached information, please feel free to contact us or our local representative, **Matt Moore** of **Hawaii Engineering Services** at matt@hiengineering.com.

Regards,

Brian Codianne
Regional Manager
KUBOTA Membrane USA Corporation
Cell: 425-898-3888
Email: brian.codianne@kubota.com

James Liu
Application Engineer
KUBOTA Membrane USA Corporation
425-977-5284
james.liu@kubota.com

1 Contents

Tables

Figures

1 Introduction

Kubota Membrane USA would like to thank you for the opportunity to present the enclosed budgetary proposal to supply a Johkasou package treatment system. Included below is an overview of the proposed Kubota system. A scope of supply and budgetary price are also included.

2 Design Overview

2.1 Influent Design Flow

The proposed Johkasou package treatment system was designed based on the following influent flow rate and wastewater characteristics data *(Tables 1 and 2)*.

Table 1: Design Flow Conditions

Condition	Design Flow	Unit
Average Day Flow (ADF)	25,000	GPD
Peak Day Flow (PDF)	35,000	GPD

Table 2: Influent and Effluent Characteristics

Constituent	Influent Concentration	Effluent Limit
BOD	300 mg/L	< 25 mg/L
TSS	300 mg/L	< 25 mg/L
TKN[1]	45 mg/L	TN < 10 mg/L
TP[1]	8 mg/L	-
Assumed Minimum Temperature[2]	18 °C	-

1. Assumed influent TKN and TP loadings as typical domestic wastewater. 2. Assumed minimum water temperature.

2.2 MBR Specifications

For this project, we have prepared a preliminary design based around the FF Series Submerged Membrane Unit (SMU), which offer high quality effluent with simple maintenance and operation.

Kubota's membrane sheet is made from chlorinated polyethylene, has an average pore size of 0.2 micron (maximum 0.4 micron), is much thicker than other membranes to provide long-lasting durability, and features high porosity to enable high flow. This pore size has been designed as the optimum balance between water quality and quantity. Kubota's membrane sheet has Title 22 approval for water reuse in California. A basic overview of the FF series of Submerged Membrane Unit and the Kubota 510-type membrane cartridge is included in the figure below.

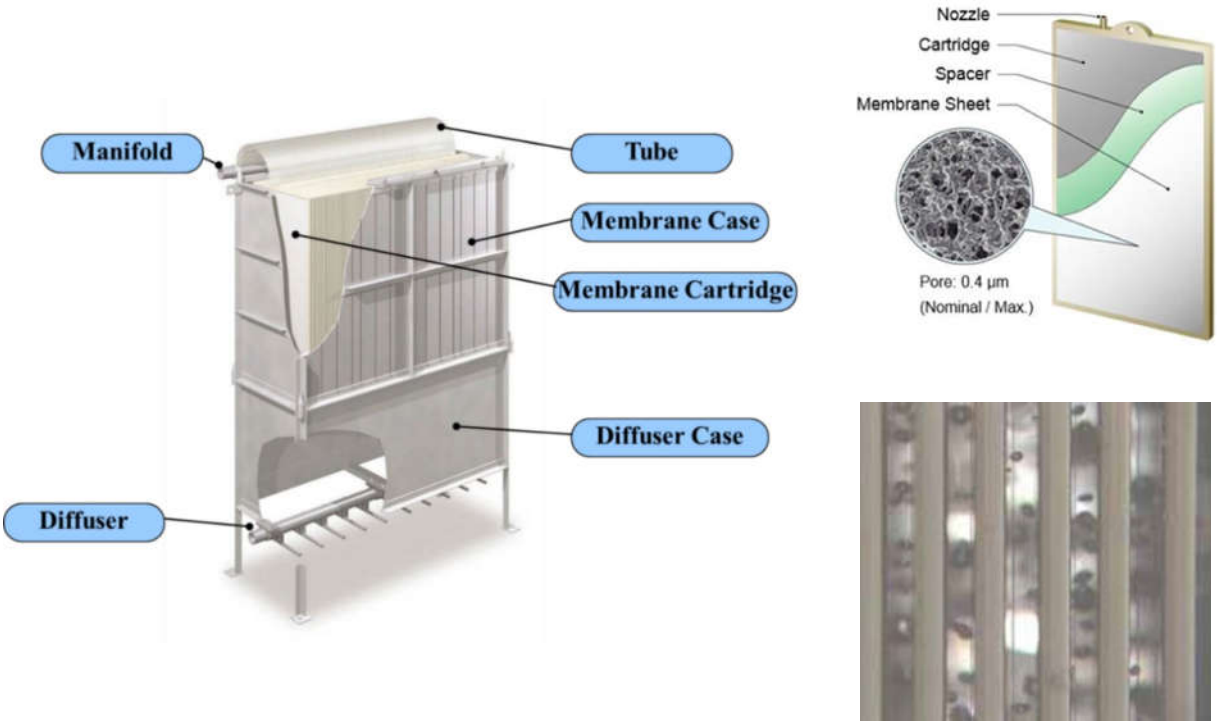


Figure 1: Kubota FF Series Membrane Unit structure (left), cartridge structure and close-up of fixed membrane spacing (right)

Details of the proposed membrane units are presented below.

Table 3: Membrane Equipment Specifications

Component	Specifications
Membrane Model	FF50
Membrane Type	Flat Plate
Membrane Surface Area per Unit	FF 50: 430.6 ft^2
Design MLSS at MBR	11,000 mg/L
Total Number of Submerged Membrane Units	6

2.3 Operation and Maintenance

The Kubota MBR system offers a simple design, simple operation, and simple maintenance. The system can operate at a wide range of MLSS concentrations. The primary method of membrane cleaning for the Kubota MBR system is the air scour provided by the diffusers at the base of the membrane units. The chemical cleaning is performed by feeding the cleaning solution through the permeate piping into the membrane units and allowing that solution to soak in the membrane units for 2 to 4 hours. If the residual chemical cannot be discharged from the system, it can be sent back to the raw water inlet or to the bioreactor in order to neutralize the chemical.

Organic fouling can be cleaned with a 0.5% sodium hypochlorite (NaClO) solution. This is typically done two to four times per year. Each FF50 SMU requires approximately 2 gallons of 12.5% NaClO stock solution per

cleaning event for organic fouling; inorganic fouling such as iron or aluminum can be cleaned by a 0.5% to 1% oxalic or citric acid solution which is typically needed once a year or less. Each FF50 SMU requires approximately 1 gallon of 50% citric acid solution per cleaning event for inorganic fouling.

The Kubota MBR system was developed in 1990 to be low-maintenance and easy to operate. Since then, Kubota MBR package plants have been installed in many remote communities to treat small flows. Many of these plants run without constant operator attention and are visited only once every two weeks. This illustrates the ease of operation and reliability of the Kubota MBR system.

2.4 Process Flow Diagram and Proposed Layout

We are proposing an MLE process for required organics and nitrogen removal. The proposed Johkasou treatment train for this project includes four cylindrical tanks: 1. First equalization (EQ) tank, 2. Second EQ tank (with a set of pumps to feed the flow forward) and a sludge holding tank (SHT), 3. An anoxic (AX) tank for denitrification (with a set of pumps to feed the flow forward) and 4. MBR tank (where the SMUs are), disinfection tank and effluent tank. Figures below illustrate the typical Process Flow Diagram and an example cross-section drawing of a Johkasou package treatment system.

Influent first enters the Johkasou package treatment system to EQ tank. The flow is then pumped to AX

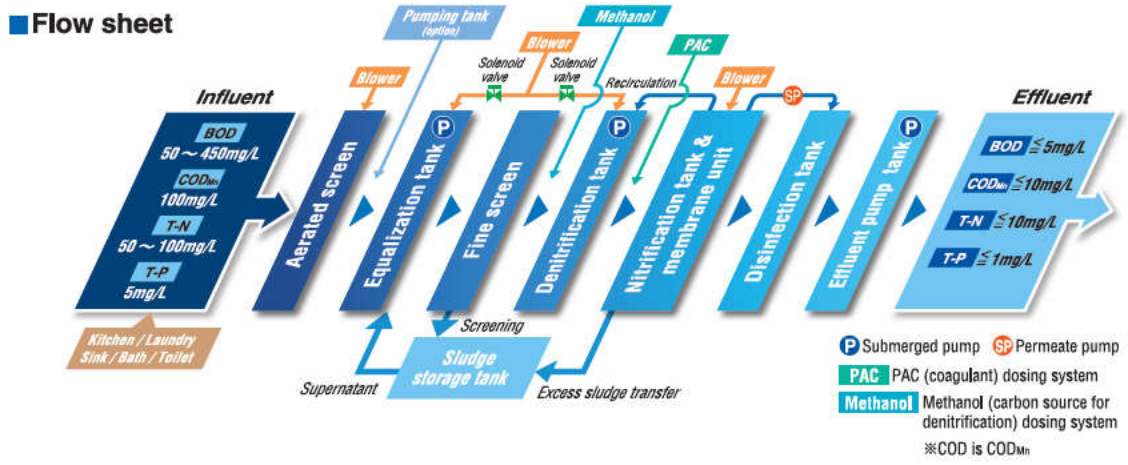


Figure 2: Process Flow Diagram. Optional methanol and PAC injections depending on the influent characteristics

tank (for denitrification) where the flow is screened through a microscreen to provide protection for the membrane. The flow then passes to the combined membrane filtration aeration/nitrification tank, where the effluent continues to the discharging tank while recycle sludge returns to AX tank for denitrification. The treated effluent pumps are submersible pumps located in the discharging tank.

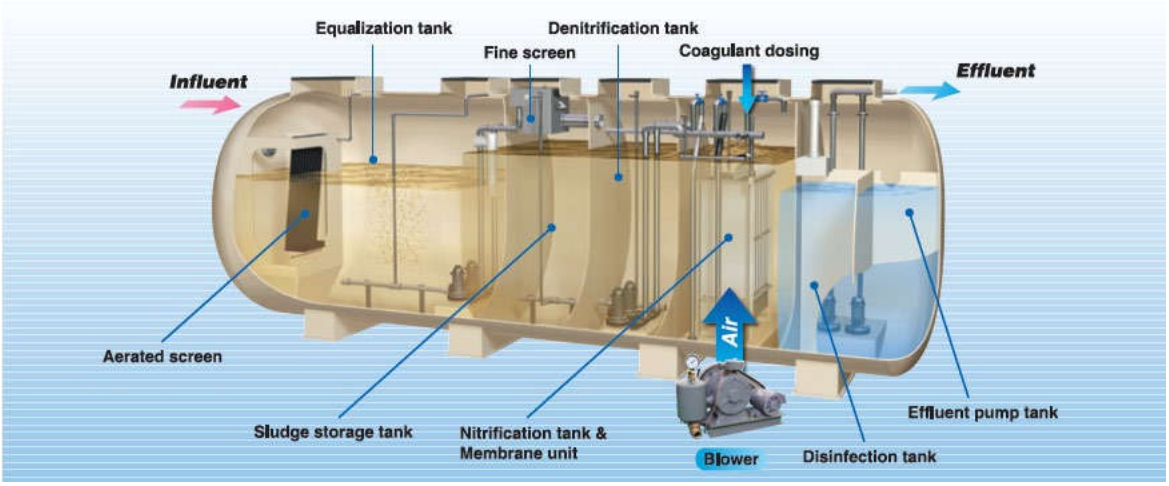


Figure 3: Example Cross-section view of Johkasou package treatment system

The EQ tank described above can store the flow up to 11 hours, and the SHT is designed to store fine screen rejections and WAS up to five (5) days. Preliminary tank sizes, dimensions and nominal HRT are listed below.

Table 4: Tank Dimensions, Volumes and Hydraulic Retention Times

Tank Dimensions		
Tank 1 (1st EQ Tank)	24.1'L x 8.2'W x 10.2'H	
Tank 2 (2nd EQ Tank + SHT)	24.1'L x 8.2'W x 10.2'H	
Tank 3 (AX Tank)	20.7'L x 8.2'W x 10.2'H	
Tank 4 (MBR Tank + Disinfection & Effluent Tank)	24.6'L x 8.2'W x 10.2'H	
Tank Volume and HRT		
Tank	**Total Volume (Gallon)**	**Nominal HRT (Hour)**
Equalization (EQ) Tank	11,900	11.4
Sludge Holding Tank (SHT)	1,550	-
AX (Denitrification) Tank	5,950	5.7
MBR (Aeration & Nitrification) Tank	7,350	7.1
Disinfection & Effluent Discharge Tank	750	0.7

3 Scope of Supply

KMU's scope of supply is limited to the equipment and services outlined in this proposal. The equipment will be supplied by Kubota Membrane USA and are included in the proposal price are listed in *Section 5.*

3.1 Major Equipment and Instrumentation

Table 5: Major Equipment and Instrumentation in KMU's Scope of Supply

Name	Type	Capacity / Size	HP	Quantity
Kubota Johkasou Tanks				
Johkasou Tank Set	Kubota Johkasou FRP Tank Skid	Tank 1 & 2: 24.1'L x 8.2'W x 10.2'H Tank 3: 20.7'L x 8.2'W x 10.2'H Tank 4: 24.6'L x 8.2'W x 10.2'H	-	1 set
Fine Screening (FSC) Equipment				
Fine Screen	1-mm Bar Screen	30 gpm	0.03	1
Submerged Membrane Unit (SMU)				
Kubota SMU	Flat Plate	FF50	-	6
Pumps				
EQ Pump	Submersible	37 gpm	0.5	2
Feed Forward (FF) Pump	Submersible	106 gpm	2	2
Permeate Pump	Centrifugal	66 gpm	1	2
Effluent Pump	Centrifugal	21 gpm	0.5	2
Blowers				
Mixing Blower	Three-Lobe	23 scfm	1	1
Aeration Blower	Three-Lobe	210 scfm	7.4	2
Instrumentation				
Permeate Pressure Gauge	Diaphragm	±15 psi	-	2
Integrated Flow Meter	Electromagnetic	2"	-	2
Level Switch	Float	-	-	10
SMU Clean-In-Place (CIP) and Chemical Dosing Equipment				
CIP Pump	Centrifugal	15 gpm	0.5	1
Control Panel Equipment				
Control System	PLC Panel, HMI	-	-	1 set

3.2 Direct Services Information

The following services are included in Kubota's scope of supply.

Design Support

- Submittals including shop drawings.
- One (1) day on-site inspection meeting.
- Preparation and submittal of a system O&M manual for Kubota supplied systems and equipment.
- Equipment delivery coordination with the contractor.
- One (1) day on-site delivery inspection of the Johkasou system.

Commissioning

- Five (5) days on-site for installation inspection, start-up, and commissioning including dry and wet equipment checks, clean water testing, and support during seeding and start-up.
- Additional days are available as needed.

Training

- Two (2) days of on-site, hands-on operator training using a mix of classroom and field time. See *Table 7* below for an example of training topics to be covered.

Table 6: Training and Workshops included in Kubota's Scope of Supply

Training/Workshop	Brief Summary
MBR control system and HMI	1. Navigation of all HMI screens and menus. 2. Review of automatic operations and controls. 3. Changing process set points. 4. Overriding controls from the HMI. 5. Manual operation of the system in the event of a power failure.
CIP training	1. Navigation of CIP (Clean-In-Place), in-situ maintenance chemical cleaning. 2. Control from HMI and operation of manual valve. 3. Adjust set points of chemical flow.
Troubleshooting	1. Case study of troubleshooting 2. Recovery from trouble 3. "Fish bone" approach
Daily testing	1. Filterability test 2. Viscosity measurement

3.2.1.1 Workshop/Additional Training Available (No Charge)

- In addition to our standard training at commissioning, Kubota Membrane USA will host an annual regional operator workshop in which operators meet to exchange ideas and learn about the latest developments in MBR technology.
- Customized individual training, such as membrane disassembling training, is also available upon request.

3.3 Exclusions to KMU's Scope of Supply

The following items are not currently included in the KMU scope of supply:

- Sales tax.
- Bid bond, performance bond and payment bond.
- Site preparation including preparation of a suitable foundation for the package treatment system.
- Equipment unloading and installation at the site.
- Electrical site work and piping outside of the skid (i.e., connecting to main power, backup power, influent and effluent connections, etc.).
- Variable Frequency Drives (VFD) for the pumps.
  - ✓ Given the designed equalization capacity of the proposed Johkasou treatment system, VFDs are not necessary for the pumps.
- Coarse screening, grit removal, oil and grease removal (if needed).
- Building construction.
- Treated water holding tank.
- Sludge treatment (dewatering, etc.).
- Alum/ferric chloride, carbon addition, and alkalinity addition systems (if needed).
- Chemical storage tank.
- Heat tracing (A separate power supply will also be required).
- Covers on the package plant tanks or overhead walkways and stairs (available at an additional cost)
- Seismic bracing for the SMU, if needed.
  - ✓ Kubota can provide related services at extra cost if needed.

4 Warranty

Kubota's standard 2-year membrane warranty, and 1-year mechanical equipment warranty is included in the main budgetary price proposed (Table 7) and goes into effect at the commencement date of commissioning. The warranty included is a guarantee that the products supplied by Kubota are free from defect in material or workmanship.

5 Budgetary Price

The Budgetary Price for the equipment and instrumentation described herein is shown below in Table 7. The pricing herein is for budgetary purposes only and does not constitute an offer of sale. **Freight, taxes and duties are not included.**

Table 7: Budgetary Price for Proposed Kubota Johkasou Treatment System Equipment

Budgetary Price	
Johkasou Treatment System Equipment, Instrumentation, Services and Warranty	$635,000, excluding sales tax, freight

The pricing herein is for budgetary purposes only and does not constitute an offer of sale. Tax, freight, and duties are not included. Tax will be added to this total at the time of sale based on the applicable tax rate.

6 24/7 Technical Support

24/7 phone support is available in addition to support during regular business hours. 24-hour technical support calls are shared within the Kubota staff so that you can rest assured knowing that knowledgeable engineers and technicians are just a phone call away.

7 Additional Services (Optional)

The following service plans are optional and may be added to Kubota's scope of supply if desired for an additional cost.

Kubota Membrane Protection Plan

Under this plan, Kubota Membrane USA warrants against any membrane failure for 10 years when the system is operated in accordance with the O&M manual. This plan includes annual onsite membrane inspection with a membrane examination and inspection report, periodic replacement of parts and damaged membranes (if any), and phone support during the 10-year period. With this plan, Kubota will replace each cartridge at least once during the 10-year span, regardless of necessity.

Kubota Custom Membrane Support Plan

Kubota can customize your support/service package to meet your needs. The following table shows a variety of our available services:

Table 8: Kubota's Available Services

Service	Note
Periodical technical support	Monthly, quarterly, annually
24/7 phone support	Always available
MBR control system monitoring	Weekly, monthly, quarterly
Periodical site visit	Quarterly, semi-annually, annually
Membrane inspection	Annual, semi-annual, 3x per year
Membrane protection (10-year contract)	Select annual or semi-annual inspections
Program (MBR control system, etc.) update	Based on hydraulic changes, such as increases in flow or changes in operation

8 Design Summary

For Earth, For Life
Kubota

Design Summary
Ono Vista, HI (MMF 25,000 GPD)

Basis of Design

Parameter	Flow	Temperature	Typical Event Duration	Design Durations
Average Annual Flow (AAF)	19,250 GPD *	23 °C *	9 consecutive months	9.0 months *
Max Month Flow (MMF)	25,000 GPD *	18 °C *	3 consecutive months	3.0 months *
Peak Week Flow (PWF) **	30,000 GPD *	18 °C *	3 non-consecutive weeks	3.0 weeks *
Peak Day Flow (PDF) **	35,000 GPD *	18 °C *	8 non-consecutive days	8.0 days *
Peak Hourly Flow (PHF) **	35,000 GPD *	18 °C *	4 hrs with 24 hrs between PHF	4.0 hours *

Parameter	Influent	Effluent Limits
BOD	300 mg/L *	< 25 mg/L *
TSS	300 mg/L *	< 25 mg/L *
TKN	45 mg/L *	< 3 mg/L *
NH_3	32 mg/L *	< 1 mg/L *
TP	8 mg/L *	< 8 mg/L *
TN	45 mg/L *	< 10 mg/L *
Alkalinity	300 mg/L *	< 75 mg/L *
Maximum Wastewater Temperature	25 °C *	
Elevation	500 ft *	

* Value assumed by Kubota, to be verified by consulting engineer.

** Peak values assumed to occur during MMF, to be verified by consulting engineer.

MBR/PA Zone (Membrane) Design

Parameter	Value	Notes
No. of Membrane Basins	1	
No. of Membrane Rows per Basin	1	
No. of Membrane Units per Basin	6	6 units total
Membrane Unit Type	FS-50	Cartridge: 510
No. of Cartridges per Unit	50	300 membrane Cartridges total
Surface Area per Cartridge	8.60 ft2/cartridge	2,580 sq ft total
Flux @ 19,250 GPD (AAF)	7.46 gal/(ft2 x day)	
Flux @ 25,000 GPD (MMF)	9.69 gal/(ft2 x day)	
Flux @ 30,000 GPD (PWF)	11.63 gal/(ft2 x day)	
Flux @ 35,000 GPD (PDF)	13.57 gal/(ft2 x day)	
Flux @ 35,000 GPD (PHF)	13.57 gal/(ft2 x day)	
Membrane Basin Volume	11,316 gal/basin	8.2ft x 24.6ft x 7.5ft SWD
Membrane Air Scour Rate for Sizing	18.9 scfm/unit	@ 4.1 PSIG discharge
Total System AOR	85 lb O2/day	
AOR Satisfied by Air Scour	40 lb O2/day	
MBR Basin MLSS	11,000 mg/L	

Anoxic Zone Design

Parameter	Value	Notes
Basin Volume	5,950 gal	6,029 gal total
Basin Dimensions	15.5ft x 8ft x 6.5ft SWD	
Anoxic MLSS	9,289 mg/L	
Recycle Rate	5.5 Q	From MBR to Anoxic Basin

MBR/PA Zone Design

Parameter	Value	Notes
Fine Bubble Diffuser AOR	45 lb O2/day	

MBR Waste Activated Sludge Production Parameters		
Parameter	**Value**	**Notes**
WAS Sludge Production	43 lbs sludge / day	
Chemical Sludge Production	0 lbs sludge / day	Based on Chem-P process
Total Sludge Production	43 lbs sludge / day	
Sludge Concentration	1.1%	solids
Sludge Flow	469 gal sludge / day	
WAS Volatile Fraction	0.75	Assumed

System Design Parameters		
Parameter	**Value**	**Notes**
Plant HRT	12.5 hrs	
Design Plant SRT	26 days	
F:M ratio	0.05	

Feed Forward Pump Design		
Parameter	**Value**	**Notes**
Feed Forward Pumps	2	1 Duty, 1 Shelf Spare
Type	SUBMERSIBLE	
Unit Capacity	112 GPM	
TDH	20.0 ft	

Permeate Pump Design		
Parameter	**Value**	**Notes**
Permeate Pumps	2	1 Duty, 1 Stdby
Type	CENTRIFUGAL	Suction Design
Unit Permeate Pump Capacity	66 GPM	
TDH	35.0 ft	

Blower Design		
Parameter	**Value**	**Notes**
MBR Blowers	2	1 duty, 1 Stdby
Type	POSITIVE DISPLACEMENT	
Unit MBR Blower Capacity	210 SCFM	
MBR Blower Discharge Pressure	4.06 PSIG discharge	

Chemical Cleaning Design		
Parameter	**Value**	**Notes**
Cleaning chemical (organic fouling)	Sodium Hypochlorite	2 times/yr
Typical Cleaning Schedule	1-2	cleanings/basin/yr
Volume per Membrane	.79 gal/cartridge	
Volume of Cleaning Solution	237.78 gal/basin	
Cleaning Solution Concentration	0.0025	
Volume of 12.5% Stock solution	5 gal/basin/cleaning	
Cleaning chemical (inorganic fouling)	Oxalic Acid	2 times/yr
Typical Cleaning Schedule	1-2	cleanings/basin/yr
Volume per Membrane	.79 gal/cartridge	
Volume of Cleaning Solution	237.78 gal/basin	
Cleaning Solution Concentration	0.01	
Volume of 100.0% Stock solution	2 gal/basin/cleaning	

9 O & M Estimates

O & M costs based on Average Annual Flow (AAF) are listed below, and have been broken down into four categories.

• Category 1: Annual Chemical Use Summary

Table 1: Chemical Usage

Parameter	Value	Notes
Number of Cartridges	300 Cartridges	
Volume of Chemical Needed per Cartridge	0.79 gal/Cartridge	
Sodium Hypochlorite (Membrane CIP)		
Volume of Dilute Sodium Hypochlorite	238 gal	
Concentration of Dilute Solution	0.25%	
Concentration of Stock Solution	12.5%	
Volume of Stock Solution of Sodium Hypochlorite	5 gal	vol. per single plant clean
Sodium Hypochlorite Buyout Cost	$0.10/lb	Assumed
Cleanings per Year	2 times/yr	
Total Annual Sodium Hypochlorite Chemical Cost	$10	Specific Gravity: 1.2
Oxalic Acid (Membrane CIP)		
Volume of Dilute Oxalic Acid	238 gal	
Concentration of Dilute Solution	1%	
Concentration of Stock Solution	100%	
Volume of Stock Solution of Oxalic Acid	2 gal	vol. per single plant clean
Oxalic Acid Buyout Cost	$0.71/lb	Assumed
Cleanings per Year	2 times/yr	
Total Annual Oxalic Acid Chemical Cost	$46	Specific Gravity: 1.65
Total Annual Chemical Cleaning Costs	**$56**	

• Category 2: Annual Labor Costs for Membrane Cleaning

Table 2: Membrane CIP Labor

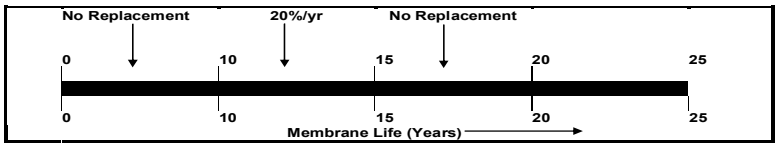
Parameter	Value	Notes
Operator Hourly Wage	25	per hour
Total Cleaning Man-hours	12	hr/yr
Total Annual Labor Cost for Cleaning	$300 /yr	Estimated

• Category 3: Annual Plant Operation and Maintenance Costs

Table 3: Plant Maintenance & Sampling Costs

Parameter	Value (hr/yr)	Notes
Blowers	10	(Oil & filter change)
Influent Screens	4	
Permeate Pumps	4	(Inspection/lube)
RAS Pumps	4	(Inspection/lube)
Instrumentation	12	(calibrate and/or clean)
Sampling	25	
Mixers	0	(replace seals)
Total Annual Labor Manhours	59 hr/yr	hr/yr (membrane clean not included)
Operator Hourly Wage	25	per hr
Total Annual Labor Cost for O&M	$1,475 /yr	Estimated

- Category 4: Membrane Replacement Cost



• Years: 1 through 10
No replacement.

• Years: 11 through 15
20% replacement per year

Estimated annual replacement cost = 0.2 X 300 Cartridges X $148*/Cartridge = $8,880/yr **

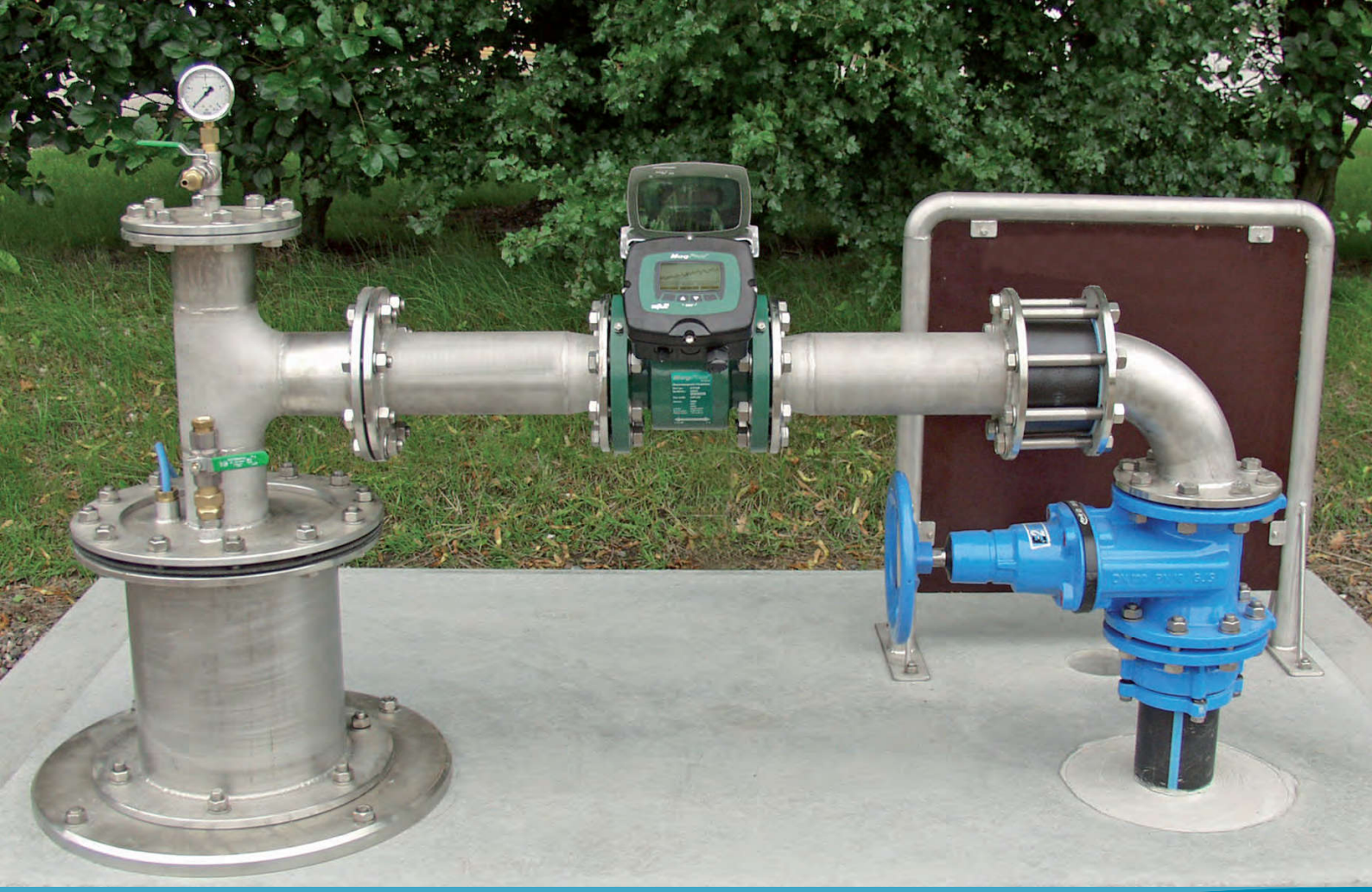
* Replacement cost. Must add CPI.
** Without redundant basin

• Years: 16 through 20
No replacement.

Estimated daily energy use (kwHrs/day): 425

Attachment C- Flowmeter Specifications and Details

Attachment C- Flowmeter Specifications and Details



MagFlux®

ELECTROMAGNETIC FLOWMETERS

BROCHURE

EN 3.05 MAGFLUX BROCHURE 1401

mjk a xylem brand

PROVEN AND RELIABLE FLOW MEASUREMENT

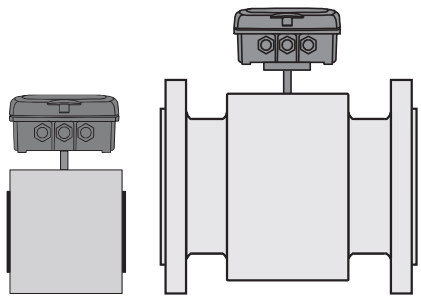
MJK MagFlux® flow meters combine high accuracy, stability and low maintenance.

Without moving parts, straight through flow sensor and self-cleaning electrodes there is virtually never any need for maintenance, there is no influence on the flow rate, and no pressure drop because of the flow sensor.

MagFlux® flow meters use a tested and approved sensing technology giving linear readings over a large range in closed pressurized pipe systems.

www.mjk.com

LARGE SELECTION OF SIZES AND MATERIALS



Wafer *Flange*

MagFlux® is available in sizes from DN 3 to DN 1400 (1/8" to 56") with standard lay lengths and standard EN, ANSI, AS and JIS pipe connections.

Model	7100	7200	7300	7400	7600
Mounting	Flange	Flange	Wafer	Wafer	Flange
Liner	PTFE	Hard rubber	PTFE	Hard rubber	Soft rubber
DN3 / 1/8"			•		
DN6 / 1/4"			•		
DN8 / 5/16"			•		
DN10 / 3/8"			•		
DN15 / 1/2"	•	•	•	•	•
DN20 / 3/4"	•	•	•	•	•
DN25 / 1"	•	•	•	•	•
DN32 / 1 1/4"	•	•	•	•	•
DN40 / 1 1/2"	•	•	•	•	•
DN50 / 2"	•	•	•	•	•
DN65 / 2 1/2"	•	•	•	•	•
DN80 / 3"	•	•	•	•	•
DN100 / 4"	•	•	•	•	•
DN125 / 5"	•	•	•	•	•
DN150 / 6"	•	•	•	•	•
DN200 / 8"	•	•	•	•	•
DN250 / 10"	•	•			•
DN300 / 12"	•	•			•
DN350 / 14"	•	•			•
DN400 / 16"	•	•			•
DN450 / 18"	•	•			•
DN500 / 20"	•	•			•
DN600 / 24"	•	•			•
DN700 / 28"	•	•			•
DN800 / 32"	•	•			•
DN900 / 36"		•			•
DN1000 / 40"		•			•
DN1200 / 48"		•			•
DN1400 / 56"		•			•

A BREAKTHROUGH IN SENSOR SET-UP SIMPLICITY

MJK's unique registration code for each sensor feeds all the necessary data into the meters electronics. In a matter of seconds the registration is completed, and the sensor characteristics and meter electronics are fully matched and ready to perform flow measurements.

It is safer than other systems that require memory chips that get lost or damaged, or complicated procedures requiring external equipment that have potential for mistakes.

MagFlux® sensor direction is also configured in the electronics, so there is no way to install a sensor backwards.

66NQ10

REGISTRATION CODE

COMPREHENSIVE FLOW AND BATCH CONTROL FUNCTIONS

The MagFlux® Converter has one 4 - 20 mA output, two relays for control and alarms, one digital input for batch or alarm reset, keypad start and stop of batch counters and reset of counters, totalizers and alarms.

Pop-up windows alert the user about operational and alarm functions which are automatically logged and easily reset.

Batching, batch counters, forward, reverse and net totalizers and non-resettable totalizers are all on-board and easy to configure.

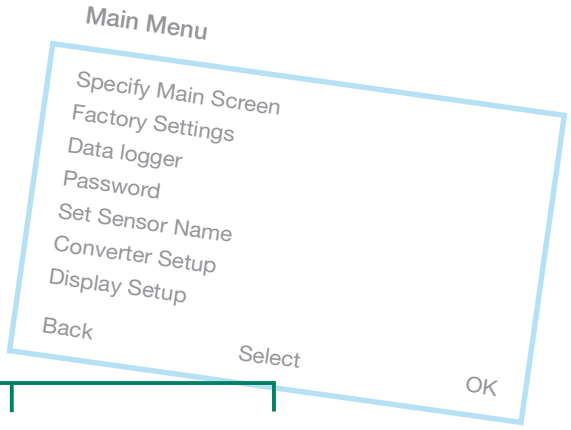
With its cell-phone like navigation, finding and managing these features is simple, but you can also password protect your settings.

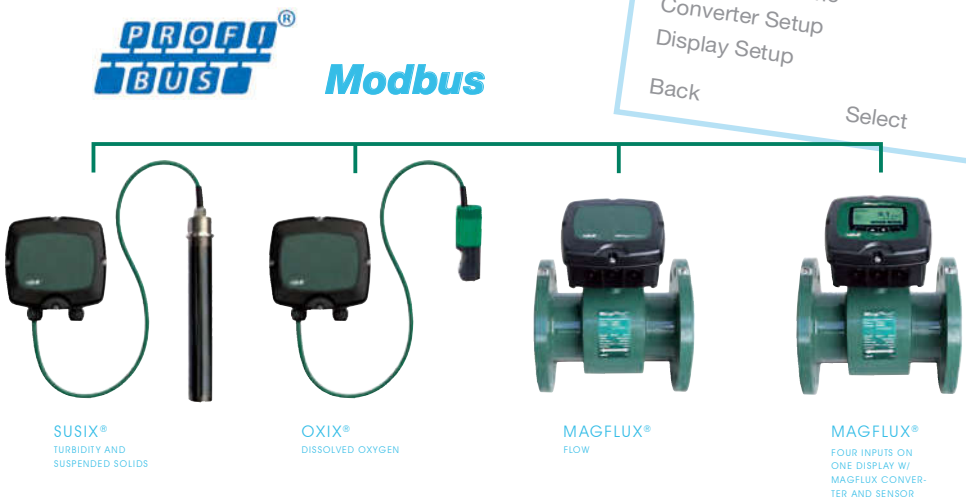
BEST-IN-CLASS DATA LOGGING AND NETWORKING

MagFlux® is the first to bring you an on-board electronic chart recorder that graphs flow rates and shows the date, time and flow rate for each data point. Behind the scene is a data logger that you set up with the data logging interval. To capture data for your permanent records simply use the USB connection or Bluetooth® (optional) in the MagFlux® Display and the MJK Field Link freeware. This delivers not only the graphed data, but also a CSV data file (up to 160.000 data points) that you can open with MS Excel on your PC.

For SCADA users MJK provides RS-485 communication with Modbus protocol along with registers, so that several MJK MagFlux® flow meters can be operated seamlessly from a control room.

MagFlux® never gets out of date. The USB port also allows for uploading of new software, features and several different languages from a PC.





SUSIX®
TURBIDITY AND SUSPENDED SOLIDS

OXIX®
DISSOLVED OXYGEN

MAGFLUX®
FLOW

MAGFLUX®
FOUR INPUTS ON ONE DISPLAY W/ MAGFLUX CONVERTER AND SENSOR

LOCATE AND CONFIGURE MAGFLUX YOUR WAY

MagFlux® Converter and Display can stay locally with the flow sensor or can be installed remotely.

A single Display can be used for set-up, viewing and data logging for one, two, three, or four Converters and Sensors in their own network to save space and cost.

The Display can be up to 1000 m (3000 ft) from a Converter, allowing the Converter to be where the electrical and control connections are, while the Display can be where the operators are.

The Converter can be separated from the sensor, too! This allows for even more flexibility to locate the Converter, where electrical connections are needed and out of danger from submersion, burial or other hazards.

Wall mounting or panel mounting is possible for all MagFlux® electronic units.

COMPACT MOUNTED

PANEL MOUNTING

WALL MOUNTING

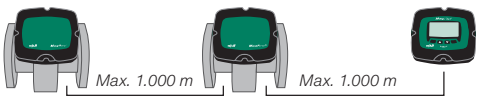
1 *Converter and Display mounted directly on the flow sensor (Compact Mounted).*

2 *Display is mounted remotely from the Converter and Flow Sensor.*

3 *Both the Display and Converter are together and mounted remotely from the Flow Sensorthe Flow Sensor.*

4 *The Converter is mounted remote from the Sensor and the Display is Mounted remote from the Converter.*

5 *One remote mounted Display operates two Converters and flow sensors that are mounted together.*



MagFlux® Sensor	
Mounting	Flange or wafer
Materials	Housing: Painted carbon or stainless steel Liner: Hard rubber, soft rubber or PTFE Electrode: Stainless steel 1.4571 (AISI 316). On order Hastelloy, titanium or platinum
Built-in grounding electrode	≥ DN 50
Accuracy	Better than ± 0,25%
Temperature	Liquid: -20 to +150° C / -5 to +302° F, depending of type. Surroundings: -20 to +60° C / -5 to +140° F (converter mounted on sensor) -20 to +80° C /14 to +176° F (converter remote mounted)
Enclosure	IP 67 (with gel potting IP 68) / NEMA 4X (with gel potting NEMA 6P)

MagFlux® Converter	
Accuracy	± 0,1% of measurement (system accuracy better than ± 0,25 %)
Input	From MagFlux® sensor
Analog output	One active 4 - 20 mA, galvanic isolated (max. 800 Ω)
Digital output	One voltage-free, electromechanical relay (max. 50 V DC / 1 A) One optically isolated (max. 50 V AC / V DC / 120 mA)
Digital input	One digital input. Max. 30 V DC
Communication	Modbus® RTU-mode, 9600 baud, 2-wire RS 485, slave-mode
Datalogger	Display 160,000 logs with date, time, value and daily totals
Interface	RS 485 for connection to Display Unit or PLC.
Power supply	24 V AC, 50 / 60 Hz ± 10 % or 10 - 30 V DC or 230 / 115 V AC, 50 / 60 Hz ± 10 %
Power consumption	Max. 10 W
Cabinet materials	Polycarbonate, glass reinforced
Enclosure rating	IP 67 / NEMA 4X

mjk a xylem brand

MJK Automation ApS
Byageren 7
DK-2850 Nærum
Denmark
Tel +45 45 56 06 56
Fax +45 45 56 06 46
www.mjk.com

ISO 9001-2008 ISO CERTIFIED

EN 3.05 MagFlux brochure 1401

Attachment D- UV System Specifications and Details

Attachment E- Influent Laboratory Report

O & M ENTERPRISES

92-7091 ELELE ST.
KAPOLEI, HI. 96707
FAX: (808) 672-6247
CELL: (808) 721-4866
OFFICE: (808)-672-6247 .

July 12, 2022

Ms. Sina Pruder
Chief Wastewater Branch
P.O Box 3378
Honolulu, Hawaii 96801

Ms. Pruder

Subject: Ono Vista Apartments Permit # 225 Report for January 1, 2022 to June 30, 2022.

The plant has one significant issue during the period. The Injection Wells are failing requiring extra pumping from plant.

If you have any questions, please call Wade Thode at 808-721-4866.

Sincerely

Wade Thode

HFWT HAWAII FOOD & WATER TESTING LLC

2688 Kilihau St. #B
Honolulu, HI 96819

Phone: (808) 836-5558
E-mail: lab@hfwt.com

LABORATORY ANALYSIS REPORT

O&M Enterprises
92-7091 Elele St.
Kapolei, HI 96707

Case No. 117
Received 06-09-2022
Analyzed 06-09-2022
Completed 06-14-2022

Sample Type: Wastewater

Sampled on 06-08-2022

Sampled by: Wade Thode

Lab No.	Sample ID	Sample Time	BOD-5 mg/L	TSS mg/L
362	Ono Vista (OV)	15:40	10.5	15.4

Method Reference:
Minimum Detection Level:
Biochemical Oxygen Demand: EPA 405.1; MDL 1.0 mg/L
Total Suspended Solids: EPA 160.2; MDL 1.0 mg/L

Approved by:

Wendy Minor

Wendy Minor, June 17, 2022

HFWT HAWAII FOOD & WATER TESTING LLC

2688 Kilihau St. #B
Honolulu, HI 96819

Phone: (808) 836-5558
E-mail: lab@hfwt.com

LABORATORY ANALYSIS REPORT

O&M Enterprises
92-7091 Elele St.
Kapolei, HI 96707

Case No. 116
Received 05-11-2022
Analyzed 05-11-2022
Completed 05-16-2022

Sample Type: Wastewater

Sampled on 05-10-2022

Sampled by: Wade Thode

Lab No.	Sample ID	Sample Time	BOD-5 mg/L	TSS mg/L
347	Ono Vista (OV)	14:30	20.0	20.7

Method Reference:
Minimum Detection Level:
Biochemical Oxygen Demand: EPA 405.1; MDL 1.0 mg/L
Total Suspended Solids: EPA 160.2; MDL 1.0 mg/L

Approved by:

Wendy Minor

Wendy Minor, May 18, 2022

HFWT HAWAII FOOD & WATER TESTING LLC

2688 Kilihau St. #B
Honolulu, HI 96819

Phone: (808) 836-5558
E-mail: lab@hfwt.com

LABORATORY ANALYSIS REPORT

O&M Enterprises
92-7091 Elele St.
Kapolei, HI 96707

Case No. 114
Received 04-06-2022
Analyzed 04-07-2022
Completed 04-12-2022

Sample Type: Wastewater

Sampled on 04-05-2022

Sampled by: Wade Thode

Lab No.	Sample ID	Sample Time	BOD-5 mg/L	TSS mg/L
339	Ono Vista (OV)	14:00	15.0	19.2

Method Reference:
Minimum Detection Level:
Biochemical Oxygen Demand: EPA 405.1; MDL 1.0 mg/L
Total Suspended Solids: EPA 160.2; MDL 1.0 mg/L

Approved by:

Wendy Minor

Wendy Minor, April 12, 2022

HFWT HAWAII FOOD & WATER TESTING LLC

2688 Kilihau St. #B
Honolulu, HI 96819

Phone: (808) 836-5558
E-mail: lab@hfwt.com

LABORATORY ANALYSIS REPORT

O&M Enterprises
92-7091 Elele St.
Kapolei, HI 96707

Case No. 113
Received 03-02-2022
Analyzed 03-02-2022
Completed 03-07-2022

Sample Type: Wastewater

Sampled on 03-01-2022

Sampled by: Wade Thode

Lab No.	Sample ID	Sample Time	BOD-5 mg/L	TSS mg/L
333	Ono Vista (OV)	14:40	45.0	12.6

Method Reference:
Minimum Detection Level:
Biochemical Oxygen Demand: EPA 405.1; MDL 1.0 mg/L
Total Suspended Solids: EPA 160.2; MDL 1.0 mg/L

Approved by:

Wendy Minor

Wendy Minor, March 11, 2022

HFWT HAWAII FOOD & WATER TESTING LLC

2688 Kilihau St. #B
Honolulu, HI 96819

Phone: (808) 836-5558
E-mail: lab@hfwt.com

LABORATORY ANALYSIS REPORT

O&M Enterprises
92-7091 Elele St.
Kapolei, HI 96707

Case No. 112
Received 02-03-2022
Analyzed 02-03-2022
Completed 02-08-2022

Sample Type: Wastewater

Sampled on 02-02-2022

Sampled by: Wade Thode

Lab No.	Sample ID	Sample Time	BOD-5 mg/L	TSS mg/L
329	Ono Vista (OV)	14:40	41.0	13.8

Method Reference:
Minimum Detection Level:
Biochemical Oxygen Demand: EPA 405.1; MDL 1.0 mg/L
Total Suspended Solids: EPA 160.2; MDL 1.0 mg/L

Approved by:

Wendy Minor

Wendy Minor, February 09, 2022

HFWT HAWAII FOOD & WATER TESTING LLC

2688 Kilihau St. #B
Honolulu, HI 96819

Phone: (808) 836-5558
E-mail: lab@hfwt.com

LABORATORY ANALYSIS REPORT

O&M Enterprises
92-7091 Elele St.
Kapolei, HI 96707

Case No. 110
Received 01-06-2022
Analyzed 01-07-2022
Completed 01-12-2022

Sample Type: Wastewater

Sampled on 01-05-2022

Sampled by: Wade Thode

Lab No.	Sample ID	Sample Time	BOD-5 mg/L	TSS mg/L
320	Ono Vista (OV)	14:40	22.0	20.0

Method Reference:
Minimum Detection Level:
Biochemical Oxygen Demand: EPA 405.1; MDL 1.0 mg/L
Total Suspended Solids: EPA 160.2; MDL 1.0 mg/L

Approved by:

Wendy Minor

Wendy Minor, January 13, 2022

Attachment B- Kubota Johkasou Treatment Package Preliminary Design/Equipment Summary

Attachment F- BWS Billing and Consumption Data

APPENDIX C

UIC Injection Well Status Report

UIC INJECTION WELL STATUS REPORT
UIC PERMIT NO. UO-1305

MONITORING PERIOD:
SEPTEMBER 2021 THROUGH AUGUST 2022

FACILITY:
ONO VISTA CONDOMINIUMS
68-024 APUHIHI STREET
WAIALUA, HAWAII 96791
TMK: (1) 6-8-011: 058

DATE:
SEPTEMBER 7, 2022

Prepared for:
Zach Esparza, President
AOAO Ono Vista
69-090 Au Street, E305
Waialua, HI 96791
esparazach@gmail.com
(314) 775-3878

Prepared by:
McNulty Civil Engineering
67-335 Kaiea Place
Waialua, Hawaii 96791

Mr. Gaudencio Lopez, P.E., Chief
Safe Drinking Water Branch
2385 Waimano Home Road
Uluakupu Building 4
Pearl City, HI 96782

September 7, 2022
Job No. 22-1041

Re: UIC Injection Well Status Report
UIC Permit No. UO-1305
Ono Vista Apartments
68-024 Apuhihi St.
Waialua, HI 96791

1.0 INTRODUCTION

McNulty Civil Engineering (MCE) is pleased to present this letter report describing the status of the three permitted Underground Injection Control (UIC) wells accepting treated effluent from the Ono Vista Condominium located in Waialua, Hawaii. This status report is for the monitoring period of September 2021 to August 2022 and has been prepared in accordance with State of Hawaii Department of Health UIC Injection Well Status Report Guidelines, October 1999.

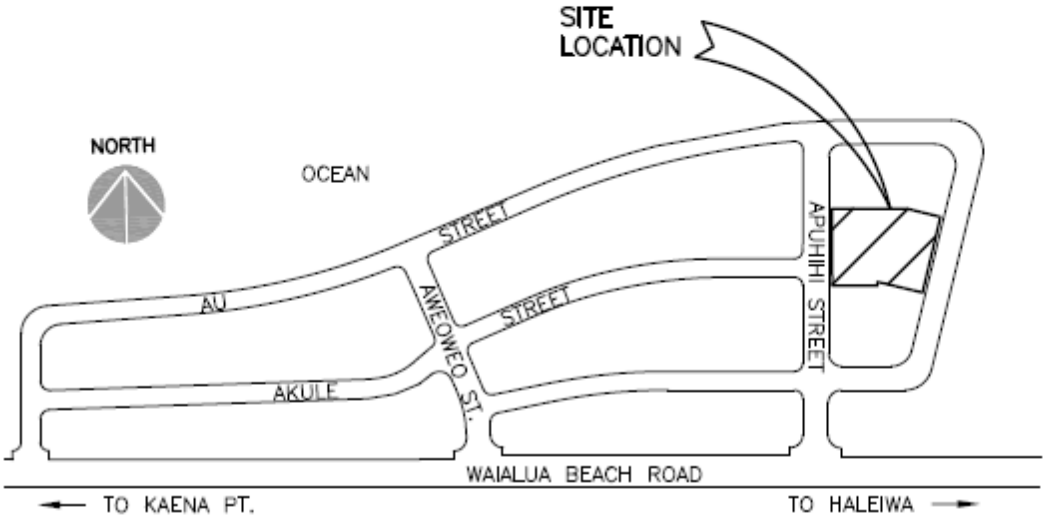
2.0 BACKGROUND

Three injection wells are currently used for the disposal of the treated effluent from the Ono Vista Condominium wastewater treatment plant. They are located on the Haleiwa side of the swimming pool and the treatment plant, in the parking lot. The treatment plant is an activated sludge plant with a pre-loader, an activated sludge tank, a clarifier, and a chlorine contact chamber. The treatment plant was installed in the 1970's. The plant services two apartment buildings with 32 units in each building. The plant is permitted for a maximum injection quantity of 22,400 gallons per day (gpd). The UIC Permit to Operate will expire on July 29, 2024, and should be renewed six months prior to expiration.

Site Location

The facility is located on the makai side of Waialua Beach Road. One apartment building fronts Apuhihi Street and the other building fronts Au Street. The complex is in the middle of the block. Private residences and other apartments are in the surrounding area. The Pacific Ocean is located approximately 600 feet north of the site.

VICINITY MAP
NOT TO SCALE



LOCATION MAP
NOT TO SCALE

Topography

The topography of the site is flat, residential, and suburban. The site is approximately 7.8 feet above mean sea level. The site has a pool in the middle area (between the parking lots and buildings) and is landscaped.

Geology

The site soils are of the Jaucas Series, which are excessively drained, calcareous soils that occur as narrow strips on coastal plains, adjacent to the ocean (soil designation JaC), (Foot, 1972). Permeability is rapid and run off is slow.

Hydrology

There are many irrigation wells in the area, left over from the Waialua Sugar Company. The nearest drinking water wells are located approximately two miles away toward Wahiawa. Dole Food operates them both.

The water table is approximately eight feet below grade and it is under a tidal influence.

3.0 OBSERVATIONS

Treatment System

The system begins with a lift station pumping to a pre-loader tank. The pre-loader gravity flows to the aeration chamber (approximately 32,000 gallons). The effluent from the chamber flows into a clarifier where the sludge is returned to the aeration tank. The effluent flows over a weir, in the clarifier, into the chlorine contact tank. Chlorination is accomplished by effluent passing over chlorine tablets in a basket. The effluent is pumped on demand by a mercury level switch to the well cellars of Well 1 (W-1), Well 2 (W-2), and Well 3 (W-3) via piping with gate valves. These wells then operate under gravity head. In case of pump failure an overflow pipe connects the contact chamber to W-2, which in turn overflows to the well cellar of W-3.

When we arrived on site there was no flow going into Well 1. When testing Well 2 the effluent flow was less than the usual 50 gallons per minute (gpm). We could not estimate the flow but noted that the turbulence from the effluent pipe was not as much as previous years. The overflow pipe to Well 3 was submerged. All the effluent had suspended matter and we could not see the bottom of the well cellars.

Weather

On August 24, 2022, the weather was light trade winds with 30% cloud cover.

Injection Wells

Each injection well is surrounded by an asphalt cement berm. The berms keep rainwater out of the wells. All measurements are from the top of cover (TOC) of the wells.

Injection Well 1 (W-1)

The access to the cellar is 19″ x 19″ covered by sheet metal and cellar is a standard storm drain manhole extending to 6′ below TOC. The well has a 4″ diameter stickup from the bottom of the well cellar. The stick up is 4.75′ below TOC. The influent pipe of W-1 has a float valve that shuts off the influent when it rises to about 3 feet above the well cellar. When we arrived, the effluent was at the level of the stick-up and there was no flow. We could not see the bottom of the well cellar. The total depth of W-1 was measured at 51.50 feet. No sludge was detected. The depth to water was measured at 7.80 feet. Photographs of the wells are presented in the Attachments.

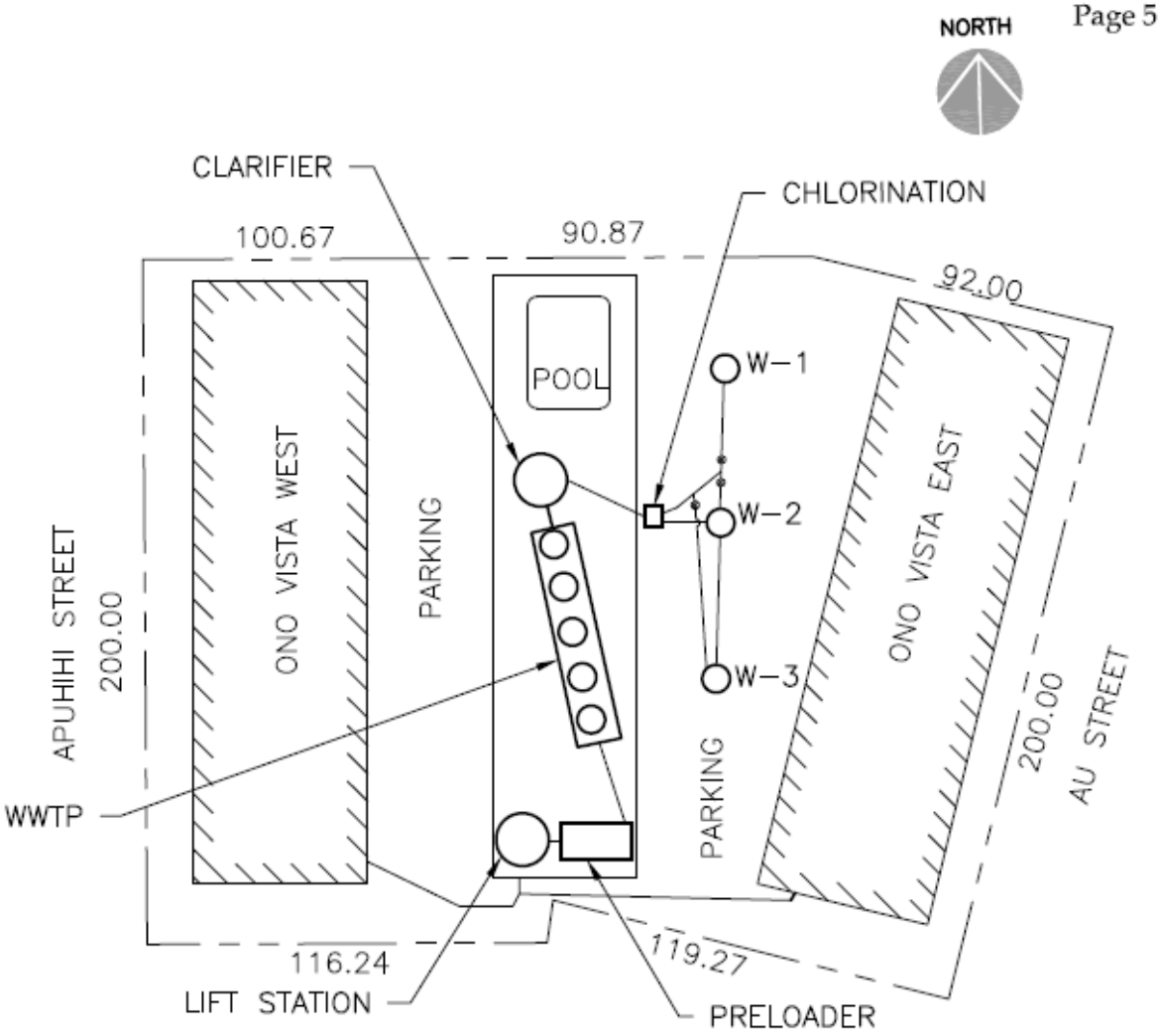
Injection Well 2 (W-2)

The well access/cellar is 3′ by 1.5′ by 7.6′ deep made of concrete and bricks. It is covered with a sheet metal plate. A 4″ well stickup pipe extends up from the bottom a few inches. An overflow pipe connects this well cellar to the well cellar of W-3. We suspect that this overflow pipe is 6". The well stick up was below the fluid level upon our arrival. The overflow pipe to Well 3 was below the fluid level. The depth of W-2 was not measured because the flow running past the stickup would wash the weighted tape away and we could not insert it into the stick up (we could not see the stick up but knew where it should be from the old photographs. The depth to water was measured at 1.90 feet.

Injection Well 3 (W-3)

The well access/cellar is 3′ by 1.5′ by 4.6′ deep. The well cellar receives influent from the discharge pump. The delivery piping from the plant is 2½″. Effluent gravity flows into the well (open to atmosphere). A pipe extension is loosely attached to the well stick up. This extension comes within 26″ of the cover preventing W-3 from accepting most of the wastewater effluent. Some effluent apparently enters the well through the loose fit of the pipe extension. This well cellar is connected to the well cellar of W-2 by the 6″ overflow pipe. As with W-2, the fluid level was above the

WELL LOCATION MAP



INJECTION WELL SITE PLAN

NOT TO SCALE

PROJECT: ONO VISTA CONDOMINIUMS UIC PERMIT NO.: UO-1305 TMK: (1) 6-8-011: 058	MCNULTY CIVIL ENGINEERING 67-335 KAIEA PLACE WAIALUA, HI 96791

overflow pipe. The depth to bottom of the well measured 44.00 feet. The depth to water was measured at 1.65 feet.

Effluent Water Quality

On August 24, 2022, the effluent had no odor, however the effluent was murky, full of suspended solids and we could not see the stick up or bottom of any of the well cellars.

Cleaning Events

This past year the wells were cleaned every two weeks. The cleaning consists of blowing the wells with compressed air (agitating the walls) while removing the agitated material with a vacuum truck.

Flow Evaluation

Utilizing a garden hose, a steady flow rate of 7.5 gallons per minute (gpm) was set to test the well capacities. Battery operated water level meters were used to record water levels. At 0930 we began testing W-1, we removed the testing water at 0950 and measured the well rebound for another 15 minutes

Next, we tested the W-2 with the 7.5 gpm flow while it was receiving flow from the plant. At 1035 we began testing W-3; we removed the testing water at 1100. There was a slight measurable difference in the level of the effluent during the time when we were adding the 7.5 gpm and the time when we were not adding the flow.

4.0 FINDINGS

The treatment plant, injection wells, wellheads, and related piping are in working order. There are no signs of leaks, corrosion, or mechanical malfunctions. Fine solids are overflowing into the wells.

W-1: The measured depth to the bottom of the well has regained its normal 51' depth. We measured a head build-up of 3.90 feet. There was a slight re-bound.

The water level in Wells 2 and 3 was less than 2' from grade. This is the highest measurement on record. During testing there was a slight rise in the liquid level of both wells and no rebound. Well 2 was receiving a less than 50 gpm flow from the plant. The depths of this well could not be measured. Well 3 measured 44.00' deep from grade. There was no obstruction in the well this year.

5.0 CONCLUSIONS

The wastewater treatment plant is receiving a high flow volume, possibly causing the overflow of some solids.

Well 1 has regained its normal 50' depth.

The bank of wells is accepting the daily flow from the plant. Effluent flowing into the well cellars is being adequately absorbed. The effluent is not overflowing and there are no signs of leaks in the parking lot.

6.0 RECOMMENDATIONS

- Continue the cleaning of the wells on a bi-weekly schedule; and
- If it has not already been done, install "low flow" fixtures in the units. This would include faucets, showers, and toilets.
- We understand that a new treatment plant and effluent disposal plans are being developed.

Please call me directly at 637-2460 if you have any questions or comments.

Sincerely,

Michael McNulty, P.E.

Attachments: Historical Head Build Up Graph
Figures
Tables
Site Photographs

Historical Head Build Up
Ono Vista Condominiums

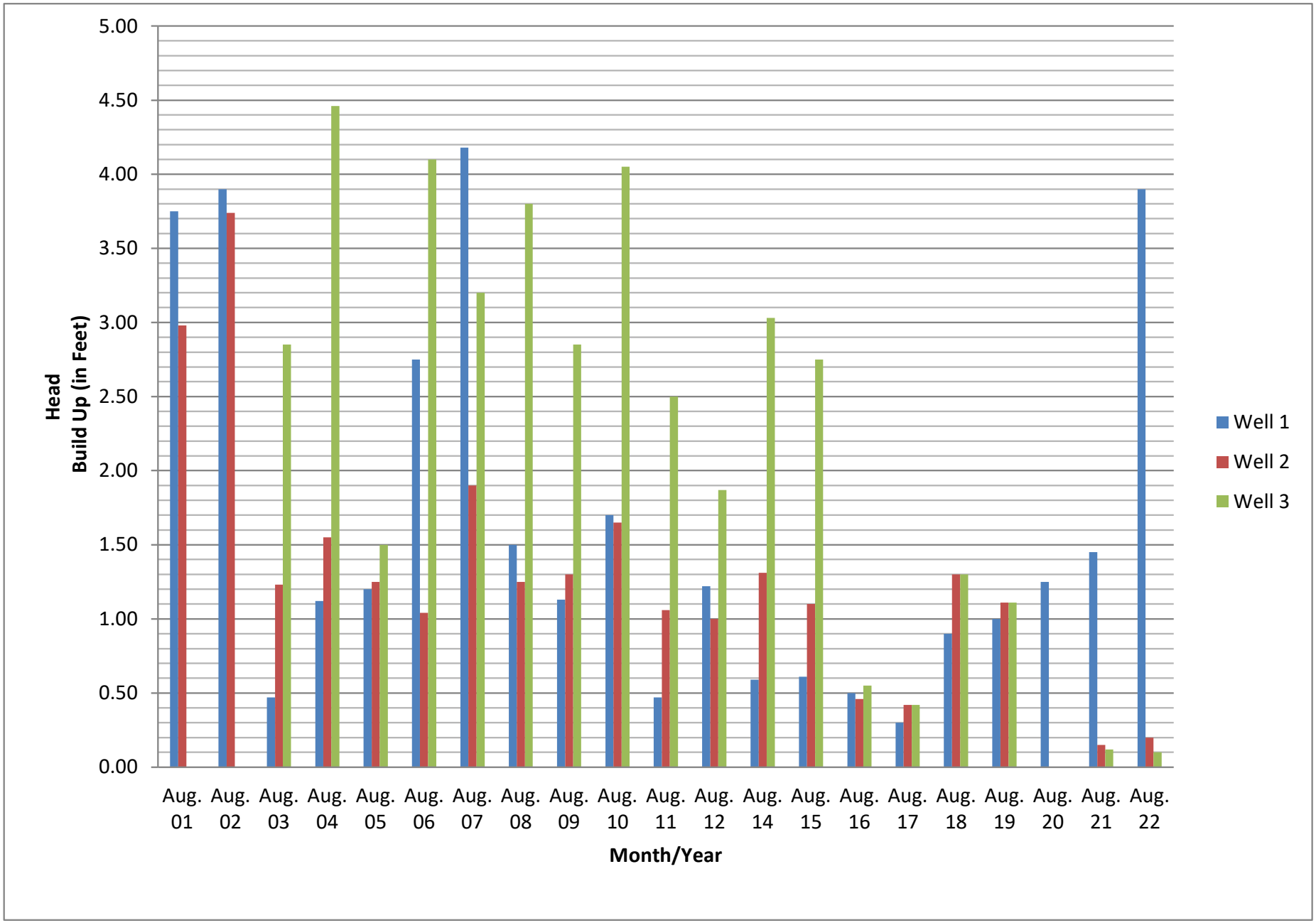
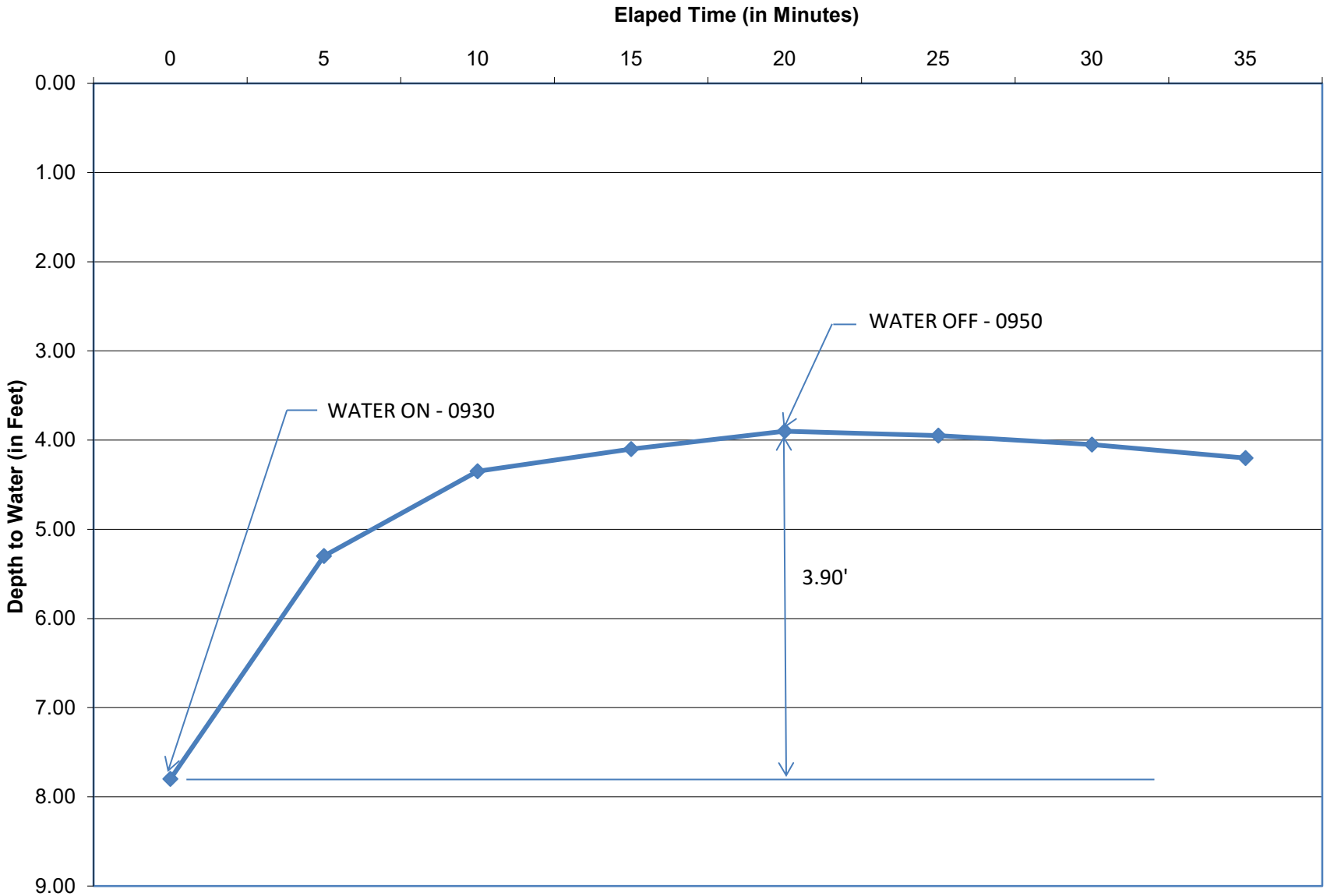
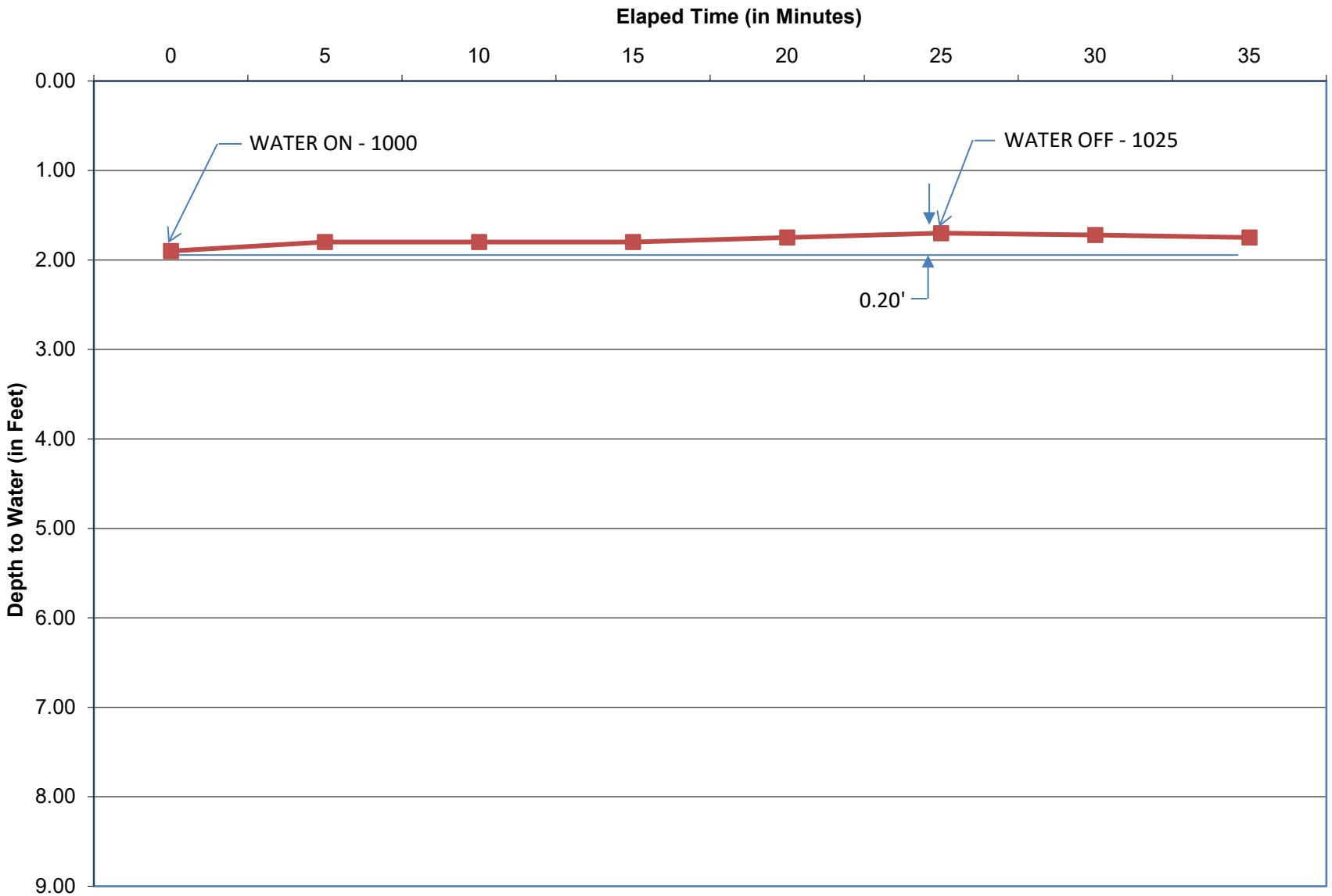


Figure1-Injection Curve for Well 1
Ono Vista Condominium
August 24, 2022



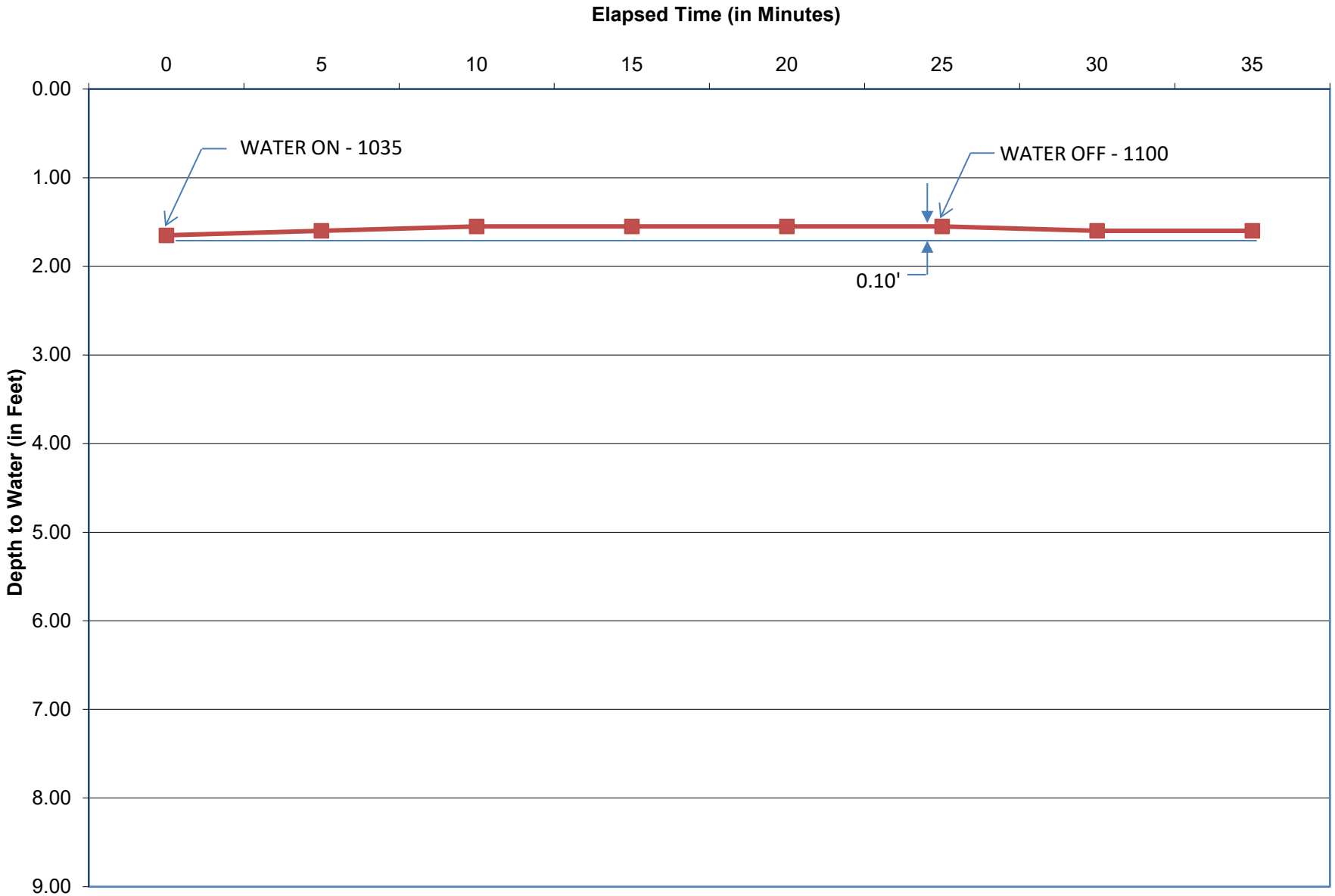
Note: 7.5 gpm injection rate.

Figure 2-Injection Curve for Well 2
Ono Vista Condominium
August 24, 2022



Note: W-2 tested w/ 50 gpm flow from plant into W-2

Figure 3-Injection Curve for Well 3
Ono Vista Condominium
August 24, 2022



Note:Injection rate 7.5 gpm

TABLE 1

Underground Injection Control Wells

Ono Vista, UIC Permit No. UO-1305

August 24, 2022

	Well No.1		Well No.2*		Well No. 3	
Elapsed Time (minutes)	Depth to Water (feet)	Comments (feet)	Depth to Water (feet)	Comments (feet)	Depth to Water (feet)	Comments (feet)
0	7.80	WATER ON-0930	1.90	WATER ON-1000	1.65	WATER ON-1035
5	5.30		1.80		1.60	
10	4.35		1.80		1.55	
15	4.10		1.80		1.55	
20	3.90	WATER OFF-0950	1.75		1.55	
25	3.95		1.70	WATER OFF1025	1.55	WATER OFF-1100
30	4.05		1.72		1.60	
35	4.20	END TEST	1.75	END TEST	1.60	END TEST
40						
45						
50						
55						
60						
65						
70						
75						
80						
85						
90						
95						
100						
105						
110						
115						
120						
125						
130						
135						
140						
145						
150						

Notes:

1. All depth measurements made from the top of casings
2. Injection rate 7.5 gpm.

* Water entering well from plant @ less than 50 gpm.

TABLE 2
Historical Depth Measurements of UIC Wells
Ono Vista, UIC Permit No. UO-1305
August 24, 2022

Date (Month - Year)	Well No. W-1			Well No. W-2			Well No. W-3*		
	Depth to Water	Depth to Sediment	Depth to Bottom	Depth to Water	Depth to Sediment	Depth to Bottom	Depth to Water	Depth to Sediment	Depth to Bottom
	(feet)	(feet)	(feet)	(feet)	(feet)	(feet)	(feet)	(feet)	(feet)
Aug. 01	4.75	47.58	48.50	6.90	47.00	47.60	0.00	34.50	34.60
Aug. 02	7.80	50.35	50.70	7.70	51.43	51.90	0.00	26.35	27.10
Aug. 03	7.75	None	51.15	7.62	None	52.00	6.15	None	35.20
Aug. 04	8.04	None	51.15	8.00	None	52.85	8.06	36.60	36.70
Aug. 05	7.95	None	51.18	7.70	None	53.00	7.90	Negligible	36.70
Aug. 06	7.70	None	51.15	7.55	None	55.50	7.80	None	37.05
Aug. 07	7.80	None	51.10	7.90	None	53.30	7.80	None	36.95
Aug. 08	7.40	None	51.12	7.50	51.00	51.10	6.50	35.60	35.80
Aug. 09	7.70	None	51.19	7.65	48.00	48.50	4.00	35.70	35.80
Aug. 10	7.60	None	51.20	7.65	45.80	46.80	7.30	None	39.09
Aug. 11	7.72	None	51.20	4.95	None	52.80	5.60	None	42.90
Aug. 12	8.47	None	51.20	7.45	45.20	45.50	8.17	None	42.95
Aug. 13	7.00	None	51.10	4.95	—	—	6.55	42.80	42.85
Aug. 14	7.91	None	51.00	7.90	29.30	30.45	7.54	None	42.90
Aug. 15	7.81	None	50.85	7.60	28.20	28.90	7.60	None	40.70
Aug. 16	7.50	None	51.00	5.46	16.40	17.20	5.40	None	42.86
Aug. 17	7.20	None	51.05	5.65	17.53	17.56	5.65	None	41.90
Aug. 18	7.95	None	51.20	5.80	13.78	17.69	5.80	None	42.28
Aug. 19	7.80	None	51.10	6.35	None	43.20	6.35	None	43.10
Aug. 20	4.40	None	51.35	6.30	**	**	6.30	**	**
Aug. 21	4.20	None	21.10	2.20	**	**	2.17	**	**
Aug. 22	7.80	None	51.50	1.90	**	**	1.65	None	44.00

Notes:

1. Depth measurements made from the top of the west side of the concrete vaults.

* Depth measurements made from the top of the extension pipe.

** Unable to Measure.

TABLE 3

Historical Head Build Up Measurements of the UIC Wells

Ono Vista, UIC Permit No. UO-1305

August 24, 2022

	Well No.1		Well No.2		Well No. 3	
Date	Head Build Up	Comments	Head Build Up	Comments	Head Build Up	Comments
month/year	(feet)		(feet)		(feet)	
Aug. 01	3.75	#1	2.98	#1	N/A	
Aug. 02	3.90	#1	3.74	#1	N/A	
Aug. 03	0.47	#2	1.23	#2	2.85	#2
Aug. 04	1.12	#2	1.55	#2	4.46	#2
Aug. 05	1.20	#2	1.25	#2 & #4	1.50	#2 & #4
Aug. 06	2.75	#2	1.04	#2	4.10	#2
Aug. 07	4.18	#2	1.90	#2	3.20	#2
Aug. 08	1.50	#2	1.25	#2	3.80	#3
Aug. 09	1.13	#2	1.30	#2 & #4	2.85	#2 & #4
Aug. 10	1.70	#2	1.65	#2 & #4	4.05	#2 & #4
Aug. 11	0.47	#2	1.06	#2 & #4	2.50	#2 & #4
Aug. 12	1.22	#2	1.00	#2 & #4	1.87	#2 & #4
Aug. 14	0.59	#2	1.31	#2 & #4	3.03	#2 & #4
Aug. 15	0.61	#2	1.10	#2 & #4	2.75	#2 & #4
Aug. 16	0.50	#2	0.46	#6	0.55	#6
Aug. 17	0.30	#2	0.42	#6	0.42	#6
Aug. 18	0.90	#2	1.30	#2, #6	1.30	#2, #6
Aug. 19	1.00	#2	1.11	#2, #6	1.11	#2, #6
Aug. 20	1.25	#2	0.00	#2, #6, #7	0.00	#2, #6, #7
Aug. 21	1.45	#2	0.15	#2, #6, #7	0.12	#2, #6, #7
Aug. 22	3.90	#2	0.20	#2, #8	0.10	#2

Notes:

1. Water supply flow rate set at 10 gpm
2. Water supply flow rate set at 7.5 gpm
3. Water supply flow rate set at 1 gpm
4. Water overflowed into adjoining well
5. N/A -Not Available
6. W-2 & W-3 tested together w/7.5 gpm flowing into W-2
7. W-2 & W-3 tested together w/50 gpm in W-2 & 25 gpm in W-3.
8. Additional flow from plant at less than 50 gpm

Photo 1: Overhead view of Well 1
All photos taken on August 24, 2022

Photo 2: View facing south of W-1 @ 10’

Photo 3: Overhead view of Well 2

Photo 4: View facing south of W-2 @ 10’

Photo 5: Overhead view of Well 3

Photo 6: View facing south of W-3 @ 10’

APPENDIX D

Pre-Consultation Agency Response

BOARD OF WATER SUPPLY

CITY AND COUNTY OF HONOLULU
630 SOUTH BERETANIA STREET
HONOLULU, HI 96843
www.boardofwatersupply.com

November 2, 2022

Ms. Stephanie Davis
Environmental Science International
354 Uluniu Street, Suite 304
Kailua, Hawaii 96734

Dear Ms. Davis:

Subject: Your Letter Requesting Comments on the Availability of Water for the Proposed Ono Vista Condominiums Wastewater Treatment System Replacement Project at 68-024 Apuhihi Street – Tax Map Key: 6-8-011: 058

Thank you for your letter regarding the proposed wastewater treatment system replacement project.

The existing water system is adequate to accommodate the proposed development. However, please be advised that this information is based upon current data, and therefore, the Board of Water Supply (BWS) reserves the right to change any position or information stated herein up until the final approval of the building permit application. The final decision on the availability of water will be confirmed when the building permit application is submitted for approval.

When water is made available, the applicant will be required to pay our Water System Facilities Charges for resource development, transmission and daily storage.

Water conservation measures are required for all proposed developments. These measures include low flow plumbing fixtures, utilization of nonpotable water for irrigation using rain catchment and chiller/air handler condensate, cooling tower conductivity meters and water softening recycling systems, drought tolerant plants, xeriscape landscaping, efficient irrigation systems and the use of Water Sense labeled ultra-low-flow water fixtures and toilets.

The proposed project is subject to BWS Cross-Connection Control and Backflow Prevention requirements prior to the issuance of the Building Permit Applications.

The on-site fire protection requirements should be coordinated with the Fire Prevention Bureau of the Honolulu Fire Department.

If you have any questions, please contact Robert Chun, Project Review Branch of our Water Resources Division at (808) 748-5443.

Very truly yours,

ERNEST Y. W. LAU, P.E.
Manager and Chief Engineer

DEPARTMENT OF DESIGN AND CONSTRUCTION
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET, 11TH FLOOR
HONOLULU, HAWAII 96813
Phone: (808) 768-8480 • Fax: (808) 768-4567
Web site: www.honolulu.gov

RICK BLANGIARDI
MAYOR

HAKU MILLES, P.E.
ACTING DIRECTOR

BRYAN GALLAGHER, P.E.
ACTING DEPUTY DIRECTOR

October 31, 2022

SENT VIA EMAIL

Stephanie Davis
sdavis@esciencei.com

Dear Ms. Davis:

Subject: Ono Vista Condominiums Wastewater
Treatment System Replacement
68-024 Apuhihi Street, Waialua, Oahu, Hawaii
TMK No. (1) 6-8-011:058

Thank you for the opportunity to review and comment. The Department of Design and Construction has no comments to offer at this time.

Should you have any questions, please contact me at (808) 768-8481.

Sincerely,

for Haku Milles, P.E.
Acting Director

HM:krn (890042)

Stephanie Davis

From: Maruoka, Colin <Colin.Maruoka@doh.hawaii.gov>
Sent: Wednesday, October 12, 2022 3:00 PM
To: Stephanie Davis
Cc: CleanWaterBranch
Subject: 2022A429 Ono Vista Condominium WWTS Replacement TMK No. (1) 6-8-011:058

Follow Up Flag: Follow up
Flag Status: Flagged

Dear Ms. Davis,

The Department of Health (DOH), Clean Water Branch (CWB) has received the pre-consultation letter, dated October 3, 2022, requesting comments for Ono Vista Condominiums Wastewater Treatment System Replacement. The DOH-CWB no longer provides comments for pre-consultation on EA/EIS documents. For agencies and projects owners requiring DOH-CWB comments, please utilize the DOH-CWB standard comments accessible on our website or the following link: https://health.hawaii.gov/cwb/files/2018/05/Memo-CWB-Standard-Comments.pdf.
If you have any questions, please email cleanwaterbranch@doh.hawaii.gov.

Sincerely,

Colin T. Maruoka
Clean Water Branch
State of Hawaii Department of Health
2827 Waimano Home Road, #225
Pearl City, Hawaii 96782
Phone: (808) 586-4309

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
DIVISION OF AQUATIC RESOURCES
1151 PUNCHBOWL STREET, ROOM 330
HONOLULU, HAWAII 96813

Date: 10/25/2022
DAR # 6307

MEMORANDUM

TO: Brian J. Neilson
DAR Administrator

FROM: Paul Murakawa, Aquatic Biologist *Paul J. Murakawa*

SUBJECT: Ono Vista Condominiums Wastewater Treatment System Replacement

Request Submitted by: Stephanie Davis, Project Manager,Environmental Science Internat

Location of Project: 68-024 Apuhihi Street, Waialua, Oahu, Hawaii TMK No. (1) 6-8-011 :058

Brief Description of Project:

The proposed project involves replacing the existing wastewater treatment system with a new wastewater treatment plant [WWTP] that will be connected to the existing permitted injection well disposal system. For wastewater treatment, Ono Vista Condominiums currently utilizes a system consisting of a wet well, pre-loader for preliminary treatment, an aerobic treatment unit, clarifier, and chlorine contact tank. Treated effluent is then discharged by gravity into three (3) active injection wells. The existing wastewater treatment system was installed in the 1970s and requires replacement due to deterioration. The proposed WWTP system components will all be constructed in the existing footprint and a portion of the east parking lot area.

Comments:

☐ No Comments ☒ Comments Attached

Thank you for providing DAR the opportunity to review and comment on the proposed project. Should there be any changes to the project plan, DAR requests the opportunity to review and comment on those changes.

Comments Approved: _____ Date: Oct 25, 2022

Brian J. Neilson
DAR Administrator

DAR# 6307

Comments

The Division of Aquatic Resources would like to request that Best Management Practices (BMPs) be included in the Draft Environmental Assessment. This is to ensure that the
contractor(s) implement the BMPs to minimize runoff/sedimentation and land-based sources of pollution (LBSP) at the project area where there is the opportunity (e.g. any site where there will be excavation, grading, or sediment/pollutant producing activities) for discharge into nearby waters. These BMPs may include (but not limited to) any type of barrier (e.g. sediment fences, silt screens/curtains, bags, environmental socks, petroleum absorption materials) that limits the amount of runoff, sediment, or LBSP (e.g. petroleum products, chemicals, debris, etc.) to the maximum extent possible. This is important given the proximity of the project to nearby waters. Periods of heavy rains increases runoff and there is a higher risk of sediment or LBSP ending up in nearby waters.

DAVID Y. IGE
GOVERNOR OF HAWAII

SUZANNE D. CASE
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

ROBERT K. MASUDA
FIRST DEPUTY

M. KALEO MANUEL
DEPUTY DIRECTOR - WATER

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

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
DIVISION OF FORESTRY AND WILDLIFE
1151 PUNCHBOWL STREET, ROOM 325
HONOLULU, HAWAII 96813

November 2, 2022

Stephanie Davis
Project Manager
Environmental Science International (ESI)
354 Uluniu Street Suite 304
Kailua, Hawai‘i 96734
Attn: sdavis@esciencei.com

Log no. 3846
ESI Project no. 122067

Dear Ms. Stephanie Davis,

The Department of Land and Natural Resources, Division of Forestry and Wildlife (DOFAW) has received your request for comments for the replacement of an existing wastewater treatment system (ESI Project No. 122067) at the Ono Vista Condominiums located at 68-024 Apuhihi Street, Waialua, on the island of O‘ahu; TMK: (1) 6-8-011:058. The proposed project consists of replacing the existing wastewater treatment system with a new wastewater treatment plant that will be connected to the existing permitted injection well disposal system, and all components will be constructed in the existing footprint and a portion of the east parking lot.

The State listed Hawaiian Hoary Bat or ‘Ōpe‘ape‘a (*Lasiurus cinereus semotus*) could potentially occur at or in the vicinity of the project and may roost in nearby trees. Any required site clearing should be timed to avoid disturbance to bats during their birthing and pup rearing season (June 1 through September 15). During this period woody plants greater than 15 feet (4.6 meters) tall should not be disturbed, removed, or trimmed. Barbed wire should also be avoided for any construction because bats can become ensnared and killed by such fencing material during flight.

Artificial lighting can adversely impact seabirds that may pass through the area at night by causing them to become disoriented. This disorientation can result in their collision with manmade structures or the grounding of birds. For nighttime work that might be required, DOFAW recommends that all lights used to be fully shielded to minimize the attraction of seabirds. Nighttime work that requires outdoor lighting should be avoided during the seabird fledging season, from September 15 through December 15. This is the period when young seabirds take their maiden voyage to the open sea. Permanent lighting also poses a risk of seabird attraction, and as such should be minimized or eliminated to protect seabird flyways and preserve the night sky. For illustrations and guidance related to seabird-friendly light styles that also protect seabirds and the dark starry skies of Hawai‘i, please visit https://dlnr.hawaii.gov/wildlife/files/2016/03/DOC439.pdf.

State-listed waterbirds such as the Hawaiian stilt (*Himantopus mexicanus knudseni*), Hawaiian coot (*Fulica alai*), Hawaiian gallinule (*Gallinula chloropus sandvicensis*), and Hawaiian Duck (*Anas wyvilliana*) could potentially occur at or in the vicinity of the proposed project site. It is against State law to harm or harass these species. If any of these species are present during construction, then all activities within 100 feet (30 meters) should cease, and the bird or birds should not be approached. Work may continue after the bird or birds leave the area of their own accord. If a nest is discovered at any point, please contact the O'ahu Branch DOFAW Office at (808) 973-9778.

DOFAW is concerned about the wastewater treatment facility attracting vulnerable birds to areas that may host nonnative predators such as cats, rodents, and mongooses. We recommend taking action to minimize predator presence; remove cats, place bait stations for rodents and mongoose, and provide covered trash receptacles. Also, you should consider implementing additional mitigation measures to avoid avian mortality during project design and during operation for the long term.

The State endangered Hawaiian Short-eared owl or pueo (*Asio flammeus sandwichensis*) could potentially occur in the project vicinity. Pueo are most active during dawn and dusk twilights. Before clearing any vegetation, DOFAW recommends twilight pre-construction surveys by a qualified biologist. If pueo nests are present, DOFAW staff should be notified and a buffer zone should be established in which no clearing occurs until nesting is completed.

DOFAW recommends minimizing the movement of plant or soil material between worksites. Soil and plant material may contain pathogens, pests such as Little Fire ants and/or Coconut Rhinoceros beetles, or invasive plant parts that could harm our native species and ecosystems. We recommend consulting the O'ahu Invasive Species Committee (OISC) at (808) 266-7994 to help plan, design, and construct the project, learn of any high-risk invasive species in the area, and ways to mitigate their spread. All equipment, materials, and personnel should be cleaned of excess soil and debris to minimize the risk of spreading invasive species.

We appreciate your efforts to work with our office for the conservation of our native species. These comments are general guidelines and should not be considered comprehensive for this site or project. It is the responsibility of the applicant to do their own due diligence to avoid any negative environmental impacts. Should the scope of the project change significantly, or should it become apparent that threatened or endangered species may be impacted, please contact our staff as soon as possible. If you have any questions, please contact Paul Radley, Protected Species Habitat Conservation Planning Coordinator at (808) 295-1123 or paul.m.radley@hawaii.gov.

Sincerely,

Lainie Berry

LAINIE BERRY
Wildlife Program Manager

DAVID Y. IGE
GOVERNOR OF HAWAII

SUZANNE D. CASE
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

November 22, 2022

LD 0360

Stephanie Davis, Project Manager
Environmental Science International
354 Uluniu Street, Suite 304
Kailua, HI96734

Via email: sdavis@esciencei.com

To Whom It May Concern:

SUBJECT: **Pre-Assessment Consultation for Draft Environmental Assessment**
Ono Vista Condominiums Wastewater Treatment System Replacement
68-24 Apuhihi Street, Waialua, Island of Oahu, Hawaii
TMK: (1) 6-8-011:058

Thank you for the opportunity to review and comment on the subject project. The Land Division of the Department of Land and Natural Resources (DLNR) distributed copies of your request to DLNR's various divisions for their review and comment.

Enclosed are comments received from our Engineering Division. Should you have any questions, please feel free to contact Barbara Lee via email at *barbara.j.lee@hawaii.gov*. Thank you.

Sincerely,

Russell Tsuji

Russell Y. Tsuji
Land Administrator

Attachments
cc: Central Files

DAVID Y. IGE
GOVERNOR OF HAWAII

SUZANNE D. CASE
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

October 21, 2022

LD 0360

MEMORANDUM

FROM: ~~TO:~~ **DLNR Agencies:**
___Div. of Aquatic Resources
___Div. of Boating & Ocean Recreation
_X_ Engineering Division *(via email: DLNR.engr@hawaii.gov)*
_X_ Div. of Forestry & Wildlife *(via email: rubyrosa.t.terrago@hawaii.gov)*
___Div. of State Parks
_X_ Commission on Water Resource Management *(via email: DLNR.CWRM@hawaii.gov)*
___Office of Conservation & Coastal Lands
_X_ Land Division – Oahu District *(via email: barry.w.cheung@hawaii.gov)*

Russell Tsuji

TO: ~~FROM:~~ Russell Y. Tsuji, Land Administrator
SUBJECT: **Pre-Assessment Consultation for Draft Environmental Assessment**
Ono Vista Condominiums Wastewater Treatment System Replacement
LOCATION: 68-24 Apuhihi Street, Waialua, Island of Oahu, Hawaii
TMK: (1) 6-8-011:058
APPLICANT: **Environmental Science International, in cooperation with Laulea Engineering, LLC**

Transmitted for your review and comment is information on the above-referenced project. Please review the attached information and submit any comments by the internal deadline of **November 18, 2022,** to *barbara.j.lee@hawaii.gov* at the Land Division.

If no response is received by the above due date, we will assume your agency has no comments at this time. Should you have any questions about this request, please contact Barbara Lee at the above email address. Thank you.

BRIEF COMMENTS:

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

Signed: 
Print Name: Carty S. Chang, Chief Engineer
Division: Engineering Division
Date: Nov 10, 2022

Attachments
Cc: Central Files

DEPARTMENT OF LAND AND NATURAL RESOURCES
ENGINEERING DIVISION

LD/Russell Y. Tsuji

Ref: Pre-Assessment Consultation for Draft Environmental Assessment
Ono Vista Condominiums Wastewater Treatment System Replacement
Location: 68-24 Apuhihi Street, Waialua, Island of Oahu, Hawaii
TMK(s): (1) 6-8-011:058
Applicant: Environmental Science International, in cooperation with Laulea Engineering, LLC

COMMENTS

The rules and regulations of the National Flood Insurance Program (NFIP), Title 44 of the Code of Federal Regulations (44CFR), are in effect when development falls within a Special Flood Hazard Area (high-risk areas). Be advised that 44CFR, Chapter 1, Subchapter B, Part 60 reflects the minimum standards as set forth by the NFIP. Local community flood ordinances may stipulate higher standards that can be more restrictive and would take precedence over the minimum NFIP standards.

The owner of the project property and/or their representative is responsible to research the Flood Hazard Zone designation for the project. Flood zones subject to NFIP requirements are identified on FEMA's Flood Insurance Rate Maps (FIRM). The official FIRMs can be accessed through FEMA's Map Service Center (msc.fema.gov). Our Flood Hazard Assessment Tool (FHAT) (http://gis.hawaiinfip.org/FHAT) could also be used to research flood hazard information.

If there are questions regarding the local flood ordinances, please contact the applicable County NFIP coordinating agency below:

- Oahu: City and County of Honolulu, Department of Planning and Permitting (808) 768-8098.
- Hawaii Island: County of Hawaii, Department of Public Works (808) 961-8327.
- Maui/Molokai/Lanai County of Maui, Department of Planning (808) 270-7139.
- Kauai: County of Kauai, Department of Public Works (808) 241-4849.

Signed: _____
CARTY S. CHANG, CHIEF ENGINEER

Date: Nov 10, 2022

LD 0360

Environmental Science International
354 Uluniu Street Suite 304, Kailua, Hawaii 96734
(808) 261-0740 phone

ESI Project No. 122067

Land Division - Oahu District
State of Hawaii Department of Land and Natural Resources
Kalanimoku Building
1151 Punchbowl Street Room 220
Honolulu, HI 96813

RECEIVED
LAND DIVISION
2022 OCT 11 PM 2:11
DEPT. OF LAND & NATURAL RESOURCES
STATE OF HAWAII

Subject: Ono Vista Condominiums Wastewater Treatment System Replacement
68-024 Apuhihi Street, Waialua, Oahu, Hawaii
TMK No. (1) 6-8-011:058

Dear Sir/Madam,

Environmental Science International, Inc. [ESI], in cooperation with Laulea Engineering, LLC, will be preparing an Environmental Assessment [EA] on a proposal to replace the existing wastewater treatment system at the Ono Vista Condominiums located at 68-024 Apuhihi Street, Waialua, Oahu, Hawaii (Figure 1).

The proposed project involves replacing the existing wastewater treatment system with a new wastewater treatment plant [WWTP] that will be connected to the existing permitted injection well disposal system. For wastewater treatment, Ono Vista Condominimums currently utilizes a system consisting of a wet well, pre-loader for preliminary treatment, an aerobic treatment unit, clarifier, and chlorine contact tank. Treated effluent is then discharged by gravity into three (3) active injection wells. The existing wastewater treatment system was installed in the 1970s and requires replacement due to deterioration. The proposed WWTP system components will all be constructed in the existing footprint and a portion of the east parking lot area.

The proposed WWTP will consist of the following:

- Existing Wet Well/Lift Station/Trash Tank
- New Secondary Treatment Tank/System
  - Integrated Equalization Tank
  - Integrated Clarifier Tank
  - Integrated Sludge Holding Tank
  - Integrated Disinfection System
- Existing Multiple Injection Well Disposal System
  - One (1) Primary Deep Injection Well
  - Two (2) Backup Deep Injection Wells (A primary backup and the other for redundancy)

The proposed project will be constructed within the Special Management Area [SMA], which triggers the requirement for an EA under State laws. The EA is being prepared to comply with the State's environmental policy and to give appropriate regard to environmental, economic, and technical concerns. We are notifying potentially interested parties to provide the opportunity for comments or the raising of potential concerns that can be addressed in the Draft EA.

Additionally, a draft copy of the EA will be made available for your review. A copy of the draft EA will also be placed in the Waialua Public Library, 67-068 Kealohanui Street, Waialua, Oahu, for a 30-day public comment period to be held later this year.

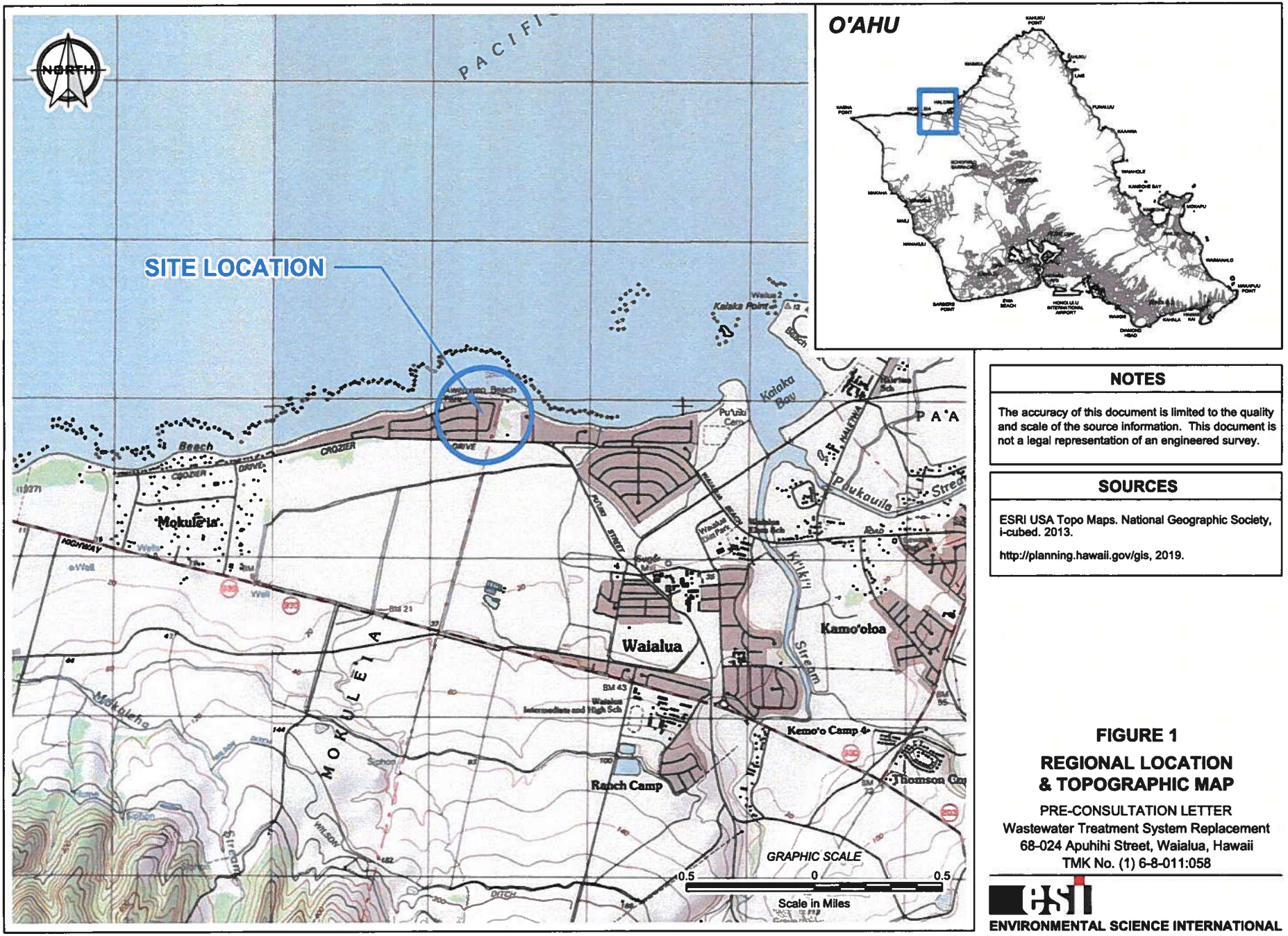
Please direct your comments to Stephanie Davis via mail at the letterhead address, or by e-mail to sdavis@esciencei.com. We welcome your input.

Sincerely,

Stephanie Davis
Project Manager

Attachments:

Figure 1 – Regional Location & Topographic Map
Figure 2 – Site Plan



NOTES

The accuracy of this document is limited to the quality and scale of the source information. This document is not a legal representation of an engineered survey.

SOURCES

ESRI USA Topo Maps. National Geographic Society, i-cubed. 2013.

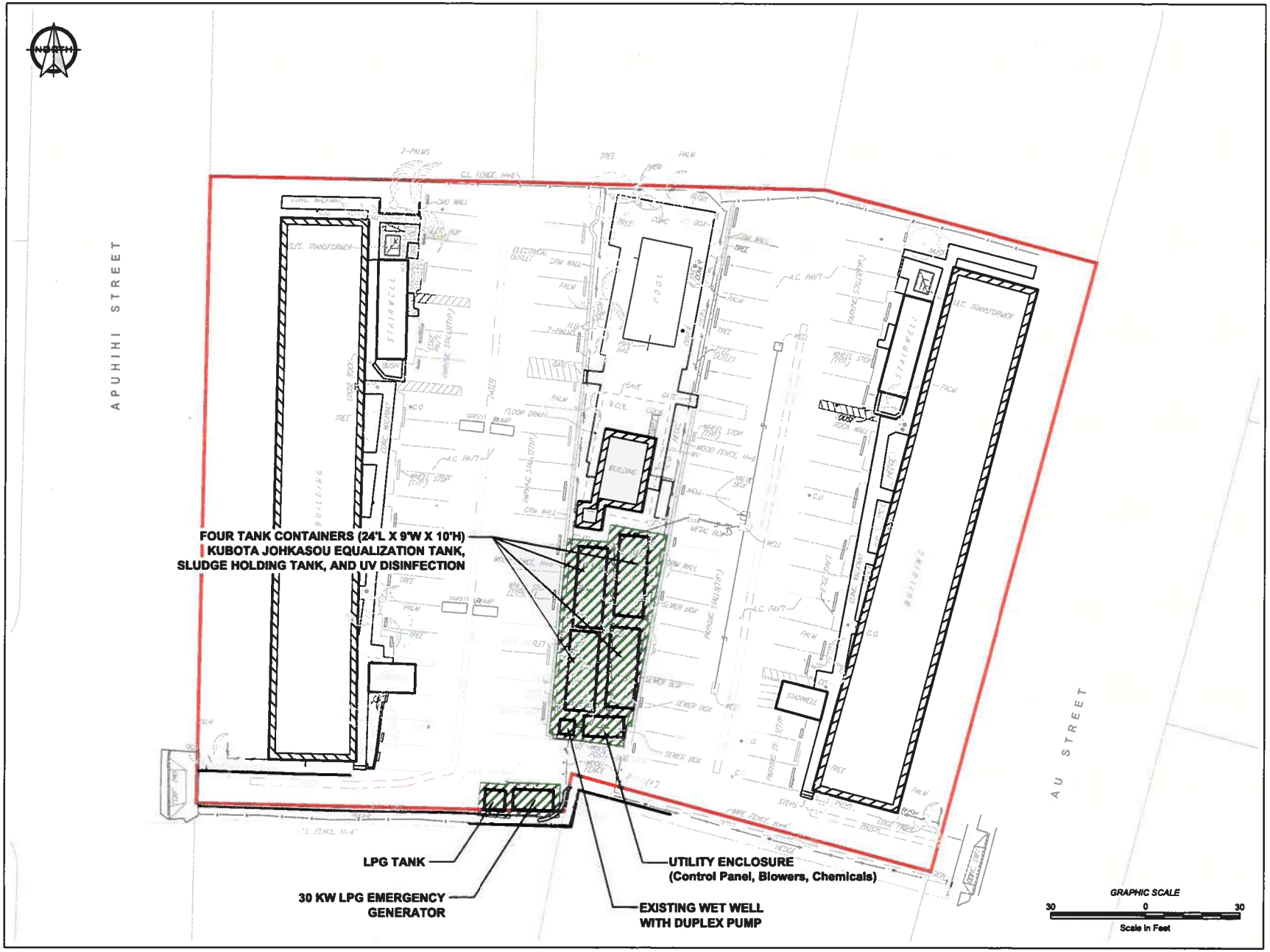
http://planning.hawaii.gov/gis, 2019.

FIGURE 1

REGIONAL LOCATION & TOPOGRAPHIC MAP

PRE-CONSULTATION LETTER
Wastewater Treatment System Replacement
68-024 Apuhihi Street, Waialua, Hawaii
TMK No. (1) 6-8-011:058

ENVIRONMENTAL SCIENCE INTERNATIONAL



LEGEND

- ONO VISTA CONDOMINIUMS BOUNDARY, TMK NO. (1) 6-8-011:058
- BUILDING/STRUCTURE
- CONCRETE
- CRM WALL
- AREA OF NEW WWTP SYSTEM

NOTES

The accuracy of this document is limited to the quality and scale of the source information. This document is not a legal representation of an engineered survey.

SOURCES

Drawing - Topographic Survey Map, Ono Vista Condominium WWTP, Waialua, Oahu, Hawaii, (1) 6-8-001:058, 220922_Civil Site Plan_Conceptual Design.dwg, ControlPoint Surveying, Inc., June 1, 2021.

http://planning.hawaii.gov/gis/, 2022.

FIGURE 2

SITE PLAN

PRE-CONSULTATION LETTER
Wastewater Treatment System Replacement
68-024 Apuhihi Street, Waialua, Hawaii
TMK No. (1) 6-8-011:058

ENVIRONMENTAL SCIENCE INTERNATIONAL

DEPARTMENT OF PLANNING AND PERMITTING
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET, 7TH FLOOR • HONOLULU, HAWAII 96813
PHONE: (808) 768-8000 • FAX: (808) 768-6041
DEPT. WEB SITE: www.honoluludpp.org • CITY WEB SITE: www.honolulu.gov

RICK BLANGIARDI
MAYOR

DAWN TAKEUCHI APUNA
ACTING DIRECTOR

October 4, 2022 2022/ELOG-1837(ZS)

SEND VIA EMAIL

Ms. Stephanie Davis
SDavis@esciencei.com

Dear Ms. Davis:

SUBJECT: Pre-Environmental Assessment (EA) Consultation
Replacement Wastewater Treatment System
Ono Vista Condominium
68-090 Au Street - Waialua
Tax Map Key 6-8-011: 058

This is in response to your letter, received September 1, 2022, initiating consultation for the preparation of a draft EA for the subject Project. The subject Property is 51,656 square feet in area and is within the A-2 Medium Density Apartment District and the Special Management Area. The property fronts Apuhihi Street to the west and Au Street to the east. There are two apartment buildings, one along each street frontage, with parking in-between. You state that the existing wastewater system was installed in the 1970s and is deteriorating. A new wastewater system will be constructed within the existing footprint and a portion of the east parking lot area. Our comments are as follows; the EA should include:

- A description of the structural differences between the existing and proposed wastewater systems, and include drawings illustrating existing and proposed layouts and elevations. Drawings should demonstrate compliance with the A-2 Medium Density Apartment District standards established in the zoning code, including required yards.

- An explanation of whether the approved parking spaces will be affected, and an assessment of compliance with current parking regulations.

- A comparison of the environmental impacts of the existing and proposed wastewater systems, and explain whether a National Pollutant Discharge Elimination System permit is required.

- An evaluation of the proposed wastewater system with respect to coastal hazards, including flooding and sea level rise.

- Indication as to whether the EA is required pursuant to Hawaii Revised Statutes (HRS) Section 343-5(9)(A) (propose any wastewater treatment unit serving at least 50 single-family dwellings or the equivalent). If so, the document should be submitted for publication as an HRS Chapter 343 and ROH Chapter 25 document. Based on certificates of occupancy on file, it appears there are a total of 64 dwelling units.

We look forward to reviewing the draft EA. Should you have any questions, please contact Zack Stoddard, of our staff, at (808) 768-8019 or via email at zachary.stoddard@honolulu.gov.

Very truly yours,

for Dawn Takeuchi Apuna
Acting Director

HONOLULU FIRE DEPARTMENT

CITY AND COUNTY OF HONOLULU

636 South Street
Honolulu, Hawaii 96813-5007
Phone: 808-723-7139 Fax: 808-723-7111 Internet: www.honolulu.gov/hfd

RICK BLANGIARDI
MAYOR

SHELDON K. HAO
FIRE CHIEF

JASON SAMALA
DEPUTY FIRE CHIEF

OCT 26 2022

October 20, 2022

Ms. Stephanie Davis
Project Manager
Environmental Science International
354 Uluniu Street, Suite 304
Kailua, Hawaii 96734

Dear Ms. Davis:

Subject: Wastewater Treatment System Replacement
Ono Vista Condominiums
68-024 Apuhihi Street
Waialua, Hawaii 96791
Tax Map Key: 6-8-011: 058

In response to your letter received on October 11, 2022, regarding the abovementioned subject, the Honolulu Fire Department (HFD) reviewed the submitted information and requires that the following be complied with:

1. Fire department access roads shall be provided such that any portion of the facility or any portion of an exterior wall of the first story of the building is located not more than 150 feet (46 meters) from fire department access roads as measured by an approved route around the exterior of the building or facility. (National Fire Protection Association [NFPA] 1; 2018 Edition, Sections 18.2.3.2.2 and 18.2.3.2.2.1, as amended.)

   A fire department access road shall extend to within 50 feet (15 meters) of at least one exterior door that can be opened from the outside and that provides access to the interior of the building. (NFPA 1; 2018 Edition, Section 18.2.3.2.1.)

2. An approved water supply capable of supplying the required fire flow for fire protection shall be provided to all premises upon which facilities, buildings, or portions of buildings are hereafter constructed or

moved into the jurisdiction. The approved water supply shall be in accordance with NFPA 1; 2018 Edition, Sections 18.3 and 18.4.

3. The fire department access roads shall be in accordance with NFPA 1; 2018 Edition, Section 18.2.3.

4. Submit civil drawings to the City and County of Honolulu's Department of Planning and Permitting and route them to the HFD for review and approval.

5. The abovementioned provisions are required by the HFD. This project may necessitate that additional conditions be met as determined by other agencies.

Should you have questions, please contact Acting Battalion Chief Kendall Ching of our Fire Prevention Bureau at 808-723-7154 or kching3@honolulu.gov.

Sincerely,

CRAIG UCHIMURA
Acting Assistant Chief

CU/MD:bh

STATE OF HAWAIʻI
OFFICE OF PLANNING
& SUSTAINABLE DEVELOPMENT

DAVID Y. IGE
GOVERNOR

MARY ALICE EVANS
DIRECTOR

235 South Beretania Street, 6th Floor, Honolulu, Hawaiʻi 96813
Mailing Address: P.O. Box 2359, Honolulu, Hawaiʻi 96804

Telephone: (808) 587-2846
Fax: (808) 587-2824
Web: https://planning.hawaii.gov/

DTS 202210110828NA

Coastal Zone Management Program

Environmental Review Program

Land Use Commission

Land Use Division

Special Plans Branch

State Transit-Oriented Development

Statewide Geographic Information System

Statewide Sustainability Branch

October 21, 2022

Ms. Stephanie Davis
Environmental Science International
354 Uluniu Street, Suite 304
Kailua, HI 96734

Dear Ms. Davis:

Subject: Pre-consultation for an Environmental Assessment on Ono Vista Condominium Wastewater Treatment System Replacement, 68-024 Apuhihi Street, Waialua, Oahu; Tax Map Key: (1) 6-8-011: 058

The Office of Planning and Sustainable Development (OPSD) is in receipt of your Environmental Assessment (EA) pre-consultation request, received October 11, 2022, for Ono Vista Condominium Wastewater Treatment System Replacement, 68-024 Apuhihi Street, Waialua, Oahu.

According to the EA pre-consultation request, the proposed project, which is located within the county designated Special Management Area (SMA), will replace the existing wastewater treatment system with a new Wastewater Treatment Plant (WWTP). The new WWTP system will be constructed in the existing footprint and a portion of the east parking lot area, and connected to the existing permitted injection well disposal system. The proposed WWTP system will consist of the following components:

- Existing wet well/lift station/trash tank
- New secondary treatment tank system
- Existing multiple injection well disposal system, including one primary deep injection well, and two backup deep injection wells

The OPSD has reviewed the subject pre-consultation request and has the following comments to offer:

1. The EA should discuss the triggers for the requirement of an EA for the proposed WWTP system pursuant to Hawaii Revised Statutes (HRS) Chapter 343, and county SMA Ordinance.

2. Hawaii Coastal Zone Management (CZM) Law, HRS Chapter 205A, requires all state and county agencies to enforce the CZM objectives and

policies. The subject EA should include an assessment with mitigation measures, if needed, as to how the proposed residential development conforms to each of the CZM objectives and supporting policies set forth in HRS § 205A-2, as amended.

3. If the subject EA will serve as a supporting document for a SMA Use Permit application, the OPSD recommends that the EA specifically discuss the compliance with the requirements of SMA use under Revised Ordinances of Honolulu (ROH) Chapter 25 for the proposed WWTP system by consulting with the Department of Planning and Permitting, City and County of Honolulu.

4. To assess potential impacts of sea level rise on the proposed development, the OPSD suggests the EA refer to the findings of the Hawaii Sea Level Rise Vulnerability and Adaptation Report 2017, accepted by the Hawaii Climate Change Mitigation and Adaptation Commission. The Report, and Hawaii Sea Level Rise Viewer at https://www.pacioos.hawaii.edu/shoreline/slr-hawaii/ particularly identifies a 3.2-foot sea level rise exposure area across the main Hawaiian Islands which may occur in the mid to latter half of the 21st century. The EA should provide a map of the 3.2-foot sea level rise exposure area in relation to the property area, and consider whether site-specific mitigation measures are necessary to respond to the potential impacts of 3.2-foot sea level rise on the proposed development.

5. The OPSD has developed guidance documents on stormwater runoff strategies, which offer techniques to prevent land-based pollutants and sediment from potentially affecting water resources. The OPSD recommends that the subject EA consider the following stormwater assessment guidance to mitigate stormwater runoff impacts:

   Stormwater Impact Assessments can be used to identify and analyze information on hydrology, sensitivity of coastal and riparian resources, and management measures to control runoff, as well as consider secondary and cumulative impacts to the area. https://files.hawaii.gov/dbedt/op/czm/initiative/stomwater_imapct/final_stormwater_impact_assessments_guidance.pdf

If you have any questions regarding this comment letter, please contact Shichao Li of our office at (808) 587-2841, or by email at shichao.li@hawaii.gov.

Sincerely,

Mary Alice Evans

Mary Alice Evans
Director

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Pacific Islands Fish and Wildlife Office
300 Ala Moana Boulevard, Room 3-122
Honolulu, Hawai‘i 96850

In Reply Refer To:
2023-0007035-S7-001

November 8, 2022

Ms. Stephanie Davis
Environmental Science International
354 Uluniu Street, Suite 304
Kailua, Hawai‘i 96734

Subject: Species List for the Ono Vista Condominiums Wastewater Treatment Replacement System, O‘ahu

Dear Ms. Davis:

Thank you for your letter of October 11, 2022, requesting our comments for the Ono Vista Condominiums wastewater treatment system replacement at 68-024 Apuhihi Street, Waialua, O‘ahu, TMK (1) 6-8-011:058. The proposed project involves replacing the existing wastewater treatment system with a new wastewater treatment plant (WWTP) that will be connected to the existing permitted injection well disposal system. The proposed WWTP will consist of an existing wet well/lift station/trash tank, a new secondary treatment tank/system, and an existing multiple injection well disposal system.

This letter has been prepared under the authority of and in accordance with provisions of the Endangered Species Act of 1973 (16 U.S.C. 1531 *et seq*.), as amended (ESA). We have reviewed the information you provided and pertinent information in our files, as it pertains to federally listed species in accordance with section 7 of the ESA. Our data indicate the following federally listed species may occur or transit through the vicinity of the proposed project area: the endangered Hawaiian hoary bat (*Lasiurus cinereus semotus);* endangered Hawaiian petrel (*Pterodroma sandwichensis*), threatened Newell’s shearwater (*Puffinus auricularis newelli*), and endangered Hawaii DPS band-rumped storm-petrel (*Oceanodroma castro*) (hereafter collectively referred to as Hawaiian seabirds).

Hawaiian hoary bat
The Hawaiian hoary bat roosts in both exotic and native woody vegetation across all islands and will leave young unattended in trees and shrubs when they forage. If trees or shrubs 15 feet or taller are cleared during the pupping season, there is a risk that young bats could inadvertently be harmed or killed since they are too young to fly or may not move away.

To avoid and minimize impacts to the endangered Hawaiian hoary bat we recommend you consider incorporating the following applicable measure into your project description:

- Do not disturb, remove, or trim woody plants greater than 15 feet tall during the bat birthing and pup rearing season (June 1 through September 15).
- Do not use barbed wire for fencing.

Hawaiian seabirds

Hawaiian seabirds may traverse the project area at night during the breeding, nesting, and fledging seasons (March 1 to December 15). Outdoor lighting could result in seabird disorientation, fallout, and injury or mortality. Seabirds are attracted to lights and after circling the lights they may become exhausted and collide with nearby wires, buildings, or other structures or they may land on the ground. Downed seabirds are subject to increased mortality due to collision with automobiles, starvation, and predation by dogs, cats, and other predators. Young birds (fledglings) traversing the project area between September 15 and December 15, in their first flights from their mountain nests to the sea, are particularly vulnerable.

To avoid and minimize potential project impacts to seabirds we recommend you incorporate the following applicable measures into your project description:

- Fully shield all outdoor lights so the bulb can only be seen from below bulb height and only use when necessary.
- Install automatic motion sensor switches and controls on all outdoor lights or turn off lights when human activity is not occurring in the lighted area.
- Avoid nighttime construction during the seabird fledging period, September 15 through December 15.

We appreciate your efforts to conserve protected species. If you have questions regarding this response, please contact Elyse Sachs, Fish and Wildlife Biologist (phone: 808-792-9400, email: Elyse_Sachs@fws.gov). When referring to this project, please include this reference number: 2023-0007035-S7-001.

Sincerely,

Island Team Manager
O‘ahu, Kaua‘i, Northwestern Hawaiian Islands, and American Samoa

Stephanie Davis

From: Kathleen Pahinui <pahinuik001@hawaii.rr.com>
Sent: Friday, October 28, 2022 12:52 PM
To: Stephanie Davis
Subject: FW: Pre-Consultation for Draft Environmental Assessment for WWTS at Ono Vista Condominium

Follow Up Flag: Follow up
Flag Status: Flagged

Aloha –

Here is a question from one of our board members.

Mahalo!

Kathleen

From: Bob Leinau <leinaur001@hawaii.rr.com>
Date: Thursday, October 20, 2022 at 6:11 PM
To: 'Kathleen Pahinui' <pahinuik001@hawaii.rr.com>
Subject: RE: Pre-Consultation for Draft Environmental Assessment for WWTS at Ono Vista Condominium

It would be good to know the design capacity and how assurance can be instituted that there is sufficient detention time. Also in a high density area there should be some enforceable policies and procedures that reduce the amount of waste stream/ pressure on the system.
Mahalo, Bob

From: Kathleen Pahinui <pahinuik001@hawaii.rr.com>
Sent: Thursday, October 20, 2022 3:33 PM
To: NSNB <pahinuik001@hawaii.rr.com>
Cc: Ishitani, Casey J <casey.ishitani@honolulu.gov>
Subject: FW: Pre-Consultation for Draft Environmental Assessment for WWTS at Ono Vista Condominium

Aloha Board Members –

If you have any questions or comments, send my way and I will forward to Stephanie.

Mahalo!

Kathleen

APPENDIX E

DOH Safe Drinking Water Branch Approval to Construct, Three Injection Wells

DAVID Y. IGE
GOVERNOR OF HAWAII

ELIZABETH A. CHAR, M.D.
DIRECTOR OF HEALTH

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

In reply, please refer to:
File: SDWB

1305Nov01ATC.docx

November 9, 2022

Ms. Sarada Wright
President
Association of Apartment Owners of Ono Vista
68-090 Au Street
Waialua Hawaii 96791

Dear Ms. Wright:

SUBJECT: **ONO VISTA CONDOMINIUM**
UNDERGROUND INJECTION CONTROL (UIC)
UIC PERMIT NO. UO-1305
GRANTED APPROVAL-TO-CONSTRUCT (ATC)
THREE (3) INJECTION WELLS

The Safe Drinking Water Branch (SDWB) UIC Program has reviewed your application for a UIC permit. Your application has been assigned the number listed above. Please list this number in all future correspondence.

This ATC is hereby granted to you, the applicant, strictly based on the following 20 conditions. These conditions, unless identified as a recommendation, are enforceable under Hawaii Administrative Rules (HAR), Sections 11-23-07(c) and (d). Enforcement may include, and not be limited to, monetary penalties and corrective action paid by the applicant.

1. Only applicable are the information, specifications, and plans that were provided in the revised UIC application received on August 12, 2022. All other types or forms of information/materials are not applicable unless acknowledged and approved by this ATC;

2. The injection well amount per the application is three (3).

   The approximate diameter and depth below ground surface of the injection wells are:

Well No.	Diameter (inches)	Depth (feet)
1	8	100
2	8	100
3	8	100

   The proposed injectant is generally categorized as treated sewage wastewater;

3. Any modification or revision to the injection wells' particulars, including the facility and application, shall not occur unless such proposals are first submitted to the UIC program for review, concurrence, and written approval under this ATC.
   Any modification, revision, or construction involving the injection wells done without written authorization will constitute a violation of HAR, Chapter 11-23;

4. A geologist shall be involved from the start of injection well construction to monitor the drilling on a daily basis, either directly or by detailed field reporting to the geologist;

5. Weekly reports, on a day basis, shall be made to the UIC program throughout the duration of active injection well drilling. The reports shall include, but not be limited to, current well diameter and depth, major or significant geologic or hydrogeologic conditions encountered by the drilling, and preliminary injection test findings. Reports shall be concise, professionally prepared or reviewed, organized consistently, and purposeful. Reports shall be transmitted via email to sdwb@doh.hawaii.gov on Mondays following every work week. Enclosed is a suggested weekly reporting format;

6. We recommend that the entire well bore length be properly cased, i.e., no open hole, in order to eliminate sidewall collapse which may not be recoverable without redrilling;

7. The applicant is responsible to identify all drinking water sources around the injection wells in order to prevent injection well siting within one-quarter mile of any existing drinking water source. Identifying water sources may require field activities as well as records research. Noncompliance with this requirement may result in improper injection well siting needing corrective action by the applicant which includes proper backfilling and abandonment of the injection well;

8. Comply with applicable conditions stipulated in HAR, Section 11-23-10, such as the requirement of at least a fifty-foot buffer zone between the bottom of the injection well and the top of the volcanic aquifer when establishing an injection well in the caprock formation;

9. Regarding deep injection, injection into a basalt formation shall not be into or adversely affecting an artesian aquifer;

10. If an artesian groundwater condition is encountered during the injection well drilling/construction, drilling shall immediately stop and not proceed until the artesian condition is assessed by the Department of Health (DOH). The applicant is required to promptly notify the DOH for an assessment. An artesian groundwater condition may warrant a redesign of the injection well in order to protect the artesian aquifer as an underground source of drinking water. For reference, artesian aquifer requirements and restrictions are described under HAR, Section 11-23-10;

11. If a void, such as a lava tube or solution cavity, 3 feet or more in diameter or vertical measurement is encountered during injection well drilling/construction, drilling shall immediately stop and not proceed until the void is assessed by the DOH. The applicant is required to promptly notify the DOH for an assessment. A void may

warrant a redesign of the injection well in order to prevent unacceptable migration of the injectant or to prevent direct injection into the void. For reference, voids are described under HAR, Section 11-23-09 (f);

12. Once the injection depth, for a shallow or deep injection well, is established and injection well construction is completed, a minimum 12-hour continuous injection test at design rates shall be conducted for the injection well. During injection well construction, preliminary injection testing over extended durations before the injection well is fully built is recommended, if practicable. Preliminary injection test results may provide a progressive estimate of injection capacities which tend to diminish with the installation of the well casing and the annular backfill;

13. If groundwater within the influence of the injection well is used for injection testing, the effects of groundwater withdrawal on the injection well's capacity should be addressed in the injection test results. The injection well's capacity should not include influences due to groundwater withdrawal for injection testing;

14. Operation of the injection well is not automatically authorized by this ATC. Furthermore, construction and testing of the injection well does not guarantee that the injection well will be authorized for operation under a UIC permit. Depending on the information obtained during and from construction and testing, a UIC permit may or may not be issued;

15. The fully constructed injection well must demonstrate satisfactory performance. An UIC permit may not be issued for an injection well that cannot successfully support the proposed discharge quantity;

16. The injection well shall be constructed to allow for the following continuous or periodic, permit-required activities related to operating and maintaining an injection well: injection well access, injection well depth and diameter measurement, injectant flow measurement (quantity) metering, injectant pressure measurement when applicable (metering), and injection performance testing;

17. Pursuant to HAR, Section 11-23-13, submit the final report for the enclosed outline: "Final Report Format For New or Modified Injection Well." This report shall be made and signed by a geologist and a professional engineer, including the P.E. stamp. The engineer and geologist shall be responsible for monitoring the proper construction of the injection wells and for obtaining the information needed to complete the final report;

18. <u>The final report is due by November 9, 2024</u>. The final report shall be fully complete and satisfactory. Unless the final report is submitted by the due-date, this ATC automatically expires and is void. A late final report may subject the applicant to an enforcement action/penalty or corrective measures, including a permit reapplication. If more time beyond the due-date is needed to complete the final report, a written request with reasons for a time extension must be submitted at least 60 days before the due-date. Time extensions are not guaranteed, and if granted, may contain restrictive conditions;

19. Backfilling and abandonment of an injection well, should such an activity become necessary, whether during construction or after full well completion, may only occur under the instructions from the DOH. An abandonment application must first be submitted, and specific abandonment instructions will be issued by the DOH. Drilling contractors under their own discretion should not backfill and abandon an injection well; and

20. You are required to notify Mr. Mark Frazier by email at sdwb@doh.hawaii.gov one week prior to the injection well testing. You will be informed if DOH personnel will be present to witness the injection well testing. If you conduct the injection well test without notifying the DOH, you will be required to redo the injection well test under proper witnessing. Injection well testing for the purpose of the final report shall be valid only when such testing is performed on the fully completed injection well.

If you have any questions about the final report, or the processing of your application, please contact Mr. Mark Frazier of the SDWB UIC Program at (808) 586-4258 or by email at sdwb@doh.hawaii.gov.

Sincerely,

JOANNA L. SETO, P.E., CHIEF
Environmental Management Division

MF:mb

Enclosures: Final Report Format For New or Modified Injection Well
Weekly Report Format
Signatory and Certification Statement

c: Mr. Kevin Gooding, INTERA, Inc. (w/encls.)
[via kgooding@intera.com only]

FINAL REPORT FORMAT FOR
NEW OR MODIFIED INJECTION WELL
UNDERGROUND INJECTION CONTROL (UIC)
UIC APPLICATION NO. UO-1305A

For Office Use

1. General Information:
    a. Facility Name:
    b. Address:
    c. Applicant (Permittee):
2. Physical Characteristics of the Area:
    a. Location and accessibility:
    b. Climate:
    c. Topography:
    d. Geologic and foundation conditions:
    e. Earthquake considerations:
    f. Flood potential including tsunami inundation zones:
    g. Conformance with local land-use planning and zoning regulations:
    h. Sensitive environments: natural or community-related:
3. Injection Well System:
    a. Actual number of injection wells constructed or modified:
    b. Date of construction or modification:
    c. Security from unauthorized access (As-built drawing of the modified injection well):
    d. Site plan (drawn to scale) showing location of constructed or modified injection wells:
    e. Description of any changes from the permit application:
4. Hydrogeologic Characteristics:
    a. Well log (geologic profile) by geologist for each injection well drilled:
        i. General formations: e.g., organic, fill, soil, saprolite, decomposed rock, sedimentary, lagoonal, marine, alluvial, coral, dune, beach, pyroclastic, ash, pahoehoe, `a`a, ponded lava, tuff, etc.
        ii. Physical and structural characteristics of the formations encountered. The following characteristics shall be used in the descriptions: color, hardness (competency), degree of weathering, qualitative degree of fracturing or consolidation, qualitative degree of vesiculation or porosity, unified soil classification for soils, volcanic series or lithologic formation for rock, petrologic terminologies for rock and cinder, lava type, and the differentiation between soil and rock units;
    b. Injection testing:
        i. Minimum 12 hours of continuous injection testing for wells No. 1 and 3:
        ii. Complete results of injection testing including maximum injection capacity of each well and hydraulic conductivity of the injection formation. Injection test results shall be shown graphically with the related data.

c. Groundwater characteristics: (if encountered)

   i. Initial water level, and subsequent water level as fluctuations occur (below ground surface and corresponding elevation per msl):

   ii. Tidal fluctuations and tidal efficiency:

   iii. Continuous profile of total dissolved solids and salinity (maximum 5-foot sample intervals if done with discrete sampler) for all wells obtained before the introduction of any foreign fluids. The profiling shall represent stabilized conditions without influence or restriction from any well casing and shall extend to the bottom of the boring. Profiling within solid casing strings are typically not acceptable;

   iv. Water samples collected from each distinct zone of significantly different total dissolved solids or salinity concentration levels.

   Water samples shall be analyzed using EPA or EPA equivalent standards and methods for the following parameters:

Parameter	EPA Method
chlorides	325
conductivity (specific conductance)	120
dissolved oxygen	360
Fecal Coliform	MF or MPN
field pH	150
field temperature	170
nitrate+nitrite as (N)	353
Total Dissolved Solids	160

5. Special considerations to be addressed by this report: (None)

6. Attach an original Signatory and Certification Statement sheet signed and dated by the permittee or legal representative.

7. Preparers' signature: The final report shall be signed by the geologist and licensed engineer and shall bear the engineer's stamp.

8. Submit the final report by mail to Uluakupu Building 4, 2385 Waimano Home Road, Suite 110, Pearl City, Hawaii 96782-1400 and email at sdwb@doh.hawaii.gov.

INJECTION WELL CONSTRUCTION WEEKLY REPORT FORM

(Send to: Safe Drinking Water Branch email: **sdwb@doh.hawaii.gov**)

Report Date: _____ Project Name: _____

Reported By: _____ UIC No.: _____

Driller:_____ Injection Well No.: _____

Date	Depths Drilled (feet bgs)	Diameter (inches)	Casing Depth (feet)	Remarks*
	from: to:			
	from: to:			
	from: to:			
	from: to:			
	from: to:			
	from: to:			

* Remarks should include formation & materials encountered, anomalies, injection considerations and indications

SIGNATORY AND CERTIFICATION STATEMENT
FOR UNDERGROUND INJECTION CONTROL (UIC) SUBMITTALS
Submitted Statement shall bear an original signature and date.
Photocopy signatures are unsatisfactory.

Facility Name: _____

e-Permitting Submission No. (if applicable) _____

UIC No. (if assigned): _____

Please check one:

☐ I certify that for a municipality, I am a principal executive officer or ranking elected official.

☐ I certify that for a state, non-federal or other public agency, I am a principal executive officer or ranking elected official.

☐ I certify that for a federal agency, I am the chief executive officer of the agency, or I am the senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency.

☐ I certify that I am a general partner for a partnership.

☐ I certify that I am the proprietor for a sole proprietorship.

☐ I certify that I am a trustee for a trust.

☐ I certify that for a corporation/association of apartment owners/home owners association, I am the President, Vice President, Secretary or Treasurer of the corporation/association of apartment owners/home owners association and in charge of a principal business function, or I perform similar policy or decision making functions for the corporation/association of apartment owners/home owners association.

☐ I certify that for a corporation, I am the manager of one or more manufacturing, production or operating facilities employing more than 250 persons or having gross annual sales or expenditures exceeding $25 million (in second-quarter 1980 dollars), and authority to sign documents has been assigned or delegated to me in accordance with corporate procedures.

☐ I certify that for a limited liability company (LLC), I am the Manager or a Member authorized to make management decisions for the LLC and am in charge of a principal business function, or I perform similar policy or decision making functions for the LLC.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature: _____ Date: _____

Name (Print): _____ Title: _____

Company Name: _____

Address: _____

_____

Phone Number: _____ Fax Number: _____

Email: _____