DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY AND COUNTY OF HONOLULU
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FILE COPY

JAN 23 2018

KIRK CALDWELL
MAYOR

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DIRECTOR

TIMOTHY A. HOUGHTON
DEPUTY DIRECTOR

ROSS S. TANIMOTO, P.E.
DEPUTY DIRECTOR

IN REPLY REFER TO:
WTD 17-082

December 22, 2017

Mr. Scott Glenn, Director
Office of Environmental Quality Control
Department of Health
State of Hawai'i
235 South Beretania Street, Room 702
Honolulu, Hawaii 96813

RECEIVED
'17 DEC 36 P2:04
OFC. OF ENVIRONMENTAL QUALITY CONTROL
18 JAN 05 P2:04

Dear Mr. Glenn:

Subject: Draft Environmental Assessment for the Honouliuli Wastewater Treatment Plant Biogas Project 'Ewa, O'ahu, Hawai'i

The City and County of Honolulu, Department of Environmental Services has determined that an Environmental Assessment (EA) is required for the proposed Honouliuli Wastewater Treatment Plant (HWWTP) Biogas Project ("Project"). It hereby transmits the Draft EA (DEA) for the Project, situated in Tax Map Key No. (1) 9-1-013:007 (portion), in 'Ewa, O'ahu, Hawai'i for publication in the next available edition of *The Environmental Notice*.

We will submit to your office, by email, a summary of the proposed Project, a completed Office of Environmental Quality Control Publication Form, the DEA, Anticipated Finding of No Significant Impact (AFONSI), and OEQC Publication Form in Word format.

Should you have any questions, please contact Cyril Hamada, Acting Chief of Technical Services Branch, Division of Wastewater Treatment and Disposal at 768-5979.

Sincerely,

Ross S. Tanimoto

for Lori M.K. Kahikina, P.E.
Director

cc: Mr. Richard DeGarmo, Hawai'i Gas (electronic only)
Mr. Neil Sheehan, Sheehan Group Pacific (electronic only)

18-281

APPLICANT
PUBLICATION FORM

Project Name:	Honouliuli WWTP Biogas Project
Project Short Name:	Honouliuli WWTP Biogas Project
HRS §343-5 Trigger(s):	Waste-to-energy facility, use of County lands.
Island(s):	Oʻahu
Judicial District(s):	Ewa
TMK(s):	(1) 9-1-013:007 (por.)
Permit(s)/Approval(s):	PUC Authorization to Commit Funds, HAR §11-60.1 Noncovered Source Air Permit, Chapter 343, HRS Environmental Assessment, Street Usage Permit, Noise Permit, Grubbing, Grading, and Stockpiling Permit, Building Permit.
Approving Agency:	City and County of Honolulu, Department of Environmental Services
Contact Name, Email, Telephone, Address	Mr. Cyril Hamada, chamada@honolulu.gov (808-768-5979) Department of Environmental Services City and County of Honolulu 1000 Uluʻōhiʻa Street, Suite 308 Kapolei, Hawaiʻi 96707
Applicant:	The Gas Company, LLC dba Hawaiʻi Gas
Contact Name, Email, Telephone, Address	Mr. Richard DeGarmo, rdegarmo@hawaiigas.com (808-596-1415) 745 Fort Street, Suite 1800 Honolulu, Hawaiʻi 96813
Consultant:	Sheehan Group Pacific, LLC
Contact Name, Email, Telephone, Address	Mr. Neil Sheehan, nsheehan@sheehangrouppacific.com (808-282-2153) 133 Kuʻukama Street Kailua, Hawaiʻi 96734

Status (select one)	**Submittal Requirements**
__X__ DEA-AFNSI	Submit 1) the approving agency notice of determination/transmittal letter on agency letterhead, 2) this completed OEQC publication form as a Word file, 3) a hard copy of the DEA, and 4) a searchable PDF of the DEA; a 30-day comment period follows from the date of publication in the Notice.
____ FEA-FONSI	Submit 1) the approving agency notice of determination/transmittal letter on agency letterhead, 2) this completed OEQC publication form as a Word file, 3) a hard copy of the FEA, and 4) a searchable PDF of the FEA; no comment period follows from publication in the Notice.
____ FEA-EISPN	Submit 1) the approving agency notice of determination/transmittal letter on agency letterhead, 2) this completed OEQC publication form as a Word file, 3) a hard copy of the FEA, and 4) a searchable PDF of the FEA; a 30-day comment period follows from the date of publication in the Notice.
____ Act 172-12 EISPN (“Direct to EIS”)	Submit 1) the approving agency notice of determination letter on agency letterhead and 2) this completed OEQC publication form as a Word file; no EA is required and a 30-day comment period follows from the date of publication in the Notice.
____ DEIS	Submit 1) a transmittal letter to the OEQC and to the approving agency, 2) this completed OEQC publication form as a Word file, 3) a hard copy of the DEIS, 4) a searchable PDF of the DEIS, and 5) a searchable PDF of the distribution list; a 45-day comment period follows from the date of publication in the Notice.
____ FEIS	Submit 1) a transmittal letter to the OEQC and to the approving agency, 2) this completed OEQC publication form as a Word file, 3) a hard copy of the FEIS, 4) a searchable PDF of the FEIS, and 5) a searchable PDF of the distribution list; no comment period follows from publication in the Notice.

___ FEIS Acceptance Determination	The approving agency simultaneously transmits to both the OEQC and the applicant a letter of its determination of acceptance or nonacceptance (pursuant to Section 11-200-23, HAR) of the FEIS; no comment period ensues upon publication in the Notice.
____ FEIS Statutory Acceptance	The approving agency simultaneously transmits to both the OEQC and the applicant a notice that it did not make a timely determination on the acceptance or nonacceptance of the applicant's FEIS under Section 343-5(c), HRS, and therefore the applicant's FEIS is deemed accepted as a matter of law.
____ Supplemental EIS Determination	The approving agency simultaneously transmits its notice to both the applicant and the OEQC that it has reviewed (pursuant to Section 11-200-27, HAR) the previously accepted FEIS and determines that a supplemental EIS is or is not required; no EA is required and no comment period ensues upon publication in the Notice.
____ Withdrawal	Identify the specific document(s) to withdraw and explain in the project summary section.
____ Other	Contact the OEQC if your action is not one of the above items.

Project Summary
Provide a description of the proposed action and purpose and need in 200 words or less.

The City and Count of Honolulu, Department of Environmental Services (DES) operates Honouliuli Waste Water Treatment Plant (HWWTP). The secondary stage of treatment at HWWTP produces raw biogas, which is currently discarded by burning it off in an on-site flare. Hawai'i Gas, in partnership with DES, is now proposing to purchase, construct, and operate biogas purification equipment on approximately 2,500 ft.^{2} at HWWTP. It will use this installation to purify the raw biogas produced at HWWTP into utility-grade renewable natural gas, which will be compressed and injected into its pipeline system for distribution to Hawai'i Gas customers. It will also construct an approximately 1-mile length of new underground pipeline to connect the biogas purification equipment to the nearby Hawaii Gas pipeline along Kapolei Parkway.

Draft Environmental Assessment
HONOULIULI WASTEWATER TREATMENT PLANT BIOGAS PROJECT

'EWA, O'AHU, HAWAI'I

PREPARED FOR:

The Gas Company, LLC

PREPARED BY:

Sheehan GROUP-PACIFIC LLC

&

PLANNING SOLUTIONS

DECEMBER 2017

PROJECT SUMMARY

Project:	**Honouliuli Wastewater Treatment Plant Biogas Project**
Applicant:	The Gas Company, LLC dba Hawai‘i Gas 745 Fort Street, Suite 1800 Honolulu, Hawai‘i 96813 Contact: Richard DeGarmo (808-596-1415)
Approving Agency:	Department of Environmental Services City and County of Honolulu 1000 Ulu‘ōhi‘a Street, Suite 308 Kapolei, Hawai‘i 96707 Contact: Cyril Hamada (808-768-5979)
Location:	91-1000 Geiger Road ‘Ewa Beach, Hawai‘i 96706
Proposed Action:	Installation of biogas purification equipment at Honouliuli Wastewater Treatment Plant and pipeline along Geiger Road to tie into Hawai‘i Gas’ existing distribution system at Kapolei Parkway.
Associated Actions Requiring Environmental Assessment:	Commitment of City and County of Honolulu land pursuant to HRS, Chapter 343-5(a)(1).
Tax Map Key:	(1) 9-1-013:007 (portion)
Parcel Area:	51.38 acres total
Project Area:	2,500 square feet
Judicial District:	‘Ewa
Development Plan Designation:	Public Facility
State Land Use District:	Urban
County Zoning:	I-2 Intensive Industrial, AG-1 Restricted Agriculture, P-2 General Preservation, and R-5 Residential.
Required Permits & Approvals:	• PUC Authorization to Commit Funds • HAR §11-60.1 Noncovered Source Air Permit • Chapter 343, HRS Environmental Assessment • Modification to Existing Conditional Use Permit • Street Usage Permit • Noise Permit and/or Noise Variance • Grubbing, Grading, and Stockpiling Permit • Building Permits
Anticipated Determination:	Finding of No Significant Impact
Parties Consulted:	See Chapter 7
Consultant:	Sheehan Group-Pacific, LLC 133 Ku‘ukama Street Kailua, Hawai‘i 96734 Contact: Neil Sheehan (808-282-2153) Email: nsheehan@sheehangrouppacific.com

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List of Acronyms

Acronym	*Phrase*
ADF	Average Daily Flow
AIS	Archaeological Inventory Survey
CCH	City and County of Honolulu
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CIA	Cultural Impact Assessment
DES	Department of Environmental Services
EA	Environmental Assessment
EIS	Environmental Impact Statement
EISPN	Environmental Impact Statement Preparation Notice
EPA	Environmental Protection Agency
HAR	Hawai‘i Administrative Rules
HDOH	State of Hawai‘i Department of Health
HRS	Hawai‘i Revised Statutes
HWWTP	Honouliuli Wastewater Treatment Plant
kV	Kilovolt
MGD	Million Gallons per Day
MW	Megawatt
MWh	Megawatt Hour
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NPDES	National Pollutant Discharge Elimination System
PUC	Public Utilities Commission
RFP	Request For Proposals
ROW	Right of Way
RPS	Renewable Portfolio Standards
TMK	Tax Map Key

1. PROJECT OVERVIEW

1.1 PROJECT SUMMARY

This Environmental Assessment (EA) evaluates the potential environmental effects of The Gas Company, LLC (henceforth "Hawai'i Gas") constructing and operating a biogas purification system within the existing Honouliuli Wastewater Treatment Plant (HWWTP) and an associated 4-inch diameter underground pipeline interconnecting the biogas system with Hawai'i Gas' existing natural gas distribution system along Kapolei Parkway. HWWTP is owned by the City and County of Honolulu (CCH) and operated by its Department of Environmental Services (DES). HWWTP is located on two adjacent parcels of land in 'Ewa, O'ahu, Hawai'i: TMK Nos. (1) 9-1-013:007 which is 48.7 acres (ac.) and (1) 9-1-069:004, which is 2.7 ac. in size. The proposed biogas facility would occupy approximately 2,500 square feet (ft.^{2}) of the larger parcel; the smaller parcel would not be affected by the proposed project. The location of HWWTP is shown in Figure 1.1; the project's immediate vicinity is shown in greater detail in Figure 1.2. A site plan of the existing plant is provided in Figure 1.3. The zoning designations in the vicinity of HWWTP are shown in Figure 1.4.

HWWTP was originally built in 1978, and became fully operational in 1984.[1] In 2013, the average daily flow (ADF) was approximately 26.1 million gallons per day (MGD). ADF at HWWTP includes flow generated by the population in the surrounding service area, including residential, commercial, and industrial uses. In addition to these sources, ADF includes water that may enter the system through infiltration, where pipes and mains lie below the water table during normal weather. HWWTP serves one of the fastest growing areas in the State of Hawai'i and flow to the plant is projected to increase based on the continuation of this population growth, and DES has plans in place to gradually expand HWWTP in order to accommodate this trend.

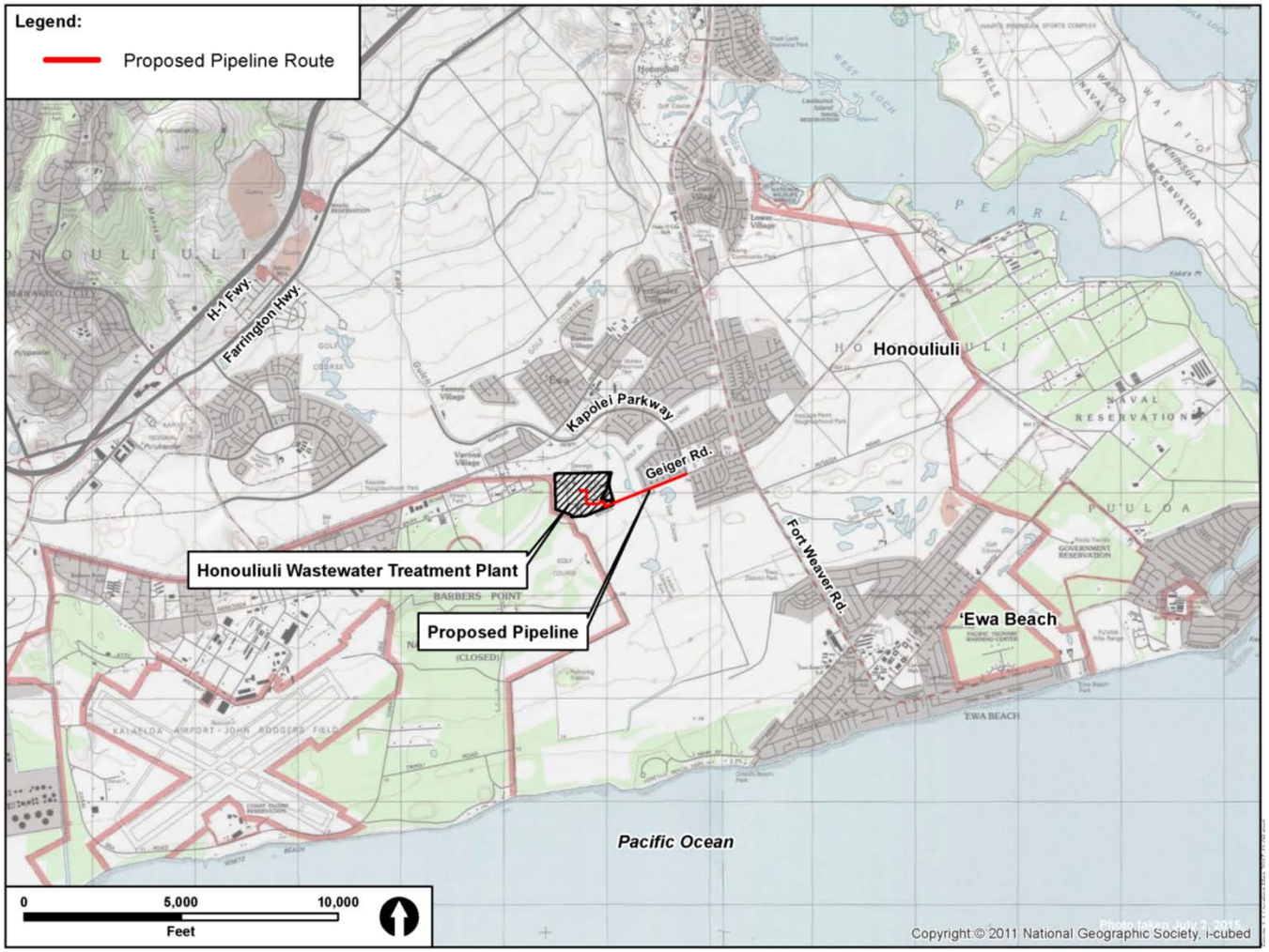
All inflow receives multi-stage treatment; the secondary stage of treatment employs anaerobic biological processes which produce approximately 800,000 therms—or 23,400,000 kilowatt hours—of raw biogas annually. Currently, DES simply discards this gas by burning it off in a flare located within HWWTP. Hawai'i Gas, in partnership with DES, is now proposing to:

- Lease roughly 2,500 ft^2 of vacant land within the plant from DES.
- Purchase, install, operate, and maintain biogas purification equipment that will occupy approximately 2,500 ft^2 of land adjacent to the existing anaerobic digester tanks at HWWTP.
- Design, construct, and maintain approximately 1 mile of new underground pipeline within the HWWTP and Geiger Road right-of-way to connect the purification system to the existing Hawai'i Gas pipeline system along Kapolei Parkway.
- Purify the raw biogas produced at HWWTP into utility-grade renewable natural gas, which will be compressed and injected into the new pipeline for distribution to Hawai'i Gas customers.

This project represents a unique opportunity for the DES, Hawai'i Gas, its customers, and the State of Hawai'i. If constructed as planned, the project has the potential to offer low-cost, renewable energy to the people of O'ahu, as called for under the State's Clean Energy Initiative, while providing a steady stream of revenue to the DES for a byproduct of its sewage treatment process which is currently discarded.

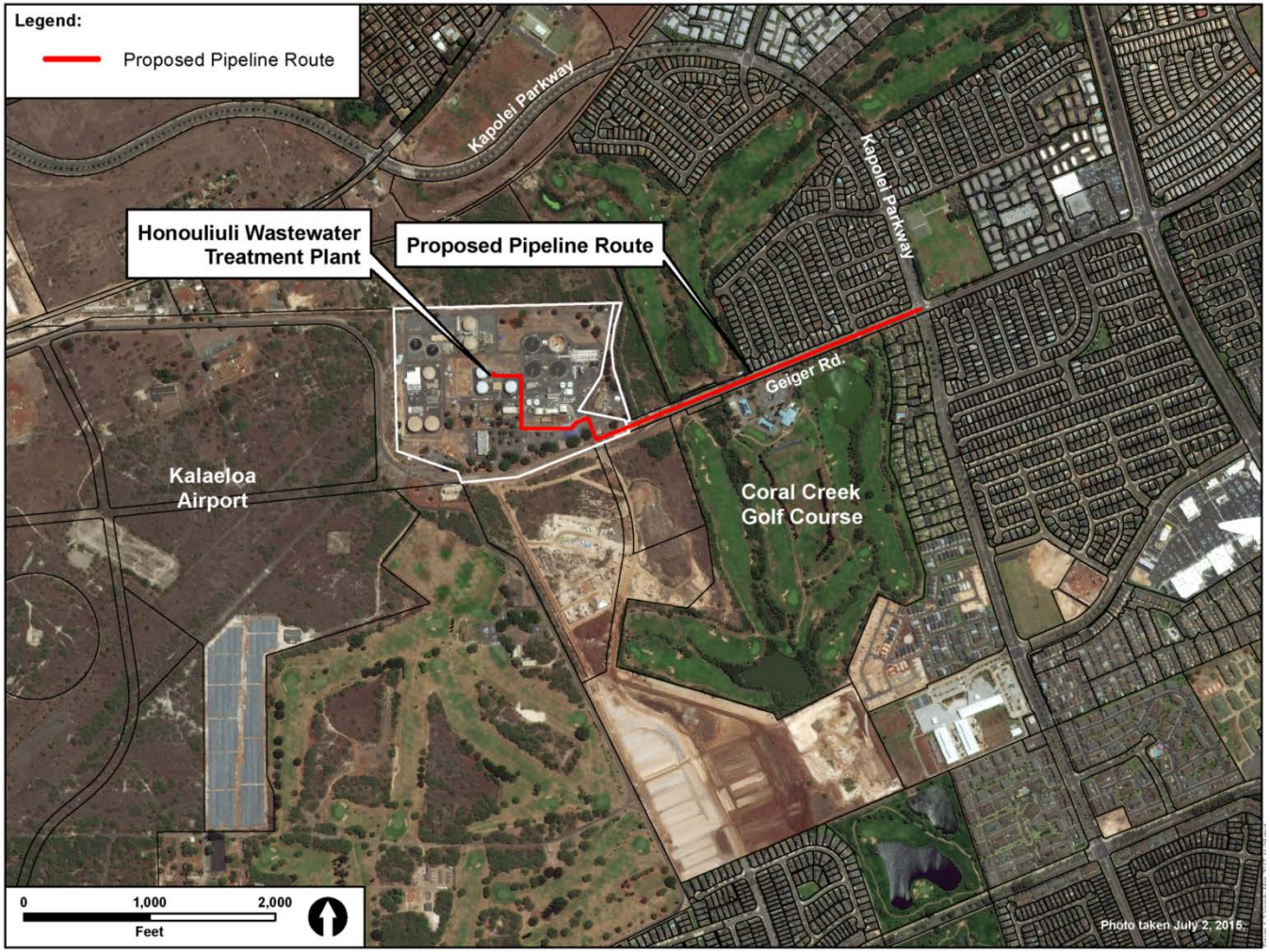
[1] As of December 16, 1993 HWWTP operated under National Pollutant Discharge Elimination System (NPDES) Permit No. HI0020877. The DES applied to the U.S. Environmental Protection Agency (EPA) to renew the permit prior to its expiration on June 5, 1996. In 2009, the EPA denied reissuing the permit. HWTTP operated under an administrative extension of the permit after it expired in 1996. The NPDES Permit was subsequently reissued by the State of Hawai'i's Department of Health (HDOH), effective March 30, 2014.

Figure 1.1 Location Map



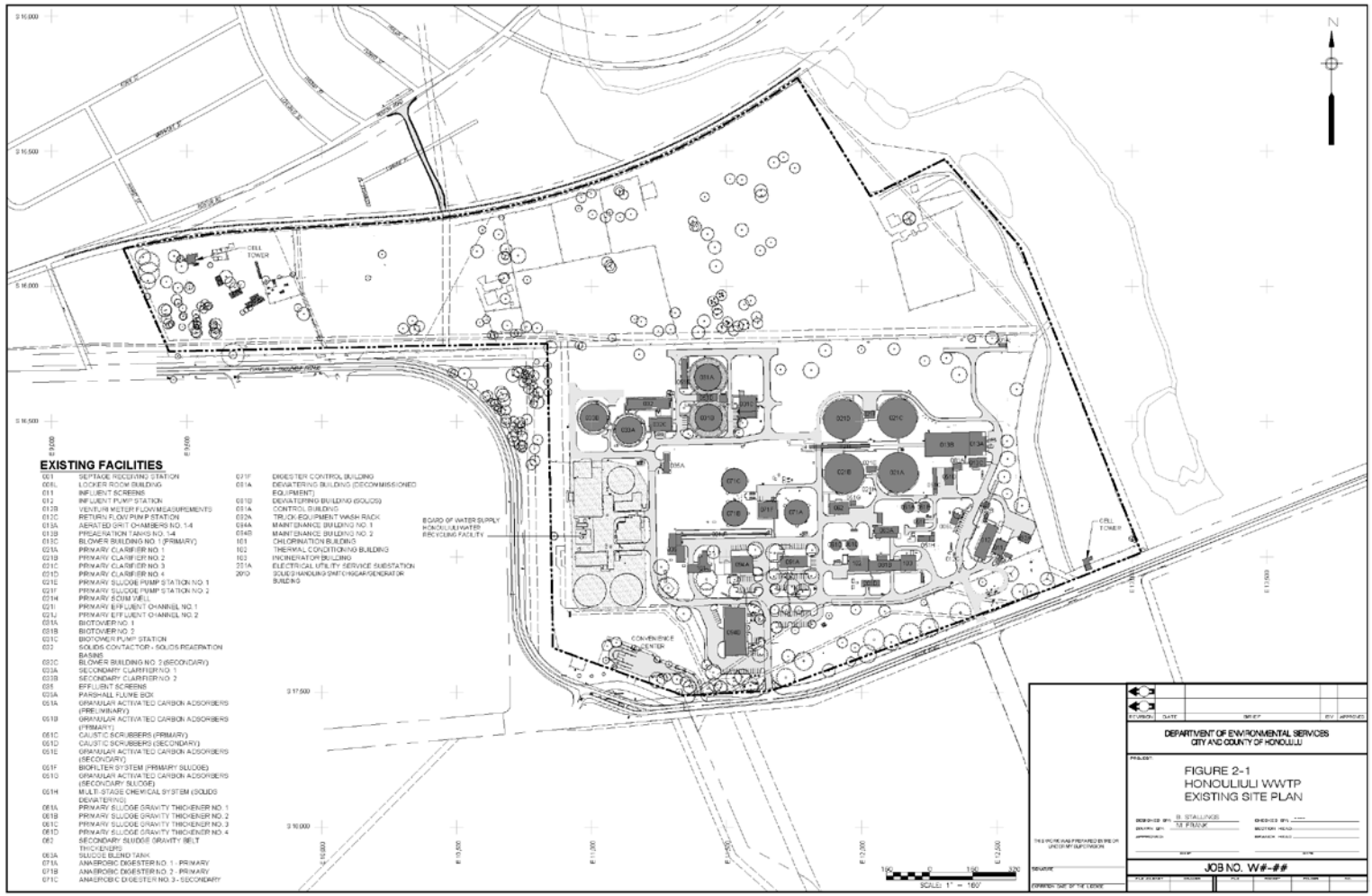
Source: Planning Solutions, Inc. (2017)

Figure 1.2 Project Vicinity



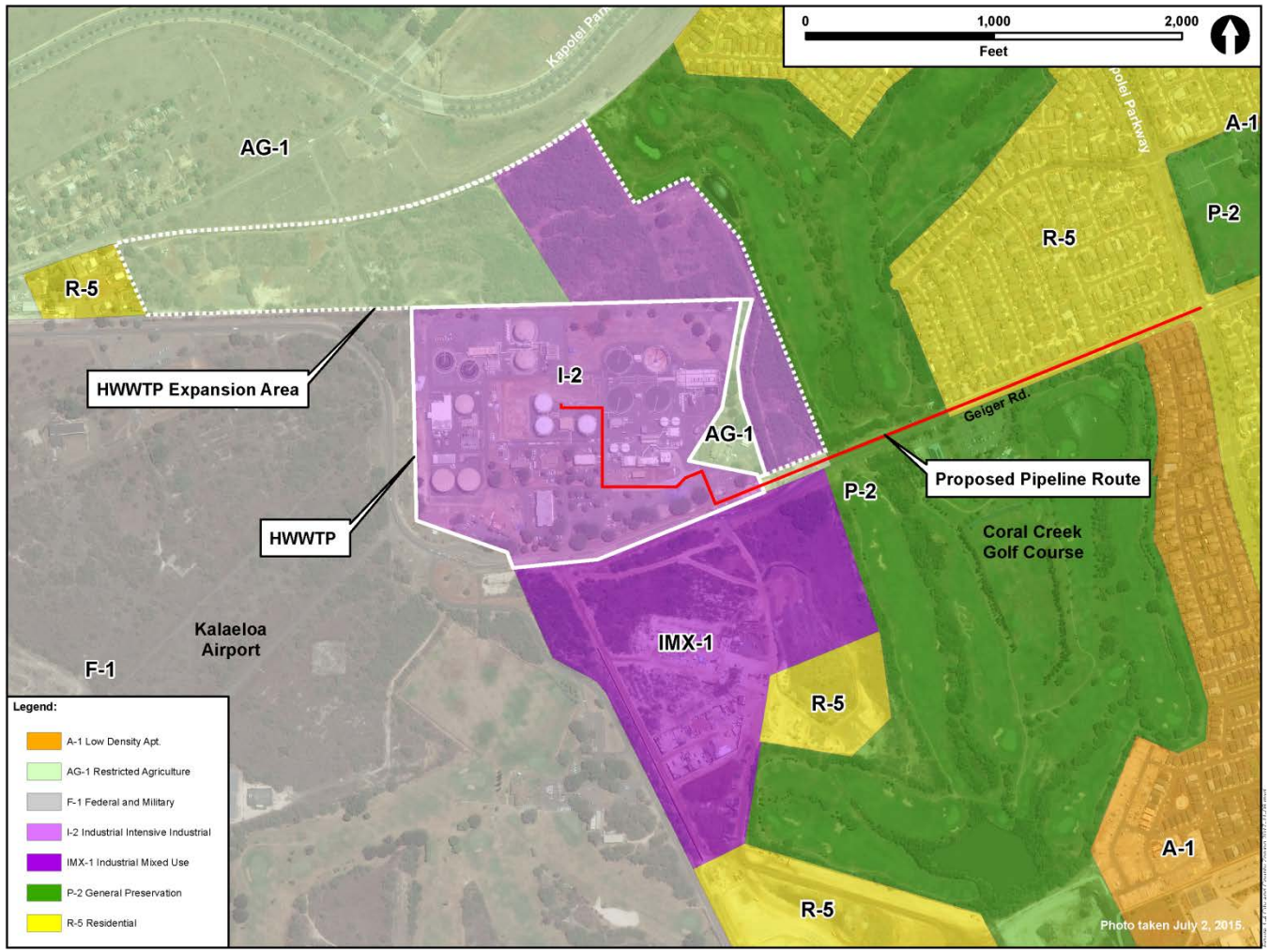
Source: Planning Solutions, Inc. (2017)

Figure 1.3 HWWTP Site Plan



Source: DES (2017)

Figure 1.4 City and County Zoning



Source: City and County of Honolulu (2017)

The proposed HWWTP Biogas Project will also allow Hawai‘i Gas to further diversify its supply chain, blending the renewable natural gas produced at HWWTP with its existing supply of synthetic natural gas. Hawai‘i Gas customers will be unaffected by fluctuations in the availability of the renewable natural gas produced at HWWTP because synthetic natural gas will buffer those fluctuations. In addition, this project may act as a testbed for additional biogas reclamation projects elsewhere in the State. Finally, Hawai‘i Gas customers will benefit from the fixed price of this biogas, which is not subject to the price-variability of gas produced from petroleum.

1.2 HAWAI‘I GAS

Hawai‘i Gas is a franchised public utility, overseen by the Public Utility Commission (PUC), holding a franchise granted by the State of Hawai‘i to (per Act 262, Session Laws of Hawai‘i 1967) “manufacture and supply gas for use as a fuel, illuminating purposes and otherwise, throughout the State.” Since 1904, Hawai‘i Gas and its predecessors have expanded its gas utility operations to encompass the entire State of Hawai‘i. Currently, it provides gas service throughout all of the major islands of Hawai‘i, engaging in regulated and non-regulated gas utility operations that serve approximately 68,700 customers throughout the state.

Hawai‘i Gas’ regulated operations include the purchase, production, transmission, and distribution through underground gas pipelines of synthetic natural gas (SNG) for residential, commercial, and industrial uses. Other PUC-regulated activities include the distribution of liquid petroleum gas (LPG) and synthetic natural gas (SNG) via pipelines. Hawai‘i Gas also conducts non-regulated operations related to the purchase, distribution, and sale of tanked and bottled LPG to residential, commercial, and industrial customers throughout the State of Hawai‘i. In total, Hawai‘i Gas has approximately 320 employees conducting operations on six islands.

1.3 DEPARTMENT OF ENVIRONMENTAL SERVICES

The Department of Environmental Services, or DES, is responsible for the collection, treatment, and disposal of solid waste and wastewater throughout the CCH. DES’ solid waste program includes the curbside collection, recycling, and disposal of residential garbage and green waste. The collected refuse and green waste is recycled, burned at the DES’s H-Power waste-to-energy facility, or deposited in the municipal Waimanalo Gulch Landfill.

DES’ wastewater program include the collection of approximately 100 MGD of wastewater from toilets, sinks, and drains of homes and businesses throughout O‘ahu through a 2,100-mile network of sewer pipelines, 70 pump stations, and 9 wastewater treatment plants spread out across the island. The wastewater collected by DES in its treatment plants is screened to remove debris, settled to remove organic solids, and treated at varying levels—primary through tertiary—depending on the sophistication of the plant and the wastewater’s subsequent intended use. The resulting water, known as effluent, is monitored for quality and either discharged back into the environment via ocean outfall, reservoir, or underground injection wells; in some cases, the effluent is recycled and reused for irrigation and industrial uses.

1.4 NEED FOR AN ENVIRONMENTAL ASSESSMENT

Hawai‘i Gas has received PUC approval to expend the funds necessary to purchase and install the equipment to scrub biogas produced by the existing waste treatment facilities at HWWTP into utility-grade natural gas and construct the pipeline extension necessary to add the gas to Hawai‘i Gas’ existing distribution system.

Pursuant to Hawai‘i Revised Statutes, Section 343.5(a)(1), an EA is required if, “the proposed project involves the use of State or County lands.” CCH is the owner of HWWTP (TMK No. 9-1-013:007); the commitment of a portion of this land to Hawai‘i Gas, via long-term lease or other instrument of

transfer, is a "trigger" for the environmental review process outlines in Hawai‘i Revised Statutes (HRS), Chapter 343 and its implementing regulations contained in Hawai‘i Administrative Rules (HAR), Title 11, Chapter 200. The purpose of this process is to determine the project's potential for impacts to the natural and human environment. This EA has been prepared to fulfill the purpose and content requirements of these regulations. In addition to this Chapter 343 environmental review process, Hawai‘i Gas, through its subcontractors, will need to obtain grading, building, and other permits and approvals prior to construction of the new biogas facility and associated pipeline.

1.5 PROJECT PURPOSE AND NEED

The purpose of the HWWTP Biogas Project is to convert a byproduct of the wastewater treatment process (biogas) into a clean, renewable source of energy for sale to customers of Hawai‘i Gas. The need for the project is rooted in Hawai‘i's renewable energy goals. The objectives which Hawai‘i Gas has identified for the proposed project are summarized in Table 1.1.

Table 1.1 Objectives of the HWWTP Biogas Project

No.	*Objective*
1	To diversify Hawai‘i Gas' fuel supply with cost-effective, locally-produced renewable natural gas (RNG).
2	To increase the proportion of Hawai‘i Gas' total gas sales which will be produced renewably.
3	To obtain a fixed-price source of renewable natural gas (RNG).
4	To reduce the cost of its gas, as compared with the average historical SNG fuel cost on a weighted average basis.
5	To move towards a more stable price of energy for its customers.
6	To serve as a testbed model for additional, future RNG reclamation projects.
Source: Hawai‘i Gas (2016)	

In addition, the sale of the methane produced by DES at HWWTP, which is currently discarded, will provide the DES with an ongoing, continuous source of revenue while reducing pollution and assisting the State of Hawai‘i in achieving its renewable energy goals.

1.6 ORGANIZATION OF THE REPORT

The remainder of this report is organized as follows:

- Chapter 2 describes the proposed project elements in detail, including location, design, construction, cost, and mode of operation as well as several alternatives to the proposed project which Hawai‘i Gas has considered in earlier phases of the planning process.
- Chapter 3 provides descriptions of the existing environment and analyzes the ways in which the proposed action and its alternatives could impact the natural and human environment. It also outlines strategies for minimizing the potential for adverse effects and mitigating unavoidable impacts.
- Chapter 4 discusses the consistency of the proposed project with applicable county and state plans, policies, and controls.
- Chapter 5 states the anticipated determination that the proposed project will not have significant adverse effects on the environment.

- Chapters 6 and 7 identify parties which were consulted and references cited during preparation of this EA.

2. DESCRIPTION OF PROPOSED PROJECT AND ALTERNATIVES

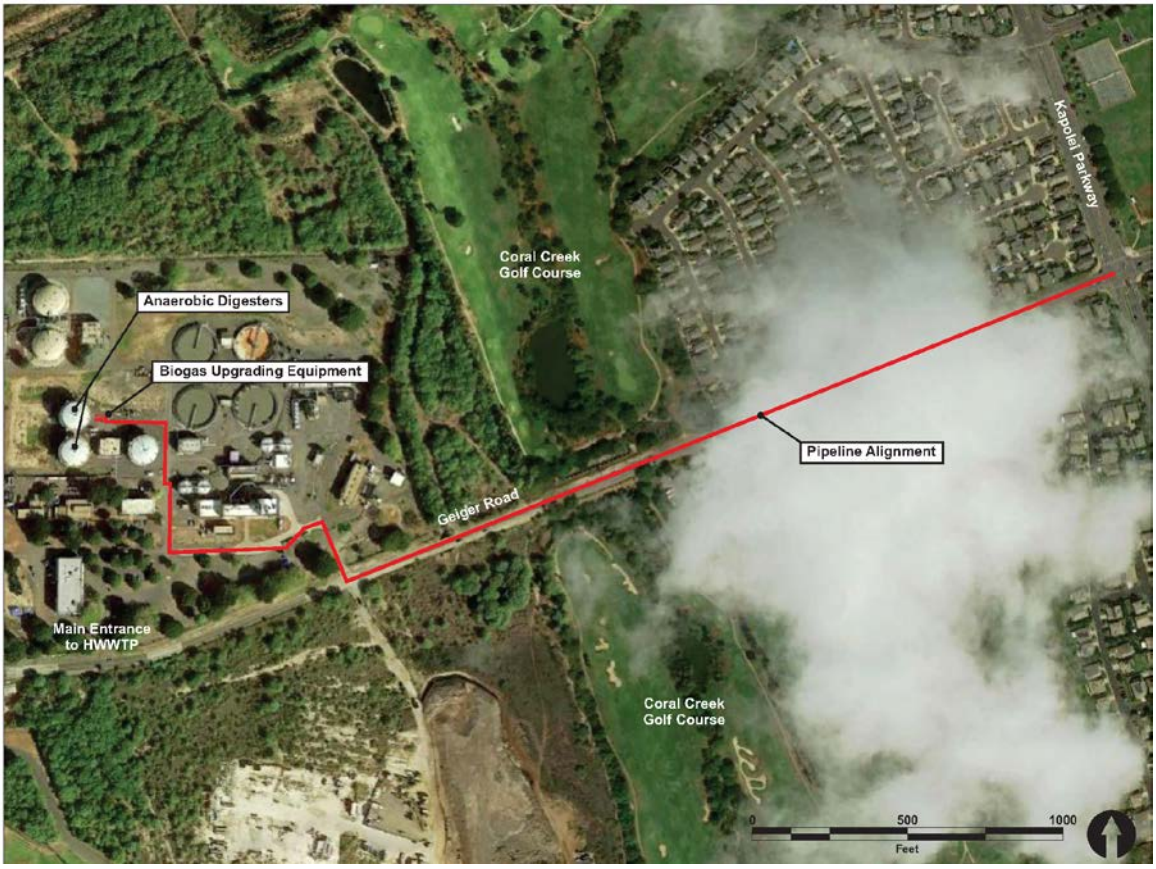
HAR Title 11, Chapter 200 contains the State of Hawai‘i, Department of Health’s environmental impact assessment rules. That section: (*i*) defines the assessment process for applicant actions such as the one Hawai‘i Gas is proposing; (*ii*) requires that the approving agency, in this case DES, analyze alternatives; and (*iii*) establishes the required contents of EAs. Among the content requirements listed is the identification and summary of the project and alternatives considered.

This chapter provides more detailed information about the location and design of the various elements of the proposed project. It also includes the procedures that will be used in its construction, operation and maintenance, the materials that will be used, the estimated costs, and the anticipated schedule for the project’s development. It concludes with a discussion of alternatives to the proposed action, including those alternatives which were originally considered in early phases of planning, but which were ultimately rejected from further consideration because they would not achieve the project objectives summarized in Table 1.1.

2.1 ALTERNATIVE 1: THE HWWTP BIOGAS PROJECT

The proposed project involves the construction, installation, and operation of a biogas purification system within the existing HWWTP and an associated 4-inch diameter underground pipeline interconnecting the biogas system with Hawai‘i Gas’ existing pipeline along Kapolei Parkway. The project, which would provide locally-produced RNG to Hawai‘i Gas’ pipeline network will provide as-available, low-cost renewable fuel and provide a moderate reduction in the overall use of fossil fuel on O‘ahu. The following subsections describe the various project elements in further detail. A site plan for the proposed biogas facility at HWWTP is shown in Figure 2.1 below.

Figure 2.1 Site Plan of HWWTP Biogas Project



Source: Hawai‘i Gas (2017)

2.1.1 BIOGAS UPGRADING TECHNOLOGY

As part of its ongoing wastewater treatment operations at HWWTP, DES operates large anaerobic digester tanks (see Figure 1.3) which accumulate waste from the municipal sewer system, concentrates it in tanks, and breaks down the biodegradable matter in the absence of oxygen (hence “anaerobic”) so that it can be safely disposed of via an ocean outfall. Anaerobic digestion is part of the larger, ongoing process of treating municipal sewage sludge at HWWTP. As part of its integrated waste management system, it reduces the amount of organic solids which need to be disposed of. The process of anaerobic digestion is commonly used to manage biologic waste and to produce fuels; a pairing of these purposes is at the heart of the HWWTP Biogas Project.

A byproduct of the anaerobic digestion process is “biogas” which is composed primarily of: (*i*) methane (CH_4), which is also known as natural gas; (*ii*) carbon dioxide (CO_2); and (*iii*) trace levels of other gasses, primarily hydrogen sulfide (H_2S), but also mercaptans, terpenes, and water (H_2O); Table 2.1 below summarizes the content of the raw biogas. A technique known as “biogas upgrading” is used to separate the methane from the carbon dioxide and other gasses, resulting in a stream of renewable natural gas (i.e., methane) suitable for use as fuel.

Table 2.1 Composition of Raw Biogas

Composition	*Concentration*
Methane (CH_4)	50.0-60.0 %
Carbon Dioxide (CO_2)	30.0-50.0 %
Hydrogen Sulfide (H_2S)	1000-1600 ppm
Siloxanes	200-300 ppb
Saturated Water Vapor (H_20)	-

Notes: ppm = parts per million; ppb = parts per billion
Source: DMT Clear Gas Solutions (2017)

The HWWTP Biogas Project involves the use of DMT Clear Gas Solutions' Carborex™ MS filament system, in a containerized unit, to separate the methane from the carbon dioxide and other gasses using membranes, pressure, and activated carbon to separate these biogas constituents without the use of chemicals or water, and with a low amount of energy. The primary impurity, carbon dioxide, is separated using solution diffusion through polymer tubules inside the Carborex™ MS units; the separation of the methane from the carbon dioxide occurs because of differences in their solubility through the tubules. The molecular structure of carbon dioxide allows it to pass through the tubules more quickly than the methane, resulting in a carbon dioxide rich stream at the permeate end of the unit and a methane rich stream at the retentive end of the unit.

As noted above, the raw biogas produced in the anaerobic digesters consists primarily of methane and carbon dioxide, but other components are present. These include hydrogen sulfide, mercaptans, terpenes, and water. It is preferable that these compounds are removed from the stream at the outset. To address this, the pre-treatment process uses activated carbon filters to remove and trap these components. Once the gas has undergone pre-treatment, it is compressed up to 16 bar by a compressor.[2] The pressure level for the treated gas is optimized for the separation of the methane and carbon dioxide in the subsequent step.

The entire biogas upgrading process can be summarized as follows:

1. Biogas accumulates in the anaerobic digester(s) as a result of anaerobic activity by acidogenic and methanogenic bacteria.
2. The raw biogas is passed through activated carbon filters to remove the hydrogen sulfide, terpenes, mercaptans, siloxanes, and water. The water and used carbon containing the hydrogen sulfide, terpenes, and mercaptans are disposed of at an approved offsite location.
3. The remaining biogas containing methane and carbon dioxide is pressurized to 16 bar and pumped into the Carborex™ MS unit.
4. The Carborex™ MS unit's tubules system separates the carbon dioxide permeate stream from the methane retentive stream; this CO_2 is released into the atmosphere.
5. At the retentive end, the methane stream still contains some residual amounts of carbon dioxide, so the stream is passed through multiple stages of Carborex™ MS filters for further

[2] The bar is a unit of pressure defined as 100 kilopascals. It is about equal to the atmospheric pressure on Earth at sea level.

purification, resulting in an up to 98 percent pure methane stream. On the permeate side, through these multiple cycles of separation, the methane concentration can be reduced to less than 0.5 percent. The retentive stream composition is summarized in Table 2.2 below; as a safety measure an odorizing agent is also introduced to the output so that any methane release is detectable.

The entire biogas upgrading system is containerized and has very few moving parts. Because of this, it requires little more than a raw biogas input, an output for the permeate and retentive streams, and occasional replacement of the activated carbon pre-treatment filters. This technology results in a very low-maintenance system, with no required after treatment of the waste and off-gas, and a low-cost and ready to use stream of RNG. Additionally, it reduces pollutants released into the air or burned off within the facility.

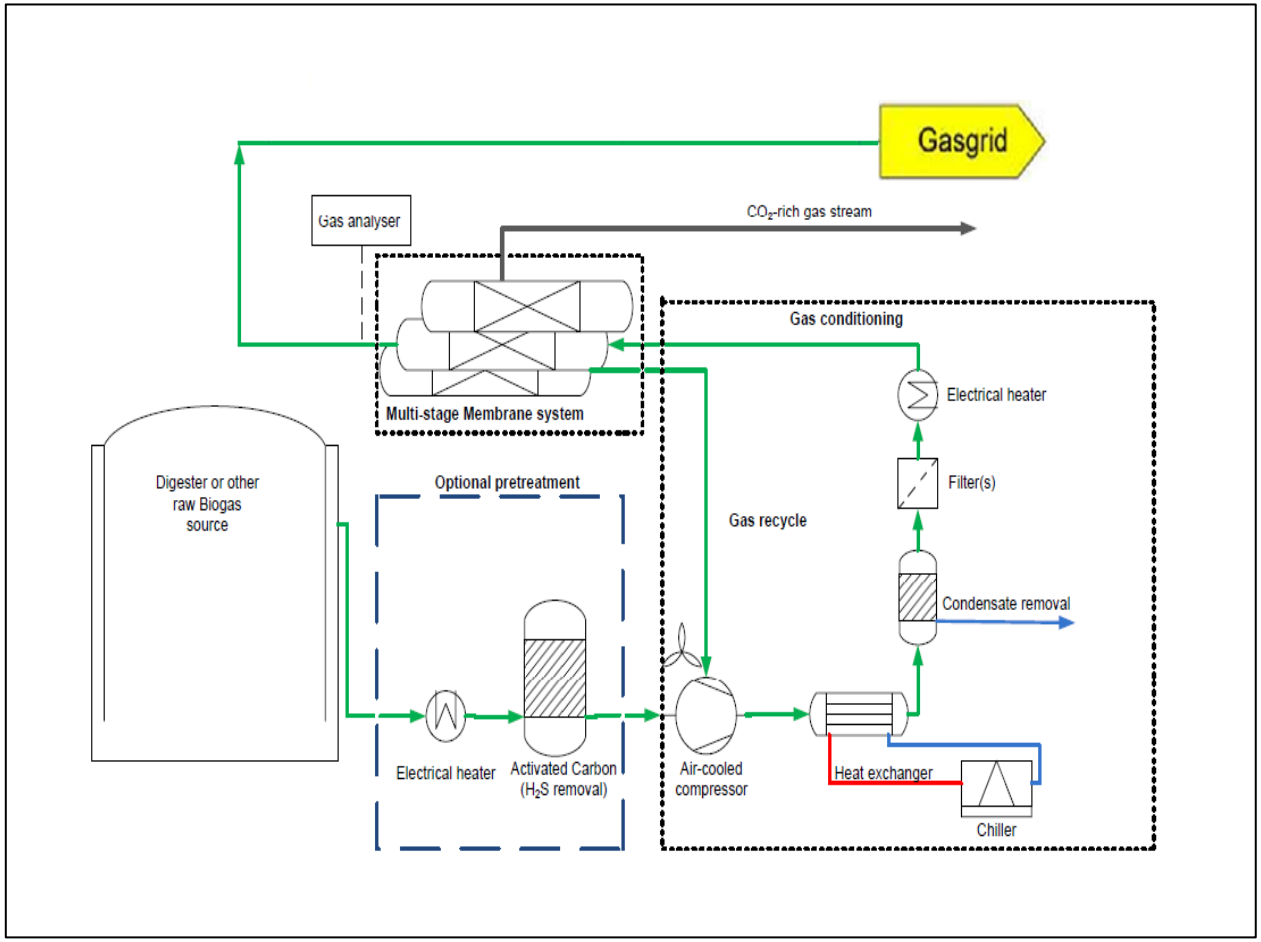
Table 2.2 Composition of RNG Output

Composition	*Concentration*
Methane (CH_4)	>95.0%
Carbon Dioxide (CO_2)	<2.5%
Hydrogen (H_2)	<1.0%
Oxygen (O_2)	<0.4%
Other Inert Gasses	<2.0%
Hydrogen Sulfide (H_2S)	<4 ppm
Siloxanes	Non-detectable
Water Vapor (H_20)	<32 ppb

Note: ppm = parts per million; ppb = parts per billion
Source: DMT Clear Gas Solutions (2017)

A graphic summarizing the biogas upgrading process is provided in Figure 2.2. While the size and capacity of DMT Carborex™ MS biogas upgrading systems can be scaled across a broad range of applications, the general appearance of similar units is shown in Figure 2.2 below.

Figure 2.2 Biogas Upgrading Process Flow Diagram



Source: DMT Clear Gas Solutions (2016)

Figure 2.3 Sample Views of Biogas Upgrading Systems

500 standard cubic feet per minute (SCFM) raw biogas upgrading for injection into local gas grid in the UK.

300 SCFM raw biogas upgrading for use as compressed natural gas in Sweden.

1,500 SCFM raw biogas upgrading for injection into the local gas grid in the UK.

Source: DMT Clear Gas Solutions (2016)

2.1.2 PROJECT CONSTRUCTION

2.1.2.1 Biogas Upgrading Facility Construction

Because the Carborex™ MS unit is containerized, activity required for the construction of the biogas upgrading system is very limited. As shown in Figure 2.1, an approximately 2,500 ft.^{2} area will be prepared for the containerized unit, and the ancillary electrical equipment which will serve it, adjacent to the existing anaerobic digesters already present at HWWTP. Because the site has already been mass graded during construction of the wastewater treatment facility, this will involve only very

minor earthwork (i.e., <50 cubic yards (c.y.)) and the addition of a porous gravel surface treatment intended to prevent ponding around the biogas equipment. Existing conditions on the biogas equipment site are shown in Figure 2.4 below.

Figure 2.4 Existing Conditions on Biogas Upgrading Equipment Site at HWWTP

View toward the west from approximate location of biogas upgrading equipment site showing the neighboring anaerobic digester.

View toward the north of the biogas upgrading equipment site in the grassy area beyond the hydrant and waterline.

View toward the northwest showing the relationship between the anaerobic digester and the proposed biogas upgrading equipment site.

Closer view toward the northeast of the site for the proposed biogas upgrading equipment.

Source: Planning Solutions, Inc. (Photos dated September 30, 2016)

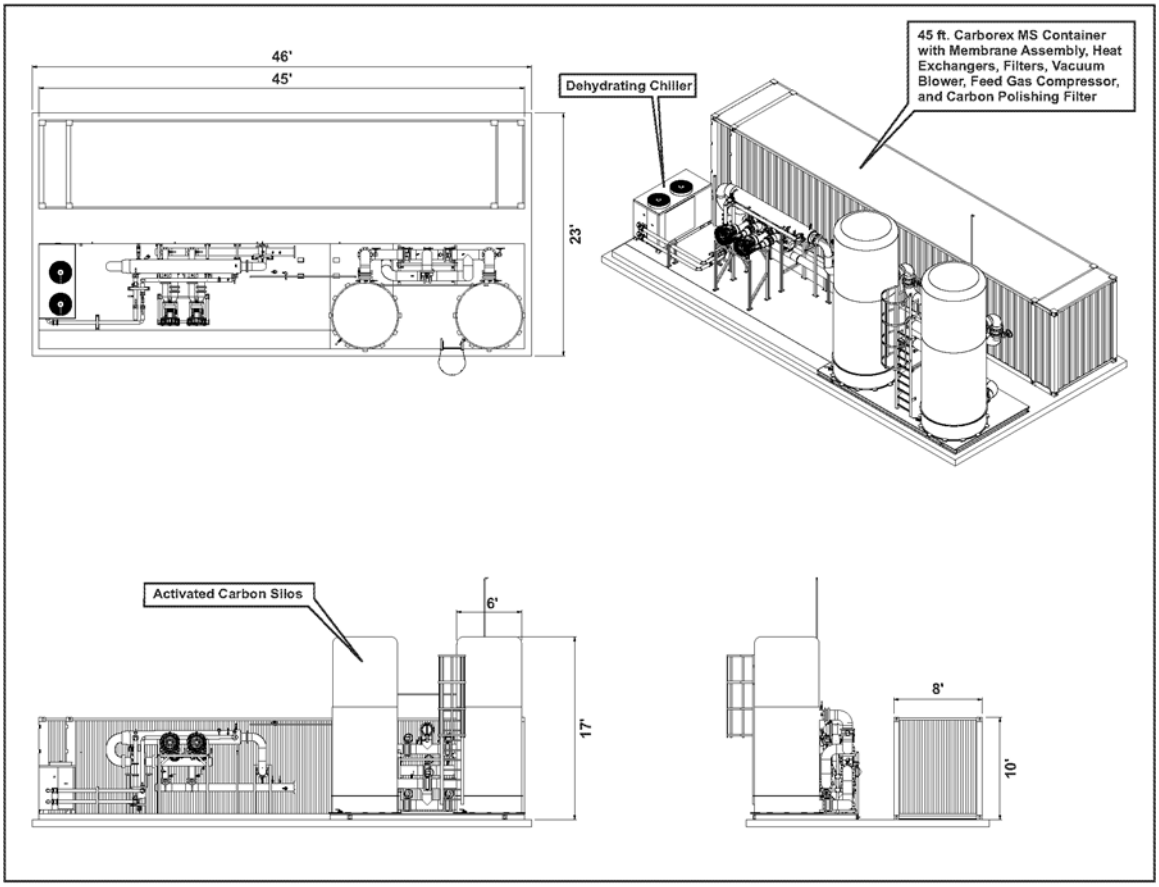
Some additional minor earthwork (i.e., <20 c.y.) will be required to emplace the equipment associated with the biogas upgrading unit and the ancillary electrical equipment which will power the system. This additional infrastructure includes:

- The power supply cabinet and interconnections;
- The gas compressor cabinet and interconnections;
- The biogas inlet and compressor;
- The condensate housing;

- Biogas outlet;
- Air compressor; and
- Other minor conduits, piping, controls, and equipment.

The general appearance of the biogas upgrading system site, with all appurtenant structures, is shown in the rendering in Figure 2.5 below.

Figure 2.5 Rendering of Proposed Biogas Upgrading System Site



Source: DMT Clear Gas Solutions (2017)

Construction of the biogas upgrading equipment identified above will require the use of heavy, combustion-engine powered equipment including heavy and light utility vehicles, excavators, all-terrain forklifts, and pickup trucks to deliver material, equipment, and workers to the site. The work will require the services of managers, truck drivers, heavy equipment operators, licensed journeymen electricians, and laborers to working on the HWWTP site. The biogas upgrading unit and associated equipment will be transported to the site via tractor-trailer as needed and staged on-site for as long as it is required. The storage, maintenance, and fueling of these vehicles and pieces of equipment would follow all applicable laws, regulations, and Best Management Practices (BMPs).

The contractor will excavate (minimum) 2-foot deep trenches in which it would place the conduits that would carry the electrical cables interconnecting the individual pieces of equipment with the existing, on-site power supply at HWWTP. The excavated soil would then be back-filled into the trench and the soil tamped to the appropriate level of compaction. The excavation work for the

conduits and cables would be conducted using an excavator or mini-excavator, followed by the appropriate compaction equipment. If the construction contractor determines that it is more efficient to run the electrical conduits above ground, the contractor will provide and install above ground stanchions with appropriate unistruts for conduit attachment.

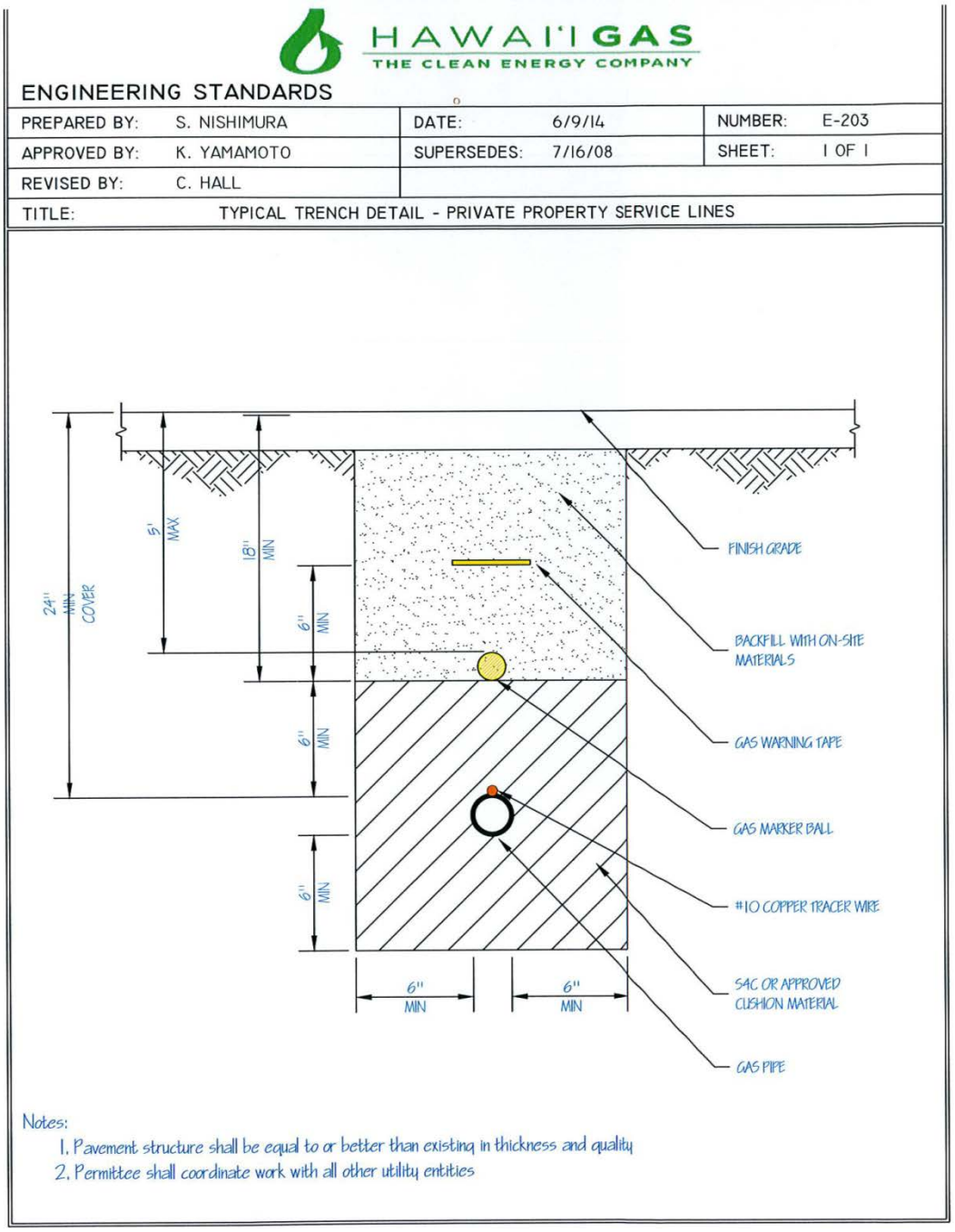
2.1.2.2 Biogas Pipeline Construction

As discussed in Section 2.1.2.1, the biogas upgrading system results in a more than 95 percent pure stream of renewably produced methane which will be transferred to Hawai‘i Gas’s pipeline network via a new 4-inch high-density polyethylene (HDPE) pipe. As depicted in Figure 1.2, this HDPE pipe will exit HWWTP and travel along the CCH’s Geiger Road right of way (ROW), where it will tie in to a Hawai‘i Gas existing distribution pipe which extends north and south along Kapolei Parkway and east to Fort Weaver Road’s existing 6-inch pipeline. Although the jurisdiction will change as the pipeline exits CCH property and enters the CCH ROW, the construction materials and methods will be identical.

Construction of the proposed pipeline will involve several types of activities; including: (*i*) pre-construction surveying; (*ii*) clearing and minor grading as needed; (*iii*) trenching; (*iv*) hauling and laying the HDPE pipe; (*v*) pipefitting; (*vi*) joining; (*vii*) connecting new pipe to existing pipe; (*viii*) laying tracer wire, marking balls, and warning tape; (*ix*) back filling; (*x*) testing; and (*xi*) cleaning up and restoring construction areas. The details of this process are:

1. Hawai‘i Gas or its contractor will survey the proposed alignment from HWWTP, along Geiger Road, to the intersection of Geiger Road and Kapolei Parkway. This will include any geotechnical assessment of soils or geohazards to help engineers design the pipeline parameters, and also help develop erosion control measures for pipeline construction and operation. A detailed *Construction Traffic Management Plan* will be developed for areas where construction activities are anticipated to require a lane closure or otherwise interfere with the normal flow of traffic. Hawai‘i Gas will coordinate development and implementation of the plan with the CCH Department of Transportation Services (DTS) and obtain a Street Usage Permit, as needed.
2. Beyond the project scoping which has already occurred, Hawai‘i Gas will notify landowners adjacent to the construction area or which have the potential for their residences or businesses to be affected by the construction operations. Notification of landowners would generally occur by mail. Notification may also be made by other means, such as posting one or more signs along Geiger Road in advance of construction. Hawai‘i Gas will also make a presentation to the No. 23 ‘Ewa Neighborhood Board.
3. While the alignment of the proposed pipeline, the majority of which is in the Geiger Road ROW, is relatively free of obstructions, some minor clearing in areas adjacent to the roadway may be required. This includes removal of any shrubs, rocks, or other obstacles along the pipeline alignment. No large-scale grubbing or grading is anticipated.
4. Once the pipeline design details have been finalized, trenching operations would commence. Plans call for the trenching to be conducted by tracked excavators and backhoes; an exception to this would be in areas where hand digging may be used to locate buried utilities, such as other conduits, cables, water mains, or sewers. Paved areas will be saw-cut prior to trenching. While in special conditions the depth of the trench may vary, the trench will typically be approximately 36″ deep and 16″ wide. Figure 2.6 below provides a typical Hawai‘i Gas trench detail.

Figure 2.6 Typical Hawai‘i Gas Trench Detail



Source: Hawai‘i Gas (2014)

5. Piping and other material would be delivered to the work area from a nearby staging site and placed in the trench on a 6″ layer of approved cushioning material, along with No. 10 copper tracer wire, followed by an additional 6″-8″ of cushion material. Over this layer gas marker balls will be placed and then backfilled with on-site cut material. Any excess cut material which was not used for backfill would be disposed of in accordance with county guidelines in an available landfill or used for another approved purpose. A gas pipeline warning tape

would be placed in the trench at an approximate depth of 18″ as a safety measure, warning future excavators of the pipeline's presence.

6. Once the pipeline is installed and tested, pavement restoration would occur to meet or exceed CCH standards in terms of the thickness and quality of the repaved layer. In the event of any potential impacts to their infrastructure, Hawai‘i Gas will work with other utilities to coordinate work and ensure any necessary adjustments are conducted to their standards.

Figure 2.7 below provides sequenced photographs of various phases of the pipeline installation process along with descriptions of the activity.

2.1.2.3 Operations and Maintenance Activities

Once the biogas upgrading equipment is installed and placed into service, although it is fully automated, it will need to be monitored and inspected regularly by trained operators. A remote monitoring system allows the biogas upgrading process to be monitored 24-hours per day by Hawai‘i Gas personnel, with an automated service call sent when the system requires an operator or engineer response. If a problem occurs in the process flow, the biogas will be redirected to the existing flare while the problem is addressed.

In addition to continuous remote monitoring of operations and servicing the equipment regularly, the activated carbon filters which scrub the hydrogen sulfide from the gas stream must be changed out periodically, typically approximately every 6 months. Hawai‘i Gas will coordinate with its vendor DMT Clear Gas Solutions to ensure that the system is maintained in good working order and serviced regularly per manufacturer recommendations. Occasional maintenance of ancillary equipment such as the compressor and chiller may also be required, as needed. In total, it is estimated that the facility will be taken out of operation for servicing approximately 2 to 3 weeks per year.

Once installed, the pipeline and interconnections will not require regular maintenance.

Figure 2.7 Gas Pipeline Installation Process in CCH ROW

Pavement is saw-cut to prepare work area.

Trenching occurs with a combination of machinery and hand tools.

Pipeline and No. 10 copper locator wire are placed in excavated trench.

Another view of the pipeline and locator wire installation.

Warning tape is installed during the backfill process.

Road surface is restored to meet or exceed CCH standards for thickness and quality.

Source: Hawai‘i Gas (2017)

2.2 ALTERNATIVE 2: NO ACTION

Under the "No Action" alternative, the proposed HWWTP Biogas Project would not be implemented. The site identified for the project within the wastewater treatment plant would remain unused, or would be put into use for some other, unrelated purpose, and consequently no gas pipeline would be built. Hawai‘i Gas would continue to purchase and import gas obtained from fossil fuels for sale to its customers. In addition to not meeting the project objectives summarized in Table 1.1, the categories of natural and human resources identified in Chapter 3.0 would not be affected, and conditions would remain as described in the discussion of existing conditions.

Without the HWWTP Biogas Project, Hawai‘i Gas would lessen its ability to:

- Diversify its fuel supply with cost-effective, locally-produced, RNG;
- Increase the proportion of its total gas sales produced locally or renewably;
- Reduce or stabilize the cost of energy for its consumers; and
- Test biogas reclamation and upgrading technology for additional future projects.

In addition, under the No Action Alternative the DES would not obtain a source of revenue from the sale of the biogas or contribute to achieving the State of Hawai‘i's renewable energy goals in the near future.

Because the No Action Alternative would not allow Hawai‘i Gas to meet any of the project objectives, the Company has determined that it is not a feasible or desirable alternative to the proposed action. It is included here pursuant to the recommendations of Hawai‘i Revised Statutes (HRS), Chapter 343, and its implementing regulations contained in Hawai‘i Administrative Rules (HAR) §11-200. Including the No Action Alternative herein provides a baseline against which to measure the potential impacts of the HWWTP Biogas Project.

2.3 ALTERNATIVES ELIMINATED FROM DETAILED CONSIDERATION

In addition to the two alternatives described in the previous sections, Hawai‘i Gas considered several other potential alternatives early in the planning process. These alternatives were considered before being ultimately rejected because they were unable to meet the project objectives defined in Table 1.1.

2.3.1 ALTERNATIVE LOCATION

Because the locations of the existing anaerobic digesters at HWWTP are fixed, Hawai‘i Gas was limited in the extent to which it could consider alternative locations for the biogas reclamation and upgrading equipment. However, the Company did consider several options to the proposed action that involved alternative locations which included: (*i*) alternative routes for the proposed biogas pipeline; and (*ii*) employing biogas reclamation and upgrading technology at an alternative wastewater treatment facility elsewhere on the Island of O‘ahu.

2.3.1.1 Alternative Wastewater Treatment Plant

One potential alternative site for a similar biogas reclamation and upgrading project which Hawai‘i Gas and DES evaluated in earlier stages of the planning process was Sand Island Wastewater Treatment Plant (SIWWTP). SIWWTP is located on Sand Island, O‘ahu on TMK No. (1) 1-5-041:005. The facility, owned by the State of Hawai‘i and managed by DES in accordance with Executive Order No. 3939, is the largest wastewater treatment plant in the State, serving the Sand Island Sewer Basin service area, which encompasses approximately 79 square miles of the most concentrated development in the state from Niu Valley in the east to Salt Lake-Aliamanu in the west.

SIWWTP began operations in 1978 as a primary treatment wastewater plant. Since that time, SIWWTP has undergone many major modifications in accordance with its master plan, *Sand Island WWTP Modifications and Expansion Work* (DDC, 2001; DDC 2005). Most recently in 2016 a second anaerobic digester was added to SIWWTP. As a result of these projects, the facility's capacity was expanded to an average daily flow of 90 mgd and its hydraulic capacity to 271 mgd. This is several times the average daily flow at HWWTP, and at least in theory, would allow for a much larger stream of raw biogas feedstock for purification and resale.

However, two critical factors militate against this potential alternative. First, as noted in the project objectives summarized in Table 1.1, the intent of the HWWTP Biogas Project was, "to serve as a testbed model for additional, future RNG reclamation projects." While biogas reclamation and upgrading systems are a proven technology in wide use, this is the first project of its type undertaken by Hawaiʻi Gas and DES. The complex nature of the operations SIWWTP, its size, and its position as the critical wastewater treatment plant for Honolulu's urban core made using HWWTP as a testbed for a pilot project of this type a more logical, moderately scaled choice while the challenges of producing and incorporating the biogas stream are better understood.

Second, since 2002, DES has had an agreement with Synagro Waste Water Treatment, Inc. ("Synagro") to conduct operations at SIWWTP. Per the terms of this agreement, Synagro designed, built, and now operates a bioconversion facility within SIWWTP. This facility provides anaerobic digestion, dewatering, heat drying, and pelletization of bio-solids. Synagro now produces and sells these pellets as a commercial-grade fertilizer for agricultural and commercial use on the island. This public-private partnership between DES and Synagro raised questions related to how the terms of their agreement would affect proprietorship of the biogas stream produced at SIWWTP. These questions would incur significant costs, in both time and money, to resolve. By partnering with Hawaiʻi Gas on a pilot project at HWWTP, DES was able to defer this dialogue while it evaluates the merits of biogas reclamation and upgrading.

Because the availability of the biogas stream at SIWWTP is not yet secured by DES, and because the scale of the plant weighs against its use as a test bed for this emerging technology, this alternative was determined not to be viable now. As DES and Hawaiʻi Gas better understand the technology and its applications, conditions may favor future use of gas upgrading technology at SIWWTP at a later date.

2.3.1.2 Alternative Pipeline Routes

In addition to considering alternative wastewater treatment facilities as the potential site of a biogas reclamation and purification, Hawaiʻi Gas has considered alternative routes for its proposed pipeline interconnecting the HWWTP Biogas Project with its existing network of gas pipelines. Because the nearest 6″ transmission-level pipeline is located running along Kapolei Parkway which curves from the north to the east around HWWTP, exploration of this possibility centered on alternative means to link the project site to this pipeline. Two principal means of doing so were identified as:

Alternative Route East

Under this alternative pipeline route (see Figure 2.8), the pipeline would exit the HWWTP along its eastern boundary as opposed to along Geiger Road, as called for under Alternative 1 (see Section 2.1). From there, the new pipeline would skirt the northern green of Coral Creek Golf Course, then travel along the eastern edge of the golf course parallel to Papapuhi Place. Finally, under this alternative the new pipeline would travel under Kahiʻuka Street, across its intersections with Papapuhi Place, ʻAwawalei Place, Hoʻoilo Place, Keoneʻae Place, and Waihuna Place to connect with existing gas transmission pipeline running along Kapolei Parkway.

Figure 2.8 Alternative Route East

Source: Planning Solutions, Inc. (2017)

Multiple factors argued against the selection of this alternative. First, its run is approximately 5,145 feet in length, as opposed to 4,190 feet called for under Alternative 1, incurring greater construction costs with no additional project benefit. Further, this alternative would require negotiations with Coral Creek Golf Course because of the potential adverse impact to their operations caused by the construction activity required for installation. Furthermore, Alternative Route East would impact residential neighborhoods to a far greater extent than the proposed action, incurring construction noise, dust, and impacts to traffic flow due to construction activity along Kahiʻuka Street, including disruptions to five separate intersections which serve as the sole means of vehicular access to dozens of private residences.

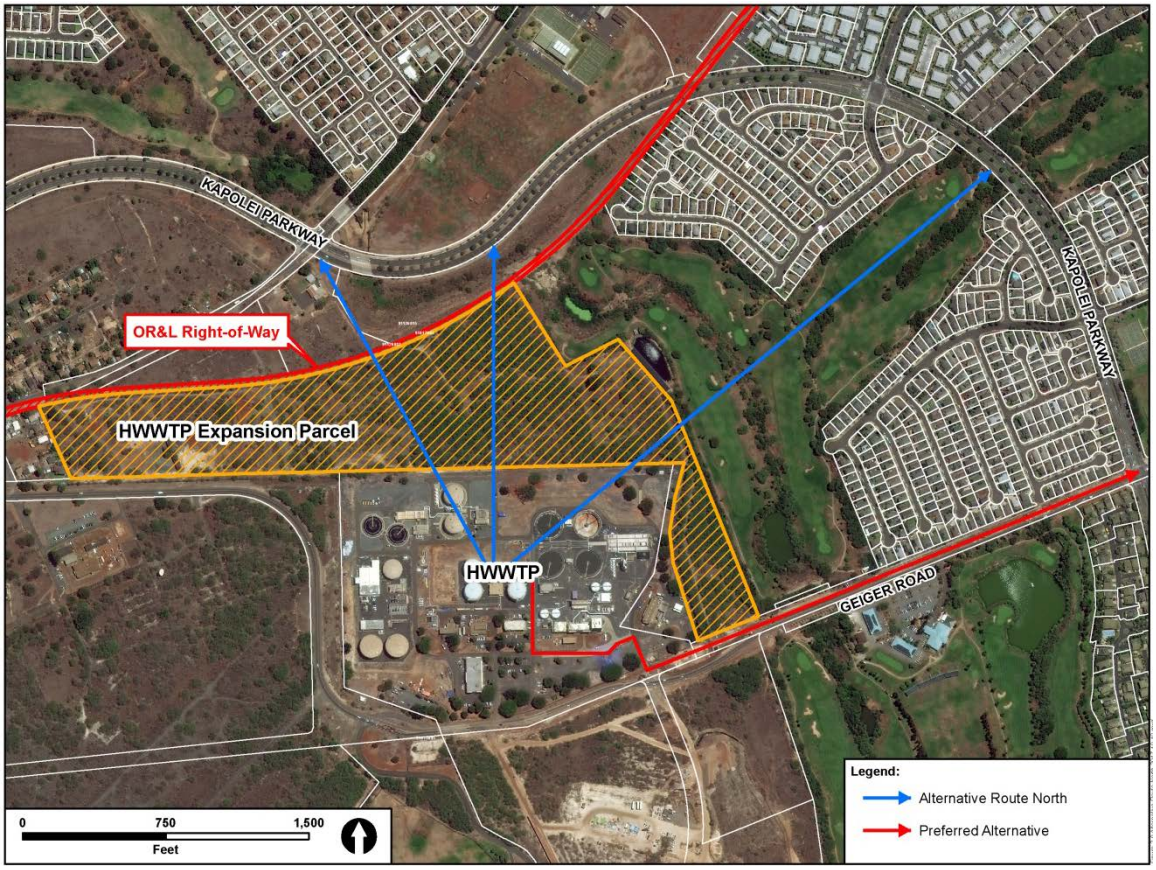
Because this route incurred greater costs and had the potential to be more impactful to nearby sensitive residential and recreational uses, and because it did not provide any additional project-related benefits, Hawaiʻi Gas concluded that this was not a valid option and eliminated it from further consideration.

Alternative Route North

During the initial planning phase of the project, Hawaiʻi Gas also considered a pipeline exiting the facility along its northern boundary to connect with the existing gas transmission pipeline along Kapolei Parkway. While no exact route was ever selected, Figure 2.9 shows the basic orientation which an alternative northern pipeline route could follow. Because of the proximity of Kapolei Parkway to the northern edge of HWWTP, a potential pipeline route with a northern orientation could

be significantly shorter than other options, including the preferred alternative identified in Section 2.1.

Figure 2.9 Alternative Route North



Source: Planning Solutions, Inc. (2017)

However, as can be seen in Figure 2.9, conditions in the project vicinity limited the viability of this route as a serious alternative. Pipeline route traveling northward would have to cross the HWWTP expansion parcel, which has already been set aside for future improvements to the Honouliuli sewer basin wastewater conveyance and treatment facilities, required to meet the anticipated service demands for the year 2035 and beyond. This substantial enhancement of HWWTP is being conducted pursuant to the 2010 Consent Decree (Civil No. 94–00765) established by the CCH, State of Hawai‘i’s DOH, and the U.S. Environmental Protection Agency, which required the CCH to update its wastewater collection and treatment system. Potential conflicts between these two uses argued against development of this option as a complete alternative.

In addition, pipeline routes which would connect to Kapolei Parkway to the north or northwest would have to cross the ROW of the former O‘ahu Railroad and Land Company (OR&L ROW) railway. Crossings of the OR&L would require an easement from the Federal Highways Administration, which is tasked with management of this historic ROW. This ROW is on the National Register of Historic Places and is protected by the terms of the National Historic Preservation Act of 1966 (NHPA), as amended. As such, all licenses, permits, or easements authorizing the use or occupancy of the 40-foot wide easement are issued only with the written approval of the director of the Federal Highways Administration, Hawai‘i Division’s director, making it a “federal action” and requires

compliance with the National Environmental Policy Act (NEPA), Section 106 of the NHPA, and other applicable federal regulations. These processes are time consuming, costly, and uncertain.

Finally, Hawai‘i Gas considered a possible northern pipeline route which would avoid the OR&L ROW with a northeastern orientation across Coral Creek Golf Course. However, such a potential route would either require trenching directly through the northern playing green (thus disrupting golf course operations), or skirt the green and in so doing, lose any potential advantage it might have in terms of total pipeline length.

Because any alternative pipeline route to the north would either pose costly, time-consuming, and uncertain regulatory hurdles, or incur significant impacts to adjacent residential and recreational land uses, Hawai‘i Gas concluded that it was not a valid option and eliminated it from further consideration.

2.4 PROJECT SCHEDULE

The major project-related tasks, and their schedule for completion, are presented in Table 2.3 below.

Table 2.3 Preliminary Project Schedule

Task	*Estimated Start Date*	*Estimated Completion Date*
PUC and Land Use Permitting Requirements	6/2017	5/2018
Equipment Acquisition	9/2017	7/2018
Plant Construction	1/2018	6/2018
Mechanical Work	3/2018	4/2018
Construction Permitting	11/2017	1/2018
Pipeline Design and Construction	9/2017	7/2018
Commence Operations	8/2018	n/a
Source: Hawai‘i Gas (2017)		

2.5 PROJECT COSTS

Hawai‘i Gas estimated that the total cost for the project, including: (*i*) equipment purchases; (*ii*) HRS, Chapter 343 planning and review; (*iii*) balance of plant construction; and (*iv*) pipeline installation to be $5.016 million.

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3. AFFECTED ENVIRONMENT, ENVIRONMENTAL IMPACTS, & MITIGATION MEASURES

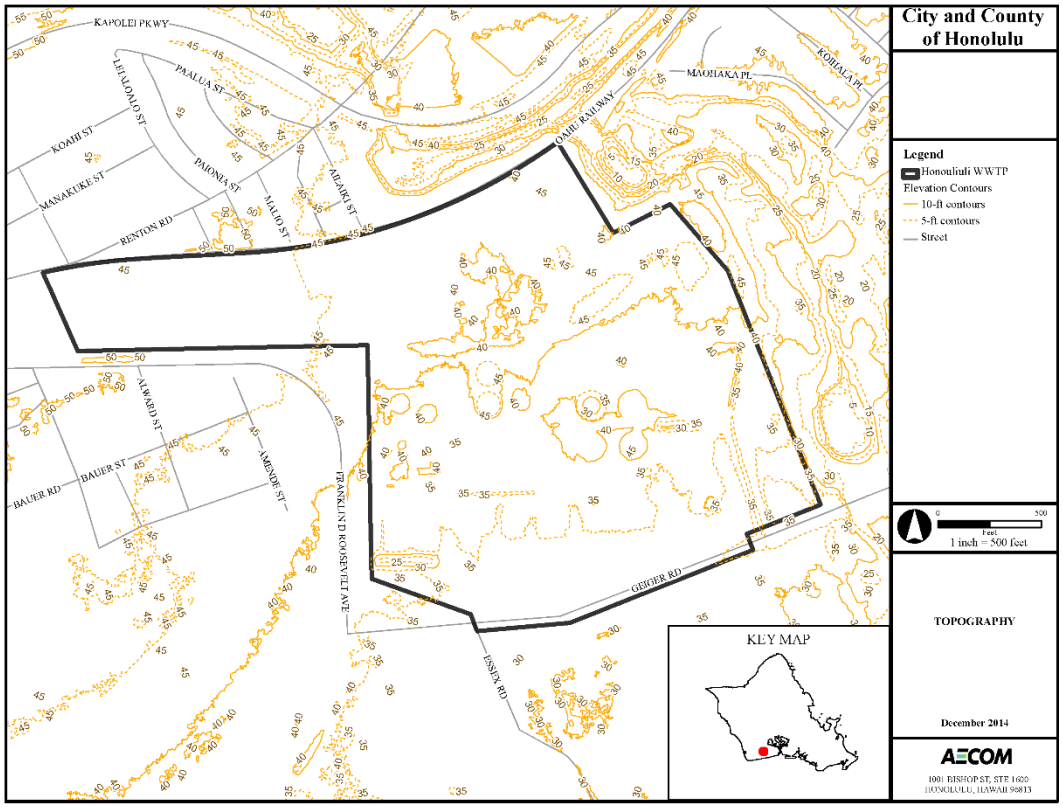
This chapter describes the potential environmental effects of the proposed actions. It is organized by impact topic (e.g., air quality, noise, geology and soils, water quality, etc.). The discussion under each topic begins with an overview of existing conditions related to that topic. Where appropriate, this includes the larger environmental context (e.g., West O‘ahu); in other cases, the focus is narrower (e.g., HWWTP). The discussion also distinguishes between short-term construction impacts and those that may result from the facilities’ continuing long-term presence or operation. Where appropriate, the discussion includes the measures that Hawai‘i Gas proposed to take to minimize or mitigate potential adverse effects.

3.1 TOPOGRAPHY, GEOLOGY, AND SOILS

3.1.1 EXISTING CONDITIONS: TOPOGRAPHY, GEOLOGY, AND SOILS

HWWTP and the proposed project are situated on the coastal ‘Ewa Plain in the southwestern portion of the Island of O‘ahu. This ‘Ewa Plain, south of the Central O‘ahu plateau, was created by the now inactive Wai‘anae volcano. Topography in the vicinity of HWWTP and the project area is gently sloping to the south, and relatively flat. Elevation at HWWTP ranges from 25′ above mean sea level (+msl) to 45′ +msl on the northern, mauka side of the property (see Figure 3.1).

Figure 3.1 Topography at HWWTP



Source: AECOM, Inc. (2014)

Three soil suitability studies have been prepared for the Hawaiian Islands. The principal focus of these studies is to describe the physical attributes and relative productivity ratings on the different soil-types for agricultural production within the State of Hawai‘i. The three studies are:

1. U.S. Department of Agriculture (USDA), Natural Resource Conservation Service (NRCS), formerly the U.S. Soil Conservation Service, Soil Survey.
2. The University of Hawai‘i, Land Study Bureau (LSB), Detailed Land Classification.
3. State of Hawai‘i, Department of Agriculture, Agricultural Lands of Importance to the State of Hawai‘i (ALISH).

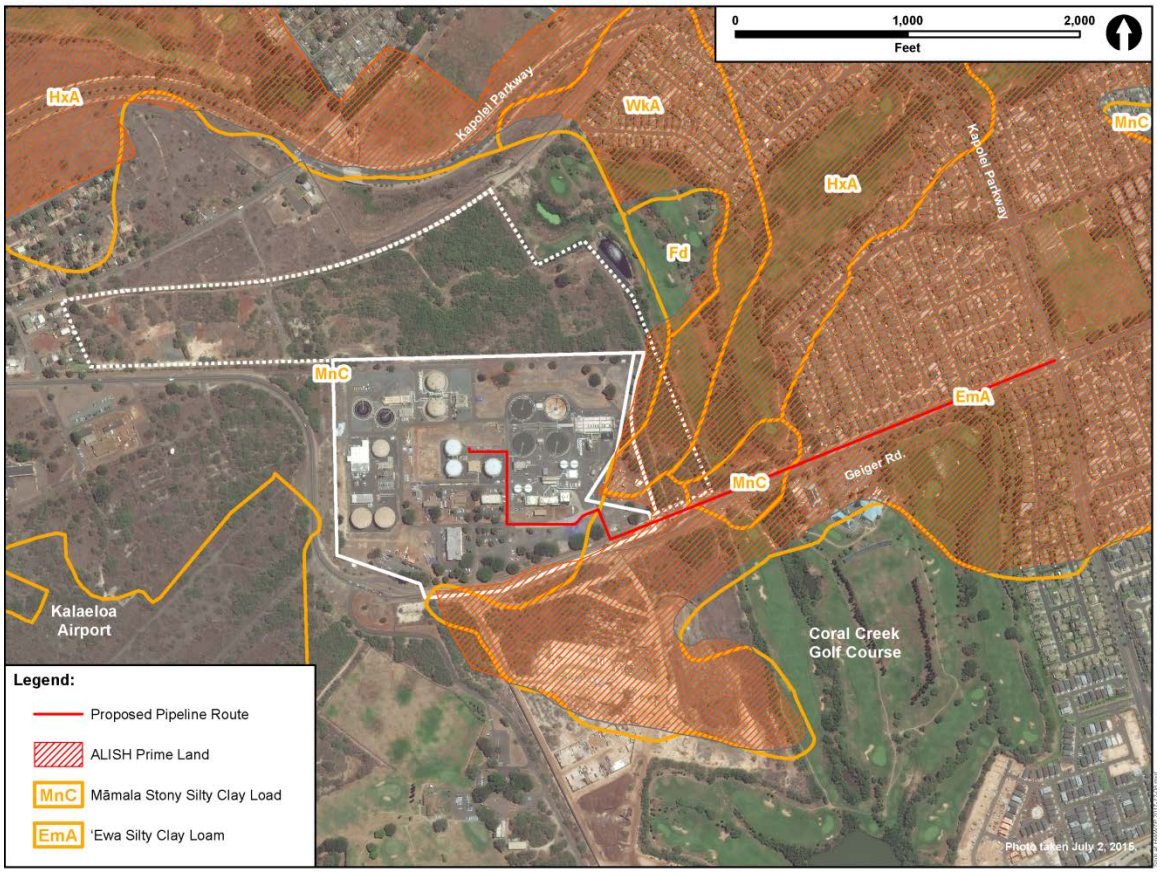
According to the USDA Soil Conservation Service’s *Soil Survey of the Islands of Kauai, Oahu, Maui, Molokai, and Lanai, State of Hawaii* (USDA SCS 1972), seven soil associations are present on the Island of O‘ahu. The soil association within HWWTP and the project area is the Lualualei-Fill Land-‘Ewa association, which is defined as, “a deep, nearly level to moderately sloping, well-drained soils that have a fine textured or moderately fine textured subsoil or underlying material and areas of fill land located on coastal plains.” As shown in Figure 3.2, the soils on the project site are classified primarily as Mamala stony silty clay loam (MnC), with ‘Ewa silty clay loam (EmA) being the predominant soil-type along the proposed pipeline route.

According to the Soil Survey (USDA SCA 1972), Mamala stony silty clay loam ranges between 0 and 12 percent slope, but in most cases the slope does not exceed 6 percent. Stones, mostly coral rock fragments, are common in the surface layer and in the profile. In a representative profile the surface layer is dark reddish-brown stony silty clay loam about 8 inches thick. The subsoil is dark reddish-brown silty clay loam about 11 inches thick. The soil is underlain by coral limestone and consolidated calcareous sand at depths of 8 to 20 inches. The soil is neutral to mildly alkaline. Permeability is moderate; runoff is very slow to medium, and the erosion hazard is slight to moderate.

‘Ewa silty clay loam, moderately shallow, 0 to 2 percent slopes has a profile like that of other ‘Ewa silty clay loam, with 3 to 6 percent slopes, except that the depth to coral limestone is 20 to 50 inches. Runoff is very slow, and the erosion hazard is no more than slight.

In addition to the presence of these soil classifications in the project vicinity, the State of Hawai‘i’s Department of Agriculture, has designated most of the proposed pipeline alignment as being within the ALISH “Prime Lands” zone. Prime agricultural land is defined by the NRCS as land best suited to produce food, feed, forage, and fiber crops. Although the Honouliuli area has historically been utilized for agricultural purposes, the project area (i.e., HWWTP and Geiger Road) has been in continuous use as developed, urbanized areas since the late 1970s; therefore, it would be unsuitable for agricultural purposes, both because the land value is too high for unsubsidized agriculture and it would be incompatible with surrounding land uses. There are no regulations specific to this designation; however, federally financed or permitted projects are subject to the Farmland Protection Policy Act (FPPA). According to Part 523, Subpart B, 523.10B(ii) of the FPPA manual, lands identified as Urban Areas (UA) on the U.S. Census Bureau maps are not subject to provisions of the FPPA (NRCS 2013). The HWWTP Biogas Project is located in an area designated as UA and this project is not subject to federal financial assistance or approval; therefore, this project is not subject to the provisions of the FPPA and a farmland conversion rating analysis is not required.

Figure 3.2 Soils Classifications in the Project Area



Source: Soils Survey Geographic Databased (1995)

3.1.2 PROBABLE IMPACTS ON TOPOGRAPHY, GEOLOGY, AND SOILS: CONSTRUCTION PHASE

A detailed description of construction activities associated with the project is provided in Section 2.1.2. Construction of the HWWTP Biogas Project would involve limited amounts of site clearing and earthmoving (see Table 3.1 below). Consequently, it will not have any significant impact on the overall topography of HWWTP or the surrounding area; no mass grading or large-scale vegetation management is required. All of the underlying soils that would be affected by the proposed project are suitable for construction of the biogas reclamation and upgrading facility and associated pipeline as they are designed.

Table 3.1 Estimated Earthmoving Volumes

Area	*Length of Excavation (ft.)*	*Width of Excavation (ft.)*	*Average Excavation Depth (ft.)*	*Graded Area (sf)*	*Estimated Cut (cy)*	*Estimated Imported Fill (cy)*
Biogas Reclamation and Upgrading System	Minor small excavation for equipment footings, to be determined.			2,500	<50	
Onsite Pipeline	1,400	1.5	3	2,100	233	116
Offsite Pipeline	2,800	1.5	3	4,200	466	233
Source: Hawai‘i Gas (2017)						

As noted in the descriptions of construction activity contained in Section 2.1.2 an attempt will be made to balance cut and fill on site. However, should construction activities result in any excess cut material which is not used for backfilling or other grading needs within HWWTP, it would be disposed of in accordance with county guidelines in an available landfill or used for another approved purpose. Areas subject to earthwork, both within HWWTP and in the Geiger Road ROW have been heavily disturbed by previous construction and commercial scale agriculture, and there are no significant geologic resources (i.e., gravel or sand) present.

3.1.3 PROBABLE IMPACTS ON TOPOGRAPHY, GEOLOGY, AND SOILS: OPERATIONAL PHASE

Once in operation, neither the aboveground biogas reclamation and upgrading equipment nor the below-grade pipeline will require any maintenance or other activity with the potential to affect the topography, geology, or soils in the project vicinity.

3.1.4 PROBABLE IMPACTS ON TOPOGRAPHY, GEOLOGY, AND SOILS: DECOMMISSIONING

When the decision is made to decommission the project, the work can be done without any substantial effect on the area’s topography, geology, or soils, at which point the area could be either returned to vacant space within HWWTP or put to some other use.

Decommissioning would entail manually disconnecting the biogas reclamation and upgrading unit from the anaerobic digester and the pipeline, disconnecting any ancillary equipment such as the compressor and chiller and removing it from the site. The concrete pads or other surface treatment provided for this equipment may be removed using a backhoe and dump truck, or left in place for another use to cause minimal soil disturbance. Very limited removal of any buried conduits for the electrical connections would be required. Wherever any soil disturbance would occur, immediate backfilling and resurfacing would prevent any unnecessary soil erosion and loss. The potential for erosion would be further reduced if the buried conduits were left in place, but doing so may constrain other potential future uses.

The HDPE pipeline would remain in place to avoid additional impacts to the CCH roadway.

3.2 HYDROLOGY

3.2.1 EXISTING CONDITIONS: HYDROLOGY

3.2.1.1 Existing Conditions: Ground Water

HWWTP is located within the Waipahu-Waiawa system within the DLNR's Pearl Harbor Aquifer Sector. The sustainable yield for the Waipahu-Waiawa system is approximately 16 MGD, and it is the primary source of drinking water for the area. The closest well to HWWTP is approximately 3.1 miles to the north, which is up-gradient relative to groundwater flow. HWWTP is also located within the Southern Oʻahu Basal Aquifer, which is designated as a Sole Source Aquifer by the U.S. Environmental Protection Agency (EPA). EPA review is required for federally-funded projects within a Sole Source Aquifer to determine whether the potential project poses a risk of contamination. However, as this project is not subject to federal funding or approvals, no EPA review is required.

Groundwater moves downslope in volcanic rocks until it encounters impermeable geological features and contributes to the freshwater lens or emerges as springs. On Oʻahu, the thickness of the lens typically decreases as it nears the ocean, but it can be impounded or dammed within the volcanic rocks near the coastline by sediments or limestone caprock. Most of the water supply on Oʻahu is from fresh water within these volcanic rock aquifer systems. Separate, shallow groundwater systems can occur within the caprock where it is extensive, as is the case at the project site. Such caprock aquifers typically have lower water quality and are not used as a drinking water resource. There are no public groundwater wells within a one-mile radius of HWWTP.

3.2.1.2 Existing Conditions: Surface Water

As part of DES' *Final Environmental Impact Statement for Honouliuli Wastewater Treatment Plant Secondary Treatment and Facilities*, a natural resources survey, including a discussion of surface water in the vicinity of HWWTP was conducted in November 2014. This section of the EA draws on information contained in that document, as well as the USFWS National Wetlands Inventory (NWI).

Observations during site visits and a review of data from the State of Hawaiʻi GIS system, records from the State of Hawaiʻi's Commission on Water Resource Management, the U.S. Geological Survey 1:24,000 scale topographic map and the USFWS NWI indicate that there are no lakes or wetlands present within the working portion of HWWTP, as can be seen in Figure 3.3 below; a former drainage ditch is located in the eastern portion of the new expansion area mauka of the project parcel. This wetland is part of the abandoned irrigation system from when the area was used for agricultural purposes and no longer functions as an active irrigation ditch. Some standing water may accumulate there during significant rain events; however, surface water does not persist there throughout the year.

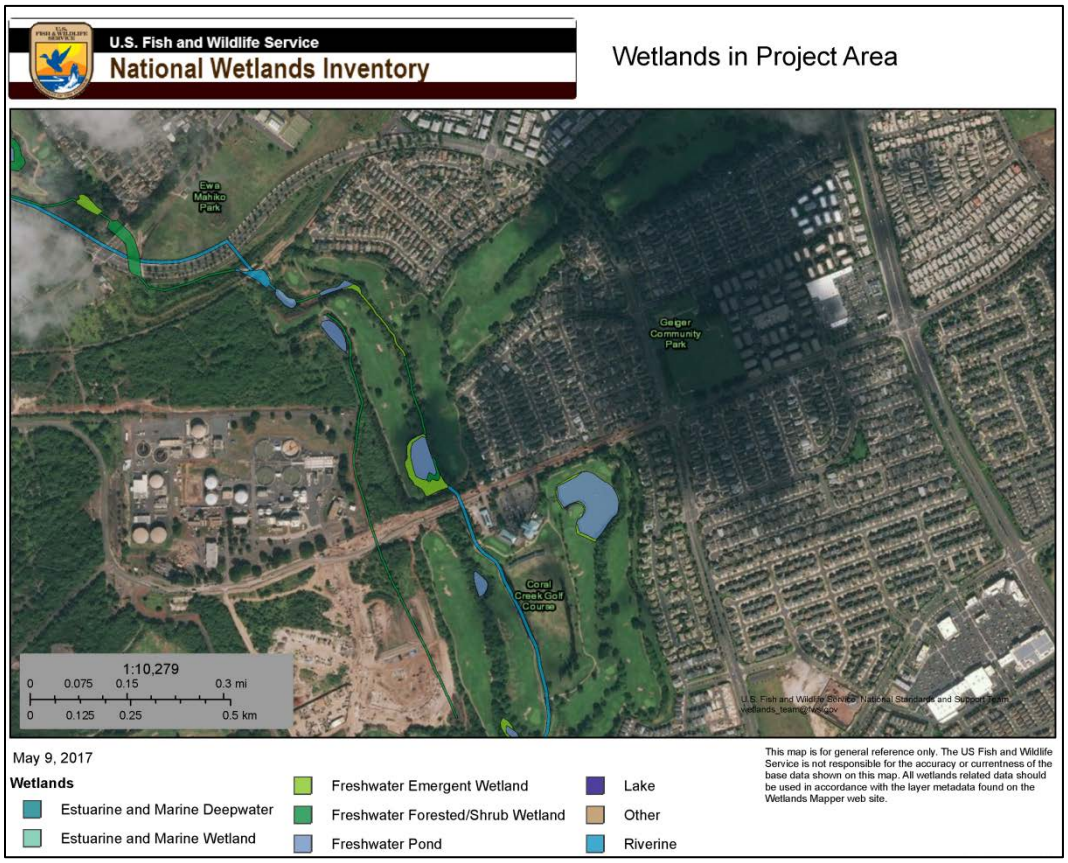
The only wetland in the immediate vicinity of the project is Kaloʻi Gulch which runs on a north-south orientation under Geiger Road through Coral Creek Golf Course (see Figure 3.3). Water passing down Kaloʻi Gulch is channeled through culverts as it passes beneath Geiger Road. According to *The Atlas of Hawaiian Watersheds and their Aquatic Resources* (Devick, 2008) Kaloʻi's meaning in the Hawaiian language is "the taro patch" and it is a non-perennial stream. Selected characteristics of Kaloʻi Gulch are provided in Table 3.2 below.

Table 3.2 Selected Characteristics of Kalo‘i Gulch

Name	*Watershed Area*	*Maximum Elevation*	*Percent by State Land Use District*		
			Conservation	*Agricultural*	*Urban*
Kalo‘i Gulch	10.9 mi.^{2}	2,572 ft.	7.4%	39.6%	53%
Source: *Atlas of Hawaiian Watersheds and their Aquatic Resources* (2008)					

Based on the latest available Flood Insurance Rate Map (FIRM) for the area, the entire project site lies in Flood Zone D. Zone D is defined as the flood insurance rate zone that corresponds to: (*i*) unstudied areas where, (*ii*) flood hazards are undetermined but possible. Because of the low probability of flooding, no base flood elevations or depths have been defined within the zone.

Figure 3.3 USFWS National Wetlands Inventory Map



Source: USFWS National Wetlands Inventory (2017); https://www.fws.gov/wetlands/data/mapper.html

3.2.2 PROBABLE IMPACTS: HYDROLOGY

3.2.2.1 Effects on Groundwater

The proposed HWWTP Biogas Project would be constructed in an area that has relatively low rainfall and high evapotranspiration rates. Because of this, very little of the precipitation that falls on the project site presently percolates to the water table and recharges groundwater. The effect of the very small increase in impermeable surfaces that the project will create will not have a significant effect on

the quantity or rate of groundwater recharge in the area. In addition, the quality of recharge water will remain unchanged. Finally, construction and operation of the proposed project does not require significant water use, and will not, therefore affect groundwater withdrawals from anyplace on O‘ahu.

3.2.2.2 Effects on Surface Water

Emplacement of the biogas reclamation equipment within the existing, heavily developed HWWTP facility will not require significant earthwork. Significant ground-disturbing activities will be limited to emplacement of the gas pipeline interconnecting HWWTP to Hawai‘i Gas existing gas distribution pipeline network near the intersection of Geiger Road and Kapolei Highway. Erosion and sedimentation measures would be employed where necessary during construction activities.

New standards promulgated by the City and County of Honolulu requiring low-impact development strategies went into effect in June 2013. The standards require storm water runoff from 1-inch of rainfall to be retained onsite to the maximum extent practicable, using Post-Construction Treatment Best Management Practices (BMPs). The design of the storm water retention and quality basins must take into consideration the soil type, proximity to the groundwater table, and storm water discharge permit limits.

3.2.2.3 Sanitary Wastewater Disposal

Neither the biogas upgrading equipment nor the gas pipeline interconnection will generate sanitary wastewater. For work conducted within HWWTP, workers will use the existing latrines already present on the site. During the pipeline emplacement, portable toilets will be used to meet the needs of construction workers. The waste that is collected in these facilities will be taken by a contractor to an approved sanitary wastewater treatment and disposal facility.

3.3 CLIMATE/MICRO-CLIMATE

3.3.1 EXISTING CONDITIONS: CLIMATE/MICRO-CLIMATE

The climate in the Hawaiian Islands is considered subtropical with annual temperatures in the project area ranging from 60˚F in the winter to 85˚F in summer, and mean monthly temperatures ranging from 73˚F in January and February to 81˚F in August. The mean annual rainfall in the area ranges from 50 to 76 cm (i.e., 20 to 30 inches). The project area is located within the leeward physiographic zone of the Island of O‘ahu.

3.3.2 EFFECTS ON CLIMATE

Construction and operation of any of the alternatives described in Chapter 2 of this document would not result in significant impacts on the regional climate or area micro-climate. There is increasing agreement among atmospheric scientists that emissions of what have come to be known as “greenhouse gasses” are contributing to a systemic heating of the earth’s atmosphere.[3] Generally referred to as climate change, a continuation of this trend has the potential to alter atmospheric circulation, ocean circulation, and climate worldwide, with a host of consequences.

One of the most potent greenhouse gasses is methane, which is a gas produced by the anaerobic digestion process described in Section 2.1. Currently, the methane produced at HWWTP is burned via an onsite flare (see Section 3.4). Once the action described in Chapter 2 is implemented, this

[3] Gases that trap heat in the atmosphere are called greenhouse gases. The primary greenhouse gases are carbon dioxide (CO_2), Methane (CH_4), Nitrous oxide (N_2O), and Fluorinated gases. The first three are emitted when fossil fuels are burned to produce electricity (though there are many other sources of these gases as well).

methane would be transported offsite via pipeline and burned as an energy source. Thus, the action alternatives described in this report do not have the potential to increase methane emissions or to contribute additional atmospheric greenhouse gasses that could contribute to climate change.

Another important greenhouse gas is carbon dioxide (CO_2). Hawai‘i Gas estimates that the HWWTP Biogas Project will produce 800,000 therms of energy per year; the equivalent of 23,440 megawatt-hours (MWh), and is expected to release 6,748 tons of CO_2 annually at HWWTP. The existing HWWTP flare currently emits approximately 10,676 tons of CO_2 annually, associated with both the CO_2 in the biogas and the CO_2 generated when the methane in the biogas is burned by the flare. Thus, the proposed HWWTP Biogas Project would substantially reduce the release of this greenhouse gas from HWWTP. Because the methane will be consumed elsewhere on O‘ahu and will produce CO_2 when it is burned, when viewed at the island-wide scale, an equivalent weight of CO_2 would be produced. Finally, whether released at HWWTP or elsewhere on the island, that CO_2 is present in the carbon chain today and is being recycled. This carbon was originally in plant form, which it had absorbed from the atmosphere and which would ultimately be released back into the atmosphere upon decomposition, as opposed to the use of fossil-fuel based SNG, which introduces previously sequestered carbon into the carbon chain. To the extent that the use of reclaimed biogas offsets the use of fossil fuels, it may reduce greenhouse gas emissions.

3.3.3 EFFECTS ON MICROCLIMATE

None of the activities or work required to construct the proposed project or other action alternatives involve substantial heat or moisture emissions. Neither do they entail the erection of tall structures or grading of land that could alter wind-flow within the HWWTP vicinity or along the pipeline corridor to any measurable extent. None of the facilities are substantial structures that might serve as windbreaks or contain large masses of material that could act as heat sinks.

The relatively small biogas reclamation facilities would shade the ground under them and could affect soil moisture content in ways that would have very minor influence on near-earth humidity and soil temperature. Thus, the project alternatives considered in this report would have negligible impacts on the area microclimate.

3.4 AIR QUALITY

3.4.1 EXISTING CONDITIONS: AIR QUALITY

The U.S. Environmental Protection Agency (EPA) has established National Ambient Air Quality Standards (NAAQS) for ozone (O_3), nitrogen dioxide (NO_2), carbon monoxide (CO), sulfur dioxide (SO_2), particulate matter with an aerodynamic diameter of 10 microns or less (PM_{10}), particulate matter with an aerodynamic diameter of 2.5 microns or less ($PM_{2.5}$), and lead (Pb). These standards establish the maximum safe concentrations of pollution considered to be acceptable, with an adequate margin of safety, to protect the public health and welfare.

The State of Hawai‘i’s Department of Health (DOH) has adopted ambient air quality standards that apply within the State of Hawai‘i, which in some cases are more stringent than national standards. At present, DOH has set standards for six of the seven criteria pollutants as well as hydrogen sulfide (H_2S); DOH has not established a separate state standard for $PM_{2.5}$. Hawai‘i Administrative Rules (HAR), Title 11, Chapter 59 *Ambient Air Quality Standards* and Chapter 60 *Air Pollution Control* establish these standards. Table 3.3 below presents the state and national ambient air quality standards for criteria pollutants.

Both state and national air quality standards consist of two parts: (*i*) an allowable concentration of a pollutant and (*ii*) an averaging time over which the concentration is measured. The allowable concentrations are based on the results of studies of the effects of the pollutants on human health,

crops, and vegetation, and, in some cases, damage to paint and other materials. The averaging times are based on whether the damage caused by the pollutant is more likely to occur during exposure to a high concentration for a short time (one hour, for instance), or to a lower average concentration over a longer period (e.g., 8 hours, 24 hours, or a year). For some pollutants there is more than one air quality standard, reflecting both its short-term and long-term effects.

The proposed HWWTP Biogas Project is located in the City and County of Honolulu, and is under the jurisdiction of the DOH's Clean Air Branch (CAB). CAB acts as the regulatory agency for air pollution control in the state and is the state agency empowered to regulate air pollutant emissions in the state. Under the provisions of the federal Clean Air Act, the City and County of Honolulu is classified as being in attainment with regard to the NAAQS.

Air quality data collected at the Kapolei monitoring station—the monitoring station nearest the project area—during the years 2013 to 2015 are presented in Table 3.4. As shown by these data, air quality in the area never exceeded short-term or long-term state or national standards for nitrogen dioxide (NO_2), particulate matter (PM_{10}) or carbon monoxide, the pollutants that could be emitted during construction of the proposed project. The CAB annual *Air Quality Data Book* indicates that in 2013, 2014, and 2015 (the latest year for which annual reports are available), excluding exceedances on the Island of Hawai‘i due to the volcano, the State of Hawai‘i was in attainment of all NAAQS.[4]

[4] State of Hawai‘i Air Quality Data Books for 2013, 2014, and 2015. Available online at: *http://health.hawaii.gov/cab/hawaii-air-quality-data-books/*

Table 3.3 State and National Ambient Air Quality Standards

Pollutant	*Unit*	*Averaging Period*	*NAAQS*	*SAAQS*
SO_2	ppb	1 hour	75[a]	--
	ppm	3 hours	0.5[b]	0.5
		24 hours	--	0.14
		1 year	--	0.03
CO	ppm	1 hour	35[c]	9
		8 hours	9[c]	4.4
NO_2	ppb	1 hour	100[d]	--
	ppm	1 year	0.053[c]	0.04
PM_{10}	µg/m^3	24 hours	150[e]	150
		1 year	-- [f]	50
$PM_{2.5}$	µg/m^3	24 hours (block avg.)	35[g]	--
		1 year	12.0[h]	--
		1 year	15.0[i]	--
O_3	ppm	8 hours (rolling avg.)	0.070[j]	0.08
Pb	µg/m^3	3 months (rolling avg.)	0.15[k]	0.15
H_2S	ppm	1 hour	--	0.025

Notes:
a. The three-year average of the 99th percentile of 1-hour maximum daily concentrations must not exceed the level of the standard.
b. Federal Secondary Standard.
c. Not to be exceeded more than once per year.
d. The three-year average of the 98th percentile of 1-hour maximum daily concentrations must not exceed the level of the standard.
e. Not to be exceeded more than once per year on average over three years.
f. EPA revoked the annual PM_{10} standard effective December 17, 2006, due to a lack of evidence linking health problems to long-term exposure. The State still has an annual standard.
g. 98th percentile, averaged over three years.
h. Annual mean, averaged over three years.
i. Annual mean, averaged over three years. Secondary standard.
j. The three-year average of the fourth highest daily maximum value must not exceed the level of the standard.
k. Rolling three-month average may not exceed the level of the standard.

Source: U.S EPA, NAAQS Table, available at *https://www.epa.gov/criteria-air-pollutants/naaqs-table*
State of Hawai'i Department of Health, *Air Quality Data Book* (2015), available at https://health.hawaii.gov/cab/files/2016/12/aqbook_2015.pdf

Table 3.4 Air Quality in the Project Area: 2013-2015

Parameter	*Statistic*	*2013*	*2014*	*2015*	*Strictest Standard*
24-hour PM_{10}	Maximum	39	32	32	150 µg/m^3
Annual PM_{10}	Annual average	14	15	16	50 µg/m^3
24-hour $PM_{2.5}$	98th percentile	12.0	10.7	13.7	35 µg/m^3
Annual $PM_{2.5}$	Annual average	2.8	3.9	4.1	12 µg/m^3
8-Hour O_3	4th highest daily value	0.051	0.046	0.049	0.075 ppm
1-Hour NO_2	98th percentile	23	25	22	100 ppb
Annual NO_2	Annual average	0.003	0.004	0.004	0.053 ppm[c]
1-Hour CO	Average of daily max. conc.	0.75	0.6	0.8	35 ppm
8-Hour CO	Average of daily max. conc.	0.70	0.5	0.7	9 ppm
1-Hour SO_2	99th percentile	9	21	13	75 ppb
3-Hour SO_2	Average of daily max. conc.	0.002	0.002	0.002	0.5 ppm
24-Hour SO_2	Maximum	0.005	0.008	0.004	0.140 ppm
Annual SO_2	Annual average	0.002	0.002	0.001	0.03 ppm
3-month Pb	Maximum	0.0016	0.001	0.003	0.15 µg/m^3

Source: Hawai‘i State Department of Health, Clean Air Branch records as reported in 2016 Annual Report on Air Emissions from Facilities at Campbell Industrial Park, October 2016. Available at https://health.hawaii.gov/cab/files/2017/01/2016-CIP-Annual-Report.pdf

3.4.2 PROBABLE AIR QUALITY IMPACTS

3.4.2.1 Construction Period

The heavy construction equipment that will be used for project implementation (e.g., bulldozers, dump trucks, excavators, etc.) will be powered by internal combustion engines that emit a variety of air pollutants.[5] Because construction activities will take place over a relatively limited period (i.e., several months), none of these equipment emissions is expected to add substantially to existing sources of these pollutants.

Trenching and other minor earthwork related to construction of the new biogas pipeline necessarily involves the use of diesel-fueled construction equipment. However, in the case of the proposed biogas project, the number of pieces of equipment operating at any one time in a single location is

[5] Construction equipment emissions result from the following sources and activities: (*i*) construction equipment engine exhaust; (*ii*) motor vehicle exhaust, brake, and tire wear; (*iii*) entrained dust from material delivery trucks; (*iv*) entrained dust from roadways; (*v*) entrained dust from construction worker vehicles; (*vi*) fugitive dust from bulldozing, grading, and scraping, and from the handling of excavated material, such as depositing material into haul trucks; and (*vii*) fugitive dust from wind erosion of disturbed areas

relatively low. As a result, combustion emissions such as NO_X and diesel particulate matter (diesel PM) from this equipment are not expected to have a significant effect on air quality.

However, the soil disturbance caused by site preparation and trenching work generates dust, which can have a more substantial, albeit temporary effect on air quality than emissions from the engines themselves.[6] The potential for adverse effects continues until the replacement ground cover has been established and bare dirt is no longer exposed. To minimize this potential, Hawai‘i Gas has planned to limit pipeline alignment trenching to 300-foot sections, so that one section is complete prior to the next section being excavated. As noted in Section 3.1, it expects to disturb only the minimum area required to install the new biogas reclamation equipment and pipeline, a total of less than one acre.

The construction activity taking place on the HWWTP property itself will be minimal. The only source of ground disturbance will be related to: (*i*) site preparation for the biogas reclamation and upgrading equipment; (*ii*) a concrete pad for the ancillary equipment; and (*iii*) the onsite portion of the biogas pipeline. Because the biogas upgrading technology is relatively small and self-contained in a 45′ shipping container, the number of truck deliveries and equipment required for onsite installation will also be minimal.

Over the long-term, changes in ground cover that lead to the emergence of bare soil can lead to an increase in aeolian soil erosion and windborne particulate matter. In areas of exposed earth resulting from construction activity will be provided with a surface treatment, whether gravel or pavement depending on area, which is intended to minimize the potential for fugitive dust.

Specific information regarding the construction equipment that will be used will not be available until a construction contractor has been selected and all plans finalized. Consequently, overall emissions cannot be estimated at this time. However, Hawai‘i Gas will require its contractor to implement the standard mitigation measures listed below, as well as whatever additional measures may be required by the construction-related permits that the contractor must obtain from the CCH.

- Maintain all construction equipment in proper tune according to manufacturer’s specifications.
- Fuel all off-road and portable diesel-powered equipment, including but not limited to bulldozers, graders, cranes, loaders, scrapers, backhoes, generator sets, compressors, auxiliary power units, with motor vehicle diesel fuel.
- Maximize to the extent feasible, the use of diesel construction equipment meeting the latest certification standard for off-road heavy-duty diesel engines.
- Minimize the extent of disturbed area where possible.
- Use water trucks if needed to minimize the amount of airborne dust leaving the site.
- Cover or continuously wet dirt stockpile areas containing more than 100 cubic yards of material.
- Implement permanent dust control measures identified in the project plans as soon as possible following completion of any soil disturbing activities.
- Limit vehicle speed for all construction vehicles moving on any unpaved surface at the construction site to 15 mph or less.
- Cover all trucks hauling dirt, sand, soil, or other loose materials.

[6] The construction of the pipeline will require approximately 4,200 feet of trenching, and the trenching activity will disturb soil and generate some fugitive dust.

3.4.2.2 Operation and Maintenance Activities

The only source of air pollutant emissions at the proposed HWWTP Biogas Project is the carbon dioxide (CO_2) tail gas from the permeate stream that is removed from the biogas by the Carborex™ MS system as described in Section 2.1.1. This tail gas will also contain small amounts of methane (CH4), nitrogen, and oxygen as well as trace amounts of siloxanes and hydrogen sulfide.

The existing flare at HWWTP will continue to operate as needed during the biogas upgrading system's regular maintenance or other interruptions in service, and the HWWTP's Non-Covered Source Air Permit is not being modified as part of this project. However, because the raw material for the biogas treatment process is the waste gas from the wastewater treatment plant, any biogas that is reclaimed and purified will not need to be burned in the HWWTP flare. The result of this is that emissions of criteria and greenhouse gas pollutants from the HWWTP will be reduced as a result of the proposed project.

Table 3.5 below compares the emissions produced by burning the waste gas in the existing flare with those of the proposed treatment system. This comparison demonstrates that the operation of the biogas treatment system will result in lower emissions overall.

Table 3.5 Comparison of Potential to Emit: Existing HWWTP Waste Gas Flare and Proposed HWWTP Biogas Project

	Emissions in Tons per Year					
Unit	***NOx***	***SO_2***	***CO***	***VOC***	***$PM_{10}/PM_{2.5}$***	***CO_2e[a]***
Existing WWTP Flare	3.4	35.5	18.5	7	0.2	10,676
New Biogas Treatment System	0	0	0	0	0	6,748
Potential Net Reduction	***(3.4)***	***(35.5)***	***(18.5)***	***(7)***	***(0.2)***	***(3,928)***

Note:
a. CO_2e: CO_2 equivalent, or the total tons of all GHG (CO_2 and CH_4) weighted by their global warming potentials (GWP).

3.4.2.3 Decommissioning

The potential for adverse air quality effects as a result of decommissioning is negligible. The biogas pipeline would be capped and remain in place. Removing the biogas reclamation and upgrading structures from the foundation or piers would not require significant quantities of heavy equipment that have the potential to generate exhaust and fugitive dust, although some airborne particulate can be expected if the concrete pad were to be removed.

3.5 BIOTA

3.5.1 EXISTING CONDITIONS

3.5.1.1 Existing Flora

The vegetation within the HWWTP is typical of highly-developed and disturbed industrial areas. Much of HWWTP is paved with asphalt or given some similar surface treatment, such as gravel, to facilitate maintenance and upkeep and limit unwanted vegetation. Areas within the HWWTP fence line which do not require frequent access as part of the ongoing operations there are typically manicured with grass. Several large, well established cultivated trees are located sporadically throughout the property and along Geiger Road, along the makai boundary of the property. In

addition, open areas with extensive patches of bare ground, gravel, and asphalt exist within the area and have been disturbed by past and current land use at the plant.

During preparation of the *Final Environmental Impact Statement for the Honouliuli Wastewater Treatment Plant Secondary Treatment and Facilities* (AECOM; April 2017) a complete natural resources survey of the area was completed; this survey included both the existing HWWTP and the mauka expansion area but it is representative of the biota present in the current project area. During this survey, a total of 79 plant taxa were observed, including four species native to the Hawaiian Islands. Of these four indigenous species, only *ma'o hau hele*—the Hawaiian state flower—is a federally-listed species under the Endangered Species Act of 1973. However, this species was observed within a garden adjacent to a HWWTP facility building and was determined to be a cultivated, rather than naturally occurring, specimen. No other state- or federally-listed threatened, endangered, or candidate species of plants were observed in the area during the botanical survey.

Although the HWWTP is located within the historical range of the endangered ko'oloa'ula (*Abutilon menziesii*), the species was not observed during the natural resources survey and is not known to have recently been documented in the project vicinity. A search of the locations of known threatened and endangered plant species contained in the State of Hawai'i's GIS data did not indicate the presence of any such specimens in the project area.

The vegetation present on the undeveloped portions of the HWWTP property and the Geiger Road ROW consist principally of grassland with scattered shrubs and trees, except in areas where development has altered these conditions. The dominant grass here is Guinea grass (*Urochloa maxima*). Kiawe (*Prosopis pallida*) forms the majority of the tree cover, with Manila tamarind (*Pithecellobium dulce*) and koa haole (*Leucaena leucocephala*) also found in abundance throughout the area. Two herbaceous species, lion's ear (*Leonotis nepetifolia*) and golden crown-beard (*Verbesina encelioides*) are widely distributed through the understory. Other non-native herbaceous and shrub species scattered throughout the area or in isolated patches include khaki weed (*Alternanthera pungens*), spiny amaranth (*Amaranthus spinosus*), wild bean (*Macoptilium lathyroides*), hairy abutilon (*Abutilon grandifolium*), bracted fanpetals (*Sida ciliaris*), and Cuban jute (*Sida rhombifolia*). The non-native, parasitic western field dodder (*Cuscuta campestris*) was also found within larger trees during the survey.

3.5.1.2 Existing Fauna

The fauna within the vicinity of HWWTP is dominated by non-native birds and terrestrial mammals. During the biological resources survey conducted for the April, 2017 FEIS, nine introduced and one indigenous bird species were recorded in the vicinity of HWWTP. The common myna (*Acridotheres tristis*) was the most frequently observed, as well as the zebra dove (*Geopelia striata*) and spotted dove (*Streptopelia chinensis*). All of these species are common to the main Hawaiian Islands, and particularly concentrated in urbanized and disturbed areas (SWCA 2015). Only one native species, the migratory Pacific golden plover (*Pluvialis fulva*) was observed in the project vicinity. This species is abundant throughout the main Hawaiian Islands.

The project site, including the proposed pipeline along Geiger Road, is directly adjacent to the Coral Creek Golf Course (see Figure 1.2), which contains water features that are attractive to waterbirds. As a result, it is possible that endangered Hawaiian stilts (*Himantopus knudensi*) could be present in close proximity to the proposed project area. Hawaiian stilts, as well as Hawaiian coots (*Fulica alai*) are highly mobile and may occupy newly, and often unintentionally, created habitat for foraging and even nesting such as areas that hold standing water after heavy rainfall. However, no nesting waterbirds were observed during the natural resources survey.

Four migratory bird species protected under the terms of the Migratory Bird Treaty Act (MBTA) of 1918, as amended, were observed during the survey, including: (*i*) the cattle egret (*Bubulcus ibis*), (*ii*)

Hawaiian duck-mallard hybrids, (*iii*) Pacific golden plover, and (*iv*) house finch (*Haemorhous mexicanus*).

Other fauna observed during the survey included two species non-native invasive terrestrial mammals (*Felis catus*) and small Asian mongooses (*Herpestes javanicus*). Invertebrates observed include the globe skimmer (*Pantala flavescens*), and two butterflies, the Gulf fritillary (*Agraulis vanilla*) and the western pygmy blue butterfly (*Brephidium exilis*). The globe skimmer is a dragonfly species native to the Hawaiian Islands. No herpetofauna or amphibians were observed during the survey.

No state- or federally-listed threatened, endangered, or candidate bird, mammal, or insect species were observed during the survey of the HWWTP site and surroundings. The endangered pueo (*Asio flammeus sandwichensis*) was not observed during the survey; however, this species occurs in habitat found at the HWWTP site, including wet and dry forests, grasslands, shrublands, and urban areas. The endangered Hawaiian hoary bat (*Lasiurus cinereus semotus*), or *ʻōpeʻapeʻa* as it is known locally, is the only native terrestrial mammal in Hawaiʻi, and there are no native reptiles or amphibians in Hawaiʻi. Surveys were not conducted for the endangered Hawaiian hoary bat, but this species is not likely to utilize the highly fragmented and urban area in the vicinity of HWWTP.

No aquatic fauna are present on the HWWTP property or within the Geiger Road ROW.

3.5.2 PROBABLE IMPACTS ON BIOTA

3.5.2.1 Effects on Flora

The total anticipated area of grubbing, grading, and clearing related to the action alternative considered in this report is very minor, not exceed approximately 2,500 ft^2. None of the alternatives described in this EA will involve the removal of trees, landscaping, or significant amounts of vegetation. Both the biogas extraction facility and the proposed pipeline (regardless of route) would be emplaced in areas which are heavily developed, hosting a wastewater treatment plant and roadway, respectively, and there are no significant vegetation resources in the area to be affected by construction or operation of the proposed project.

3.5.2.2 Avian and Terrestrial Fauna

The fauna which has been surveyed in and around HWWTP is dominated by non-native species of birds and terrestrial mammals. Nine introduced and one indigenous bird species were recorded during the natural resources survey; the myna bird was the most frequently observed, followed by the zebra dove and spotted dove. These species are common to the main Hawaiian Islands, particularly in urbanized or heavily disturbed areas. Only one native species, the migratory Pacific golden plover, was observed on the site; this species is abundant throughout Hawaiʻi.

All the species of introduced mammalian predators are deleterious to native ecosystems and the native faunal species dependent on them. Moreover, the minimal ground disturbance related to pipeline trenching will all occur in areas which are heavily developed; this and the other changes that will result from the proposed project do not have the potential to alter the habitat on which these species depend. No Hawaiian hoary bats were detected during the biological resource survey and, given the paucity of documented records of this species on Oʻahu and the complete lack of suitable roosting vegetation in the immediate project area, the chance that any use resources on the subject property are extremely low. Consequently, the proposed project does not have the potential to have significant adverse effect on fauna.

There are no known nesting colonies of any protected bird species on or near to the project site. The proposed project does not contain any exterior lighting that might attract or disorient fledgling nocturnal seabirds, nor will nighttime construction occur. The biogas reclamation facility is relatively low-lying (most structures are less than 20 feet above ground, the carbon silos are 17 feet high) and

the proposed pipeline would be installed underground; these facilities do not, therefore, constitute a significant avian collision hazard. This, together with the absence of substantial known seabird use of the airspace, indicates that bird strikes are not an issue with respect to the proposed project.

3.5.2.3 Critical Habitat

There is no federally delineated Critical Habitat present on the property. Thus, the development and operation of any of the action alternatives considered in this EA will result in impacts to federally designated Critical Habitat. There is no equivalent statute under state law.

3.6 NOISE

3.6.1 REGULATORY CONTEXT

Hawai‘i Administrative Rules, Title 11, Chapter 46, Section 4 (HAR §11-46-4) defines the maximum permissible community sound levels in dBA. These differ according to the kind of land uses that are involved, as defined by zoning district, and time of day (i.e., daytime or nighttime). These limits are shown in Table 3.6 below. Definitions of two technical terms used in this discussion are as follows:

- *A-Weighted Sound Level (dBA).* The sound level, in decibels, read from a standard sound-level meter using the “A-weighted network”. The human ear is not equally sensitive in all octave bands. The A-weighted network discriminates against the lower frequencies according to a relationship approximating the auditory sensitivity of the human ear.
- *Decibel (dB).* This is the unit that is used to measure the volume of a sound.[7] The decibel scale it logarithmic, which means that the combined sound level of 10 sources, each producing 70 dB will be 80 dB, not 700 dB. It also means that reducing the sound level from 100 dB to 97 dB requires a 50 percent reduction in the sound energy, not a 30 percent reduction. Perceptually, a source that is 10 dB louder than another source sounds about twice as loud. Most people find it difficult to perceive a change of less than 3 dB.

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

Table 3.6 Hawai‘i Administrative Rules §11-46 Noise Limits

Zoning District	*Noise Limit (in dBA)*	
	Daytime (7:00 a.m. to 10:00 p.m.)	*Nighttime (10:00 p.m. to 7:00 a.m.)*
Class A: Areas equivalent to lands zoned residential, conservation, preservation, public space, open space, or similar type.	55	45
Class B: All areas equivalent to lands zoned for multi-family dwellings, apartment, business, commercial, hotel, resort, or similar type.	60	50

[7] [7] The sound pressure in decibels is equal to twenty times the logarithm to the base ten of the ration of the pressure of the sound measured to a reference pressure of 20 micropascals, or 0.0002 dynes per square centimeter.

Class C: All areas equivalent to lands zoned agriculture, country, industrial, or similar type.	70	70
Source: Hawai‘i Administrative Rules §11-46 *Community Noise Control*		

All of DES' HWWTP's existing facility is zoned I-2 Intensive Industrial, which makes it a Class C area, the least restrictive for the purposes of noise limits. Portions of the Geiger Road ROW along which the proposed pipeline would travel are variously zoned: (*i*) AG-1 Restricted Agriculture, (*ii*) P-2 General Preservation, and (*iii*) R-5 Residential (see Figure 1.4). Thus, the 70 dBA limit will apply to all portions of the project except those in the R-5 district where Class A limits would apply.

3.6.2 EXISTING SOUND LEVELS

No on-site noise measurements were made during preparation of this document. However, an acoustical study, which included an analysis of noise near the HWWTP site, was prepared by Ebisu and Associates in January, 2015 (Ebisu and Associates, 2015) during preparation of the *Final Environmental Assessment for the Honouliuli Wastewater Treatment Plant Secondary Treatment and Facilities* (DES, 2017) and was published as Appendix E of that report. This section of the EA draws on information contained in that document.

Daytime and nighttime noise measurements were obtained in October 2014 at or near the property boundary of HWWTP to provide a basis for characterizing the existing background noise levels at noise-sensitive receptors in the project environs and to determine if the facility was in compliance with DOH noise limits as described in Table 3.6. As noted above, the existing HWWTP is located within the I-2 Intensive Industrial District, within which the current DOH noise limit at the property boundary for stationary noise sources is 70 dBA for both daytime and nighttime periods. DOH stipulates that noise levels shall not exceed the maximum permissible sound levels for more than 10 percent of the time in any 20-minute period (i.e., >2 minutes out of 20), except by noise permit or noise variance.

The 2014 acoustical study identified the major noise sources at HWWTP as: (*i*) the dewatering building centrifuge; (*ii*) influent pump station; (*iii*) blower building No. 1; (*iv*) bio-tower pump station booster fan; and (*v*) caustic scrubber odor control blower. These five major noise sources are anticipated to remain at their present general locations for the duration of the proposed project. During daytime operations at HWWTP, motor vehicle traffic and aircraft noise become the dominant noise sources along the HWWTP property lines, particularly in areas adjacent to Geiger Road. Noise measurements which were made during the 2014 acoustical study were influenced by these off-site noise sources more than sources within HWWTP. Based on the recorded measurements, the HWWTP is in full compliance with the 70 dBA noise limit established by DOW for both daytime and nighttime operations.

Also, traffic noise level measurements were performed near the HWWTP site in December 2014; Table 3.7 below summarizes the results and locations of these measurements. Table 3.8 presents the calculated hourly average, or L_{eq}(h), traffic noise levels at 50, 75, and 100 feet setback distances from the roadways' centerlines during the PM peak traffic hour, which reflects the highest hourly volume of traffic on the project area roads. The State of Hawai‘i, Department of Transportation considers traffic noise levels less than 66 L_{eq}(h) to be acceptable for noise sensitive land use. This criterion level was exceeded at 50 feet from the centerlines of Geiger Road and Roosevelt Avenue.

The U.S. Department of Housing and Urban Development (HUD) uses the Day-Night Average Sound Level (or DNL) descriptor in evaluating acceptable noise levels at noise sensitive locations. The DNL descriptor incorporates a 24-hour average of daytime and nighttime noise levels, with the

nighttime noise levels increased by 10 dB prior to computing the 24-hour average. A noise level of 65 DNL is considered to be acceptable for noise sensitive used by HUD. Traffic noise levels in DNL may be estimated by adding 1 unit to the peak hour L_{eq}(h), so a traffic noise level of 66 L_{eq}(h) during the peak hour would result in a 67 DNL value, or 2 DNL units above the HUD noise standard.

Table 3.7 Traffic and Background Noise Measurement Results at HWWTP

Location (12/2/14)	*Time of Day (hrs)*	*Average Speed (mph)*	*Hourly Traffic Volume*			*Measured Leq (dB)*	*Predicted Leq (dB)*
			Auto	*M. Truck*	*H. Truck*		
K1. 50′ from Centerline of Geiger Rd.	07:20-08:20	38	707	15	38	67.1	65.5
K2. 100′ from Centerline of Geiger Rd.	07:20-08:20	38	707	15	38	58.9	60.3
K1. 50′ from Centerline of Geiger Rd.	14:40-15:40	35	750	15	30	66.7	64.4
K2. 100′ from Centerline of Geiger Rd.	14:40-15:40	35	750	15	30	57.2	59.4
L1. 50′ from Centerline of Renton Rd.	08:45-09:45	36	101	6	8	57.6	57.5
L2. 100′ from Centerline of Renton Rd.	08:45-09:45	36	101	6	8	54.3	52.8
L1. 50′ from Centerline of Renton Rd.	16:00-17:00	34	290	6	4	58.8	58.8
L2. 100′ from Centerline of Renton Rd.	16:00-17:00	34	290	6	4	54.1	53.5
M. 50′ from Centerline of Philippine Sea St.	10:46-11:46	25	118	3	12	58.1	56.7
M. 50′ from Centerline of Franklin D. Roosevelt Ave.	12:07-13:07	35	507	7	26	63.1	63.0

Note: This information originally appeared in Appendix E, Table 3 of the *Final Environmental Assessment for the Honouliuli Wastewater Treatment Plant Secondary Treatment and Facilities* (April 2017)

Source: Y. Ebisu & Associates (2015)

Table 3.8 Traffic Volumes and Noise Levels Along Roadways in Project Area (PM Peak Hour)

Location	*Speed (mph)*	*Total Vehicles per Hour*	*Vehicles per Hour*			*50' Leq*	*75' Leq*	*100' Leq*
			Auto	*M. Truck*	*H. Truck*			
Geiger Rd. between Kapolei Parkway and DW3	38	1,031	965	21	45	66.6	63.5	61.5
Geiger Rd. between DW3 and DW2	38	1,002	938	20	44	66.4	63.4	61.3
Geiger Rd. between DW2 and DW1	38	998	934	20	44	66.4	63.3	61.3
Geiger Rd. between DW1 and ECRC	38	985	922	20	43	66.3	63.3	61.3
Geiger Rd. between ECRC and Essex	38	985	922	20	43	66.3	63.3	61.3
Roosevelt Ave. between Essex and DW4	35	968	909	15	44	65.5	62.5	60.5
Roosevelt Ave. between DW4 and Philippine Sea	35	968	909	15	44	65.5	62.5	60.5
Roosevelt Ave. west of Philippine Sea	35	1,209	1,137	18	54	66.4	63.4	61.4
Philippine Sea north of Roosevelt Ave.	25	326	290	7	29	60.5	57.5	55.4
Philippine Sea south of Renton Rd.	25	337	299	8	30	60.6	57.6	55.6
Renton Rd. between Kapolei Parkway and DW5	34	343	317	12	14	61.1	58.1	56.0
Renton Rd. between DW5 and Philippine Sea	34	343	317	12	14	61.1	58.1	56.0
Renton Rd. west of Philippine Sea	34	13	12	0	1	46.9	44.2	42.6

Note: This information originally appeared in Appendix E, Table 4 of the *Final Environmental Assessment for the Honouliuli Wastewater Treatment Plant Secondary Treatment and Facilities* (April 2017)

Source: Y. Ebisu & Associates (2015)

3.6.3 PROBABLE NOISE IMPACTS

3.6.3.1 Construction Noise

Audible construction noise would be an unavoidable result of construction activity related to any of the action alternatives. Transport, excavation, and other activities will also entail the use of trucks with backup alarms and excavators (e.g., backhoes, which generate up to 84 dBA at a distance of 50 feet) to dig and fill the trenches used to install the gas pipeline. As depicted in Table 3.9, some of this equipment is inherently noisy. Because much of the biogas reclamation equipment is assembled offsite and containerized, the most noticeable sources of construction noise are likely to be related to installation of the gas pipeline.

Noise from the operation of construction equipment is expected to exceed the property line noise limits during installation of at least some of the pipeline which will interconnect the HWWTP Biogas Project to Hawai‘i Gas’ gas distribution network. Because of this, Hawai‘i Gas or its contractor anticipates seeking a construction noise permit in accordance with the provisions of HAR §11-46. The implementing regulations for a DOH Construction Noise Permit stipulate that noisy construction activities do not occur during the nighttime, Sundays, and holidays. These permit procedures, which are routinely applied to noisy construction activities, are intended to minimize adverse noise impacts to residences.

The closest residential area to the proposed project is east of Coral Creek Golf Course, along Geiger Road. Those residences closest to Geiger Road would experience construction noise levels of 80 dBA (plus or minus 5 dBA).[8] Impacts associated with construction noise are not expected to affect public health or welfare, in part due to the fact that they will be temporary in nature and restricted to normally permitted hours.

Construction worker vehicles traveling to and from the project site will increase traffic volumes on Geiger Road, and potentially other area roadways, as they travel to and from HWWTP. However, the addition of the relatively few construction workers required for the project will increase total traffic noise levels by no more than a few tenths of a decibel, which will be very difficult to measure. This means that HWWTP Biogas Project-related construction activities will not cause a significant change in roadway noise.

Table 3.9 Construction Equipment Noise Emissions Levels

Equipment	*Typical Noise Levels (dBA) 50 ft., U.S. Dept. of Trans. Study (1979)*	*Average Noise Level (dBA) 50 ft., CA/T Project Study (1994)*	*Typical Noise Level (dBA) 50 ft., U.S. Dept. of Trans. Study (1995)*	*Lmax Noise (dBA) 50 ft., CA/T Project Spec. 721.560*
Air Compressor	--	85	81	80
Backhoe	84	83	80	80
Chain Saw	--	--	--	85
Compactor	82	--	82	80
Compressor	82	--	82	80
Concrete Truck	--	81	--	85
Concrete Mixer	--	--	85	85
Concrete Pump	--	--	85	85
Concrete Vibrator	--	--	76	80

[8] This would be the average noise level at 50 feet from the centerline of Geiger Road.

Crane, Derrick	86	87	88	85
Crane, Mobile	--	87	83	85
Dozer	88	84	85	85
Drill Rig	--	88	--	85
Dump Truck	--	84	--	84
Excavator	--	--	--	85
Generator	84	78	81	82
Gradall	--	86	--	85
Hoe Ram	--	85	--	90
Impact Wrench	--	--	85	85
Jackhammer[1]	--	89	88	85
Loader	87	86	85	80
Paver	80	--	89	85
Pile Driver, Impact	--	101	101	95
Pile Driver, Sonic	--	--	96	95
Pump	80	--	85	77
Rock Drill	--	--	98	85
Roller	--	--	74	80
Scraper	89	--	89	85
Slurry Machine	--	91	--	82
Slurry Plant	--	--	--	78
Truck	89	85	88	84
Vacuum Excavator	--	--	--	85
Note 1: There are 82 dBA at 7 meter rated jackhammers (90 lbs. class) available. This would be equivalent to 74 dBA at 50 ft. These are silenced with molded intricate muffler tools.				
Source: http://ops.fhwa.dot.gov/wz/workshops/accessible/Schexnayder_paper.htm				

3.6.3.2 Operations and Maintenance

Once constructed, the biogas reclamation equipment, associated infrastructure, and pipeline will make little or no noise. The only noise emission from the biogas reclamation and ancillary equipment would come from the cooling and condensing apparatus, producing a low hum that will not be audible off the HWWTP site. Once constructed, the pipeline will not produce any noise during normal operations.

Motor vehicles will occasionally travel to the HWWTP for maintenance at regularly scheduled intervals of approximately 6 months each. Given the presence of Geiger Road and other high-volume roadways only a short distance away, the occasional presence of a few vehicles is not significant. The occasional regular equipment maintenance operations will not involve activities in excess of noise standards or that otherwise might interfere with onsite or adjacent land uses.

3.7 ARCHAEOLOGICAL AND HISTORIC RESOURCES, AND CULTURAL IMPACT ASSESSMENT

No on-site studies were conducted during preparation of this document. However, at the request of AECOM, Cultural Surveys Hawai‘i, Inc. (CSH) prepared an Archaeological Assessment (AA) and a Cultural Impact Assessment (CIA) during preparation of the *Final Environmental Assessment for the Honouliuli Wastewater Treatment Plant Secondary Treatment and Facilities* (AECOM, 2017) and

was published as Appendix C of that report.[9] This section of the EA draws on information contained in that document and summarizes some of the findings relevant to the proposed action. The scope of work for that effort included:

1. Historical research including study of archival sources, historic maps, Land Commission Awards (LCA), and previous archaeological reports to construct a history of land use and determine if archaeological sites have been recorded on or near HWWTP.
2. A pedestrian inspection of the heavily developed HWWTP site, to identify any surface archaeological features and to investigate and assess the potential for impact to such sites. This inspection was undertaken to identify sensitive areas that may require additional investigation or mitigation before redevelopment of HWWTP occurs.
3. Consultation with Hawaiian organizations, agencies, community members and cultural practitioners near HWWTP in order to identify individuals with cultural expertise and knowledge of the area. The organizations consulted at that time included SHPD, the Office of Hawaiian Affairs (OHA), the Oʻahu Islands Burial Council, and community and cultural organizations.
4. Preparation of a report assessing the results of the historical and cultural research and the fieldwork with an assessment of archaeological work, if appropriate. Mitigation recommendations, as needed, were included.

3.7.1 EXISTING ARCHAEOLOGICAL AND HISTORIC RESOURCES

As noted above, CSH (DES, 2017) previously prepared the *Final Archaeological Assessment for the Honouliuli Wastewater Treatment Plant (WWTP) Secondary Treatment and Facilities Project, Honouliuli Ahupuaʻa, ʻEwa District, Oʻahu TMK: [1] 9-1-013:007*; this section summarizes the findings of that report.

HWWTP is found on the dry, inland plain known as Honouliuli, which in pre-Contact times had a thin-to-absent soil layer. Due to its distance from the ocean and Pearl Harbor, and from any adequate sources of fresh water, this inland area saw relatively little use during the pre-Contact era. The areas within and adjacent to HWWTP were not subject to any LCAs during the Kingdom of Hawaiʻi, indicating that during the division and redistribution of land during the Māhele in 1848 there were no verified claims to lands in this area. From the late 19th century through the late 20th century, commercial-scale sugar cultivation was enabled by: (*i*) the drilling of wells to tap groundwater; (*ii*) the diversion of existing surface water from distant stream systems, and (*iii*) the hydraulic transport of soil from mountain slopes to the ʻEwa plain. This intensive disturbance and agricultural use of the land associated with the establishment and operation of commercial-scale sugar cane plantations has probably destroyed any evidence of pre-Contact uses that might have been present in the region.

Previous archaeological studies have not reported the existence of archaeological resources within, or in areas adjacent to, HWWTP, and the archaeological sensitivity of the area is generally considered to be low. O'Hare et al. (2011) notes that the HWWTP area has been extensively disturbed by prior infrastructure development, including the existing wastewater treatment facility, and is of relatively low archaeological concern. In another study, O'Hare et al. (2007) focused on areas along the north and eastern sides of HWWTP, where expansion activities are planned, but identified no historic properties. This study found evidence of extreme ground disturbance and did not find Hawaiian traditional features on the surface. O'Hare et al. (2007) concluded that it is highly unlikely that there

[9] Available online at: http://oeqc.doh.hawaii.gov/Shared%20Documents/EA_and_EIS_Online_Library/Oahu/2010s/2016-05-08-OA-5B-DEIS-Honouliuli-Wastewater-Treatment-Plant-Secondary-Treatment-Improvements.pdf

are any subsurface Hawaiian features intact. HWWTP is not known to have been the subject of previous formal archaeological investigations; however, the property has undergone extensive land disturbance associated both with previous agriculture and construction of the facility itself in the late 1970s. Table 3.10 lists recorded historic sites within a 0.5-mile radius of HWWTP.

Table 3.10 Historic Sites within 0.5 Miles of HWWTP

State Inventory of Historic Properties (SIHP) No.	*Site Type*	*Description*	*Significance*
50-80-12-5127	Military	World War II ʻEwa Airfield	Recommended as eligible for the National Register of Historic Places
50-80-12-9708	Sugar plantation infrastructure	Waialua Agricultural Company Engine No. 6	On National Register of Historic Places
50-80-12-9714	Sugar plantation infrastructure	Oahu Railway and Land Company ROW	On National Register of Historic Places
50-80-12-9761	Sugar plantation infrastructure	Railway rolling stock	On State Register of Historic Places
50-80-12-9786	Sugar plantation infrastructure	ʻEwa Village Historic District	On National Register of Historic Places
Source: Yucha et al. (2015)			

On October 24, 2014 CSH conducted a pedestrian inspection of the developed areas of HWWTP, and a reconnaissance of the proposed expansion area to the north and west. No historic properties were identified either in the HWWTP or in the expansion area, and no further cultural resource management activities were recommended.

3.7.2 EXISTING CULTURAL RESOURCES AND PRACTICES

During preparation of the *Final Environmental Assessment for the Honouliuli Wastewater Treatment Plant Secondary Treatment and Facilities* (AECOM, 2017), CSH (O'Hare, 2011) prepared a *Cultural Impact Assessment for the Honouliuli/Waipahu/Pearl City Wastewater Facilities, Hōʻaeʻae, Waikele, Waiawa, and Mānana, and Hālawa Ahupuaʻa, ʻEwa District, Oʻahu Island* to assess the potential impacts to traditional and customary native Hawaiian practices, beliefs, and resources which might result from implementation of the planned expansion project at HWWTP. This section of the EA draws on information contained in that document and summarizes some of the findings relevant to the proposed action. It also draws on a series of cultural studies, *He Moʻolelo ʻĀina: Traditions and Storied Places of Honouliuli, District of ʻEwa, Island of Oʻahu* (Maly et al., 2014), relating to all the lands of Honouliuli, including the entire HWWTP Biogas Project area. Together these resources provide a basis for assessing the potential for cultural impacts as a result of the proposed action.

3.7.2.1 Summary of Background Research

The project area is located along the western coast of the Honouliuli ahupuaʻa, the largest and westernmost ahupuaʻa in the ʻEwa moku, or district. Honouliuli translates literally as "dark water," "dark bay," or "blue harbor." It is named for the waters of Pearl Harbor, which marks the eastern boundary of the ahupuaʻa. Honouliuli appears in many traditional stories, known as moʻolelo, ʻōlelo noʻeau (traditional sayings), ʻoli or chants, and possesses many wahi pana, or storied places. This

rich oral history speaks to the importance of the Honouliuli ahupuaʻa in times past, with its abundance of natural resources and thriving Native Hawaiian population.

Many moʻolelo took place along the plains of Honouliuli, such as:

- The story of the demigod Kamapuaʻa and his grandmother;
- Pele's sister Hiʻiaka, on the plains of Kaupeʻa and Keahumoa;
- The wandering ghosts of Kaupeʻa, Puʻuokapolei, and Kanēhili;
- The demigod Maui and his stolen wife;
- The pōhaku of Pukaua;
- The hero Pikoi and his arrow-shooting skills;
- The warrior Palila and his supernatural war club; and
- The hero Nāmakaokapaoʻo.

Stories and sayings associated with the natural resources of Honouliuli include:

- The many shark stories of Puʻuloa;
- The guardian shark of Kaʻahupāhau;
- The pipi and ʻānae-hol*o* of Puʻuloa;
- The kāʻī-koʻi kalo of ʻEwa;
- The fishponds of Puʻuloa involving the gods Kane and Kū;
- Kaihupalaʻai and Ihuopalaʻai;
- The planting of the first breadfruit from Kahiki; and
- The ōlohe people who dwelled in the caves of Honouliuli.

Early historical accounts and the presence of permanent habitation sites, fishing shrines (koʻa) and subsistence-related features along the coast suggest that portions of ʻEwa were widely inhabited and home to many aliʻi (chiefs and royalty) during the pre-contact period. Successful coastal settlement was likely supported by the abundance of marine resources, particularly the lochs of Pearl Harbor. Also present were irrigated lowlands suitable for wetland taro, banana, and sugarcane cultivation seen nowhere else on Oʻahu, as well as the nearby presence of forest resources along the slopes of the Waiʻanae Range, which could serve as a source of alternative subsistence in times of famine. In contrast with this, accounts of early missionaries in 1823 and 1824 suggest that the land further inland from the ʻEwa coastline were largely uncultivated and habitation was scarce.

Honouliuli was the most populous ahupuaʻa on Oʻahu at the time of contact with European explorers, with the majority of the population focused around Pearl Harbor. The inland area of ʻEwa was likely abandoned by the mid-19th century due to the decline in population that resulted from the introduction of previously unknown diseases and consolidation of the remaining people in the towns of Honouliuli, Waipahu, and Waiawa. Today, Honouliuli is once again among the fastest growing ahupuaʻa on the island.

A heiau (altar and/or associated shrine) was once located on Puʻuokapolei, a hill in Honouliuli thought to have been named after "beloved Kapo," the sisters of the volcano goddess, Pele. By the time J.G. McAllister, author of *Archaeology of Oahu* (1933), surveyed Oʻahu in the early 1930s, *the heiau* had been destroyed and its stones used elsewhere. Puʻuokapolei was used as a site for astronomical observations and it may have been regarded as the gate of the setting sun, just as the eastern gate of Kumukahi in Puna is regarded as the gate of the rising sun.

ʻEwa was known for the many limestone caves formed in the uplifted coral called the ʻEwa Karst. Some of these caves, known as ka-lua-ōlohe, were inhabited by the ōlohe, described as hairless, fierce

fighters who dwelt in Honouliuli as well as in other places in Hawai‘i. These people were skilled in wrestling and bone-breaking and often hid along narrow passes to rob travelers. They were also reputed to be cannibals. One famous cannibal king, Kaupe, lived in Līhu‘e in upland Honouliuli, and was said to be an ōlohe.

Several historic trails traversed ‘Ewa, including the lateral trail that connected Honolulu to the Wai‘anae district, and likely passed just makai side of the project site. The trail is described by native historian John Papa ‘Ī‘ī as dipping down, “toward the coast towards…Pu‘uokapolei [and] crossed into Wai‘anae at the coast near Pili o Kahe.”

The boundaries of Honouliuli were often contested with the people of Wai‘anae. However, the boundaries of those two districts are said to be marked by a stone known as Pili-o-Kahe, which translates to “clinging to flow” and refers to the female, or Wai‘anae side of the hill. Many battles took place in ‘Ewa, including in Honouliuli ahupua‘a, dating back to at least the twelfth century. Many ali‘i came from ‘Ewa and chiefs from Līhu‘e, Wahiawā, and Halemano were called lō‘āli‘i (from whom a guaranteed chief might be obtained, loa‘a). Samuel M. Kamakau (1991) records that these lō‘āli‘i were regarded as being, “like gods, unseen, resembling men”. The supremacy of the ‘Ewa chiefs came to an end with the invasion of O‘ahu by the forces of Kamehameha I, culminating in the Battle of Nu‘uanu.

In 1795, Kamehameha I gave the Honouliuli ahupua‘a to Kalanimōkū, an early supporter of his. It was subsequently inherited by Kalanimōkū’s sister, Wahinepi‘o. During the Mahele of 1848, 96 land claims were made and 72 claims were awarded to commoners. Claims ranged in size from 0.1 to 5.5 acres and almost all of them were adjacent to Honouliuli Gulch and contained fishponds and irrigated taro patches, or *lo‘i*. In 1855, the Land Commission awarded all 43,250 acres of unclaimed land in Honouliuli to Miriam Ke‘ahikuni Kekau‘ōnohi, a granddaughter of Kamehameha I and by Kalanimōkū’s heir.

The property passed through a series of heirs until 1877, when James Campbell purchased Honouliuli ahupua‘a (except the ‘ili of Pu‘uloa) for $95,000 and started the Honouliuli Ranch, which was used almost exclusively for cattle. Cattle ranching continued into modern times, and Honouliuli Ranch was considered the fattening area for the other ranches in the region. Though Honouliuli Ranch was not in operation until the late 1870s, a longhorn cattle ranch was reported to exist in nearby Wai‘anae as early as 1840.

Grazing ranch animals and the logging of the sandalwood forests in the upland forests disturbed the ecosystem of the ‘Ewa plain, allowing exotic vegetation to thrive, further changing the landscape. Rice cultivation began in Honouliuli around the 1880s, and by 1885, 200 acres of rice had replaced much of the former taro lands in the lowland areas surrounding Pearl Harbor. The ancient kalo lo‘i—irrigated terraced patches of taro—and ‘auwai, the traditional irrigation ditches, were modified and expanded to support rice cultivation, a process which was dominated by the Chinese. By the early 20th century, rice farming declined and was succeeded by sugar. Sisal, a plant used to make fibers for rope and other material, was also experimented with between 1898 and the 1920s, mainly on the coastal plain of Honouliuli in Kanēhili.

Sugarcane became a dominant industry in Hawai‘i during the second half of the 1800s. At first it expanded slowly, but the success in 1879 of the first artesian well drilled in ‘Ewa opened great irrigation possibilities. Three sugar companies were established in the district, including the Ewa Plantation Company (EPC), which was located in Honouliuli. The EPC started in 1890 and by the 1930s, it encompassed much of the eastern half of the ahupua‘a. EPC was once termed the “richest sugar plantation in the world”. The Oahu Sugar Company took over the EPC in 1970 and continued operations until 1995. Plantation villages to house a growing immigrant labor force developed on Honouliuli but by the 1930s and 40s, the Second World War siphoned off much of the plantation labor force.

The Oahu Railway and Land Company (OR&L) extended a rail line from Honolulu to Pearl City in 1890, and on to Wai‘anae in 1895, eventually running across the center of the ‘Ewa Plain. To attract business to the new railroad system, much land in Honouliuli was subleased to the sugar plantations. The U.S. Army also used the sugarcane rail system to haul ammunition, and the Navy took over a section of the OR&L track for its own use. After the Second World War, most of the more than 150 miles of track were pried up and the locomotives were sold off to businesses on the American mainland; most of the railcars were simply scrapped.

Though Pearl Harbor is located east of the project area, military development on Pearl Harbor and the events of World War II significantly changed the history of Honouliuli and of Hawai‘i at large, beginning with the Reciprocity Treaty of 1875. Since then, the American military has acquired much of coastal ‘Ewa for its naval and air force bases, and developed the surrounding areas of ‘Ewa with infrastructure to support its operation. By 1943, the military attracted more than 24,000 people who worked at Pearl Harbor and naval housing areas had grown large enough to be considered separate cities. Barracks and temporary housing for workers were built for miles between Pearl Harbor and the outskirts of Honolulu.

Following the Japanese bombing of Pearl Harbor on December 7, 1941, the Army began to develop a coastal defense battery at Kahe Point to accommodate one of the two 14″ naval gun turrets that was salvaged from the wreck of the battleship *USS Arizona*. While the guns themselves were put in place, the battery was never completed and the complex was dismantled during the years following the war.

3.7.2.2 Results of Community Consultation During Preparation of the CIA

HWWTP has been a wastewater treatment facility since the late-1970s and Geiger Road has been in continuous use as a roadway since before the Second World War. No ongoing cultural practices are present in either location, and thus, precluding the possibility of finding cultural informants with direct knowledge of traditional and customary native Hawaiian practices, beliefs, or resources present on the project site. However, as noted above, several ethnographic studies have been conducted with reference to the larger HWWTP vicinity and the Honouliuli region, and cultural informants have been interviewed as contributions to these studies.

Based on information gathered during previous community consultation efforts, as well as archaeological and archival research presented above, the evidence indicates that the proposed HWWTP Biogas Project will have little or no impact on potential burials or other cultural sites due to the limited ground disturbance and paucity of cultural activity in these areas. However, certain themes which emerged repeatedly in cultural interviews represent concerns which should be given due consideration in the planning and implementation of projects in this region. Based on interviews and other information gathered, CSH (DES 2017) made recommendations, intended to help minimize or mitigate any potentially adverse impacts the proposed action may have on customary and traditional native Hawaiian practices, beliefs, or resources. Briefly summarized, they are:

1. Despite the previous intensive agricultural development of the area, earth-moving activities in and around HWWTP may have a direct impact on as-yet undiscovered burials located in subsurface contexts. Personnel involved in development activities should be made aware of the potential for inadvertent finds, including human remains. Should cultural or burial sites be encountered during ground disturbance, all work should immediately cease, and the appropriate agencies notified pursuant to applicable laws.
2. In the event that ‘iwi kūpuna—ancestral bone fragments—or other cultural properties are encountered during project development, recognized cultural and lineal descendants should be notified and consulted on matters of burial treatment.
3. Hydrological studies should be conducted prior to excavation or underground borings to prevent damage to aquifers or water tables in the vicinity of the project.

4. Flooding concerns should be addressed in the lower areas of the ‘Ewa District to prevent sewer backups.
5. Archaeological monitoring should be conducted during ground-disturbing activities that affect layers likely to contain burials or other cultural deposits.

3.7.3 PROBABLE IMPACTS & MITIGATION MEASURES

3.7.3.1 Construction Period

The proposed HWWTP Biogas Project will require shallow subsurface work to trench, install approximately 4,200 feet of 4-inch biogas pipeline, and backfill; this work would occur within the developed portion of the HWWTP property as well as the CCH’s Geiger Road ROW. While no subsurface investigations have been conducted in either location, both areas have been the subject of significant disturbance as a result of commercial-scale agriculture and urban development, and in areas which field inspections suggested a very low probability of yielding archaeological, cultural, or historic resources. However, none of the earthwork will occur in or near areas which have been previously identified historical or archeological sites listed, or eligible for listing, on the State of Hawai‘i’s Register of Historic Places or the National Register of Historic Places. In view of the forgoing, it is unlikely that any historic, cultural, or archaeological properties exist in the project area or would be impacted by project-related construction activities.

While Hawai‘i Gas believes that the likelihood of further discoveries during project construction is very low, mitigation to address this potential for the discovery of undocumented archaeological and/or historical remains will include, but are not limited to: (*i*) compliance with all the requirements of HRS, Chapter 6E; (*ii*) the immediate cessation of work in the area of any find; and (*iii*) notification of the State Historic Preservation Division (SHPD) upon making a find to assess it.

Given the consensus that there is no ongoing use of HWWTP or the Geiger Road ROW for traditional cultural purposes, and the fact that it will not further impair or limit the ability of native Hawaiian cultural practitioners to access cultural resources in adjacent lands leads Hawai‘i Gas to the conclusion that construction of the proposed project will not have an adverse effect on traditional and customary practices, beliefs, or resources.

3.7.3.2 Operation and Maintenance Activities

Once constructed, the proposed project will not have the potential to harm archaeological, historic, or cultural properties in any way. Neither will their operation limit or otherwise adversely affect traditional and customary practices of native Hawaiians or any other ethnic community.

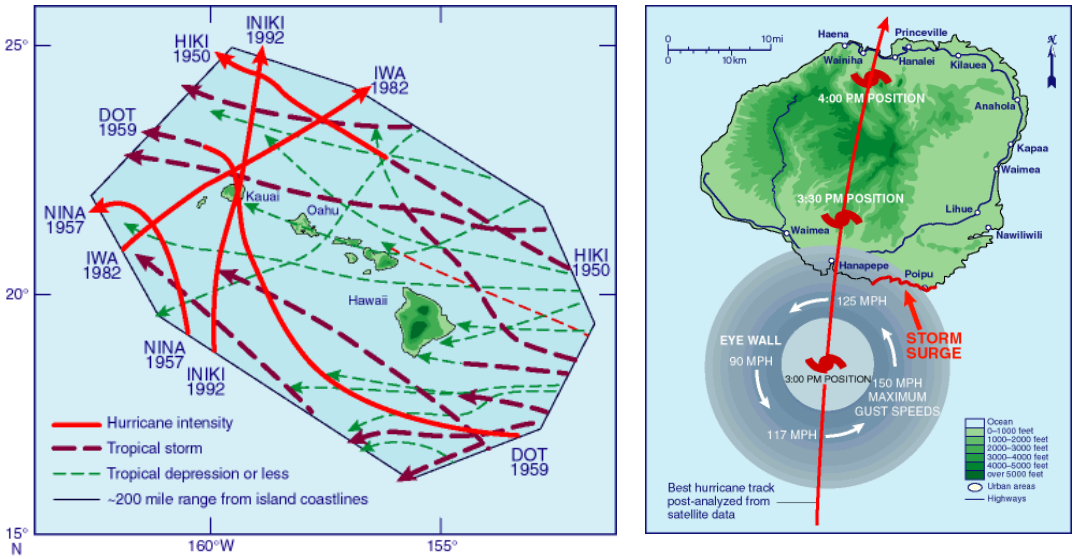
3.8 NATURAL HAZARDS

3.8.1 SUSCEPTIBILITY TO HURRICANES

Tropical storm systems that have sustained winds in excess of 73 miles per hour, forming in warm tropical waters near the equator, and striking in both the Atlantic and Eastern Pacific Oceans are known as hurricanes. Hurricane season in the Hawaiian Islands begins in June and lasts through November. During the last 70 years, many hurricanes and tropical storms have come close to the Hawaiian Islands, but only three hurricanes have had direct impact (see Figure 3.6 and Table 3.11). In all three cases, Kaua‘i was the hardest hit, although O‘ahu suffered significant damage as well.

In August of 1959, losses in Hurricane Dot were approximately $6 million. In November 1982, Hurricane ‘Iwa caused over $250 million in damages. Hurricane ‘Iniki, which struck in September of 1992, was by far the most destructive to strike Hawai‘i in recorded history, with widespread wind and water damage exceeding $2.2 billion. There is no record of damage to HWWTP because of any of these storms; although HWWTP was not yet constructed at the time of Hurricane Dot.

Figure 3.4 Tracks of Major Hurricanes Affecting the State of Hawai'i (1950-2012)



Source: http://www.soest.hawaii.edu/MET/Faculty/businger/ poster/hurricane/Fig2_tracks.gif and Fig4_kauai_track.gif

Table 3.11 Major Hurricanes Affecting the State of Hawai'i: 1950-2010

Name	*Date*	*Maximum Recorded Winds Ashore (mph)*		*Category*	*Deaths*
		Sustained	*Peak Gusts*		
Hiki	Aug. 15-17, 1950	68	NA	1	1
Nina	Dec. 1-2, 1957	NA	92	1	1
Dot	Aug. 6, 1959	81	103	2	-
'Iwa	Nov. 23, 1982	65	117	3	1
'Iniki	Sept. 11, 1992	92	143	4	8

*Note: Category is based on the Saffir-Simpson Hurricane Scale:
Category 1 – Wind speed of 74-95 mph, minimal damage.
Category 2 – Wind speed of 96-110 mph, moderate damage.
Category 3 – Wind speed of 111-130 mph, extensive damage.
Category 4 – Wind speed of 131-155 mph, extreme damage.
Category 5 – Wind speed of >155 mph, catastrophic damage.

Source: *State of Hawaii Data Book 2010*

Based on recorded Hurricane activity, O'ahu is less susceptible to hurricanes than Kaua'i to the north. However, O'ahu has sustained damage from wind and storm surge in both 1982 and 1992. In view of these findings, it appears likely that while an extremely powerful hurricane (i.e., one that is Category 4 or higher on the Saffir-Simpson Hurricane Scale) could damage HWWTP—including the proposed biogas reclamation equipment—it is unlikely to uproot the equipment and allow it to become airborne. Hence, while the project is as susceptible to hurricane damage as any other structure in the area, it does not represent a measurable threat to adjacent uses.

Regardless of the alternative, neither construction nor normal operations will increase HWWTP's susceptibility to hurricanes, or to contribute the potenail for hurricane damage in the area. If, during construciton activity, a hurricane does occur a public emergency siren operated by the State of Hawai'i, Department of Defense would sound to notify all personnel of the approach of a hurricane. The nearest Department of Defense siren is located at 'Ewa Makai Middle School approximately 0.6 miles southeast of HWWTP. In the event that this alarm is not audible, information will also be broadcast via internet, radio, television, and mobile phone via text.

In the event that a hurricane is predicted, construction equipment would be secured and all applicable federal, state, and CCH requirements would be implemented to reduce the potential for damage. Emergency procedures outline in HWWTP's *Health and Safety Plan* would be followed. If evacuation of the facility is required, the nearest emergency shelter is located at 'Ewa Elementary, approximately 0.7 miles north of HWWTP. The closest open shelter can also be found by texting "shelter 96706" which is the zip code for HWWTP, to "43362" (i.e., "4-FEMA").

3.8.2 SUSCEPTIBILITY TO TSUNAMIS AND FLOODING

Tsunamis are a series of waves that are generated by seismic activity of the sea floor such as earthquakes, landslides, or volcanic eruptions. The Hawaiian Islands are always at risk for tsunamis generated by earthquakes and volcanic activity along the so-called "Ring of Fire," a nearly continuous series of oceanic trenches, volcanic arcs, and volcanic belts and/or plate movements around the Pacific Basin. The last major tsunami to affect the islands was the Hilo tsunami of 1960. To better reflect the potential hazard posed by tsunamis, the CCH's Department of Emergency Management completed revised tsunami evacuation zone maps in 2010.[10] According to the tsunami evacuation zone maps, HWWTP is not located within a tsunami evacuation zone, and it not likely to be directly adversely affected by even the most extreme tsunami event. The HWWTP is located approximately 1.5 miles from the nearest shoreline; the Federal Emergency Management Agency defined areas within one mile of the coastline as being at greatest risk of tsunami inundation.

Based on the latest available Flood Insurance Rate Map (FIRM) for the area, the entire project site lies in Flood Zone D. Zone D is defined as the flood insurance rate zone that corresponds to: (*i*) unstudied areas where, (*ii*) flood hazards are undetermined but possible. Because of the low probability of flooding, no base flood elevations or depths have been defined within the zone. The proposed biogas reclamation facility and associated infrastructure would be located at elevations ranging from 25′ to 45′ +msl. Because of their design, the proposed facilities will not be susceptible to damage from storm runoff and do not have the ability to increase the risk of flooding on adjacent areas by restricting or obstructing a floodway.

As noted in the discussion related to hurricanes, a public emergency siren operated by the State of Hawai'i, Department of Defense would sound to notify all personnel of an approaching tsunami. The nearest Department of Defense siren is located at 'Ewa Makai Middle School approximately 0.6 miles southeast of HWWTP. In the event that this alarm is not audible, information will also be broadcast via internet, radio, and television.

In the event that a tsunami is predicted, construction equipment would be secured and all applicable federal, state, and CCH requirements would be implemented to reduce the potential for damage. Emergency procedures outline in HWWTP's *Health and Safety Plan* would be followed. As in the event of a hurricane, if evacuation of the facility is required, the nearest emergency shelter is located at 'Ewa Elementary, approximately 0.7 miles north of HWWTP. The closest open shelter can also be found by texting "shelter 96706" which is the zip code for HWWTP, to "43362" (i.e., "4-FEMA").

[10] Available on the web at: https://www.honolulu.gov/demevacuate/tsunamimaps.html

3.8.3 SUSCEPTIBILITY TO EARTHQUAKES

The International Building Code (IBC) establishes minimum design criteria for structures to address the potential for damage resulting from seismic disturbances. The scale is from Seismic Zone 0 through Seismic Zone 4, with Zone 4 having the lowest level potential for seismic-induced ground movement.

Like all of O‘ahu, HWWTP is located with Seismic Zone 2a (U.S. Geological Survey, 2001). All of the proposed equipment and infrastructure considered in this report will conform to the Seismic Zone 2a Building Standards, and their construction and operation will not increase the seismic vulnerability of the area.

3.8.4 SUSCEPTIBILITY TO VOLCANIC HAZARDS

The Wai‘anae and Ko‘olau volcanoes that formed the bulk of O‘ahu are extinct. Smaller vents in the Honolulu Volcanic Series are more recent and formed volcanic features such as Diamond Head, Punchbowl, Salt Lake Crater, Koko Head, and Koko Crater. In general, these features are believed to be between 70,000 and 500,000 years old, although some scientists have theorized that a few features at the far eastern end of the island (such as Koko Head) may be more recent. The consensus of volcanologists is that there is virtually no possibility of eruptions that could affect the Honouliuli plain or HWWTP.

3.8.5 SUSCEPTIBILITY TO SEA LEVEL RISE

The global community of climate scientists has concluded that sea levels are currently rising and that this trend is expected to continue for the foreseeable future. The Intergovernmental Panel on Climate Change (IPCC) recently predicted (IPCC 2013) that the average temperature in the Hawaiian Islands is likely to increase by 0.5 to 1.5 C˚ (0.9 F˚ to 1.7 F˚) by 2100; rainfall is likely to decrease, at most, 10 percent. Sea level could rise between 0.26 and 0.98 m (0.85′ to 3.2′). Given this likelihood, Hawai‘i Gas has considered the potential effects this trend could have on development at HWWTP.

Using information prepared by the National Oceanic and Atmospheric Agency’s Coastal Services Center, Hawai‘i Gas has compared its project plans to areas that would be affected by a 1-meter sea level rise, which is slightly more than the upper end of the range predicted to occur by the year 2100. None of the areas that would be subject to inundation due to 1-meter sea level rise are with 1.5 miles of the proposed HWWTP Biogas Project. Thus, sea level rise of 1 meter will not directly affect the proposed action.

3.9 SCENIC & AESTHETIC RESOURCES

3.9.1 EXISTING CONDITIONS

Visually, the project consists of two distinct subzones: (*i*) HWWTP itself, and (*ii*) Geiger Road. The HWWTP facility itself is highly developed, with large buildings and tank with an industrial character. The buildings and equipment present at HWWTP are visual landmarks familiar to all who pass them as they travel along Geiger Road in either direction. A belt of landscaping (e.g., red hibiscus, monkey pod, fan palm, etc.) along Geiger Road makai of the facility partially screens, but does not obscure views of the wastewater treatment equipment and structures. In addition to views from Geiger Road, the HWWTP is at least partially visible from the adjacent: (*i*) Honouliuli Water Recycling Facility; (*ii*) Coral Creek Golf Course to the east of the plant, and (*iii*) Barbers Point Golf Course to the south. As with points along Geiger Road, views of HWWTP from the golf course are screened by the existing tree canopy on both the HWWTP site and on the respective golf courses. A view of HWWTP from its entrance along Geiger Road is provided in Figure 3.5.

Figure 3.5 View of HWWTP from Entrance on Geiger Road

Source: Planning Solutions, Inc. (2017). Photo dated November 28, 2017.

Outside of HWWTP, along Geiger Road, a very different visual environment is present, as shown in Figure 3.6 below.

Figure 3.6 Existing Views Along Geiger Road

View east along Geiger Road approaching the entrance of HWWTP from the west

View east along Geiger Road at the eastern edge of HWWTP property.

View east along Geiger Road at the crossing of Kalo'i Gulch.

View east along Geiger Road at the entrance to Coral Creek Golf Course.

View east along Geiger Road approaching the intersection of Kapolei Parkway. Note adjacent residential area behind wall.

View east along Geiger Road of the intersection of Geiger Road and Kapolei Parkway.

Source: Planning Solutions, Inc. (2017). Photos dated November 28, 2017.

As shown in Figure 3.6, the views along Geiger Road consist of the relatively broad and flat 'Ewa Plain, with low-lying invasive grasses, shrubs, and trees including palms, monkey pod, and kiawe. The shoulder on the mauka side is unpaved and vegetation there is generally thin. As Geiger Road passes the residential areas closer to the intersection with Kapolei Parkway, the mauka side of the road consists of an earthen embankment with sparse grass and a low wall, partially obscuring views of the homes beyond it. Some landscaping and signage is present near the entrances to the Coral Creek Golf Course and Barbers Point Golf Course.

Section 2.2.9 of the *'Ewa Development Plan* (DPP, 2013) lists a variety of significant views and vistas which it designates for preservation; they include:

- *Distant vistas of the shoreline from the H-1 Freeway above the 'Ewa Plain;*
- *Views of the ocean from Farrington Highway between Kahe Point and the boundary of the Wai'anae Development Plan Area;*
- *Views of the Wai'anae Range from H-1 Freeway between Kunia Road and Kalo'i Gulch and from Kunia Road;*
- *Views of nā pu'u at Kapolei, Pālailai, and Makakilo;*
- *Mauka and makai views; and*
- *Views of central Honolulu and Diamond Head, particularly from Pu'u O Kapolei and Pu'u Makakilo.*

3.9.2 PROBABLE IMPACTS

No portion of the proposed action would affect the views or vistas identified in the *'Ewa Development Plan*. Impacts to scenic and aesthetic resources associated with the proposed action, which are discussed in detail below, would be minor and less than significant.

3.9.2.1 Construction Period

During construction of the proposed project, regardless of alternative, some temporary impacts would occur to user groups viewing HWWTP from Geiger Road, Coral Creek Golf Course, and other adjacent areas. These impacts would consist of viewing some construction equipment, vehicles, and workers as they transport and install the biogas reclamation equipment within the developed area at HWWTP. Because the area selected for this equipment is in an area with many significant structures and equipment, most of this activity would be at least partially obscured, and would be limited to a brief period during installation.

More significant impacts would be related to construction of the pipeline connecting the biogas reclamation facility to Hawai'i Gas' gas pipeline network. During construction of the pipeline, visual impacts to user groups traveling along Geiger Road will include: construction equipment, vehicles, and workers conducting the trenching, pipeline emplacement, filling, and repaving of the roadway. Because the work will necessitate a lane closure, signage, cones, construction fencing, stockpiling of material and other visual presences will be affect existing views along Geiger Road. Any construction impacts related to scenic resources will be short-term and will be limited to the construction period.

3.9.2.2 Operations and Maintenance Period

Once constructed, some portions of the project-related biogas infrastructure may be visible for brief moments from vehicles passing along Geiger Road. However, these views would be partial and screened by layers of intervening vegetation and existing structures already present within HWWTP. After installation, the proposed gas pipeline in the CCH ROW will be completely underground and will not be visible.

3.10 IMPACTS ON UTILITIES AND PUBLIC INFRASTRUCTURE/SERVICES

3.10.1 PUBLIC INFRASTRUCTURE

3.10.1.1 Existing Conditions

Electric Power. HWWTP is served by Hawaiian Electric's existing electrical grid. Power lines running along Geiger Road enter the facility along the southwest corner of the facility and travel up

its eastern boundary to a dedicated substation in the northeast corner of the facility. From there it is distributed throughout the wastewater plant.

Telecommunications. Telephone and internet communications in the project area are provided by Hawaiian Telcom and Spectrum; Spectrum also provides cable television service in the area. These services are transmitted through a combination of aerial lines and underground conduits. There are two cell phone towers located on HWWTP property, one in the southeast corner of the property and one in the northwest corner of the property.

Water Supply. The potable and emergency fire water supply for the Island of O‘ahu is provided by the CCH’s Board of Water Supply (BWS), which is a semi-autonomous agency that constructs, operates, and maintains the wells, pumping stations, and distribution network. The BWS relies solely on groundwater to supply potable water to the community. HWWTP site is located within the Waipahu-Waiawa System, which is the primary source of drinking water for the ‘Ewa-Honouliuli area. The closest well to HWWTP is approximately 3.1 miles north of the project area. For industrial and irrigation purposes, the BWS utilizes recycled water from Honouliuli Water Recycling Facility (HWRF), which operates under contract by Veolia Water North America, and located on the western side of the HWWTP, which recycles wastewater for non-potable uses such as fire suppression and irrigation. Access to HWRF is via the main gate at HWWTP, along Geiger Road. The HWRF provides tertiary treatment to approximately 13 MGD of secondary effluent from HWWTP.

Sanitary Wastewater. Wastewater in the project area is collected, primarily by gravity, to 16 pump stations distributed throughout the Honouliuli Watershed. Wastewater is then pumped through force mains to the interceptor sewers leading to HWWTP, where it is treated (see Section 1.4) and discharged through the Barbers Point Deep Ocean Outfall, located approximately 1.7 miles offshore at a depth of 200 feet.

3.10.1.2 Probable Impacts

The proposed action will not disturb any existing public electrical, wastewater, water, or other utility lines, nor require that any new ones be installed. It would not require any additional permanent operational or maintenance personnel, and would not, therefore, increase water use or place any additional burden on the existing supply of electrical power, water, or wastewater disposal facilities.

3.10.2 PUBLIC SERVICES

3.10.2.1 Existing Conditions

Police. Honolulu Police Department District 8 encompasses the Wai‘anae Coast, Makakilo, ‘Ewa, and the City of Kapolei. The district headquarters is in Kapolei. A substation is located in Wai‘anae, providing a base of operations for officers patrolling the Wai‘anae Coast.

Fire Protection. Leeward O‘ahu is served by the Honolulu Fire Department’s Fourth Battalion, which is headquartered at Station 40, the Kapolei Fire Station. The Nānākuli Fire Station (Station 28) and Wai‘anae Fire Station (Station 26), each have an engine and a tanker. The Makakilo Fire Station (Station 35) has a single engine, as does the ‘Ewa Beach Fire Station (Station 24).

Health Services. Leeward O‘ahu is served by: (*i*) Queen’s Medical Center – West O‘ahu, (*ii*) Pali Momi Medical Center in Pearl City, (*iii*) the Wai‘anae Coast Comprehensive Health Clinic between Nānākuli and Wai‘anae, and (*iv*) clinics in Kapolei maintained by other health care providers. Emergency Medical Services (EMS) Division staff and trucks are located at the Wai‘anae Fire Station and at Pali Momi in Pearl City. A quick response unit—with a paramedic and a truck—but without the ability to transport patients, is located at the Navy medical clinic in Barbers Point. The Honolulu Fire Department co-responds to calls for emergency services.

Solid Waste Management. The ‘Ewa Convenience Center, located at 91-1000 Geiger Road, is on the southwest corner of the HWWTP site, and accepts residential municipal solid waste only. Multiple roll-off dumpsters are used onsite for the separate collection of different types of materials. Combustibles are processed at the Honolulu Program of Waste Energy Recovery (H-POWER), a waste-to-energy facility located at the Campbell Industrial Park in Kapolei. Non-combustibles are taken to the Waimanalo Gulch Landfill near Kahe Valley. Green waste is hauled to mulching and composting sites, while large objects, tires, and automobile batteries are taken to recycling facilities. There are plans to close the Waimanalo Gulch Landfill or to limit the amount of solids that are disposed there. Solid waste, as a component of sanitary wastewater, is transported to HWWTP from interceptor sewers and trucked there from the Wahiawa and Pa‘ala‘a Kai WWTPs for additional treatment and disposal. Construction debris is transported to the PVT Land Company’s Nānākuli facility by private haulers.

Educational Services. The schools and childcare facilities near the proposed project, and their approximate distance from HWWTP, are provided in Table 3.12. Some schools or childcare facilities may be closer or further away from the proposed pipeline route.

Table 3.12 Schools and Childcare Facilities Near HWWTP

Name	*Approximate Distance from HWWTP*
‘Ewa Makai Middle School	0.6 mi.
‘Ewa Elementary School	0.7 mi.
Kapolei Middle School	0.8 mi.
Keone‘ula Elementary School	1.0 mi.
Holomua Elementary School	1.0 mi.
Seagull Schools (2 Locations)	1.3 and 1.7 mi.
Planet Preschool	1.4 mi.
Kama‘aina Kids	1.9 mi.
‘Ewa Plains Enrichment Program	2.0 mi.
Source: Compiled by Planning Solutions, Inc. (2017)	

3.10.2.2 Probable Impacts

Police, Health, and Educational Services. The proposed action and alternatives would not measurably increase the burden on existing police and health services or facilities; neither will it result in any changes that would measurably change the level of police protection that is needed at HWWTP. All the aboveground facilities will be entirely surrounded by a security fence, and DES monitors its facility with its own security systems and personnel. Because the facilities will not require a substantial increase in staffing, its operation and maintenance will have no effect on the number of people present on the property that might require medical attention. The absence of any significant long-term increase in on-site employment means that there is not a potential to place additional demands on education or healthcare services.

Fire Protection. Hawai‘i Gas has worked with DES and its contractors to make the provision of adequate fire protection a fundamental aspect of the design of the proposed biogas reclamation facility and associated pipeline. All facilities would comply with the National Fire Protection

Association's (NFPA) recommendations, local codes, and other applicable fire protection regulations. This includes compliance with applicable provisions of the National Fire Protection Association's *Uniform Fire Code Handbook* (NFPA, 2012) which provides fire prevention guidance and standards. In the event of any malfunction, gas detectors located in and around the gas upgrading equipment will automatically shut off the equipment and divert the biogas to the flare in the event of a malfunction, with no disruption to any other processes at HWWTP. Additional measures include maintaining a cleared area 10-feet around the biogas reclamation equipment, and a non-combustible base installed under and around it. While methane is inherently flammable, the biogas reclamation equipment and other ancillary facilities are largely non-flammable, but some other flammable materials may be present in small quantities. A copy of this EA will be provided to HFD with a request for review and comment; any comment (and Hawai'i Gas' response) will be included in full in the final EA.

Solid Waste. The kind of construction that is required to install the biogas reclamation equipment and pipeline produces relatively little solid waste. The containerized biogas equipment, piping, and other materials would be shipped to Hawai'i and transported to the project site in reusable 45-foot shipping containers. Packing materials will generally be recycled at an appropriate, offsite location. What little construction waste and scrap is generated will either be sold to a dealer for recycling or disposed of at an approved offsite location.

3.11 HAZARDOUS MATERIALS

3.11.1 EXISTING CONDITIONS

Hawai'i Gas does not store and has not disposed of any hazardous materials in the vicinity of the planned construction activities. The company's review, in partnership with DES, of the facility's history confirms that the project site has been in continuous use as part of the HWWTP since its construction in the late 1970s. Prior to that, the site was used for commercial sugar cane agriculture, and Geiger Road has been in continuous use as a roadway for military and agricultural use since prior to the Second World War. Because the actual project area has no history of previous development or industrial usage, and has been part of HWWTP and the roadway for decades, no Phase 1 Site Assessment was conducted as part of the planning process. Hawai'i Gas believes that the likelihood of hazardous materials being present within the area is low, and the need for remedial action sufficiently unlikely, that no such assessment is necessary.[11] As might be expected in an area such as this, various types of solid waste may be found throughout the project area, particularly those areas within the Geiger Road ROW. This waste may include stone and metal debris, car parts, glass and plastic bottles, and other containers. Because of the previous agricultural use of the area for sugar cane, some residual fertilizers, pesticides, and herbicides may be present in very minute quantities.

3.11.2 PROBABLE IMPACTS

3.11.2.1 Installation, Operation, and Maintenance

The proposed HWWTP Biogas Project's biogas reclamation and upgrading system uses dry, solid-state equipment that does not require or produce hazardous materials or waste. The sole hazardous materials which will be present as part of the project are: (*i*) the methane which is purified and piped from the site; and (*ii*) the diesel fuel and other petroleum-based substances utilized during similar construction projects (e.g., pipe glue and road marking paint).

[11] Phase 1 Site Assessments do not include any sampling activities or analysis of suspect soil or other materials.

Physical damage to a piece of equipment could result in the release of diesel fuel or hydraulic oil. The storage, maintenance, and fueling of vehicles and equipment will follow all applicable regulations and best management practices, which includes maintaining a spill response kit.

Similarly, only physical damage to the pipeline or pump would result in the release of methane. However, the biogas upgrading unit incorporates continuous, 24-hour monitoring system which will automatically shut the system down in the event of a process error such as a leak. In addition, the odorizing unit attached to the biogas stream is intended to help create an easily detectable odor to the methane gas, so that any leak can be rapidly identified and addressed.

3.12 ROADWAYS & TRAFFIC

3.12.1 EXISTING CONDITIONS

During preparation of the *Final Environmental Assessment for the Honouliuli Wastewater Treatment Plant Secondary Treatment and Facilities* (AECOM, 2017), a Traffic Impact Analysis Report (TIAR), which included a characterization of the existing roadways and traffic levels in the vicinity of HWWTP, was prepared by Austin Tsutsumi & Associates, Inc. in November 2014 (ATA, 2014). This section relies on information developed for that TIAR, as well as information gathered by the State of Hawai‘i Department of Transportation (DOT).

The State of Hawai‘i DOT, Highways Division, Highways Planning Survey Section does not conduct regular traffic counts for the portion of Geiger Road directly adjacent to HWWTP. However, it does conduct regular traffic counts for the portion of Geiger Road between Kapolei Parkway and Launahele Street; this station has a Site ID No. B72714000079. This traffic count station is directly adjacent to the portion of the project area where the proposed gas pipeline would interconnect with Hawai‘i Gas existing as main on Kapolei Parkway. The most recent count was conducted on November 17 and 18, 2015. The 24-hour traffic volumes were similar on both days: 11,080 on November 17 and 11,280 on November 18. The peak-hour volumes on the two days were also similar: 802 on November 17 and 731 on November 18. To be conservative, the following discussion is based on the data from November 18, when total volumes were marginally higher. The difference between the two counts was not significant and would not have altered conclusions. Table 3.13 below summarizes the traffic volume data for Geiger Road.

Table 3.13. Existing Traffic Volumes on Geiger Road Between Kapolei Parkway and Launahele Street

Direction	***West-Bound[1]***	***TownEast-Bound[2]***	***Total***
24-Hour Volume	6,185	5,065	11,250
Morning Peak-Hour (7:00-8:00 a.m.)	437	346	783
Afternoon Peak-Hour (3:15-4:15 p.m.)	483	476	959
Note: 1. West-bound on Geiger Road traveling towards Kapolei Parkway. 2. East-bound on Geiger Road traveling towards Launahele Street.			
Source: Site ID No. B72714000079 Geiger Road between Kapolei Parkway and Launahele Street.			

Primary road access to HWWTP is through the main entrance on Geiger Road, west of Coral Creek Golf Course and on the south side of the HWWTP property (see Figure 1.3). The Septage Receiving Station is accessed through a separate entrance along Geiger Road east of the main entrance. The planned expansion area can currently be accessed from the north from Malio Street via Renton Road and from Geiger Road, east of the Septage Receiving Station entrance. The adjacent ‘Ewa

Convenience Center (see Section 3.10.2.1) is accessed from Geiger Road west of the main entrance to HWWTP. The speed limit in the segment of Geiger Road fronting the HWWTP is 30 miles per hour.

The speed limit in the segment of Geiger Road fronting the HWWTP is 30 miles per hour. Access to the HWWTP property and adjacent areas can be summarized as follows:

- Primary road access to HWWTP is through the main entrance on Geiger Road, west of Coral Creek Golf Course and on the south side of the property (sees Figure 1.2).
- The Septage Receiving Station is accessed through a separate entrance along Geiger Road, east of the main entrance in the southeast corner of the HWWTP property.
- In addition, the planned HWWTP expansion area can currently be accessed from the north via Malio Street via Renton Road and from Geiger Road, east of the Septage Receiving Station.
- The adjacent ‘Ewa Convenience Center refuse transfer station is accessed from Geiger Road west of the main entrance to HWWTP.

For security and other reasons, DES and Hawai‘i Gas have collectively determined that all construction vehicles will access the HWWTP via the main gate. The entrance to HWWTP is not continuously monitored, and no vehicle-count data are kept for ingress or egress from HWWTP. The only means of construction access for the work related to the pipeline will be via Geiger Road.

3.12.2 PROBABLE IMPACTS: CONSTRUCTION PERIOD

Activities required to construct the HWWTP Biogas Project would generate vehicle-trips on area roadways. As construction would occur while the existing operations at HWWTP continue in their present form, and during normal traffic flow along Geiger Road, construction activities would lead to a short-term increase in the number of vehicles traveling along area roadways and entering and leaving the wastewater treatment plant. While the great majority of vehicle-trips that would be generated by the proposed project would be by worker cars and light-trucks, some material deliveries would be by medium (WB-40 class) trucks and a few large (WB-50 class) trucks.

Hawai‘i Gas’ estimates of the number of construction workers are provided in Table 3.14 below. This was done using construction employment numbers provided by Hawai‘i Gas and its contractor. Since the site preparation and biogas reclamation equipment would be essentially complete before the pipeline work commences, there would be very little overlap between these activities, such that the total number of vehicle trips generated by project-related workers, as compared with traffic volumes shown in Table 3.13, would not impact traffic measurably.

Table 3.14 Estimated Construction Period Workforce

Construction Component	*Typical Peak-Period Employment*	*Expected Duration (in mos.)*	
		Peak Period	*Start-to-Finish*
Site Preparation	4	1	To be determined.
Biogas Reclamation and Upgrading System Installation	4	2	To be determined.
Onsite Pipeline Construction	4	2	3
Offsite Pipeline Construction	5	2	3
Source: Hawai‘i Gas (2017)			

The proposed project involves work both within HWWTP and outside the facility in the Geiger Road ROW. It will require a Street Usage Permit for a temporary lane closure and will briefly affect the roadways' capacity to accommodate traffic. These effects will be the result of construction worker vehicles and material deliveries as well as work on the roadway itself. The construction along Geiger Road, which will be the primary source of traffic related impacts, is expected to take place over several months. Hawai'i Gas and its contractors would comply with restrictions on lane closures required by the City and County of Honolulu as part of the Street Usage Permit. It is likely that this will include limiting the hours of lane closure so as to avoid peak periods so that a lane is only closed during off-peak periods when the remaining lanes of Geiger Road and Kapolei Parkway provide ample capacity.

The limited number of vehicles traveling to and from the project site during peak hours and compliance with Street Usage Permit requirements would result in a less than significant impact on roadways and traffic.

3.12.3 PROBABLE IMPACTS: OPERATIONAL PERIOD

Normal operations and regular maintenance (e.g., changing the activated carbon filters) of the proposed HWWTP Biogas Project does not require on-site staffing, would not increase the number of regular personnel at HWWTP, or significantly affect transportation infrastructure. Occasional maintenance trucks would access the site, but this would represent no more than one or two vehicle-trips per week during typical business hours. Thus, none of the operational activities associated with the proposed project are anticipated to generate significant additional trip volumes on public roads.

3.12.4 AIR AND OCEAN TRANSPORTATION FACILITIES

3.12.4.1 Existing Facilities Airport and Harbor

Airports. The project site is approximately 5.3 miles west from the end of the nearest runway at Honolulu International Airport (HIA), the principal commercial aviation airport serving the Island of O'ahu. A vehicle trip between the project site and HIA takes approximately 25 minutes.[12] HIA is owned and operated by the State of Hawai'i, Department of Transportation. In 2012, the airport handled 19,291,412 passengers, 278,145 aircraft movements, and processed 412,270 metric tons of cargo. For the 12-month period ending January 30, 2014, the airport handled 286,897 aircraft operations, an average of 786 per day. In terms of passengers, it is one of the top 25 busiest airports in the world. There are 217 aircraft based at HIA.

The Airports Division also owns and operates Kalaeloa Airport. Once a Naval airfield, the facility now accommodates general aviation, Hawai'i National Guard, and Coast Guard aircraft. The end of the nearest runway at Kalaeloa Airport is approximately 1.6 miles southwest of the project site. During the 12-month period ending December 31, 2015, 29 aircraft of all types were based there and there were 128,558 operations of all types (see http://www.aopa.org/airports/PHJR).

Harbors. The nearest commercial harbor is the State of Hawai'i's Department of Transportation, Harbors Division owned Kalaeloa Harbor, which is located approximately 4.6 miles west of the project site. This harbor handles most of the bulk cargo (e.g., coal, cement, etc.) that arrives on O'ahu. Honolulu Harbor, which like Kalaeloa Harbor, is operated by the Harbor Division, is located approximately 8.5 miles east of the project site. With more than 200 acres of container yards and over 30 major berths, Honolulu Harbor is by far the largest port facility in the Hawaiian Islands and most of the products that enter and leave the State of Hawai'i will pass through it.

[12] This estimate was generated using Google Maps (2017) and may vary depending on day, time, mode of transport and other factors.

3.12.4.2 Probable Impacts on Air and Ocean Transportation Facilities

The proposed action would not directly affect air or ocean transportation facilities. However, most of the construction materials and equipment, such as the containerized biogas reclamation equipment, would be imported by sea, increasing the volume of cargo passing through the State's facilities. The volume of material which would pass through these transportation facilities amounts to a very small fraction of their capacity and is well within their existing capability. All of the proposed structures are far below the height that would require notification of the Federal Aviation Administration. Hence the HWWTP Biogas Project does not have the potential to adversely affect air and sea transportation.

3.13 PROBABLE LAND USE AND SOCIO-ECONOMIC IMPACTS

The HWWTP Biogas Project is consistent with the property's I-2 "Intensive Industrial" zoning. The intent of the I-2 intensive industrial district is to set aside areas for the full range of industrial uses necessary to support the city of Honolulu. It is intended for areas with necessary supporting public infrastructure, near major transportation systems and with other locational characteristics necessary to support industrial centers. In addition, to the maximum extent practicable, I-2 must be situated in areas away from residential communities. The HWWTP project site conforms to these characteristics, allowing Hawai'i Gas to partner with DES to develop a renewable energy source close to its existing gas distribution network while remaining separated from residential areas.

While the HWWTP would create a marginal increase in the level of activity within the plant, the area has long been identified as appropriate for intensive industrial activities and is already in use as such. Thus, while itself a new development, it would not drastically alter the overall intensity of development in the area, and would simply represent a minor intensification of existing activity. Further, the proposed HWWTP Biogas Project will not increase the number of full-time staff at the plant, nor will it lead generate secondary growth or development which would lead to other land use changes in adjoining areas. For these reasons, Hawai'i Gas believes that the proposed project is compatible with, and in the interest of, the planned for and intended use of the area.

While substantial, the construction expenditures related to project development are small relative to the overall level of construction activity on the island, which is estimated at $2.4 billion in new construction authorizations in 2016.[13] Hence, the project does not have the potential to have a major impact on the local economy or to cause demand for construction workers that cannot be met by the existing local labor force. Moreover, the proposed changes will not create a significant new revenue stream or create substantial ongoing costs that would have a considerable effect on the island's economy. At most, the project's construction will provide short-term employment. Apart from some few individuals who may be intermittently tasked with maintenance of the biogas reclamation facility—at least some of whom are already working for Hawai'i Gas—the project would not increase the number of employees at the power plant or attract new residents to the area. No persons would be displaced by the proposed project.

[13] Estimate based on State of Hawai'i Department of Business and Economic Development, State of Hawai'i Data Book 2015, *Table 21.01 Number and Value of Building Permits, by County: 2006 to 2015*, retrieved on the web at: http://files.hawaii.gov/dbedt/economic/databook/2015-individual/21/210115.pdf

3.14 IMPACTS ON RECREATION & SHORELINE ACCESS

3.14.1 EXISTING CONDITIONS

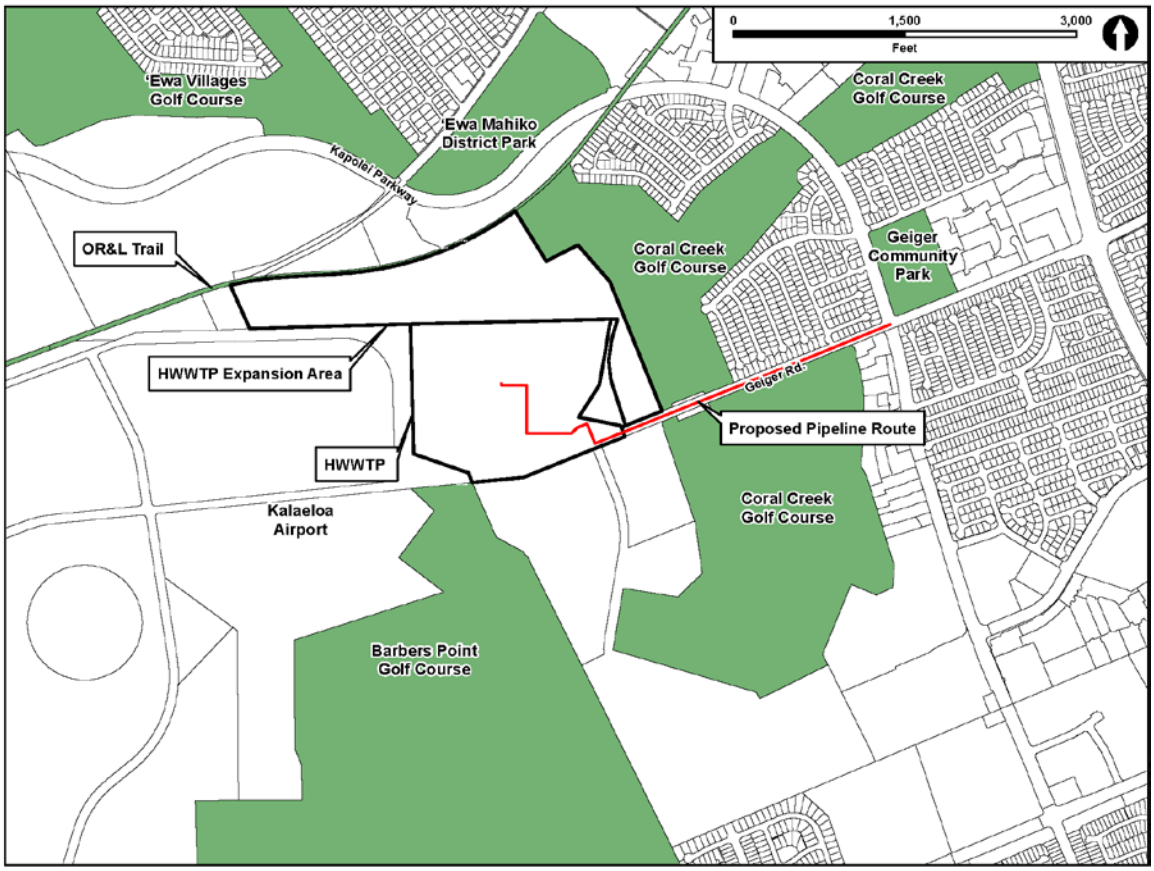
HWWTP is in the CCH Department of Parks and Recreation's District III, which encompasses 23 parks on the leeward side of O'ahu. These include parks in each of the major residential zones and numerous beach parks along the Wai'anae Coast, at Barbers Point and Campbell Industrial Park, and 'Ewa Beach. There are several recreational areas, both public and private, within a 1-mile radius of HWWTP, including golf courses, parks, and a bike trail; they are:

- Coral Creek Golf Course;
- Barbers Point Golf Course;
- 'Ewa Villages Golf Course;
- Geiger Community Park;
- 'Ewa Mahiko District Park; and
- OR&L Rail Trail and Bike Path.

Figure 3.7 shows the parks and recreational areas in the project vicinity. Of the recreational areas listed above, Coral Creek Golf Course and Barbers Point Golf Course are the recreational resources located closest to the project. These golf courses are adjacent to, and accessed off of, Geiger Road.

The proposed project is well away from the shoreline and will not pass through or near any point of shoreline access.

Figure 3.7 Parks and Recreational Areas near HWWTP



Source: Compiled by Planning Solutions, Inc. (2017)

3.14.2 PROBABLE IMPACTS ON RECREATION & SHORELINE ACCESS

Due to a combination of its: (*i*) distance from the proposed biogas facility; (*ii*) intervening roadways; (*iii*) existing and planned structures; and (*iv*) intervening vegetation, the HWWTP Biogas Project will have no effect on use of, or views from, ‘Ewa Villages Golf Course, ‘Ewa Mahiko District Park, or the OR&L Trail and Bike Path. In addition, the proposed pipeline construction along Geiger Road is unlikely to affect user groups attempting to access these recreational resources, as other roadways such as Kapolei Parkway offer a more direct route of access.

During the construction phase, elements of the proposed action are likely to be visible from, and temporarily affect access of, Barbers Point Golf Course, Coral Creek Golf Course, and Geiger Community Park. Because the pipeline installation will extend from HWWTP along the Geiger Road, a temporary lane closure may be required as discussed in Section 3.12.2, impacting the ease of access to these recreational resources, but not preventing or restricting access to them. In addition, some construction noise, dust, vehicles, and workers will be visible from these areas during construction.

Once construction of the proposed biogas reclamation facility and associated pipeline is complete, it will not be visible from these recreational resources as all of the above-ground components will be screened by intervening vegetation and structures. In addition, normal operation and maintenance of the proposed biogas project will not generate traffic, noise, air emissions, or otherwise have the potential to degrade the recreational value of adjacent areas. Consequently, no long-term recreational impacts are anticipated.

3.15 SUMMARY OF MITIGATION MEASURES

Table 3.15 summarizes the mitigation measures introduced in this chapter.

Table 3.15 Summary of Mitigation Measures

Section	*Committed Mitigation Measures*
3.1 – Topography, Geology & Soils	Use best management practices to minimize soil erosion.
3.2 – Hydrology	Maintain existing drainage patterns and avoid increase in storm water runoff. Implement Best Management Practices (BMP) to prevent impacts to storm water runoff during construction.
3.3 – Climate/Micro-Climate	None
3.4 – Air Quality	Implement construction minimization measures (dust control) as called for in Section 3.4.2.
3.5 – Biota	None
3.6 – Noise	Adhere to HAR §11-46
3.7 – Archaeological, Historical, & Cultural Resources	If undocumented cultural properties are encountered, Hawai‘i Gas will, at a minimum: (*i*) immediately cease all work in the area; and (*ii*) notify the State Historic preservation Division. As appropriate, further mitigation measures would be proposed and coordinated with SHPD.
3.8 – Natural Hazards	Design to appropriate standards as discussed in Section 3.8.
3.9 – Scenic & Aesthetic Resources	None
3.10 – Public Infrastructure	Install water and telecommunications connections as proposed.
3.11 – Hazardous Materials	None
3.12 – Transportation Facilities	None
3.13 – Socioeconomic	None
3.14 – Recreation & Shoreline Access	None
Source: Planning Solutions, Inc. (2017)	

4. CONSISTENCY WITH EXISTING POLICIES, CONTROLS, AND LAND USE PLANS

In accordance with the requirements of HAR §11-220-17(h), this chapter discusses the relationship of the proposed action to land use plans, policies, and controls for the area. Hawai‘i Gas has evaluated the proposed HWWTP Biogas Project for consistency with these regulations. It has also identified the extent to which the proposed action would conform or conflict with objects and specific terms of approved or proposed land use plans, policies, and controls. The discussion is organized first by jurisdiction (i.e., county, state, or federal) and then by specific ordinance, regulation, or law. This is followed by a listing of the required permits and approvals.

4.1 CITY & COUNTY OF HONOLULU

4.1.1 O‘AHU GENERAL PLAN

The *O‘ahu General Plan* poses several objectives regarding utilities. In Section V, Transportation and Utilities, Objective C states: “To maintain a high level of service for all utilities.” The proposed HWWTP Biogas Project are consistent with and support this objective by allowing Hawai‘i Gas—the publicly-regulated gas utility for the State of Hawai‘i—to provide safe, reliable, and renewable natural gas to its customers while providing a stream of revenue to the City’s Department of Environmental Services. By adding the proposed HWWTP Biogas Project to its existing facilities, Hawai‘i Gas will be able to diversify its fuel sources and reduce its dependence on imported fuel, thereby increasing the reliability and flexibility of its system.

Section VI of the *O‘ahu General Plan* poses several objectives and policies related to energy, and several of these relate to the proposed renewable energy (i.e., biogas) facility which Hawai‘i Gas is proposing. They include the following:

- *Objective A. To maintain an adequate, dependable, and economical supply of energy for Oahu residents.*
  - *Policy 1. Develop and maintain a comprehensive plan to guide and coordinate energy conservation and alternative energy development and utilization programs on Oahu.*
  - *Policy 2. Establish economic incentives and regulatory measures which will reduce Oahu's dependence on petroleum as its primary source of energy.*
  - *Policy 3. Support programs and projects which contribute to the attainment of energy self-sufficiency on Oahu.*
- *Objective C. To fully utilize proven alternative sources of energy.*
  - *Policy 2. Support the increased use of operational solid waste energy recovery and other biomass energy conversion systems.*
- *Objective D. To develop and apply new, locally available energy resources.*
  - *Policy 1. Support and participate in research, development, demonstration, and commercialization programs aimed at producing new, economical, and environmentally sound energy supplies from:*

    a. solar insolation;
    b. biomass energy conversion;
    c. wind energy conversion;
    d. geothermal energy; and
    e. ocean thermal energy conversion.

To the extent that the proposed biogas reclamation facility will produce renewable natural gas locally, it will offset the need for Hawai‘i Gas to meet its fuel-supply needs using fossil-fuel based synthetic natural gas. This, in turn, will help Hawai‘i Gas carry through with its renewable energy commitments required by state law, supporting the objectives of the *O‘ahu General Plan* by creating a new, economical, and renewable energy source.

4.1.2 ‘EWA DEVELOPMENT PLAN

The Island of O‘ahu is divided into eight Development/Sustainable Communities Plan areas. Each plan implements the objectives and policies of the *O‘ahu General Plan* and serves as a guide for public policy, investment, and decision-making within its respective region. The project site is located within the region addressed by the *‘Ewa Development Plan* (EDP).

The EDP was adopted by Ordinance 97-49 in 1997, and most recently revised in mid-2013, when Ordinance 13-26 was signed into law. Section 3.12 of the updated plan recognizes Honouliuli as one of ‘Ewa’s major industrial centers. Among its general policies for the Honouliuli Industrial Area, which includes HWWTP, is a call to develop a power generation facility at the wastewater treatment plant. More specifically, it states:

> *Allow a power generation facility to be included if it is dependent on wastewater treatment operations and can be designed so that it is not generally visible from nearby major public rights-of-way, residential areas, and commercial areas.*

Finally, the implementation matrix (Table 5.1) in the EDP states:

> *Develop Honouliuli as a smaller industrial area, used for wastewater treatment and for light industrial and industrial-commercial mixed uses to serve the surrounding communities. Expand the Honouliuli Wastewater Treatment Plant to accommodate additional growth in the region as well as to provide additional facilities for higher levels of wastewater treatment.*

The proposed project is fully consistent with these provisions of the EDP. It will:

- Allow for the renewable production of energy at HWWTP which is fully dependent on wastewater treatment operations.
- Once constructed, remain generally invisible from nearby major public ROW, residential areas, and commercial areas.
- Contribute to the development of the Honouliuli Industrial Center.

Finally, the proposed HWWTP Biogas Project will provide the DES with an additional stream of revenue to support the development and expansion of services in this growing community.

4.1.3 CITY AND COUNTY OF HONOLULU LAND USE ORDINANCE

The purpose of the CCH’s Land Use Ordinance (LUO) is to regulate land use in a manner that will encourage orderly development in accordance with adopted land use policies. It does this by establishing zoning districts and specifying the kinds of development and development standards that must be adhered to within each zoning district.

HWWTP is in the I-2, or “Intensive Industrial” zoning district. The proposed biogas reclamation facility is consistent with the applicable height limitations, setback requirements, and other design standards of this zoning district (see LUO §21-3.130). As discussed in Chapter 5, construction, operation, and maintenance of this facility is not expected to significantly impact the surrounding properties with more sensitive zoning and land uses.

The HWWTP was granted an Existing Use Permit for Type B Utility Installation in 19XX (XX/CUP X-XX). The permit has been modified several times in subsequent years.

4.2 STATE OF HAWAI'I

4.2.1 HAWAI'I STATE PLAN

The *Hawai'i State Plan* is intended to guide the long-range development of the State by:

- Identifying goals, objectives, and policies for the State and its residents;
- Establishing a basis for determining priorities and allocating resources; and
- Providing a unifying vision to enable coordination between the various counties' plans, programs, policies, projects and regulatory activities to assist them in developing their county plans, programs, and projects and the State's long-range development objectives.

The *Hawai'i Sate Plan* is a policy document. It depends upon implementing laws and regulations to achieve its goals. The sections of the *State Plan* that are most relevant to the proposed project are Sections 226-18(a) and (b), which establish objectives and policies for energy facility systems. These sections are reproduced in italics below, and the proposed action's consistency with them is discussed:

§226-18 (a) *Planning for the State's facility systems with regard to energy shall be directed toward the achievement of the following objectives, giving due consideration to all:*

(1) Dependable, efficient, and economical statewide energy systems capable of supporting the needs of the people;

(2) Increased energy self-sufficiency where the ratio of indigenous to imported energy use is increased;

(3) Greater energy security and diversification in the face of threats to Hawaii's energy supplies and systems;

Discussion: The proposed project would contribute to all of the above objectives and policies by providing a reliable, locally produced, and renewable source of energy which is not dependent upon imported fuel sources. While the project would not reduce the emission of carbon, as the methane would still be consumed locally resulting in the release of carbon dioxide, it would be carbon-neutral (i.e., would not increase emissions of greenhouse gasses over current levels). However, burning natural gas produces far less carbon than other available energy sources such as oil or coal. Thus, Hawai'i Gas has concluded that the project is consistent with the applicable provisions of the *Hawai'i State Plan*.

4.2.2 CHAPTER 205, HAWAI'I REVISED STATUTES - LAND USE LAW

Hawai'i Revised Statutes (HRS), Chapter 205, establishes the State Land Use Commission (SLUC) and gives this body the authority to designate all lands in the State as Urban, Rural, Agricultural, or Conservation District lands. The counties make all land use decisions within the Urban Districts in accordance with their respective county general plans, development plans, and zoning ordinances. The counties also regulate land use in the state Rural and Agricultural Districts, but within the limits allowed by Chapter 205.

The HWWTP is in the state Urban District. Hawai'i Administrative Rules §15-15-18 characterizes the Urban District as exhibiting "city-like" concentrations of people, structures, and streets with an urban level of services and other related land uses. It also stresses the importance of ensuring availability of basic services and utilities in urban areas. The HWWTP Biogas Project is consistent with, and contributes to, the land uses envisioned for the State Urban District. The proposed project

will contribute to that use and will not alter the wastewater facility's overall character; therefore, it is an appropriate land use in the Urban District.

The total land area that would be disturbed by the proposed HWWTP Biogas Project evaluated in this report will not exceed one acre. Consequently, this project will not require coverage under the State of Hawai'i's National Pollutant Discharge Elimination System (NPDES) General Permit System (HAR §11-55, Appendix C).

4.2.3 COASTAL ZONE MANAGEMENT PROGRAM (CZM)

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

4.2.3.1 Recreational Resources

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

Policies:

1. *Improve coordination and funding of coastal recreational planning and management; and*
2. *Provide adequate, accessible, and diverse recreational opportunities in the coastal zone management area by:*
    a. *Protecting coastal resources uniquely suited for recreational activities that cannot be provided in other areas;*
    b. *Requiring replacement of coastal resources having significant recreational value including, but not limited to, surfing sites, fishponds, and sand beaches, when such resources will be unavoidably damaged by development; or requiring reasonable monetary compensation to the State for recreation when replacement is not feasible or desirable;*
    c. *Providing and managing adequate public access, consistent with conservation of natural resources, to and along shorelines with recreational value;*
    d. *Providing an adequate supply of shoreline parks and other recreational facilities suitable for public recreation;*
    e. *Ensuring public recreational uses of county, state, and federally owned or controlled shoreline lands and waters having recreational value consistent with public safety standards and conservation of natural resources;*
    f. *Adopting water quality standards and regulating point and nonpoint sources of pollution to protect, and where feasible, restore the recreational value of coastal waters;*
    g. *Developing new shoreline recreational opportunities, where appropriate, such as artificial lagoons, artificial beaches, and artificial reefs for surfing and fishing; and*
    h. *Encouraging reasonable dedication of shoreline areas with recreational value for public use as part of discretionary approvals or permits by the land use commission, board of land and natural resources, and county authorities; and crediting such dedication against the requirements of section 46-6.*

Discussion: The proposed project would have no effect on coastal recreational resources. While some portion of the new biogas facility may be visible from adjacent recreational areas, these views

would be partial at most and screened by intervening structures, landscaping, and the lower elevation of some adjacent areas such as Coral Creek Golf Course. The construction and operation of the HWWTP Biogas Project would not disrupt ongoing use of these recreational resources, area parks, or access to the shoreline.

4.2.3.2 Historic Resources

Objective: *Protect, preserve, and, where desirable, restore those natural and manmade historic and prehistoric resources in the coastal zone management area that are significant in Hawaiian and American history and culture.*

Policies:

1. *Identify and analyze significant archaeological resources;*
2. *Maximize information retention through preservation of remains and artifacts or salvage operations; and*
3. *Support state goals for protection, restoration, interpretation, and display of historic resources.*

Discussion: The proposed work will occur in areas that have already been extensively disturbed. Section 3.7 describes the known locations of historic and pre-contact resources and discusses the steps that Hawaiʻi Gas would take to preserve any resources inadvertently discovered during construction. SHPD will be sent a copy of this EA for review and their comments, if any, will be produced in the *Final Environmental Assessment*.

4.2.3.3 Scenic and Open Space Resources

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

Policies:

1. *Identify valued scenic resources in the coastal zone management area;*
2. *Ensure that new developments are compatible with their visual environment by designing and locating such developments to minimize the alteration of natural landforms and existing public views to and along the shoreline;*
3. *Preserve, maintain, and, where desirable, improve and restore shoreline open space and scenic resources; and*
4. *Encourage those developments that are not coastal dependent to locate in inland areas.*

Discussion: Coastal open space and scenic resources will not be affected by the proposed action. While the proposed facilities may be briefly visible, particularly during construction, from certain public vantage points, the biogas reclamation equipment is relatively low-profile and softened by distance and the intervening structures and landscaping. In addition, it will be limited to an area which is already heavily developed with a distinctly industrial character. The proposed action would require trenching and filling, but no lasting alteration of landforms and is located well away from public views of the shoreline.

4.2.3.4 Coastal Ecosystems

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

Policies:

1. *Exercise an overall conservation ethic, and practice stewardship in the protection, use, and development of marine and coastal resources;*
2. *Improve the technical basis for natural resource management;*
3. *Preserve valuable coastal ecosystems, including reefs, of significant biological or economic importance;*
4. *Minimize disruption or degradation of coastal water ecosystems by effective regulation of stream diversions, channelization, and similar land and water uses, recognizing competing water needs; and*
5. *Promote water quantity and quality planning and management practices that reflect the tolerance of fresh water and marine ecosystems and maintain and enhance water quality through the development and implementation of point and nonpoint source water pollution control measures.*

Discussion: The proposed action will not affect coastal ecosystems or any other water body, as described in Section 3.2.2.

4.2.3.5 Economic Uses

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

Policies:

1. *Concentrate coastal dependent development in appropriate areas;*
2. *Ensure that coastal dependent development such as harbors and ports, and coastal related development such as visitor industry facilities and energy generating facilities, are located, designed, and constructed to minimize adverse social, visual, and environmental impacts in the coastal zone management area; and*
3. *Direct the location and expansion of coastal dependent developments to areas presently designated and used for such developments and permit reasonable long-term growth at such areas, and permit coastal dependent development outside of presently designated areas when:*
    a. *Use of presently designated locations is not feasible;*
    b. *Adverse environmental effects are minimized; and*
    c. *The development is important to the State's economy.*

Discussion: The proposed project would not lead to any changes in the concentration or location of coastal development. The work would be constructed entirely within an area designated for industrial use and a public ROW, and would not change the normal use of HWWTP or the roadway ROW.

4.2.3.6 Coastal Hazards

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

Policies:

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

2. *Control development in areas subject to storm wave, tsunami, flood, erosion, hurricane, wind, subsidence, and point and nonpoint source pollution hazards;*
3. *Ensure that developments comply with requirements of the Federal Flood Insurance Program; and*
4. *Prevent coastal flooding from inland projects.*

Discussion: Section 3.8.2 confirms that the project is outside a designated Special Flood Hazard Area and it not within the City and County of Honolulu's Tsunami Evacuation Zone.

4.2.3.7 Managing Development

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

Policies:

1. *Use, implement, and enforce existing law effectively to the maximum extent possible in managing present and future coastal zone development;*
2. *Facilitate timely processing of applications for development permits and resolve overlapping or conflicting permit requirements; and*
3. *Communicate the potential short and long-term impacts of proposed significant coastal developments early in their life cycle and in terms understandable to the public to facilitate public participation in the planning and review process.*

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

4.2.3.8 Public Participation

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

Policies:

1. *Promote public involvement in coastal zone management processes;*
2. *Disseminate information on coastal management issues by means of educational materials, published reports, staff contact, and public workshops for persons and organizations concerned with coastal issues, developments, and government activities; and*
3. *Organize workshops, policy dialogues, and site-specific mediations to respond to coastal issues and conflicts.*

Discussion: The public will have an opportunity to review and comment on this EA, pursuant to the requirements of Hawai‘i Administrative Rules §11-200.

4.2.3.9 Beach Protection

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

Policies:

1. *Locate new structures inland from the shoreline setback to conserve open space, minimize interference with natural shoreline processes, and minimize loss of improvements due to erosion;*
2. *Prohibit construction of private erosion-protection structures seaward of the shoreline, except when they result in improved aesthetic and engineering solutions to erosion at the sites and do not interfere with existing recreational and waterline activities; and*

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

Discussion: The project poses no risk to beaches. No structures are planned seaward of the shoreline, and no interactions with littoral processes would be involved in the HWWTP Biogas Project.

4.2.3.10 Marine Resources

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

Policies:

1. *Ensure that the use and development of marine and coastal resources are ecologically and environmentally sound and economically beneficial;*
2. *Coordinate the management of marine and coastal resources and activities to improve effectiveness and efficiency;*
3. *Assert and articulate the interests of the State as a partner with federal agencies in the sound management of ocean resources within the United States exclusive economic zone;*
4. *Promote research, study, and understanding of ocean processes, marine life, and other ocean resources in order to acquire and inventory information necessary to understand how ocean development activities relate to and impact upon ocean and coastal resources; and*
5. *Encourage research and development of new, innovative technologies for exploring, using, or protecting marine and coastal resources.*

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

4.3 FEDERAL ACTS & LEGISLATION

Certain federal regulations are not triggered by the proposed project because no Federal nexus, such as federal funding, grants, or permits, exists. Therefore, acts such as the National Historic Preservation Act and Endangered Species Act are not discussed.

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

As discussed in Section 3.4.2, any emissions of fugitive dust during construction of the proposed project are expected to be temporary and relatively minor. The contractors will employ Best Management Practices (BMPs) to control fugitive dust emissions during the construction phase. A Non-covered Source Permit will be obtained from the State of Hawai‘i Department of Heath Clean Air Branch (CAB) prior to commencing normal operation of the proposed biogas reclamation facility. The project would reduce air emissions from the HWWTP relative to current conditions, will not alter air flow in the area, and will have no other measurable effect on the area’s micro-climate.

4.3.2 CLEAN WATER ACT

The Clean Water Act (Federal Water Pollution Control Act, 33 USC 1251, et seq.) is the principal law governing pollution control and the water quality of the nation’s waterways. Because construction will not disturb more than an acre of land an NPDES Construction permit (NPDES-NOI-C) is not required. Nevertheless, Hawai‘i Gas will employ BMPs to ensure storm water quality is not adversely affected or lead to an exceedance of applicable water quality standards.

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

Enacted as Chapter 205A, HRS, the Hawai‘i Coastal Zone Management (CZM) Program was promulgated in 1977 in response to the Federal Coastal Zone Management Act of 1972. The CZM

area encompasses the entire state, including all marine waters seaward to the extent of the state's police power and management authority, as well as the 12-mile U.S. territorial sea and all archipelagic waters. Even though compliance with this act is not triggered by the proposed action, Section 4.2.3 discusses the consistence of the project with the CZM Program's ten policy objectives.

4.3.4 FLOOD PLAIN MANAGEMENT (42 U.S.C. § 4321, EX. ORDER NO. 11988)

As described in Section 3.8.2, the HWWTP lies within Flood Zone D, signifying an area with an undetermined risk of flooding. The proposed improvements comply with the standards of the National Flood Insurance Program. The proposed new biogas facility would not exacerbate existing flood hazards in the area.

4.4 REQUIRED PERMITS AND APPROVALS

The permits and approvals that may be required for the proposed project are described in Table 4.1 below.

Table 4.1 Required Permits and Approvals

Permit Name	*Issued By*
Non-Covered Source Air Permit	DOH, Clean Air Branch
Grubbing, Grading, and Stockpiling Permit	Department of Planning and Permitting, CCH
Building Permits	Department of Planning and Permitting, CCH
Noise Permit and/or Noise Variance (HAR §11-46)	DOH, Indoor and Radiological Health Branch
Street Usage Permit	Department of Transportation Services, CCH
Source: Planning Solutions, Inc. (2017)	

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5. ANTICIPATED DETERMINATION

5.1 SIGNIFICANCE CRITERIA

Hawai‘i Administrative Rules (HAR) §11-200-11.2 establishes procedures for determining if an Environmental Impact Statement (EIS) should be prepared or if a Finding of No Significant Impact (FONSI) is warranted. HAR §11-200-11.2(1) provides that applicants should issue an Environmental Impact Statement Preparation Notice (EISPN) for actions that it determines may have significant effect on the environment. HAR §11-200-12 lists the following criteria to be used in making that determination:

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

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

5.2 FINDINGS

The potential effects of the proposed project described in Chapter 2 of this document were evaluated using these significance criteria. The findings with respect to each criterion are summarized below.

5.2.1 IRREVOCABLE LOSS OR DESTRUCTION OF VALUABLE RESOURCE

The proposed biogas project would be constructed on CCH property leased to Hawai‘i Gas adjacent to the existing wastewater treatment operations at HWWTP. It would be interconnected to Hawai‘i Gas' gas distribution network via an underground pipeline. It does not involve the loss of any significant cultural or natural resources.

5.2.2 CURTAILS BENEFICIAL USES

Construction and operation of the proposed new biogas facility and pipeline would support and enhance the existing use of the site for wastewater treatment, in that it would convert a byproduct of wastewater treatment which is currently discarded into a source of renewable energy for Hawai‘i Gas and a stream of revenue for the DES. It not would curtail any beneficial use of the site, and it would not substantially modify any of the existing uses of HWWTP.

5.2.3 CONFLICTS WITH LONG-TERM ENVIRONMENTAL POLICIES OR GOALS

The proposed project is consistent with the *O‘ahu General Pla*n (see Section 4.1.1) and with the State’s long-term environmental policies and goals as expressed in HRS, Chapter 344 and elsewhere in state law.

5.2.4 SUBSTANTIALLY AFFECTS ECONOMIC OR SOCIAL WELFARE

The proposed action will not have substantial effects on the economic or social welfare, except insofar as it will allow Hawai‘i Gas to source natural gas in a renewable, economical, and efficient manner while maintaining environmental quality. The project will also provide a new revenue source for the DES. The PUC, which in part advocates for public welfare, approved the project.

5.2.5 PUBLIC HEALTH EFFECTS

As discussed in Section 3.4, the proposed project will not adversely affect air quality or any other sources used for drinking or recreation. Neither will it generate large amounts of solid waste or produce other emissions that will have a significant adverse effect on public health.

5.2.6 PRODUCE SUBSTANTIAL SECONDARY IMPACTS

The proposed project will not produce substantial secondary impacts. It is not designed to foster population growth or to promote economic development. Instead, it is intended to support Hawai‘i Gas current activities as the publicly-regulated gas utility for the State of Hawai‘i.

5.2.7 SUBSTANTIALLY DEGRADE ENVIRONMENTAL QUALITY

The proposed project will not have substantial long-term environmental effects. The work will temporarily elevate noise levels and generate airborne dust during construction, but these impacts will be localized and of limited duration. So long as adequate measures are taken to control the intensity of construction noise and the release of fugitive dust, effects will be minimal.

5.2.8 CUMULATIVE EFFECTS OR COMMITMENT TO A LARGER ACTION

The proposed biogas facility does not represent a commitment to a larger action and is not intended to facilitate substantial population growth. It is intended to help Hawai‘i Gas meet the growing need for renewable natural gas on O‘ahu in an economical, efficient, and environmentally sound way.

5.2.9 EFFECTS ON RARE, THREATENED, OR ENDANGERED SPECIES

No rare, threatened, or endangered species are known to utilize the project area. The project will not utilize a resource needed for the protection of rare, threatened, or endangered species.

5.2.10 AFFECTS AIR OR WATER QUALITY OR AMBIENT NOISE LEVELS

Once constructed, the proposed project will not have a measurable effect on air quality or water quality (see Section 3.2 and 3.4, respectively). Noise levels and airborne emissions will temporarily increase during construction of the biogas facility but are not anticipated to affect any noise-sensitive uses, as discussed in Section 3.6.

5.2.11 ENVIRONMENTALLY SENSITIVE AREAS

There are no environmentally sensitive areas or resources in or near the proposed project. The project area is outside defined flood and tsunami hazard zones. The structures built as part of the project will all be constructed to be consistent with the Hawai‘i Uniform Building Code for Earthquake Zone 2a.

5.2.12 AFFECTS SCENIC VISTAS AND VIEW PLANES

The proposed project is not within a designated scenic area, nor will it impact scenic vistas or important views across the project site (see Section 3.9).

5.2.13 REQUIRES SUBSTANTIAL ENERGY CONSUMPTION

Construction of the proposed project will use some energy, however once in operation the facility will produce, rather than consume, energy and will require only infrequent maintenance.

5.3 ANTICIPATED DETERMINATION

In view of the foregoing, Hawai‘i Gas and DES have concluded that the proposed project will not have a significant adverse impact on the environment. Consequently, DES anticipates issuing a Finding of No Significant Impact (FONSI) for the proposed action.

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7. CONSULTATION & DISTRIBUTION

7.1 PARTIES CONSULTED IN PREPARATION OF THE DRAFT EA

Hawai‘i Gas sent scoping letters to the parties listed in Table 7.1 in the course of preparing this Draft Environmental Assessment.

Table 7.1 Parties Consulted During Preparation of the Draft EA

Organization or Agency
Army Corps of Engineers, Regulatory Branch, Honolulu District
Coral Creek Golf Course
Department of Design and Construction
Department of Facility Maintenance
Department of Hawaiian Home Lands
Department of Planning and Permitting
Department of Transportation Services
Federal Aviation Administration
Hawai‘i Community Development Corporation
Hawai‘i Department of Transportation (HDOT), Airports Division
HDOT, Harbors Division
HDOT, Highways Division
HDOT, Statewide Planning Office
State Historic Preservation Division
U.S. Coast Guard, 14th Coast Guard District
Source: Compiled by Planning Solutions, Inc. (2017)

Responses to the scoping letters were received from the agencies identified in Table 7.2 below. The complete text of the scoping letter and the responses received are reproduced at the end of this chapter.

Table 7.2 Agencies Responding to Scoping Letter

Organization or Agency
Department of Design and Construction
Department of Facility Maintenance
Department of Planning and Permitting
Department of Transportation Services
HDOT, Harbors Division
HDOT, Highways Division
HDOT, Statewide Planning Office
Source: Compiled by Planning Solutions, Inc. (2017)

7.2 DISTRIBUTION OF THE DRAFT EA

The Department of Environmental Services and Hawai‘i Gas distributed copies of this Draft Environmental Assessment to the parties listed in Table 7.3.

Table 7.3 Draft EA Distribution List

State Agencies	**City and County of Honolulu**
Office of Environmental Quality Control (1 HC, 1 CD)	Department of Planning & Permitting (5 copies)
Department of Agriculture	Board of Water Supply
Department of Accounting and General Services	Department of Community Services
Department of Business, Economic Development, and Tourism (DBEDT)	Department of Design & Construction
DBEDT - Energy Division	Department of Environmental Services
DBEDT – Office of Planning	Department of Facility Maintenance
Department of Defense	Department of Parks & Recreation
Department of Education	Department of Transportation Services
Department of Hawaiian Home Lands	Honolulu Fire Department
Environmental Planning Office, Department of Health	Honolulu Police Department – City of Kapolei
Clean Air Branch, Department of Health	
Clean Water Branch, Department of Health	**Elected Officials**
Wastewater Branch, Department of Health	U.S. Senator Brian Schatz
Department of Human Services	U.S. Senator Colleen Hanabusa
Department of Labor and Industrial Relations	US Representative Mazie Hirono
Department of Land and Natural Resources (5 copies)	US Representative Tulsi Gabbard
DLNR Historic Preservation Division (1 HC)	State Senator Will Espero
Department of Transportation	State Senator Mike Gabbard
Hawaii Housing Finance and Development Corp.	State Representative Matthew S. LoPresti
Office of Hawaiian Affairs	State Representative Andria P.L. Tupola
UH Environmental Center	City Councilmember Kymberly Pine (District 1)
	‘Ewa Neighborhood Board No. 23, Chair, Mitchell Tynanes
Federal Agencies	**Libraries and Depositories**
US Department of the Army, Regulatory Branch	Hawai‘i State Library Hawai‘i Documents Center
US Fish and Wildlife Service	‘Ewa Beach Public Library
	Kapolei Public Library
Utility Companies	**News Media**
Hawaiian Telcom	Honolulu Star Advertiser
Hawaiian Electric	
Source: Compiled by Planning Solutions, Inc. (2017)	

PLANNING
SOLUTIONS

June 22, 2017

General Manager
Coral Creek Golf Course
91-1111 Geiger Road
'Ewa Beach, Hawai'i 96706

Subject: Scoping Request for Input Honouliuli Waste Water Treatment Plant Biogas Reclamation Project 'Ewa, O'ahu, Hawai'i

Dear Sir or Madam:

The Gas Company, LLC (henceforth "Hawaii Gas"), is the publicly-regulated natural gas utility for the State of Hawai'i and has retained Sheehan Group Pacific (SGP) who has teamed with Planning Solutions Incorporated (PSI) to assist with planning and permitting associated with the subject project. Hawai'i Gas serves approximately 68,700 customers throughout the State; their operations include the purchase, production, transmission, distribution and sale, via underground gas pipelines, of synthetic natural gas for residential, commercial, and industrial uses. Hawai'i Gas also purchases, distributes, and sells tanked and bottled liquefied petroleum gas. These are considered to be cleaner alternatives to other fossil fuel-based energy sources in use in the State of Hawai'i.

Hawai'i Gas now has a request before the State of Hawai'i's Public Utility Commission (PUC) for permission to expend the funds necessary to purchase and install equipment and pipeline extensions to scrub and use biogas produced by the City and County of Honolulu's (CCH) Honouliuli Wastewater Treatment Plant (HWWTP). HWWTP is operated by the CCH's Department of Environmental Services (DES) and treats the wastewater produced by much of West O'ahu. In the process of treating this wastewater, HWWTP produces about 800,000 therms—or 23,400,000 kilowatt hours—of biogas annually. Currently, DES simply discards this gas by burning it off with a flare located at HWWTP.

Hawai'i Gas, in partnership with the DES, is now proposing to:

1. Purchase, install, operate, and maintain the necessary biogas purification equipment on approximately 2,500 square feet of vacant land at HWWTP which it will lease from the CCH-DES.
2. Design, construct, and maintain approximately one mile of new pipeline along Geiger Road to connect the purification system to the existing gas pipeline system along Kapolei Parkway.
3. Purify the raw biogas produced at HWWTP into utility-grade renewable natural gas, which will be compressed and injected into the new pipeline and distributed to Hawai'i Gas customers.

The gas injected into the pipeline will be metered to measure its methane content and volume, which in turn will be used to calculate the price Hawai'i Gas pays the CCH each month for it. The location of HWWTP, the proposed purification equipment, and the proposed pipeline alignment are shown in Attachment 1. A drawing of the proposed equipment is shown in Attachment 2.

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

This project represents a unique opportunity for the CCH, Hawai'i Gas, its customers, and the State of Hawai'i. If approved, the project has the potential to offer low-cost, renewable energy to the people of O'ahu, aiding the State's Clean Energy Initiative, while providing a steady stream of revenue to the CCH for a byproduct of sewage treatment which is currently discarded. The project will also allow Hawai'i Gas to further diversify its fuel supply, blending the renewable natural gas produced at HWWTP with its existing supply of synthetic natural gas, so that its customers will be unaffected by fluctuations in the availability of the renewable natural gas produced at HWWTP. Finally, Hawaii Gas customers will benefit from the fixed price of this biogas, which is not subject to the price-variability of synthetic natural gas produced from oil refinery residual byproduct.

Because the project will require the long-term lease of lands owned by the CCH, it is subject to Hawai'i Revised Statutes, Chapter 343 and its implementing regulations in Hawai'i Administrative Rules, Title 11, Chapter 200. Pursuant to these laws and regulations, Hawai'i Gas is required to prepare an Environmental Assessment (EA), in order to determine the projects potential for impacts to the natural and human environment. In addition, grading, building, and other permits may be required prior to construction of the facility and associated pipeline.

In order for its EA to better address all potential concerns of the agencies, organizations, and individuals which may be affected by this proposed project, Hawai'i Gas has prepared this information and the attachments for your review and comment. At this time we are seeking any input you may have regarding the project's purpose, potential alternatives, or any permits or approvals that may be required. In particular, we are interested in hearing about resources or plans in the area that could be affected by the project and any specific information you feel should be discussed and evaluated in the EA.

We would appreciate your response within 30 days from your receipt of this letter, or by approximately July 24, 2017. You may respond by regular mail to the address at the bottom of this letter, or by email at makena@psi-hi.com. We are also available to meet with you regarding the proposed project, or speak by phone at (808) 282-2153.

Sincerely,

Makena

Mākena White, AICP
Planner

Attachment:
Layout of Proposed Project
Drawing of Proposed Biogas Reclamation Facility

cc: Mr. Richard DeGarmo, Hawai'i Gas (electronic only)
Mr. Neil Sheehan, Sheehan Group Pacific (electronic only)

PLANNING
SOLUTIONS

June 22, 2017

Federal Aviation Administration
Department of Transportation
300 Ala Moana Blvd., Rm. 7-128
Honolulu, Hawai'i 96850-7128

Subject: Scoping Request for Input Honouliuli Waste Water Treatment Plant Biogas Reclamation Project 'Ewa, O'ahu, Hawai'i

Dear Sir or Madam:

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2. Design, construct, and maintain approximately one mile of new pipeline along Geiger Road to connect the purification system to the existing gas pipeline system along Kapolei Parkway.
3. Purify the raw biogas produced at HWWTP into utility-grade renewable natural gas, which will be compressed and injected into the new pipeline and distributed to Hawai'i Gas customers.

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Drawing of Proposed Biogas Reclamation Facility

cc: Mr. Richard DeGarmo, Hawai'i Gas (electronic only)
Mr. Neil Sheehan, Sheehan Group Pacific (electronic only)

PLANNING
SOLUTIONS

June 22, 2017

Mr. Tunis McElwain, Chief
Honolulu District
U.S. Army Corps of Engineers – Regulatory Branch
Building 525, Suite 300
Fort Shafter, Hawai'i 96858-5440

Subject: Scoping Request for Input Honouliuli Waste Water Treatment Plant Biogas Reclamation Project 'Ewa, O'ahu, Hawai'i

Dear Sir:

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cc: Mr. Richard DeGarmo, Hawai'i Gas (electronic only)
Mr. Neil Sheehan, Sheehan Group Pacific (electronic only)

PLANNING
SOLUTIONS

June 22, 2017

Commander
Fourteenth Coast Guard District
300 Ala Moana Blvd, Room 9-204
Honolulu, HI 96850-4982

Subject: Scoping Request for Input Honouliuli Waste Water Treatment Plant Biogas Reclamation Project 'Ewa, O'ahu, Hawai'i

Dear Sir:

The Gas Company, LLC (henceforth "Hawaii Gas"), is the publicly-regulated natural gas utility for the State of Hawai'i and has retained Sheehan Group Pacific (SGP) who has teamed with Planning Solutions Incorporated (PSI) to assist with planning and permitting associated with the subject project. Hawai'i Gas serves approximately 68,700 customers throughout the State; their operations include the purchase, production, transmission, distribution and sale, via underground gas pipelines, of synthetic natural gas for residential, commercial, and industrial uses. Hawai'i Gas also purchases, distributes, and sells tanked and bottled liquefied petroleum gas. These are considered to be cleaner alternatives to other fossil fuel-based energy sources in use in the State of Hawai'i.

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cc: Mr. Richard DeGarmo, Hawai'i Gas (electronic only)
Mr. Neil Sheehan, Sheehan Group Pacific (electronic only)

PLANNING
SOLUTIONS

June 22, 2017

Ross M. Higashi, Deputy Director
Airports Division
Department of Transportation
State of Hawai'i
400 Rodgers Boulevard, 7th Floor
Honolulu, Hawai'i 96819-1880

Subject: Scoping Request for Input Honouliuli Waste Water Treatment Plant Biogas Reclamation Project 'Ewa, O'ahu, Hawai'i

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PLANNING
SOLUTIONS

June 22, 2017

Darryl T. Young, Deputy Director
Harbors Division
Department of Transportation
State of Hawai'i
79 South Nimitz Highway
Honolulu, Hawai'i 96813-4898

Subject: Scoping Request for Input Honouliuli Waste Water Treatment Plant Biogas Reclamation Project 'Ewa, O'ahu, Hawai'i

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Drawing of Proposed Biogas Reclamation Facility

cc: Mr. Richard DeGarmo, Hawai'i Gas (electronic only)
Mr. Neil Sheehan, Sheehan Group Pacific (electronic only)

DAVID Y. IGE
GOVERNOR

FORD N. FUCHIGAMI
DIRECTOR

Deputy Directors
JADE T. BUTAY
ROSS M. HIGASHI
EDWIN H. SNIFFEN
DARRELL T. YOUNG

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HARBORS DIVISION
79 S. Nimitz Highway
HONOLULU, HAWAII 96813-4898

IN REPLY REFER TO:
HAR-EP
8820.18
r/s: 17.0684

July 17, 2017

Mr. Mākena White, AICP
Planning Solutions
Ward Plaza, Suite 330
210 Ward Avenue
Honolulu, Hawaii 96814

Dear Mr. White:

Subject: Scoping Request for Input Honouliuli Waste Water Treatment Plant Biogas Reclamation Project, 'Ewa, O'ahu, Hawai'i

Thank you for your letter dated June 22, 2017. The proposed project is outside Department of Transportation, Harbors Division's (DOT-H) jurisdiction and does not seem to impact DOT-H's operations or infrastructure.

If you require additional information or have any questions, please have your staff call Mr. Carter Luke, Engineering Program Manager, at 587-1862.

Aloha,

DARRELL T. YOUNG
Deputy Director
Department of Transportation, Harbors Division

PLANNING
SOLUTIONS

June 22, 2017

Edwin F. Sniffen, Deputy Director
Highways Division
Department of Transportation
State of Hawai'i
869 Punchbowl Street, Room 513
Honolulu, Hawai'i 96813

Subject: Scoping Request for Input Honouliuli Waste Water Treatment Plant Biogas Reclamation Project 'Ewa, O'ahu, Hawai'i

Dear Sir:

The Gas Company, LLC (henceforth "Hawaii Gas"), is the publicly-regulated natural gas utility for the State of Hawai'i and has retained Sheehan Group Pacific (SGP) who has teamed with Planning Solutions Incorporated (PSI) to assist with planning and permitting associated with the subject project. Hawai'i Gas serves approximately 68,700 customers throughout the State; their operations include the purchase, production, transmission, distribution and sale, via underground gas pipelines, of synthetic natural gas for residential, commercial, and industrial uses. Hawai'i Gas also purchases, distributes, and sells tanked and bottled liquefied petroleum gas. These are considered to be cleaner alternatives to other fossil fuel-based energy sources in use in the State of Hawai'i.

Hawai'i Gas now has a request before the State of Hawai'i's Public Utility Commission (PUC) for permission to expend the funds necessary to purchase and install equipment and pipeline extensions to scrub and use biogas produced by the City and County of Honolulu's (CCH) Honouliuli Wastewater Treatment Plant (HWWTP). HWWTP is operated by the CCH's Department of Environmental Services (DES) and treats the wastewater produced by much of West O'ahu. In the process of treating this wastewater, HWWTP produces about 800,000 therms—or 23,400,000 kilowatt hours—of biogas annually. Currently, DES simply discards this gas by burning it off with a flare located at HWWTP.

Hawai'i Gas, in partnership with the DES, is now proposing to:

1. Purchase, install, operate, and maintain the necessary biogas purification equipment on approximately 2,500 square feet of vacant land at HWWTP which it will lease from the CCH-DES.
2. Design, construct, and maintain approximately one mile of new pipeline along Geiger Road to connect the purification system to the existing gas pipeline system along Kapolei Parkway.
3. Purify the raw biogas produced at HWWTP into utility-grade renewable natural gas, which will be compressed and injected into the new pipeline and distributed to Hawai'i Gas customers.

The gas injected into the pipeline will be metered to measure its methane content and volume, which in turn will be used to calculate the price Hawai'i Gas pays the CCH each month for it. The location of HWWTP, the proposed purification equipment, and the proposed pipeline

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

alignment are shown in Attachment 1. A drawing of the proposed equipment is shown in Attachment 2.

This project represents a unique opportunity for the CCH, Hawai'i Gas, its customers, and the State of Hawai'i. If approved, the project has the potential to offer low-cost, renewable energy to the people of O'ahu, aiding the State's Clean Energy Initiative, while providing a steady stream of revenue to the CCH for a byproduct of sewage treatment which is currently discarded. The project will also allow Hawai'i Gas to further diversify its fuel supply, blending the renewable natural gas produced at HWWTP with its existing supply of synthetic natural gas, so that its customers will be unaffected by fluctuations in the availability of the renewable natural gas produced at HWWTP. Finally, Hawaii Gas customers will benefit from the fixed price of this biogas, which is not subject to the price-variability of synthetic natural gas produced from oil refinery residual byproduct.

Because the project will require the long-term lease of lands owned by the CCH, it is subject to Hawai'i Revised Statutes, Chapter 343 and its implementing regulations in Hawai'i Administrative Rules, Title 11, Chapter 200. Pursuant to these laws and regulations, Hawai'i Gas is required to prepare an Environmental Assessment (EA), in order to determine the projects potential for impacts to the natural and human environment. In addition, grading, building, and other permits may be required prior to construction of the facility and associated pipeline.

In order for its EA to better address all potential concerns of the agencies, organizations, and individuals which may be affected by this proposed project, Hawai'i Gas has prepared this information and the attachments for your review and comment. At this time we are seeking any input you may have regarding the project's purpose, potential alternatives, or any permits or approvals that may be required. In particular, we are interested in hearing about resources or plans in the area that could be affected by the project and any specific information you feel should be discussed and evaluated in the EA.

We would appreciate your response within 30 days from your receipt of this letter, or by approximately July 24, 2017. You may respond by regular mail to the address at the bottom of this letter, or by email at makena@psi-hi.com. We are also available to meet with you regarding the proposed project, or speak by phone at (808) 282-2153.

Sincerely,

Makena

Mākena White, AICP
Planner

Attachment:
Layout of Proposed Project
Drawing of Proposed Biogas Reclamation Facility

cc: Mr. Richard DeGarmo, Hawai'i Gas (electronic only)
Mr. Neil Sheehan, Sheehan Group Pacific (electronic only)

DAVID Y. IGE
GOVERNOR

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

FORD N. FUCHIGAMI
DIRECTOR

Deputy Directors
JADE T. BUTAY
ROSS M. HIGASHI
EDWIN H. SNIFFEN
DARRELL T. YOUNG

IN REPLY REFER TO:
HWY 2355
HWY-CM 2.5154

July 10, 2017

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

Dear Mr. White:

Subject: Honouliuli Wastewater Treatment Plant Biogas Reclamation Project
Scoping Request for Environmental Assessment

Based on the information provided, the subject project does not appear to impact a State highway facility. If there is any work in the State Highways Right-of-Way, please advise and provide construction plans for review when available.

Should you have any questions, please call Mr. Robert Shin, Engineering Program Manager, Construction and Maintenance Branch, Highways Division, at (808) 587-2185 or email at Robert.Shin@hawaii.gov.

Sincerely,

EDWIN H. SNIFFEN
Deputy Director, Highways Division

PLANNING SOLUTIONS

June 22, 2017

Jobie Masagatani, Chair
Hawaiian Homes Commission
Department of Hawaiian Home Lands
State of Hawai'i
P.O. Box 1879
Honolulu, Hawai'i 96805

Subject: Scoping Request for Input Honouliuli Waste Water Treatment Plant Biogas Reclamation Project 'Ewa, O'ahu, Hawai'i

Dear Madam:

The Gas Company, LLC (henceforth "Hawaii Gas"), is the publicly-regulated natural gas utility for the State of Hawai'i and has retained Sheehan Group Pacific (SGP) who has teamed with Planning Solutions Incorporated (PSI) to assist with planning and permitting associated with the subject project. Hawai'i Gas serves approximately 68,700 customers throughout the State; their operations include the purchase, production, transmission, distribution and sale, via underground gas pipelines, of synthetic natural gas for residential, commercial, and industrial uses. Hawai'i Gas also purchases, distributes, and sells tanked and bottled liquefied petroleum gas. These are considered to be cleaner alternatives to other fossil fuel-based energy sources in use in the State of Hawai'i.

Hawai'i Gas now has a request before the State of Hawai'i's Public Utility Commission (PUC) for permission to expend the funds necessary to purchase and install equipment and pipeline extensions to scrub and use biogas produced by the City and County of Honolulu's (CCH) Honouliuli Wastewater Treatment Plant (HWWTP). HWWTP is operated by the CCH's Department of Environmental Services (DES) and treats the wastewater produced by much of West O'ahu. In the process of treating this wastewater, HWWTP produces about 800,000 therms—or 23,400,000 kilowatt hours—of biogas annually. Currently, DES simply discards this gas by burning it off with a flare located at HWWTP.

Hawai'i Gas, in partnership with the DES, is now proposing to:

1. Purchase, install, operate, and maintain the necessary biogas purification equipment on approximately 2,500 square feet of vacant land at HWWTP which it will lease from the CCH-DES.
2. Design, construct, and maintain approximately one mile of new pipeline along Geiger Road to connect the purification system to the existing gas pipeline system along Kapolei Parkway.
3. Purify the raw biogas produced at HWWTP into utility-grade renewable natural gas, which will be compressed and injected into the new pipeline and distributed to Hawai'i Gas customers.

The gas injected into the pipeline will be metered to measure its methane content and volume, which in turn will be used to calculate the price Hawai'i Gas pays the CCH each month for it. The location of HWWTP, the proposed purification equipment, and the proposed pipeline

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Phone: 808 550-4483 • Fax: 808 550-4549 • www.psi-hi.com

alignment are shown in Attachment 1. A drawing of the proposed equipment is shown in Attachment 2.

This project represents a unique opportunity for the CCH, Hawai'i Gas, its customers, and the State of Hawai'i. If approved, the project has the potential to offer low-cost, renewable energy to the people of O'ahu, aiding the State's Clean Energy Initiative, while providing a steady stream of revenue to the CCH for a byproduct of sewage treatment which is currently discarded. The project will also allow Hawai'i Gas to further diversify its fuel supply, blending the renewable natural gas produced at HWWTP with its existing supply of synthetic natural gas, so that its customers will be unaffected by fluctuations in the availability of the renewable natural gas produced at HWWTP. Finally, Hawaii Gas customers will benefit from the fixed price of this biogas, which is not subject to the price-variability of synthetic natural gas produced from oil refinery residual byproduct.

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In order for its EA to better address all potential concerns of the agencies, organizations, and individuals which may be affected by this proposed project, Hawai'i Gas has prepared this information and the attachments for your review and comment. At this time we are seeking any input you may have regarding the project's purpose, potential alternatives, or any permits or approvals that may be required. In particular, we are interested in hearing about resources or plans in the area that could be affected by the project and any specific information you feel should be discussed and evaluated in the EA.

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Makena

Mākena White, AICP
Planner

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Layout of Proposed Project
Drawing of Proposed Biogas Reclamation Facility

cc: Mr. Richard DeGarmo, Hawai'i Gas (electronic only)
Mr. Neil Sheehan, Sheehan Group Pacific (electronic only)

PLANNING
SOLUTIONS

June 22, 2017

Jesse Souki, Executive Director
Hawai'i Community Development Corporation
547 Queen Street
Honolulu, Hawai'i 96813

Subject: Scoping Request for Input Honouliuli Waste Water Treatment Plant Biogas Reclamation Project 'Ewa, O'ahu, Hawai'i

Dear Sir:

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PLANNING SOLUTIONS

June 22, 2017

Dr. Alan Downer, Administrator
State Historic Preservation Division
Department of Land and Natural Resources
601 Kamokila Blvd., Suite 555
Kapolei, Hawai'i 96707

Subject: Scoping Request for Input Honouliuli Waste Water Treatment Plant Biogas Reclamation Project 'Ewa, O'ahu, Hawai'i

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Planner

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cc: Mr. Richard DeGarmo, Hawai'i Gas (electronic only)

Mr. Neil Sheehan, Sheehan Group Pacific (electronic only)

PLANNING
SOLUTIONS

June 22, 2017

Michael D. Formby, Director
Department of Transportation Services
City and County of Honolulu
650 South King Street, 3rd Floor
Honolulu, Hawai'i 96813

Subject: Scoping Request for Input Honouliuli Waste Water Treatment Plant Biogas Reclamation Project 'Ewa, O'ahu, Hawai'i

Dear Sir:

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cc: Mr. Richard DeGarmo, Hawai'i Gas (electronic only)
Mr. Neil Sheehan, Sheehan Group Pacific (electronic only)

DEPARTMENT OF TRANSPORTATION SERVICES
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET, 3RD FLOOR
HONOLULU, HAWAII 96813
Phone: (808) 768-8305 • Fax: (808) 768-4730 • Internet: www.honolulu.gov

KIRK CALDWELL
MAYOR

WES FRYSZTACKI
DIRECTOR

JON Y. NOUCHI
DEPUTY DIRECTOR

TP6/17-695410R

July 20, 2017

Mr. Makena White, AICP
Planner
Planning Solutions, Inc.
210 Ward Avenue, Suite 330
Honolulu, Hawaii 96814

Dear Mr. White:

SUBJECT: Scoping Request for Draft Environmental Assessment (DEA), Honouliuli Waste Water Treatment Plant Biogas Reclamation Project, Ewa, Oahu, Hawaii

In response to your letter dated June 22, 2017, we have the following comments:

1. Kapolei Parkway is scheduled to be resurfaced in the near future. Coordinate construction schedules with the Department of Design and Construction to avoid tearing up newly resurfaced roadways.

2. The DEA should include a discussion of traffic and parking impacts the project may have on any surrounding City roadways, including short-term impacts during construction with corresponding measures to mitigate these impacts.

3. There are bus stops located along Geiger Road. Therefore, construction notes should include the following note regarding transit services:

   "This project will affect bus operations, bus routes, bus stops, and para-transit operations. **At least two (2) weeks prior to construction**, the Contractor shall provide notification of the scope of work, location, detour, proposed closure of any street, traffic lane, sidewalk, or bus stop and duration of project to:

   Department of Transportation Services, Public Transit Division:
   768-8396 and TheBusStop@honolulu.gov
   Oahu Transit Services, Inc.:
   Bus Operations: 768-9520 and 848-4565 and
   Field_Operation_Mgr@thebus.org
   Para-transit Dispatch and Operations:
   454-5007 and 768-9852"

4. Any damage to the existing roadway, sidewalk and driveway areas caused by the project should be repaired to current City standards.

5. Best Management Practice controls should be included at construction site to prevent trailing of dirt and debris on City roadways.

6. The area Neighborhood Board, as well as the area residents, businesses, emergency personnel (fire, ambulance and police), Oahu Transit Services, Inc. (TheBus and TheHandi-Van), etc., should be kept apprised of the details of the proposed project and the impacts that the project may have on the adjoining local street area network.

7. Construction materials and equipment should be transferred to and from the project site during off-peak traffic hours (8:30 a.m. to 3:30 p.m.) to minimize any possible disruption to traffic on the local streets.

8. A street usage permit from the City's Department of Transportation Services should be obtained for any construction-related work that may require the temporary closure of any traffic lane on a City street.

We reserve further comment pending review of the DEA.

Thank you for the opportunity to review this matter. Should you have any questions, please contact Renee Yamasaki of my staff at 768-8383.

Very truly yours,

Wes Frysztacki
Director

PLANNING
SOLUTIONS

June 22, 2017

Chris T. Takashige, Director
Department of Design and Construction
City and County of Honolulu
650 South King Street, 11th Floor
Honolulu, Hawai'i 96813

Subject: Scoping Request for Input Honouliuli Waste Water Treatment Plant Biogas Reclamation Project 'Ewa, O'ahu, Hawai'i

Dear Sir:

The Gas Company, LLC (henceforth "Hawaii Gas"), is the publicly-regulated natural gas utility for the State of Hawai'i and has retained Sheehan Group Pacific (SGP) who has teamed with Planning Solutions Incorporated (PSI) to assist with planning and permitting associated with the subject project. Hawai'i Gas serves approximately 68,700 customers throughout the State; their operations include the purchase, production, transmission, distribution and sale, via underground gas pipelines, of synthetic natural gas for residential, commercial, and industrial uses. Hawai'i Gas also purchases, distributes, and sells tanked and bottled liquefied petroleum gas. These are considered to be cleaner alternatives to other fossil fuel-based energy sources in use in the State of Hawai'i.

Hawai'i Gas now has a request before the State of Hawai'i's Public Utility Commission (PUC) for permission to expend the funds necessary to purchase and install equipment and pipeline extensions to scrub and use biogas produced by the City and County of Honolulu's (CCH) Honouliuli Wastewater Treatment Plant (HWWTP). HWWTP is operated by the CCH's Department of Environmental Services (DES) and treats the wastewater produced by much of West O'ahu. In the process of treating this wastewater, HWWTP produces about 800,000 therms—or 23,400,000 kilowatt hours—of biogas annually. Currently, DES simply discards this gas by burning it off with a flare located at HWWTP.

Hawai'i Gas, in partnership with the DES, is now proposing to:

1. Purchase, install, operate, and maintain the necessary biogas purification equipment on approximately 2,500 square feet of vacant land at HWWTP which it will lease from the CCH-DES.
2. Design, construct, and maintain approximately one mile of new pipeline along Geiger Road to connect the purification system to the existing gas pipeline system along Kapolei Parkway.
3. Purify the raw biogas produced at HWWTP into utility-grade renewable natural gas, which will be compressed and injected into the new pipeline and distributed to Hawai'i Gas customers.

The gas injected into the pipeline will be metered to measure its methane content and volume, which in turn will be used to calculate the price Hawai'i Gas pays the CCH each month for it. The location of HWWTP, the proposed purification equipment, and the proposed pipeline alignment are shown in Attachment 1. A drawing of the proposed equipment is shown in Attachment 2.

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

This project represents a unique opportunity for the CCH, Hawai'i Gas, its customers, and the State of Hawai'i. If approved, the project has the potential to offer low-cost, renewable energy to the people of O'ahu, aiding the State's Clean Energy Initiative, while providing a steady stream of revenue to the CCH for a byproduct of sewage treatment which is currently discarded. The project will also allow Hawai'i Gas to further diversify its fuel supply, blending the renewable natural gas produced at HWWTP with its existing supply of synthetic natural gas, so that its customers will be unaffected by fluctuations in the availability of the renewable natural gas produced at HWWTP. Finally, Hawaii Gas customers will benefit from the fixed price of this biogas, which is not subject to the price-variability of synthetic natural gas produced from oil refinery residual byproduct.

Because the project will require the long-term lease of lands owned by the CCH, it is subject to Hawai'i Revised Statutes, Chapter 343 and its implementing regulations in Hawai'i Administrative Rules, Title 11, Chapter 200. Pursuant to these laws and regulations, Hawai'i Gas is required to prepare an Environmental Assessment (EA), in order to determine the projects potential for impacts to the natural and human environment. In addition, grading, building, and other permits may be required prior to construction of the facility and associated pipeline.

In order for its EA to better address all potential concerns of the agencies, organizations, and individuals which may be affected by this proposed project, Hawai'i Gas has prepared this information and the attachments for your review and comment. At this time we are seeking any input you may have regarding the project's purpose, potential alternatives, or any permits or approvals that may be required. In particular, we are interested in hearing about resources or plans in the area that could be affected by the project and any specific information you feel should be discussed and evaluated in the EA.

We would appreciate your response within 30 days from your receipt of this letter, or by approximately July 24, 2017. You may respond by regular mail to the address at the bottom of this letter, or by email at makena@psi-hi.com. We are also available to meet with you regarding the proposed project, or speak by phone at (808) 55-4538.

Sincerely,

Makena

Mākena White, AICP
Planner

Attachment:
Layout of Proposed Project
Drawing of Proposed Biogas Reclamation Facility

cc: Mr. Richard DeGarmo, Hawai'i Gas (electronic only)
Mr. Neil Sheehan, Sheehan Group Pacific (electronic only)

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

KIRK CALDWELL
MAYOR

ROBERT J. KRONING, P.E.
DIRECTOR

MARK YONAMINE, P.E.
DEPUTY DIRECTOR

July 25, 2017

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

Dear Ms. White,

Subject: Scoping Request for Input Honuliuli Waste Water Treatment Plant Giogas Reclamation Project Ewa, Oahu, Hawaii

Thank you for the opportunity to review and comment. The Department of Design and Construction, Wastewater Division determined that there are 3 City sewer construction projects in the area that will require coordination to avoid potential construction conflicts:

1. Honouliuli WWTP Secondary Treatment (Serial No. 13-0069). Est. Construction Start: 01/01/2019. Est. Construction Finish: 06/01/2024. Project Manager is Rajkumar Rath.

2. Honouliuli WWTP Upgrade Phase 2 (Serial No. 08-0086). Est. Construction Start: 05/22/2018. Est. Construction Finish: 11/13/2019. Project Manager is Rajkumar Rath.

3. Honouliuli Influent Pump Station Odor Control System (Serial No. 09-0534). Est. Construction Start: 09/13/2017. Est. Construction Finish: 09/13/2019. Project Manager is Carl Arakaki.

If there are any further questions, please contact Steven Lum of our Wastewater Division at 768-8438.

Sincerely,

Robert J. Kroning, P.E.
Director

RJK:ms(694204)

PLANNING
SOLUTIONS

June 22, 2017

Ross S. Sasamura, Director
Department of Facility Maintenance
City and County of Honolulu
1000 'Ulu'ōhi'a Street, Suite 215
Kapolei, Hawai'i 96707

Subject: Scoping Request for Input Honouliuli Waste Water Treatment Plant Biogas Reclamation Project 'Ewa, O'ahu, Hawai'i

Dear Sir:

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The gas injected into the pipeline will be metered to measure its methane content and volume, which in turn will be used to calculate the price Hawai'i Gas pays the CCH each month for it. The location of HWWTP, the proposed purification equipment, and the proposed pipeline alignment are shown in Attachment 1. A drawing of the proposed equipment is shown in Attachment 2.

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We would appreciate your response within 30 days from your receipt of this letter, or by approximately July 24, 2017. You may respond by regular mail to the address at the bottom of this letter, or by email at makena@psi-hi.com. We are also available to meet with you regarding the proposed project, or speak by phone at (808) 55-4538.

Sincerely,

Makena

Mākena White, AICP
Planner

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cc: Mr. Richard DeGarmo, Hawai'i Gas (electronic only)
Mr. Neil Sheehan, Sheehan Group Pacific (electronic only)

DEPARTMENT OF FACILITY MAINTENANCE

CITY AND COUNTY OF HONOLULU

1000 Ulu'ohia Street, Suite 215, Kapolei, Hawaii 96707
Phone: (808) 768-3343 • Fax: (808) 768-3381
Website: www.honolulu.gov

KIRK CALDWELL
MAYOR

ROSS S. SASAMURA, P.E.
DIRECTOR AND CHIEF ENGINEER

EDUARDO P. MANGLALLAN
DEPUTY DIRECTOR

IN REPLY REFER TO:
DRM 17-436

August 8, 2017

Mr. Makena White, Planner
Planning Solutions, Inc.
210 Ward Avenue, Suite 330
Honolulu, Hawaii 96814

Dear Mr. White:

Subject: Scoping Request for Input Honouliuli Waste Water Treatment Plant Biogas Reclamation Project Ewa, Oahu, Hawaii

Thank you for the opportunity to review and provide our input regarding the subject project.

Our comments are as follows:

- Once construction phase commences, install approved Best Management Practices fronting all drainage facilities on Geiger Road.
- During construction and upon completion of project, any damages/deficiencies to Geiger Road's right-of-way shall be corrected to City standards and accepted by the City.

If you have any questions, please call Mr. Kyle Oyasato of the Division of Road Maintenance at 768-3697.

Sincerely,

Ross S. Sasamura, P.E.
for Director and Chief Engineer

PLANNING SOLUTIONS

June 22, 2017

Kathy K. Sokugawa, Acting Director
Department of Planning and Permitting
City and County of Honolulu
650 South King, 7th Floor
Honolulu, Hawai'i 96813

Subject: Scoping Request for Input Honouliuli Waste Water Treatment Plant Biogas Reclamation Project 'Ewa, O'ahu, Hawai'i

Dear Madam:

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Makena

Mākena White, AICP
Planner

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cc: Mr. Richard DeGarmo, Hawai'i Gas (electronic only)
Mr. Neil Sheehan, Sheehan Group Pacific (electronic only)

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

KIRK CALDWELL
MAYOR

KATHY K. SOKUGAWA
ACTING DIRECTOR

TIMOTHY F. T. HIU
DEPUTY DIRECTOR

2017/ELOG-1256(SA)

July 24, 2017

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

Dear Mr. White:

SUBJECT: Early Consultation for a Draft Environmental Assessment (DEA)
Biogas Reclamation Project at the
Honouliuli Wastewater Treatment Plant
91-1000 Geiger Road - Ewa
Tax Map Keys 9-1-013: 007 and 9-1-069: 003

This is in response to your letter received on June 26, 2017, regarding the above-referenced Project at the existing Honouliuli Waste Water Treatment Plant (HWWTP). Based on the preliminary information you have provided, we find the following:

- The reclamation of unused biogas, a sewage treatment byproduct, and its conversion into usable renewable energy, may not only serve as a cost-effective energy option for residents, but also has the potential to further the State's Clean Energy Initiative.
- The DEA should describe how the proposed Project meets the planning principles and guidelines of the Ewa Development Plan and the Oahu General Plan.
- If the proposed Project exceeds the 60-foot-height limit within the I-2 Intensive Industrial District, a Zoning Waiver would need to be obtained.
- At this point in time, it is not clear whether the Project will be considered accessory to the existing WWTP as a "Public Use and Structure," or whether it is a separate Utility Installation Type A or B. If the Project operates separately from the Plant, it is considered a Utility Installation; and the difference between a Type A or B, is the magnitude of potential impacts.
- An application for a Special Use Permit is currently being processed to allow expansion of a full secondary treatment and support facilities onto adjacent lots.

- The DEA should address the potential for catastrophic disaster associated with the production, storage, and transmission of flammable gas products as it pertains to HWWTP employees, nearby residents, businesses, and members of the general public.
- Since Tax Map Key 9-1-069: 003 is within the State Land Use Agricultural District, the DEA should indicate that Bio-fuel processing facilities and appurtenances is a permissible use pursuant to Section 205-4.5(a)(16), Hawaii Revised Statutes.
- The dimensions and height of the proposed structure should be clearly shown, and include a discussion of the visual impacts of the proposed Project.

Should you have any questions, please contact Sarah Afong at 768-8026.

Very truly yours,

Kathy K. Sokugawa
Acting Director

DAVID Y. IGE
GOVERNOR

FORD N. FUCHIGAMI
DIRECTOR

Deputy Directors
JADE T. BUTAY
ROSS M. HIGASHI
EDWIN H. SNIFFEN
DARRELL T. YOUNG

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

IN REPLY REFER TO:

STP 8.2186

August 1, 2017

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

Dear Mr. White:

Subject: Honouliuli Wastewater Treatment Plant Biogas Reclamation Project
Scoping Request
Ewa, Oahu, Hawaii
TMK: (1) 9-1-013:007 (por.)

Department of Transportation (DOT) commented earlier in HWY- CM 2.5154 dated 7/10/17 and HAR-EP 88.20.18 dated 7/17/17. We now offer the following supplemental comments:

Airports Division (DOT-AIR)

1. The nearest portion of the site area to Runway 22R at the Kalealoa Airport (JRF) is approximately 9,500 feet. All applicants, agencies and subsequent construction contractors need to be aware of the duties of the state and county agencies to implement the Technical Assistance Memorandum (TAM) related to this project and all projects within five (5) miles of an airport. More information about the TAM can be found at the State of Hawaii Office of Planning Website: http://files.hawaii.gov/dbedt/op/docs/TAM-FAA-DOT-Airports_08-01-2016.pdf

2. The Federal Aviation Administration (FAA) requires the submittal of FAA Form 7460-1 Notice of Proposed Construction or Alteration according to the Code of Federal Regulations, Title 14, Part 77.9, if the construction or alteration is within 20,000 feet of a public use or military airport which exceeds a 100:1 surface from any point on the runway of each airport with its longest runway more than 3,200 feet. This requirement is also applicable to tall equipment, such as cranes, that may be used during construction. FAA Form 7460-1 and criteria for its submittal can be found at the following website: https://oeaaa.faa.gov/oeaaa/external/portal.jsp

3. Any activity that can potentially attract wildlife within five (5) miles of the airport are discouraged. The proposed project shall meet the requirements of FAA Advisory Circular150/5200-33B Hazardous Wildlife Attractants on or Near Airports.

4. If the proposed project includes a photovoltaic (PV) system, then the developer must be aware that PV systems, located in or near the approach path of the aircraft into JRF, can create a hazardous condition for a pilot due to possible glint and glare reflected from the PV array. If a PV system will be installed, then, the following website may assist you with preparation of a glint and glare analysis: www.sandia.gov/glare

The submittal of a FAA Form 7460-1 for the PV installation will be required. Note that you will need Latitude, Longitude, ground elevation and the above ground elevation (AGL) data for the installation site in order to fully complete this form. You will also need to attach a copy of your glint and glare analysis with your submittal of FAA Form

If there are any questions, please contact Mr. Norren Kato of the DOT Statewide Transportation Planning Office at telephone number (808) 831-7976.

Sincerely,

FORD N. FUCHIGAMI
Director of Transportation