ENVIRONMENTAL ASSESSMENT

for the

Pāhala Large Capacity Cesspool (LCC)
Replacement Project

EPA Grant XP-96942401

VOLUME 1

Pāhala, District of Kaʻu, County of Hawaiʻi, Hawaiʻi
TMK: 9-6-002:018

U.S. Environmental Protection Agency
Region 9
75 Hawthorne Street
San Francisco, California 94105

County of Hawaiʻi
25 Aupuni Street
Hilo, HI 96720

FINAL

February 2020

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TITLE PAGE

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U.S. Environmental Protection Agency and the County of Hawai'i

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PREFACE

The National Environmental Policy Act (NEPA) of 1969, as amended (42 U.S.C. §§ 4321 – 4347), requires a federal agency proposing to undertake a project to consider the potential environmental impacts of the proposed project. Use of federal funds for a project is among the criteria set forth in NEPA that require preparation of environmental review documentation under NEPA and procedural requirements at 40 CFR Parts 1500-1508 (Council on Environmental Quality (CEQ) regulations), and 40 CFR Part 6 (U.S. Environmental Protection Agency (EPA) regulations). The Pāhala Large Capacity Cesspool (LCC) Replacement Project will be constructed with funds provided by EPA. EPA Region 9 has determined that NEPA requirements for the proposed project can be fulfilled by preparing an Environmental Assessment (EA) with a Finding of No Significant Impact (FONSI).

Comparably, Hawai'i Revised Statues (HRS) 343, as amended, and implementing rules under Hawai'i Administrative Rules (HAR) 11-200 (Environmental Impact Statement Rules) require state and local governmental agencies undertaking projects utilizing state or county lands or funds to consider the potential environmental impacts of a proposed project by preparing environmental review documentation. The Pāhala LCC Replacement Project will be constructed by the County of Hawai'i Department of Environmental Management (DEM) using County funds. Based on HAR § 11-200-9(a)(4), construction and use of the proposed project does not warrant the preparation of an environmental impact statement. Further, based on the findings and the assessment of potential impacts of the proposed project as set forth in HAR § 11-200-12 and documented in Section 8.1.1 of this Final EA, a FONSI is determined by DEM (see Section 8.1.2).

Federal NEPA regulations at 40 CFR § 1506.2 direct federal agencies to cooperate with state and local agencies to the fullest extent possible to reduce duplication between NEPA and state and local requirements. See also 40 CFR §§ 6.200 and 6.201. Hawai'i law and regulations similarly direct agencies subject to HRS 343 to cooperate with federal agencies to the fullest extent possible (HRS § 343-5(h), HAR § 11-200-25(2)). This EA has been prepared to jointly meet the content and procedural requirements of both NEPA and federal cross-cutting authorities, and HRS 343, as amended.

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ACRONYMS

AAQS	Ambient air quality standards
AC	Asphaltic concrete
ACS	American Community Survey
AHPA	Archaeological and Historic Preservation Act
AIS	Archaeological Inventory Survey
ALISH	Agricultural Lands of Importance to the State of Hawai'i
AOC	Administrative Order on Consent
ASTM	American Society for Testing and Materials
BMP	Best management practice
BOD_5	Five-day biochemical oxygen demand
CAA	Clean Air Act
CBRA	Coastal Barrier Resources Act
CBRS	Coastal Barrier Resources System
CDP	Community Development Plan
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CREAT	Climate Resilience Evaluation and Awareness Tool
CWRM	Commission on Water Resource Management
CWSRF	Clean Water State Revolving Fund
CZM	Coastal Zone Management
CZMA	Coastal Zone Management Act
dBA	A-weighted decibel scale
DBEDT	(State of Hawai'i) Department of Business, Economic Development and Tourism
DEM	(County of Hawai'i) Department of Environmental Management
DLNR	(State of Hawai'i) Department of Land and Natural Resources
DOE	(State of Hawai'i) Department of Education
DOH	(State of Hawai'i) Department of Health
DOT	(State of Hawai'i) Department of Transportation
DWS	(County of Hawai'i) Department of Water Supply
EA	Environmental Assessment
EFH	Essential Fish Habitat
EMS	Emergency medical services
EO	Executive Order
EPA	(United States) Environmental Protection Agency
ESA	Environmental Site Assessment
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
FONSI	Finding of No Significant Impact
FPPA	Farmland Protection Policy Act
FWS	(United States) Fish and Wildlife Service

GAC	Granular activated carbon
HAR	Hawai'i Administrative Rules
HCC	Hawai'i County Code
HDPE	High-density polyethylene
HELCO	Hawai'i Electric and Light Company
HRS	Hawai'i Revised Statues
HUD	(United States) Department of Housing and Urban Development
IBC	International Building Code
LCC	Large capacity cesspool
LF	Linear feet
LSB	(University of Hawai'i) Land Study Bureau
LUC	(State of Hawai'i) Land Use Commission
MBTA	Migratory Bird Treaty Act
MMPA	Marine Mammal Protection Act
msl	Mean sea level
NAAQS	National ambient air quality standards
NEPA	National Environmental Policy Act
NFPA	National Fire Prevention Association
NHO	Native Hawaiian Organization
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NWI	National Wetland Inventory
OEQC	(State of Hawai'i) Office of Environmental Quality Control
OSHA	Occupational Safety and Health Administration
PER	Preliminary Engineering Report
$PM_{2.5}$	Particulate matter with a diameter of 2.5 micrometers or less
PM_{10}	Particulate matter with a diameter of 10 micrometers or less
PVC	Polyvinyl chloride
REC	Recognized environmental concern
ROW	Right-of-way
SAAP	Special Appropriations Act Project
SDWA	Safe Drinking Water Act
SF	Square feet
SHPD	(Hawai'i) State Historic Preservation Division
SIHP	(Hawai'i) State Inventory of Historic Places
SIP	State Implementation Plan
SMA	Special Management Area
SO_2	Sulfur dioxide
SWPPP	Stormwater Pollution Prevention Plan
TMK	Tax Map Key

TSS	Total suspended solids
TTEE	Trustees
UIC	Underground Injection Control
U.S.C.	United States Code
USDA	United States Department of Agriculture
USDA-RD	United States Department of Agriculture – Rural Development Program
USGS	United States Geological Survey
UV	Ultraviolet light

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1 SUMMARY

Proposing County Agency: County of Hawai'i
Department of Environmental Management
345 Kekūanāo'a Street, Suite 41
Hilo, HI 96720

Proposing Federal Agency: U.S. Environmental Protection Agency, Region 9
75 Hawthorne Street
San Francisco, CA 94105

EA Preparers: Wilson Okamoto Corporation
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Honolulu, HI 96826
Contact: Earl Matsukawa, AICP, Project Manager
Tel: 808.946.2277; Fax: 808.946.2253

Eastern Research Group, Inc.
14555 Avion Parkway, Suite 200
Chantilly, VA 20151
Contact: Patrick Goodwin, Project Manager
Tel: 703.615.4371

Project Location: Pāhala, Hawai'i

Recorded Fee Owner: B. P. Bishop Estate, TTEES (Kamehameha Schools) (wastewater treatment and disposal facility site)

Tax Map Key: 9-6-002:018 (wastewater treatment and disposal facility)
9-6-005:036 and 9-6-005:044 (easements for wastewater collection system)
9-6-002:016 (LCC 1)
9-6-016:041 (LCC 2 and associated temporary easement)
Various (laterals to wastewater collection system)

Area: 14.9 acres (wastewater treatment and disposal facility)
42.5 acres (parcel for wastewater treatment and disposal facility)

State Land Use Classification: Urban
Agricultural

County Zoning: Single and Multi-Family Residential; Village Commercial; Industrial; and A-20a

Proposed Action: The proposed wastewater collection system would be located within five streets in the western portion of the community (Maile,

'Ilima, Huapala, Hīnano, and Hala Streets) and three streets in the eastern portion of the community (Puahala, Pīkake, and Kamani Streets).

The proposed wastewater treatment and disposal facility would occupy 14.9 acres and would consist of a headworks and an odor control unit, an operations building, four lined aerated lagoons, a subsurface flow constructed wetland to remove nitrogen and an adjacent disinfection system to remove pathogens and four slow-rate land treatment basins for disposal of the treated effluent.

Impacts: No significant impacts are anticipated from construction and use of the collection system and the wastewater treatment and disposal facility.

Agencies Consulted in Pre-Draft Assessment:

Federal

U.S. Army Corps of Engineers

U.S. Fish and Wildlife Service

U.S. Department of Agriculture Natural Resources Conservation Service

National Oceanic and Atmospheric Administration

National Park Service Hawai'i Volcanoes National Park

State of Hawai'i

Department of Agriculture

Department of Accounting and General Services

Department of Business, Economic Development and Tourism (DBEDT)

- DBEDT, Hawai'i State Energy Office
- DBEDT, Land Use Commission
- DBEDT, Office of Planning

Hawai'i Emergency Management Agency

Department of Health (DOH)

- DOH, Office of Environmental Quality Control
- DOH, Office of Director
- DOH, Environmental Management Division
- DOH, Environmental Planning Office
- DOH, Clean Water Branch
- DOH, Safe Drinking Water Branch

DOH, Wastewater Branch

Department of Land and Natural Resources (DLNR)

DLNR, Engineering Division

DLNR, Division of Forestry and Wildlife

DLNR, State Historic Preservation Division

DLNR, Commission on Water Resources Management

Department of Transportation

Department of Hawaiian Home Lands

Office of Hawaiian Affairs

University of Hawai'i, Environmental Center

Hawai'i State Library

Hilo Regional Library

County of Hawai'i

Hawai'i Fire Department

Department of Parks and Recreation

Planning Department

Police Department

Department of Public Works

Department of Water Supply

Elected Officials

Congresswoman Tulsi Gabbard

State Senator Russell Ruderman

State Representative Richard H.K. Onishi

Councilmember Maile David

Native Hawaiian Organizations

Hawai'i Island Burial Council

Association of Hawaiian Civic Clubs

Charles Pelenui Mahi 'Ohana

Friends of 'Iolani Palace

Hawaiian Civic Club of Hilo

Kamehameha Schools

Kanu o ka'Āina Learning 'Ohana

Ko'olau Foundation
Maku'u Farmers Association
Na Koa Ikaika Ka Lāhui Hawai'i
Office of Hawaiian Affairs
Pacific Agricultural Land Management Systems
Partners in Development Foundation
Pi'ihonua Hawaiian Homestead Community Association

Other

Hawai'i Gas
Hawaiian Electric Light Company
Hawaiian Telcom
Spectrum Hawai'i
Mr. Stason Nishimura
Mr. Lance Uno
Ms. Julia Neal

The comments and responses are shown in Appendix A.

2 PROPOSED PROJECT DESCRIPTION

2.1 Background

2.1.1 Pāhala Community

The community of Pāhala is located about 52 miles southwest of Hilo, in the Kaʻū District, Island of Hawaiʻi. Pāhala is located west (mauka) of Māmalahoa Highway (State Route 11) about 3.8 miles from the shoreline. Most of the community lies between 980 feet above mean sea level (msl) on the western end and approximately 800 feet above msl on the eastern end. Figure 2.1 shows the location of Pāhala.

Even though Kaʻū was one of the originally settled areas in the Hawaiian Islands, it remains a vast remote area. Only a fraction of a percent of the Kaʻū District has been developed with residential properties, and the remainder is largely used for agricultural purposes or is undeveloped. The District of Kaʻū is situated at the southern tip of the island and extends across the southern and southeastern flanks of Mauna Loa. The Kaʻū District covers about 922 square miles (approximately 590,000 acres), with over 80 miles of virtually undeveloped coastline. Nearly two-thirds of its total land area is in the Conservation district. The Kaʻū district consists of several communities, including the Pāhala community, which has a population of approximately 1,341 persons. The distance to the communities of Hilo and Kailua-Kona means that the Kaʻū District is relatively isolated from the major infrastructure systems found in these communities, including wastewater treatment and disposal facilities.

Founded in 1826, C. Brewer and Company, Ltd. (C. Brewer) was both the oldest company in Hawaiʻi and a major developer of the sugar industry in Pāhala. The Kaʻū Sugar Company operations were closed in 1996, meaning that the sugar industry was no longer the major agricultural activity of the Kaʻū region. However, agriculture is still the major source of economic activity in the region. Today, macadamia nuts and coffee are the major crops grown within the Kaʻū District; however, growing competition from foreign producers is beginning to affect the macadamia nut industry.

2.1.2 Project Funding

Planning level cost comparisons for the Pāhala Large Capacity Cesspool (LCC) Replacement Project are summarized in the November 2019 *Pahala Wastewater Treatment Plant Preliminary Engineering Report* (PER), which is included as Appendix B. The capital cost of an aerated lagoon/constructed wetland/land application treatment and disposal facility is estimated at $16 million (plus $2 million for concrete lagoon lining if required) and has an estimated annual operations and maintenance cost of $227,000. The capital cost of closure of two community LCCs and a new collection system is estimated at $14 million. These numbers represent conceptual planning level cost estimates and do not include administrative, planning, design, land acquisition, or past project costs. Of the treatment alternatives that were deemed feasible and compared in the PER, the proposed wastewater treatment and disposal facility design has the lowest estimated capital cost and estimated annual operations and maintenance cost.

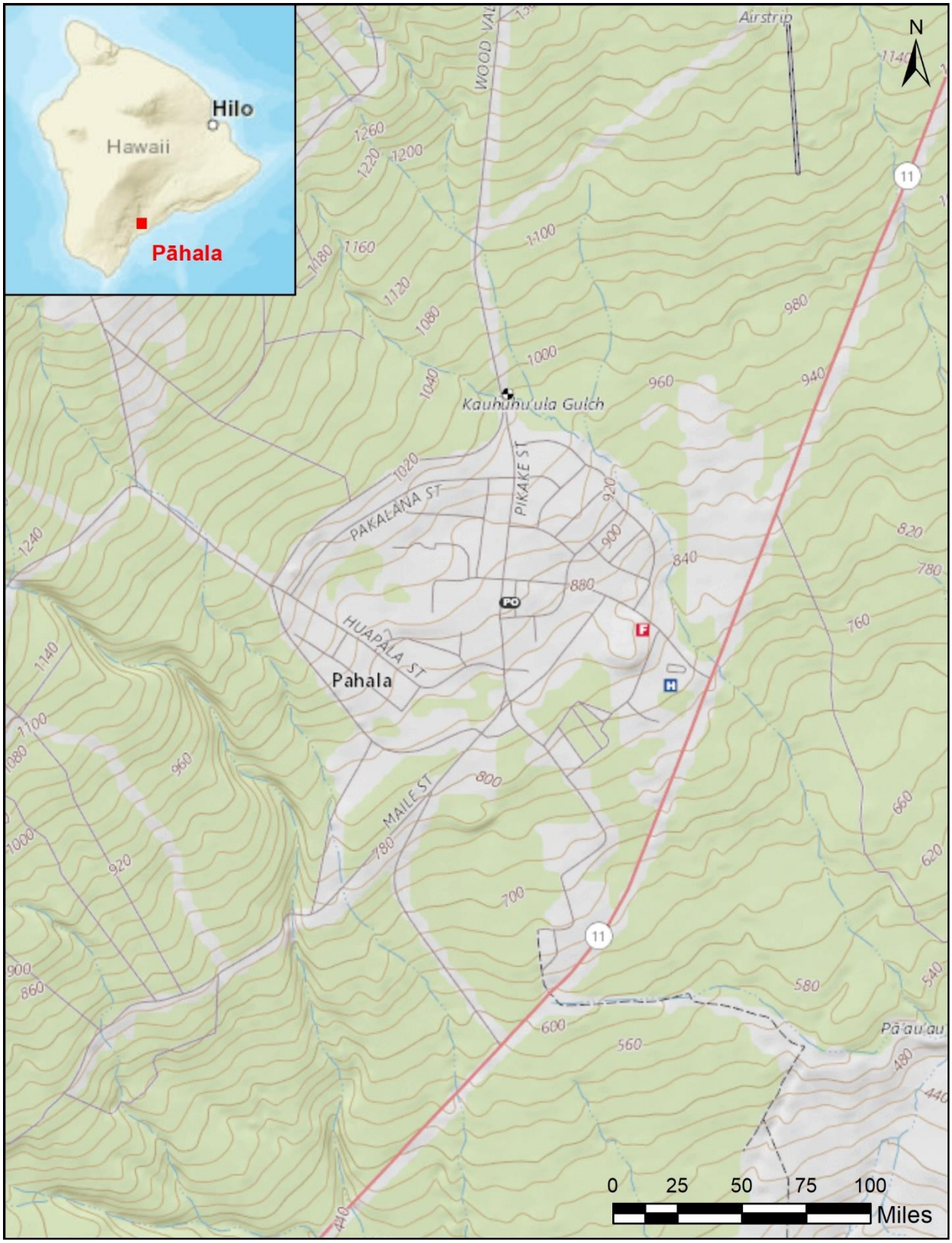


Figure 2.1. Location of Pāhala Community on the Island of Hawaiʻi

(a) EPA Special Appropriations Act Project Grant

In 2006, a U.S. Environmental Protection Agency (EPA) Special Appropriations Act Project (SAAP) grant was awarded to the County of Hawaiʻi for the Kaʻū LCC Replacement Project (XP-96942401). The grant's federal funding amount is $1.842 million which currently expires in October 2020. The purpose of the award is for the design and construction of wastewater system improvements to replace LCCs in the Kaʻū District. The initial SAAP grant was awarded for the design and construction of wastewater system improvements to replace other LCCs in the Kaʻū District in addition to those located in Pāhala. As stated in Section 2.1.4 (History of Wastewater Management in Pāhala), LCCs in the community of Nāʻālehu were originally included in earlier funding considerations.

However, since the projects were separated as described in Section 2.9 (Relationship to 2007 Final Environmental Assessment), the grant workplan for the EPA SAAP grant has been revised to only include funding for the Pāhala LCC Replacement Project. This decision was made based on two points: 1) the federal grant funds would only cover a portion of one of the projects and 2) it was expected that the Pāhala LCC Replacement Project could be completed faster than the Nāʻālehu Project, and there was therefore a lesser likelihood that funds associated with the grant would be de-obligated before they could be spent. Consequently, the grant award and current work plan provide funding to replace only the two LCCs serving the Pāhala community.

(b) State Revolving Fund

This project may also be funded by the State of Hawaiʻi Department of Health (DOH) Clean Water State Revolving Fund (CWSRF) Program. Under the CWSRF program, the project consists of two parts: Pāhala Large Capacity Cesspool Conversion and Pāhala Wastewater Collection System. The CWSRF Program was created by the federal Water Quality Act of 1987 and authorizes low interest loans for the construction of publicly owned wastewater treatment works. In 1988, the Hawaiʻi State Legislature passed Act 365, now Chapter 342D of the Hawaiʻi Revised Statues (HRS), to establish the State Water Pollution Control Revolving Fund to receive the federal capitalization grant. HRS 342D, Part V (Water Pollution Control Financing), and, more specifically, HRS § 342D-81 set forth that the State's policy is to promote water pollution prevention and control, including the use of recycled water, by financing eligible projects consistent with applicable federal and state laws. The State Revolving Fund receives annual funding from EPA, which the State of Hawaiʻi DOH is then responsible for allocating among eligible projects.

2.1.3 Large Capacity Cesspools

In 1999, EPA promulgated regulations under the Safe Drinking Water Act's (SDWA) Underground Injection Control (UIC) Program which prohibited the construction of new LCCs as of April 2000 and required the closure of all existing LCCs by April 5, 2005 (40 CFR § 144.88). Under federal regulations, an LCC is a cesspool which serves multiple dwellings, or for non-residential facilities has the capacity to serve 20 or more persons per day. Cesspools can release disease-causing pathogens and other pollutants (e.g., nitrates) into groundwater aquifers, streams, and eventually the ocean, thus leading to public health and environmental concerns.

In 2017, a state law, Act 125, was enacted requiring all cesspools not exempted by the DOH to be upgraded or converted to septic systems, or aerobic treatment unit systems, or connected to sewage systems by January 1, 2050. This legislation will affect all parcels in Pāhala currently using cesspools. Unlike LCCs, which serve multiple dwellings and/or have the capacity to serve 20 persons or more per day, small capacity cesspools typically serve individual homes and are not regulated under federal law.

In June 2017, EPA and the County entered into an Administrative Order on Consent (AOC) to close the LCCs serving the Pāhala community by June 2021. In September 2019, EPA accepted the County's request to extend the Pahala LCC closure date from June 2021 to April 2023.

2.1.4 History of Wastewater Management in Pāhala

Part of the Pāhala community is currently served by a sewer system comprised of substandard gravity lines that convey sewage from approximately 109 parcels to two LCCs, which were previously owned and operated by C. Brewer. The existing sewer system was constructed in the backyards of the residential parcels and some within the streets. In 1996, C. Brewer shut down its sugar growing and processing facility in Pāhala. In 2003, C. Brewer requested assistance from the County to close their LCCs as required by EPA.

Around 2006, C. Brewer requested that the County construct and maintain a new and improved community sewer system. A County Council Resolution approved the C. Brewer request. In anticipation of C. Brewer's dissolution, C. Brewer proposed, and the County agreed, to enter into a formal agreement to not only construct and maintain a new and improved community sewer system but to assume ownership of the existing system including the LCC's by April 30, 2010. As part of this agreement, for the majority of Pāhala and Nā‘ālehu properties connected to the LCCs, C. Brewer committed to complete the line (called a lateral) between the residences and the property line at the edge of the public right-of-way adjacent to the new collection system.[1] It was agreed, if the County did not complete its portion of the work by April 30, 2010, the County would assume pending and unfinished obligations to connect the new laterals installed by C. Brewer to the residences and new collection system when complete. Thus, because that date has passed and the County has not completed installation of the new collection system, this project includes connecting these C. Brewer laterals, which may now need to be replaced, or installing private laterals for currently connected properties if authorized by the property owner and approved by County Council.

On April 25, 2010, a community meeting sponsored by Councilman Guy Enriques was held at the Pāhala Community Center to discuss the Nā‘ālehu and Pāhala LCC Replacement project. As part of the meeting, an informational handout prepared by the County's Wastewater Division provided a brief history of the project documenting that, in 2004, Mayor Kim's office used a ballot system distributed via mail to get input from property owners regarding different wastewater treatment/disposal alternatives for those residents who would no longer be served by the C. Brewer system after LCC closure. 87 percent of the returned ballots were in favor of a new sewer collection system and a treatment and disposal system to be owned and maintained by the County. The handout indicated Mayor Kim's office advised the property owners the County would move forward with new sewer systems for Nā‘ālehu and Pāhala on November 5, 2004. Additionally, the handout stated public meetings were held in both Nā‘ālehu and Pāhala in November 2006, to discuss the wastewater system alternatives. The handout included that adequate land for the treatment and disposal system had not been identified in Pāhala.

2.2 Purpose and Need for Action

EPA's purpose for the Proposed Action considered in this Environmental Assessment (EA) is to provide the infrastructure necessary to enable the County to comply with the SDWA and fulfill the compliance provisions of the AOC between EPA and the County with respect to closure of the Pāhala LCCs by April 2023.

[1] C. Brewer did not commit to construct laterals on then-connected private properties whose owners did not consent or on approximately 30 house lots and commercial businesses subsequently sold or having Deed restrictions making them liable for all costs associated with a new sewer system for those lots.

The County's purpose for the Proposed Action considered in this EA, as stated in the June 22, 2017 EPA Region 9 AOC, is to provide an industry-standard wastewater collection system and a secondary treatment and disposal facility, a basic service to the Pāhala community, to eliminate underground injection from LCCs it operates to help protect underground drinking water sources. Though closure of individual wastewater systems by the County is not part of the Proposed Action, legislation described in Section 2.1.3 affects the future of all parcels in Pāhala utilizing cesspools for sewage disposal.

The need for action is driven by the public health and environmental concerns associated with LCCs, as described in Section 2.1.3.

2.3 Proposed Action – Site 7 Alternative (Preferred Alternative)

This section describes the Preferred Alternative under the Proposed Action.

Under the Preferred Alternative, the County of Hawaiʻi would perform the following actions:

1) Acquire, or otherwise obtain the right to develop and use, a portion of the 42.5-acre Site 7 that is currently owned by B. P. Bishop Estate Trustees (commonly known as Kamehameha Schools), then construct a new secondary wastewater treatment and disposal facility within a portion of the parcel (see Figure 2.3);
2) Construct a wastewater collection system, primarily within the public right-of-way (ROW) and three segments within easements in the Pāhala community, to collect and convey sanitary waste from the currently connected and accessible (in accordance with Hawai'i County Code) properties to the new treatment and disposal facility;
3) Close and abandon two LCCs, according to DOH closure procedures; and
4) Abandon the existing wastewater collection system in place.

These actions are described in further detail below and are depicted in Figure 2.2.

2.3.1 Acquire Site 7 and Construct New Secondary Wastewater Treatment and Disposal Facility

Under the Preferred Alternative, the County would acquire, or obtain the right to develop and use, a 14.9-acre portion of Tax Map Key (TMK) 9-6-002:018 located about 0.5 miles (2,600 feet) south of the developed area of the community and identified as Site 7 for construction of a new secondary wastewater treatment and disposal facility. This 42.5-acre parcel is owned by Kamehameha Schools and used as a macadamia nut orchard. It is located adjacent to LCC #1. An at-grade irrigation system runs in a north-south direction which allows vehicle access between the rows. Slopes throughout Site 7 are between approximately 3 and 10 percent.

The County would work with the current landowner to subdivide the 42.5-acre parcel into two parcels: 1) a 14.9-acre parcel that would be owned by the County; and 2) a 27.6-acre parcel that would include a 25-foot-wide by 1,500-foot-long utility easement and would continue to be owned by the current owner. See Figure 2.3 for a preliminary site plan showing the proposed location of the treatment and disposal facility within Site 7. This location is in the northeast corner of the Maile Street and Māmalahoa Highway intersection outside of the State of Hawaiʻi Department of Transportation (DOT) right-of-way, east (makai) of an existing access road from Maile Street. Access to both parcels would be provided from driveways on Maile Street sited mauka of the Maile Street and Māmalahoa Highway intersection.

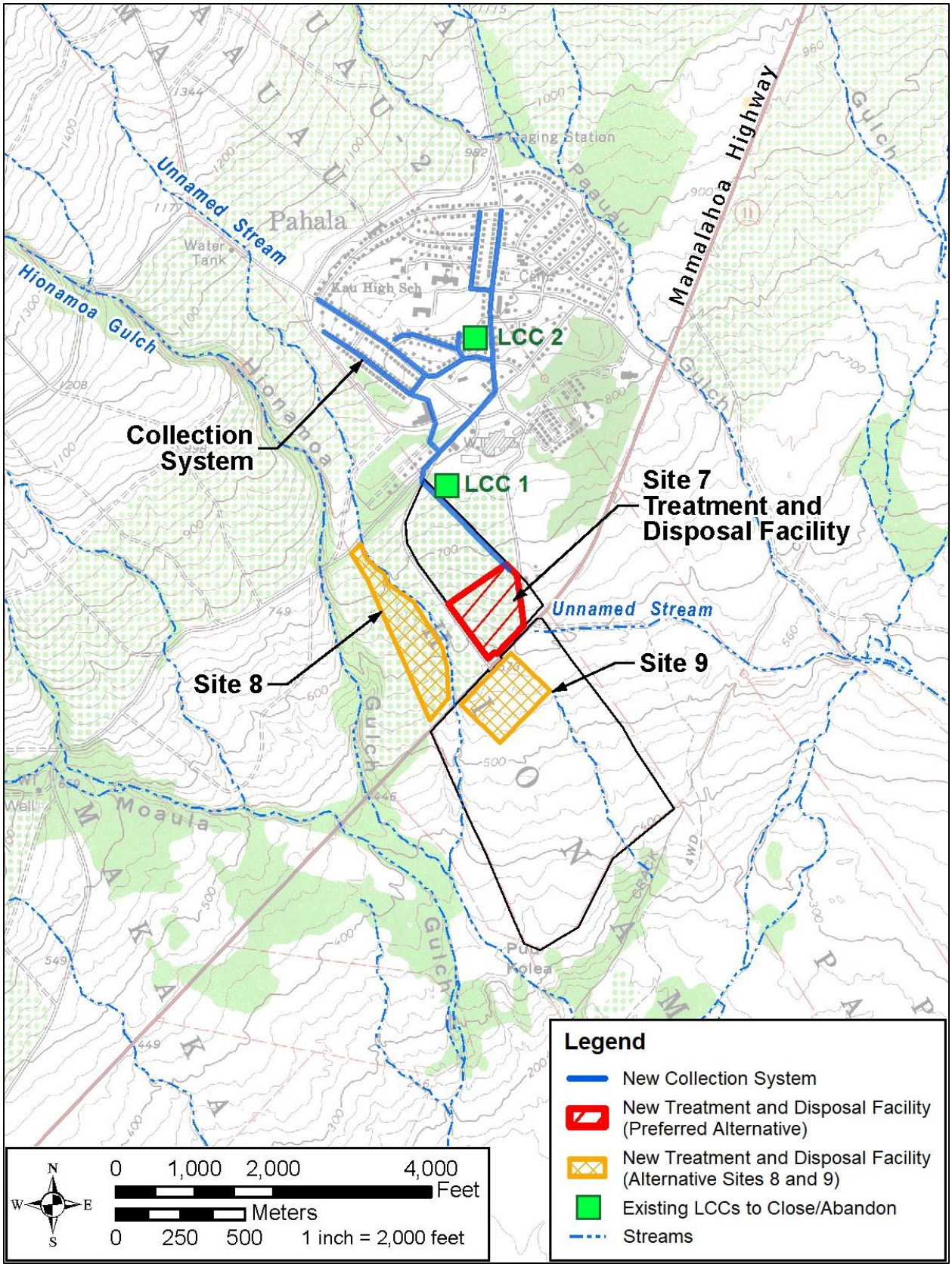


Figure 2.2. Elements of the Proposed Action

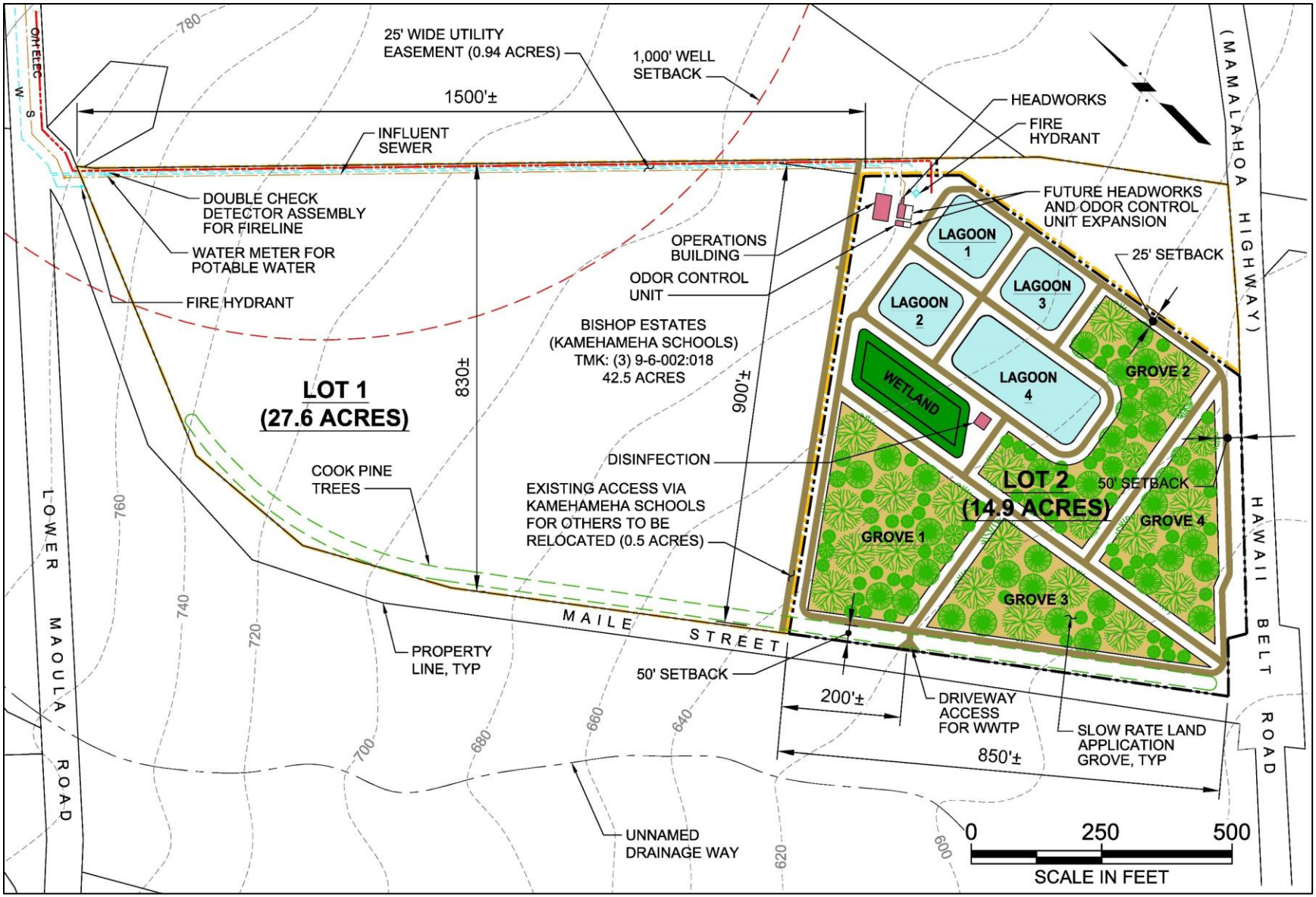


Figure 2.3. Preliminary Site Plan for New Wastewater Treatment and Disposal Facility at Site 7 (Preferred Alternative)

The County developed wastewater flow projections for the treatment and disposal facility using the City and County of Honolulu current wastewater standards, most recently updated during 2017. Based on these standards, the treatment and disposal facility would be designed to provide an average dry weather flow capacity of 190,000 gallons per day, which would be sufficient capacity to allow closure of the two LCCs.

The wastewater treatment and disposal facility would consist of the following primary components:

- Headworks preliminary treatment system. The headworks would protect the downstream system operations from large objects, debris, and rags that may be present in the incoming flows. It would include a below-grade concrete tank with channels to control flows; a fiberglass or aluminum cover plate to facilitate foul air collection; an above-grade screening system; a granular activated carbon (GAC) scrubber for odor control; and influent flow measurement and sampling equipment. A free-standing roof structure over the headworks would protect operators and equipment from rain and sun conditions.

- Aerated lagoon treatment system. A series of three 0.4-acre partial-mix aerated lagoons would provide biological wastewater treatment. Partial-mix aerated lagoons allow the solids to settle while providing enough aeration and mixing to meet the oxygen demands of the naturally occurring micro-organisms in the system. The lagoons would be equipped with high-speed floating aerators and lined with either high-density polyethylene (HDPE) or concrete to prevent wastewater seepage into the subsurface.

- Subsurface flow constructed wetland. The approximately 0.6-acre wetland would provide additional treatment of the effluent from the aerated lagoons via a process called denitrification, which would decrease the land area required for the slow-rate land application (see below). The subsurface flow wetland would consist of a shallow HDPE-lined basin filled with gravel media and planted with emergent wetland vegetation. Effluent from the lagoons would flow through the gravel media layer, with the effluent level being maintained below the gravel surface at all times. Treatment would occur through physical, chemical, and biological mechanisms.

- Covered lagoon and disinfection. The 0.8-acre lined and covered lagoon (Lagoon 4) would allow for effluent storage and algae removal, followed by disinfection to kill pathogens or render them incapable of reproduction or harm to humans. The lagoon would feature a floating cover of HDPE shade balls to prevent algae growth while allowing rainwater to pass through. Disinfection would occur through the use of an ultra-violet system.

- Slow-rate land application system. Disposal of the treated and disinfected effluent would be accomplished through land treatment in four groves of native, water-tolerant native trees occupying a total area of approximately 8.0 acres. Application of the effluent would be rotated to a different grove each day, resulting in a wet/dry cycle of 1-day wetting and 3-days drying. A lined irrigation equalization basin would be provided to facilitate grove dosing.

Figure 2.4 shows a preliminary process schematic for the proposed facility. Figure 2.5 illustrates an example of a lagoon using a floating cover of shade balls.

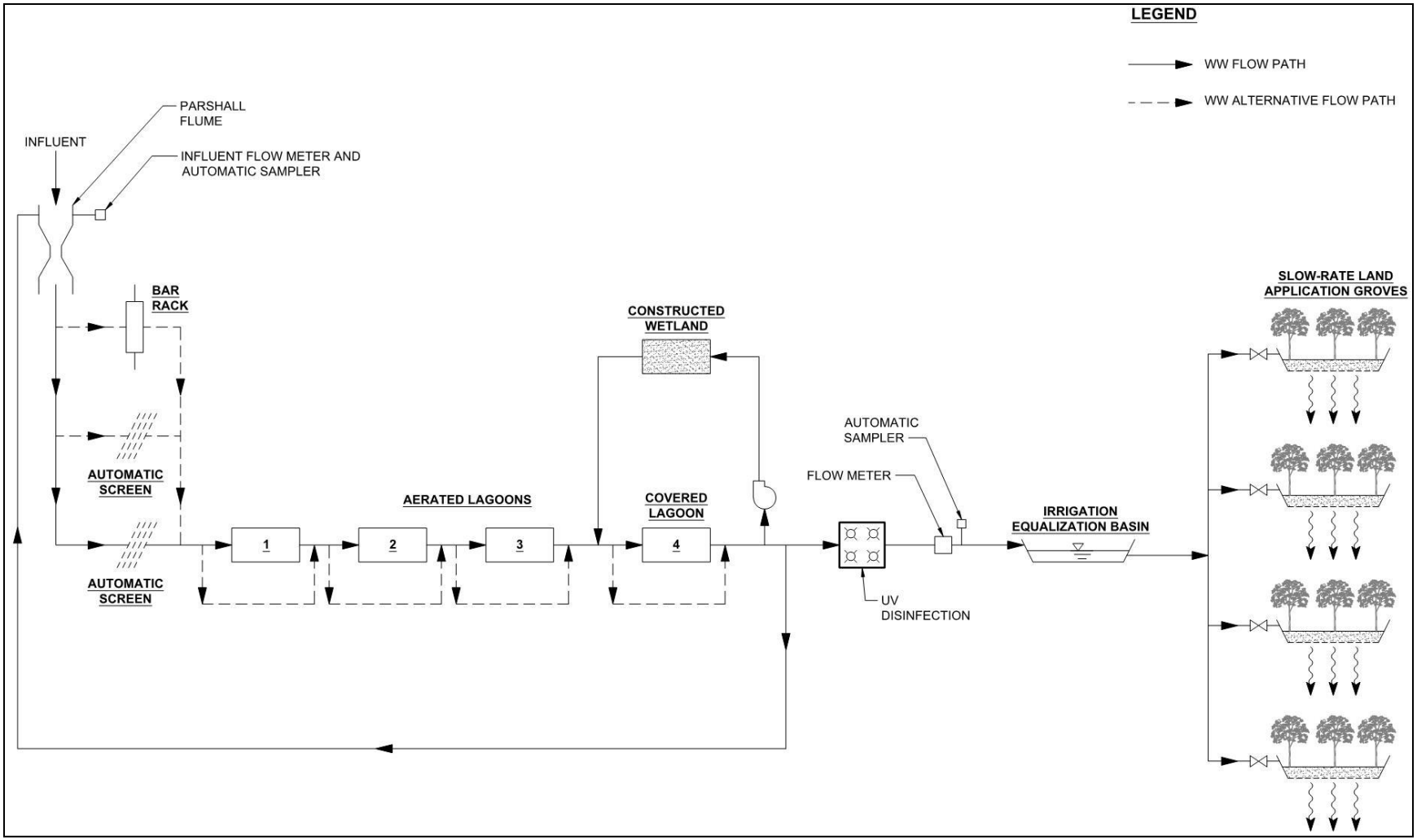


Figure 2.4. Preliminary Process Schematic for New Wastewater Treatment and Disposal Facility at Site 7 (Preferred Alternative)

Figure 2.5. Example of Shade Ball Floating Cover in a Lagoon

EPA defines land treatment as "the application of appropriately pre-treated municipal and industrial wastewater to the land at a controlled rate in a designed and engineered setting. The purpose of the activity is to obtain beneficial use of these materials, to improve environmental quality, and to achieve treatment goals in a cost-effective and environmentally sound manner." Land treatment systems rely on soil and vegetation to achieve treatment objectives, rather than energy-intensive mechanical equipment. As such, they are considered to be a form of "natural" treatment. The slow-rate land application concept is to intermittently apply wastewater to vegetation growing in permeable soils. As the applied effluent percolates through the soil matrix or is taken up by the crop, it is treated by physical filtration and biological mechanisms. After an application period or wetting period, the surface is allowed to dry, and oxygen can enter the soil matrix, which aids aerobic biological treatment. The frequent wetting and drying of the soils also maintains the infiltration rate through the soil surface and minimizes clogging. This treatment process is effective for five-day biochemical oxygen demand (BOD_5), total suspended solids (TSS), trace organics, phosphorus, metals and pathogen removal. Furthermore, nitrogen removal can be significant if it is necessary to manage the system for that objective.

The facility would be appropriately designed to have capacity to accommodate upset conditions, including pump and other equipment failures. In addition, the wastewater treatment and disposal facility would be designed not to preclude expansion to treat future average dry weather flows up to 360,000 gpd to meet the future needs of the community. As a matter of good engineering practice, and to the extent practical, the wastewater treatment and disposal facility and collection system would be designed to be expandable should the County or community decide in the future

that expansion is necessary in accordance with the requirements established in the Kaʻū Community Development Plan Policy 120. See Appendix B.

It should be noted that wastewater flows from a community are highly variable, and peak flow rates from small community wastewater collection systems are typically three to five times higher than the average flow rates. The City and County of Honolulu standards take this variability into account, and application of the standards results in conservatively designed facilities that are protective of human health and the environment in anticipated operational conditions.

The wastewater treatment and disposal facility would be designed and sized so the exposed (not enclosed) treatment processes have sufficient free-board depth to accommodate the 24-hour, 100-year storm event at the site. The wastewater treatment processes would be designed to accommodate the peak flows caused by the design storm event, including precipitation that falls on the aerated and covered lagoon treatment system. The aerated lagoons would be lined with HDPE liners or concrete to prevent water seepage through the bottom and sides of the lagoons. The aerated lagoons would be designed with operational freeboard that would be available to contain and to equalize lagoon flows during wet weather events. In addition, the slow-rate land application groves would be designed to completely contain both peak effluent flows and precipitation from a 100-year, 24-hour storm event.

The groves would be designed in accordance with EPA's "*Process Design Manual, Land Treatment of Municipal Wastewater Effluents.*" Effluent would be applied at a hydraulic loading rate that is a small percentage of the percolation rate of the soil, ensuring sufficient capacity for assimilation of peak effluent flow rates and precipitation from the design storm event.

Stormwater runoff generated mauka of the treatment and disposal facility project site would be directed around the perimeter of the site via diversion swales that would convey flow back to the existing drainage pattern that flows to the existing culvert at Maile Street. During heavy rain events, stormwater may temporarily back up behind the culvert. There would be no changes to this culvert and the proposed treatment and disposal facility would not be located within the area of the culvert.

The treatment and disposal facility would be designed with an on-site drainage system to collect runoff caused by impervious portions of the site. The system would collect the runoff via grated inlets or swales and the flows conveyed to on-site drainage detention systems, such as subsurface linear infiltration or depressed detention basins, to detain flows and volumes to their pre-development condition. In addition, landscape buffers with soil berms would be constructed around most of the perimeter of the site to function as a secondary containment in the event of a large storm event. The design is to ensure there is no adverse impact on adjacent or downstream properties due to post-development flows.

A geotechnical engineering assessment of berm stability would be conducted during the design process for any berms constructed to act as containment in the event of a large storm event.

The wastewater treatment and disposal facility design would meet the requirements of Hawaiʻi County Code (HCC) § 27-20(e) (Standards for subdivisions and other developments), which mandates a site drainage plan to "comply with sections 27-20(a) and (b) and section 27-24, and shall include a storm water disposal system to contain runoff caused by the proposed development, within the site boundaries, up to the expected one-hour, ten year storm event as shown in the department of public works *'Storm Drainage Standards'* unless those standards specify a greater interval." Also, to meet the requirements of HCC § 27-20(f), the project site "shall not alter the general drainage pattern above or below the development." Thus, no increase in flow amount would be directed to either of the culverts at the highway as a result of the site development.

Any “type” of wastewater treatment process (such as aerated lagoons, activated sludge “mechanical” treatment plants, etc.) must incorporate both peak flows from the collection system and precipitation that falls on the exposed process components into the design. The proposed aerated lagoon system is a “flow through” process, not a storage reservoir. Wastewater from the community (including peak wet weather flows) would move through the lagoon system to the disposal system and would not be stored in the lagoons. The proposed aerated lagoon system would be lined and designed to have adequate freeboard to contain the required storm event and not overflow offsite. Further:

- Stormwater flows generated outside of the treatment and disposal facility would be directed around the site;
- An onsite stormwater collection and management system would contain runoff generated at the facility; and
- The proposed land application groves would be designed to completely contain both peak effluent flows and precipitation from a design storm event.

Because the above measures would be incorporated no matter what “type” of treatment process is chosen, flooding was not a criterion specifically evaluated as part of the treatment process selection.

The facility would also include an operations building (approximately 1,620 square feet (SF)), which would include an electrical room, restroom, and maintenance/storage room. The Draft EA described a chlorination system for this disinfection process. The Proposed Action has since been revised to instead include an ultraviolet light (UV) disinfection system to reduce the use of chemicals at the facility. Disinfection would occur through a UV system which destroys microorganisms by affecting their deoxyribonucleic acid and ribonucleic acid and impeding their ability to reproduce. A UV disinfection system is comprised of lamps, a reactor, and control panel. Wastewater flows parallel to the lamps in the reactor, while the control box provides a starting voltage and maintains the continuous electrical current needed. The UV reactor would be covered to contain the UV light within the facility, which would also prevent spill-over of the light to the surrounding area. Currently, most such systems are equipped with an automated lamp cleaning system to maintain lamp efficiency levels.

The Draft EA stated a pad-mounted diesel generator would be used as the emergency power supply in the event of power loss from the commercial system. The Proposed Action has since been revised to instead place the emergency generator within the operations building, which is now feasible due to the descoping of the chlorine disinfection system from the operations building in favor of ultra-violet disinfection. This would better protect the generator from corrosion and also provide a more secure location. The generator would be connected to an exterior, aboveground double-walled, concrete-encased fuel tank with capacity to support three consecutive days of operation. The tank would have a capacity of about 250 gallons. An electrical service panel would be equipped with a manual transfer switch and generator receptacle mounted to the exterior wall of the building. This would provide a connection for a portable, trailer-mounted generator, in the event of emergency generator maintenance or failure during an extended power outage.

Emergency backup power would be required whether commercial power or alternative energy systems are utilized. It is feasible to partially augment commercial power utilizing photovoltaic solar panel arrays on the headworks and operations building rooftops. Potential use of alternative energy systems would be further analyzed during the detailed design phase after loads and demand patterns have been determined. Also, the proposed electrical systems would be

designed to accept or be adaptable to additional alternative energy input in the future if prioritized and funded by County Council.

The design of the treatment and disposal facility would not include utilizing alternative energy systems such as photovoltaic solar or wind as a total replacement for connecting to the HELCO grid due to:

- The need for consistent power supply;
- Up-front capital cost;
- The need for additional land to accommodate alternative energy systems;
- The objective to minimize the amount of land area removed from agricultural production; and
- EPA-enforced project deadlines.

Methane gas is generated at wastewater treatment plants that use a treatment process called anaerobic digestion. The proposed wastewater treatment facility would be too small for anaerobic digestion to be economical. As stated previously, the dry weather design flow to the Pāhala LCC Replacement Project for the Proposed Action is 190,000 gallons per day. Anaerobic digestion is only economically attractive for wastewater treatment and disposal facilities that treat at least 5 to 10 million gallons per day. In addition, the anaerobic digestion process requires primary clarifiers as part of the liquid treatment process, but primary clarifiers tend to be odorous in tropical climates, due to the relatively high wastewater temperatures. The proposed wastewater treatment and disposal facility would instead rely on natural treatment systems that require relatively low energy input. Additional detail regarding the preliminary analysis of alternative energy options can be found in the PER (Appendix B).

The entire wastewater treatment and disposal facility would be enclosed with a 6-foot-high chain-link fence, which would not be topped with barbed wire stringers, and posted to prevent public access. Gate(s) to the facility would be locked, except when County or other County-authorized personnel are present. The site fencing would not extend into the Maile Street or Māmalahoa Highway rights-of-way.

A 25-foot-wide by approximately 1,500-foot-long easement located along the eastern edge of the Kamehameha Schools parcel would be used to provide access to utilities from Maile Street to the treatment and disposal facility site. The easement would contain the incoming sewer line from the collection system, potable water line, and above-ground electric service from the Hawai‘i Electric and Light Company (HELCO) system. The easement would not be improved as an access road to the treatment and disposal facility. Potable water would be provided by extending the existing water main in Maile Street operated by the County of Hawai‘i Department of Water Supply (DWS), located approximately 2,000 feet northeast of the parcel, and by installing a service line in the easement to connect the new facility to that extended water main. The above-ground electric service would likely consist of 480-volt, three-phase electrical power via a pole-mounted transformer to a service panel with a meter. Provided utilities would also include a land-line and/or cellular telephone telemetry system would be used to connect the wastewater treatment and disposal facility to Department of Environmental Management (DEM) operations staff based in Hilo or Kona and would facilitate automatic control of equipment and communication of operational data, malfunctions or intrusion. This system would have an auto-dialer to inform operators of alarm conditions. Operational procedures would be in place to address mechanical and electrical outages and other issues. Permanent, exterior site lighting would be limited to one shielded light mounted under the roof overhang of the operations building, and one shielded light

near the headworks, and one shielded light at the UV disinfection system. The exterior lighting would be manually switched and used only for emergency purposes; the facility would normally be unlit at night.

The treatment and disposal facility would be designed according to National Fire Prevention Association (NFPA) 820 "Standard for Fire Protection in Wastewater Treatment and Collection Facilities." In accordance with Hawaiʻi Fire Department requirements, Fire Department access and water supply to the site would be designed to comply with Chapter 18 of NFPA 2006 Uniform Fire Code as amended by Hawaiʻi County.

It is anticipated that the wastewater treatment and disposal facility would require only weekly visits by an operator based in Hilo or Kona to check and occasionally maintain it.

A geophysical survey of the treatment and disposal facility site would be performed during detailed design with the specific intent to locate potential subsurface voids (such as lava tubes) present beneath the site that may impact design and construction of the new facility. The presence of potential subsurface voids identified by the geophysical survey would be confirmed by geotechnical borings. The intent of the subsurface investigations is to minimize the impacts of lava tubes on the project, including avoiding excessive damage to lava tubes and burials from construction of the treatment and disposal facility at Site 7.

Hazards related to hurricanes, such as wind, rain, and flood loads, would be taken into account during detailed design. Applicable regulations and standards, including IBC 2006, would be adhered to. The County would develop a facility management plan in accordance with applicable rules and regulations.

The aerated lagoon plant design would not result in the migration of aerosols outside of the site boundaries. In addition, disinfection processes selectively kill pathogens or render them incapable of reproduction or harm to humans. As outlined in Appendix B Section 3.2, continuous disinfection of the treated effluent would be provided to protect human health and the environment. The land application groves would incorporate a distribution system at the ground surface which would not produce aerosols (Appendix B, Section 4.5.1).

To mitigate potential nuisance odors, the headworks would be equipped with an odor control system with a GAC scrubber to remove odor. A package GAC scrubber passes the odorous air through a bed of activated carbon, which adsorbs the odorous constituents within the pore spaces of the carbon. The County currently operates GAC scrubbers at other facilities, and it has been proven to be an effective means of odor control both locally and nationwide. The treatment lagoons would be equipped with mechanical aerators capable of maintaining sufficiently aerobic (with oxygen) conditions within the water column, which would prevent nuisance odor conditions from occurring under normal operating conditions. The disposal groves would be irrigated with fully treated and aerobic secondary effluent from the treatment process; irrigation with secondary effluent is not associated with development of nuisance odor conditions.

Construction of the wastewater treatment and disposal facility would require extensive site modifications, including the following:

- Clearing and grubbing of approximately 14.9 acres of macadamia nut trees within Site 7 to accommodate the new facility, and clearing of up to approximately 0.9 acres of trees from within the utility easement – these trees would be disposed of at an approved site or re-used for some other purpose;

- Removal of Cook pines (*Araucaria columnaris*) along Maile Street, limited to those necessary to accommodate the main access to Site 7 via Maile Street and an existing private road to be relocated northwest (mauka) of its current location in order to provide

continued access between Maile Street and the macadamia nut processing plant immediately northeast of Site 7.

- Excavation to a depth of approximately 10 feet to provide the necessary capacity for the lagoons;
- Excavation to a depth of approximately 4 feet to provide the necessary depth for the media in the subsurface constructed wetland;
- Excavation to a depth of approximately 6 feet to provide sufficient depth for the planted groves and disposal of the effluent;
- Construction of a berm (with approximate 4-foot height) on all four sides of the groves to contain rainfall from a 100-year, 24-hour storm event, with perimeter roads on the top of the berms to provide operator access;
- Construction of internal service roads to provide access to the new facilities; and
- Relocation of the existing access road from Maile Street to the macadamia nut processing facility (see above).

Prior to construction of the treatment and disposal facility, the County would need to obtain the necessary discretionary and ministerial approvals from various federal, state, and county agencies.

2.3.2 Construct New Wastewater Collection System

Under the Preferred Alternative, the County would construct a new sewer collection system in the Pāhala community to replace the existing system of substandard gravity lines that convey sewage to the two LCCs and connect it to the proposed wastewater treatment and disposal facility on Site 7. The new collection system would consist of a total of approximately 12,150 linear feet (LF) (2.3 miles) of corrosion-resistant polyvinyl chloride (PVC) piping almost entirely within the public ROW of eight public streets. This includes five streets in the western portion of the community (Maile, ‘Ilima, Huapala, Hīnano, and Hala Streets) and three public streets in the eastern portion of the community (Puahala, Pīkake, and Kamani Streets). The new collection system would service a total of between 176-177 lots (111 existing or previously connected lots, plus 65-66 newly accessible lots as described later in this subsection), with the specific number being dependent on the results of the topographic survey and the design of the collection system, conveying sewage to the new wastewater treatment and disposal facility at Site 7. Figure 2.6 shows the collection system plan.

Similar to the treatment and disposal facility, the collection system would be designed not to preclude expansion to meet the requirements of Policy 120 of the Ka‘ū Community Development Plan.

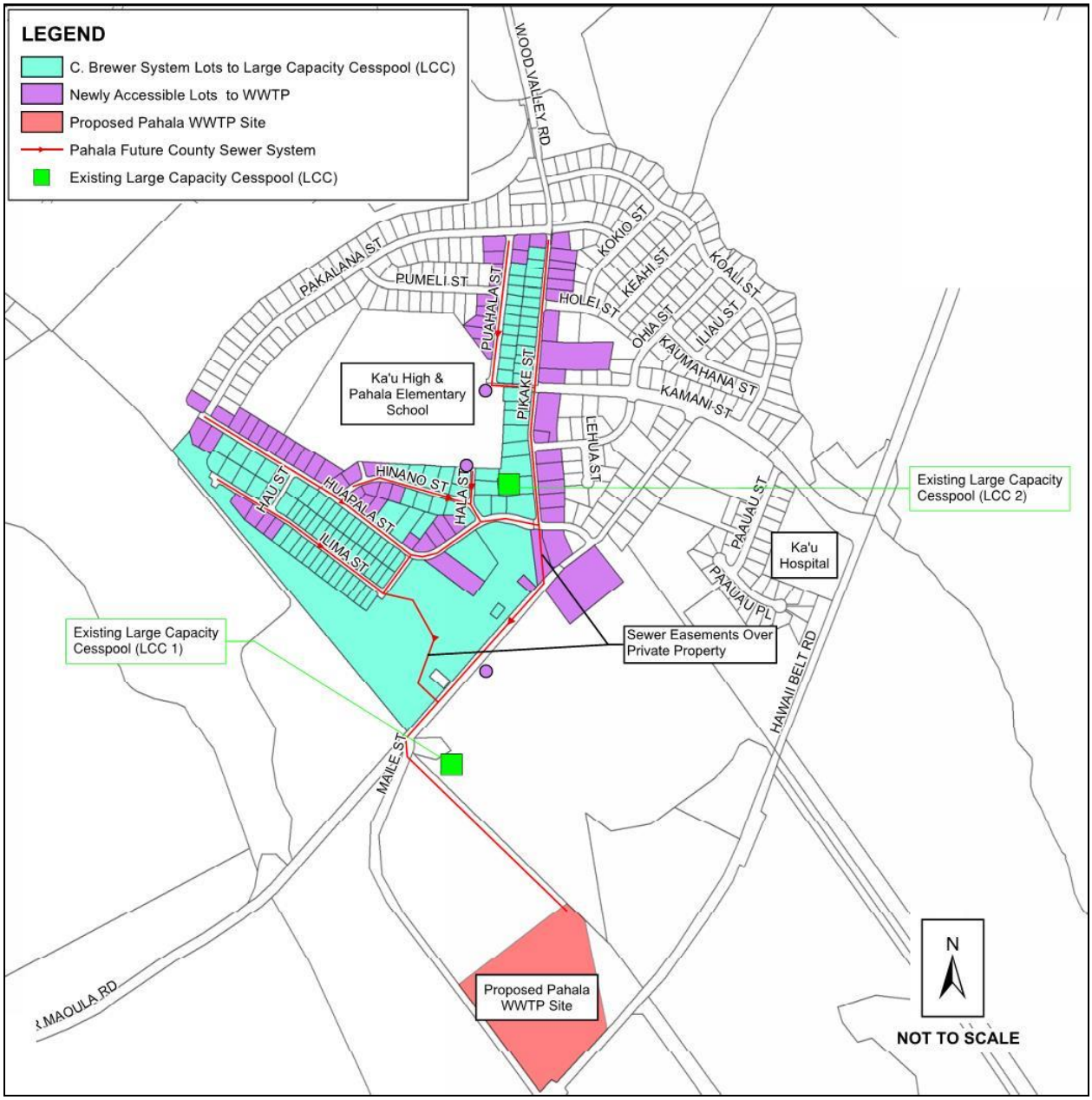


Figure 2.6. Preliminary Collection System Plan with New Wastewater Treatment and Disposal Facility at Site 7 (Preferred Alternative)

The County would construct the collection system in two phases to ensure that residential units can maintain sewer system access all times. Phase 1 would construct segments totaling approximately 2,510 LF to divert sewage flows from the existing LCC collection system to the new treatment and disposal facility and extend laterals to individual properties making them accessible to this portion of the new collection system. Specifically, Phase 1 would include the following:

- A new 1,730-LF, 16-inch diameter line within the Maile Street ROW to intercept flows from the existing system serving ʻIlima, Huapala, Hīnano, and Hala Streets and convey this sewage to the new wastewater treatment and disposal facility at Site 7. This new line would be sized to accommodate the flows from the entire community.

- A new 780-LF, 14-inch diameter line partially within the Pīkake Street ROW that would connect the existing collection system above LCC 2 to the new line on Maile Street described above. A 350-LF portion of this line would run through an easement on a privately owned parcel (TMK 9-6-005:044) to access Maile Street from Huapala Street.

Phase 2 would complete the new collection system by constructing segments totaling approximately 9,630 LF throughout Pāhala, installing pumps on selected properties, making individual properties accessible to the new collection system and re-connecting individual properties currently serviced by the existing collection system to the new collection system. These main lines would range from a 14-inch line on Pīkake Street to mostly 8-inch lines on the remaining streets and would run primarily within County ROWs for ease of access. However, an approximately 1,100-LF segment would follow the existing system alignment in an industrial area between ‘Ilima and Maile Streets. The property (TMK 9-6-005:036) is owned by Edmund Olsen and leased to M L Macadamia Orchards. The County would obtain an easement for the work proposed within this area.

Construction of the new collection system would involve temporary impacts within the public ROWs of eight streets. The streets within the community are under the jurisdiction of the County, with the exception of a privately owned portion of Pīkake Street for which the County would obtain an easement. The streets have been improved with asphaltic concrete (AC) surfaces; most shoulder areas are somewhat improved or consist of grassy swales. Most of the streets have two travel lanes, are approximately 22 to 24 feet wide (plus shoulders), and do not have curbs or gutters. Residential lots along the streets have driveways with direct access to the travel lanes. Overhead utility poles are located outside the travel lanes. Typical sewer trenches would be about 3 feet wide and at least 6 feet deep to allow the placement of the lines to meet County standards. The existing pavement would be sawcut, the trench would be excavated (which could require removal of bedrock), sewer pipe installed, and then the trench would be backfilled and compacted. The cut portion of the AC pavement would then be patched with new AC material. Additional resurfacing may be required where trenches parallel streets. The collection system would be installed with the proper horizontal and vertical clearances from existing water system facilities and concrete jacketing at waterline crossings, where necessary, as recommended by the County of Hawai‘i DWS Water System Standards.

As discussed in Section 3.3, geophysical and geotechnical surveys of the proposed collection system sites would be performed during detailed design with the specific intent to locate potential subsurface voids (such as lava tubes) which, if present beneath the sites, could require minor adjustments to the preliminary collection system plan where practicable.

All accessible properties would be required to connect to the new wastewater collection system in accordance with HCC § 21-5. However, in April 2007, the County entered into an agreement with C. Brewer to eliminate LCCs from the existing community sewer systems and connect properties discharging to them to new County collection, treatment, and disposal systems. Once the actual costs are determined, County Council action is still required to approve the expenditure of funds on private property for existing connections.

The new collection system would be subject to HCC 21 (Sewers). Specifically, HCC § 21-5 states the following:

> *“(a) Owners of all dwellings, buildings, or properties used for human occupancy, employment, recreation, or other purposes, which are accessible to a sewer are required at their expense to connect directly with the public sewer within 180 days after date of official notice.*

(b) If, due to rock, wastewater collection system depth, or other construction problems, a building cannot be practically served, the owner shall install, operate and maintain a residential pumping station.

(c) The director may grant a variance/exemption of the foregoing connection requirements to owners of single-family dwellings existing at the time of installation of the public wastewater system, if the following is found:

(1) There are special or unusual circumstances applying to the subject real property which exist that render the ability to connect to a wastewater system an extreme physical or financial hardship; and

(2) There are no other reasonable alternatives; and

(3) The variance is consistent with the general purpose of the chapter and will not be materially detrimental to public health, safety, or welfare."

Accordingly, additional newly accessible lots in Pāhala would be required to connect to the new wastewater collection system after it becomes operational. These other lots are near the existing service area and are presently connected to individual wastewater systems. Under the Preferred Alternative, the design of the new collection system would include stub-outs to accommodate the eventual connection of these newly accessible lots. However, the respective lot owners would be responsible for the design and completion of these connections and for the proper closure of their individual wastewater systems.

Additionally, as discussed in Section 4, the State of Hawaiʻi Department of Education (DOE) would connect the Kaʻū High School and Pāhala Elementary School and the recently completed Kaʻū Gymnasium and Shelter to the new collection system following completion of the Proposed Action. As stated in Section 4.7.2 of the County of Hawaiʻi, Department of Public Works, Final Environmental Assessment and Finding of No Significant Impact, Kaʻū Gym and Shelter, Pāhala, Kaʻū District. April 2012: "In accordance with Section 21-5, Hawaiʻi County Code (HCC), Kaʻū High and Pāhala Elementary School, including the Kaʻū District Gym and Shelter, will be required to connect to the County sewer system when access becomes available. The State Department of Education will be responsible for coordinating and constructing the connection to the sewer system via a branch main on Hala Street and properly closing their onsite system."

2.3.3 Close and Abandon Two Existing Large Capacity Cesspools

Under the Preferred Alternative, following DOH approval to operate the new wastewater treatment and disposal facility and completion of Phase 1 of the new collection system, the County would close and abandon LCC 1 (located within TMK 9-6-002:016) and LCC 2 (located within TMK 9-6-016:041) as instructed by DOH Safe Drinking Water Branch UIC requirements. HAR § 11-23-19 sets forth the plugging and abandonment requirements, which state the following:

> *"(a) any owner who wishes to abandon an injection well shall submit an application, in accordance with Section 11-23-12, containing the details of the proposed abandonment. The DOH may require an abandoned well to be plugged in a manner which will not allow detrimental movement of fluids between formations. If required, plugging shall be completed by grouting with the tremie method in accordance with the Honolulu Board of Water Supply's "Water System Standards", dated March, 1977; or by some other method found appropriate and acceptable to the DOH; (b) The DOH may order an injection well to be plugged and abandoned when it no longer performs its intended purpose, or when it is determined to be a threat to the ground water resource. The owner shall schedule the plugging so that DOH staff may be present to monitor the abandonment operation."*

The specific methods to be used for closure of the LCCs have not yet been determined but would be consistent with the requirements described above.

The two LCCs in Pāhala are readily accessible for closure activities. LCC 1 is located in a parcel that has been previously cleared. However, it is currently overgrown with tall grasses and it may be necessary to clear a path for construction vehicles and equipment to access. Clearing an access road (or other similar work) would not be necessary at LCC 2, which is located in the backyard of a residential lot with access via the house driveway. After the new treatment and disposal facility is operational, temporary easement(s) and a pipeline may be needed to bypass LCC 2, connect the existing collection system to the new collection system in Pikake Street, and close the LCC.

2.3.4 Close and Abandon Existing Wastewater Collection System

Under the Preferred Alternative, following completion of Phase 2 of the new collection system, the County would close and abandon the existing C. Brewer wastewater collection system. This system includes some lines located in the back yards of residential lots and some within public streets; therefore, abandoning the lines in place would minimize impacts related to their excavation and removal. The cut ends of the abandoned laterals to the collection system would be plugged with concrete to prevent unauthorized use of the old system and to prevent maintaining an unused underground hydraulic conduit.

2.4 Proposed Action – Site 8 Alternative

Under the Site 8 Alternative, the County would perform the same actions as described in Section 2.4 for the Preferred Alternative, with the following exceptions:

- The new secondary wastewater treatment and disposal facility would be constructed at Site 8 instead of Site 7; and
- The new wastewater collection system would require approximately 1,600 feet of additional pipe within the ROW of Lower Maoula Road to reach Site 8.

The County would acquire, or obtain the right to develop and use, the area identified as Site 8 for construction of the new secondary wastewater treatment and disposal facility (see Figure 2.7). The 45.2-acre parcel (TMK 9-6-002:021) containing Site 8 is southwest of and adjacent to the parcel containing Site 7, across Maile Street and above Māmalahoa Highway. As with Site 7, it is owned by Kamehameha Schools and used as a macadamia nut orchard. Site 8 is more steeply sloped than Site 7, with slopes between approximately 10 and 20 percent. An unnamed branch of Hiʻonamoa Gulch crosses from northwest to southeast near the center of the parcel.

The secondary wastewater treatment and disposal facility at Site 8 would consist of the same treatment components, and would require the same support facilities and infrastructure, as the facility described in Section 2.3.1 for the Preferred Alternative. However, because of the steeper slopes in Site 8, use of this site would require larger slow-rate land application groves totaling approximately 12 acres. Also, depending on the selected configuration of the wastewater treatment facility and the land application groves, this alternative could require trenching and construction of piping across an unnamed branch of Hiʻonamoa Gulch within the parcel.

As with the Preferred Alternative, the Site 8 Alternative would close and abandon LCC 1 and LCC 2 following completion of the wastewater treatment and disposal facility and Phase 1 of the new collection system and would close and abandon the existing C. Brewer wastewater collection system following completion of Phase 2 of the new collection system.

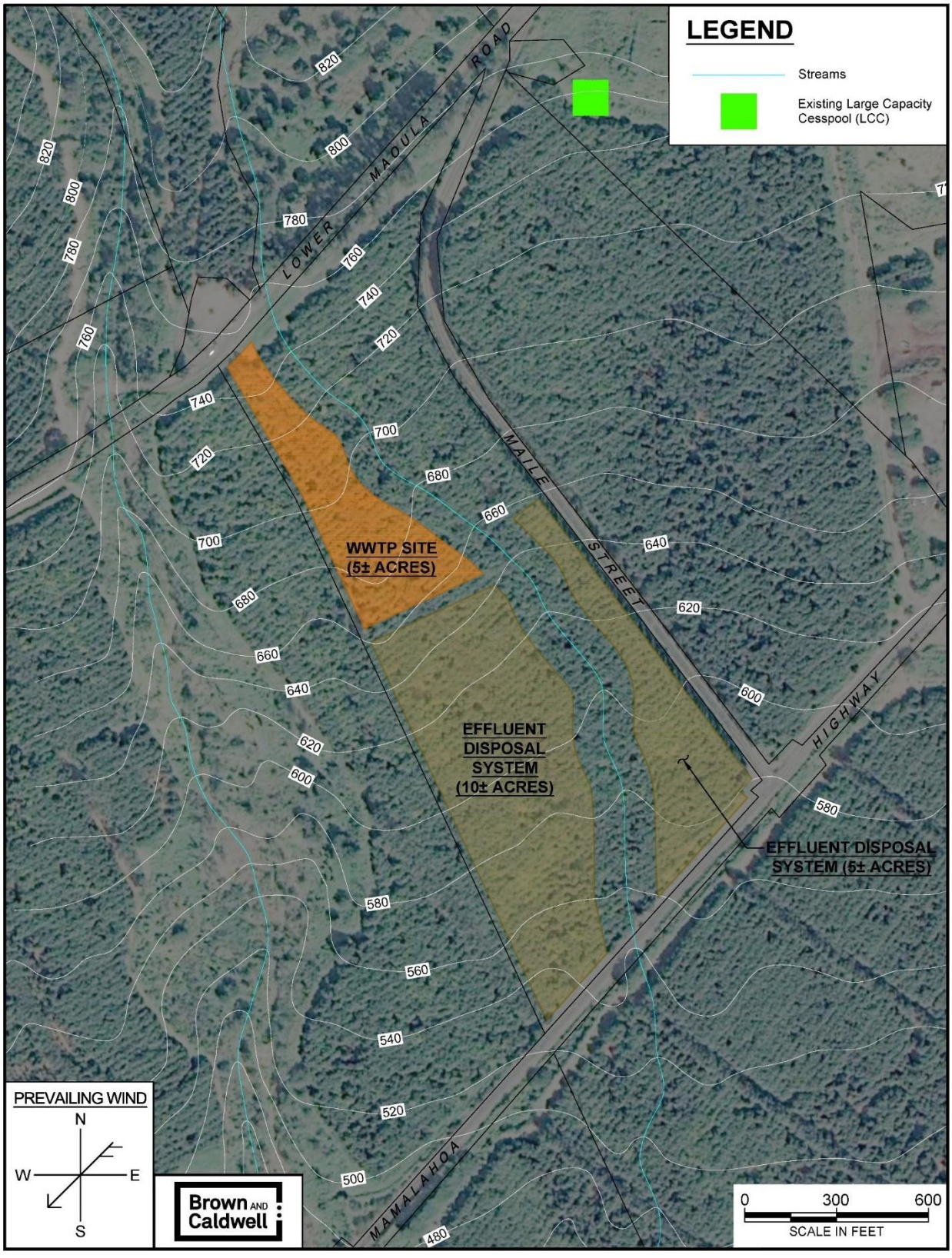


Figure 2.7. Site 8 Alternative – Preliminary Site Plan for New Wastewater Treatment and Disposal Facility

2.5 Proposed Action – Site 9 Alternative

Under the Site 9 Alternative, the County would perform the same actions as described in Section 2.3 for the Preferred Alternative, with the following exceptions:

- The new secondary wastewater treatment and disposal facility would be constructed at Site 9 instead of Site 7; and
- The new wastewater collection system would require approximately 3,200 feet of additional pipe within the ROW of Maile Street and across Māmalahoa Highway to reach Site 9.

The County would acquire, or obtain the right to develop and use, the area identified as Site 9 for construction of the new secondary wastewater treatment and disposal facility (see Figure 2.8). The 157-acre parcel (TMK 9-6-002:049) containing Site 9 is south of Sites 7 and 8, across Māmalahoa Highway. As with Sites 7 and 8, it is owned by Kamehameha Schools and used as a macadamia nut orchard. Slopes throughout Site 9 are between approximately 3 and 10 percent. An unnamed branch of Hiʻonamoa Gulch crosses the parcel from north to south near the northwest corner of the site (through the upper westerly portion of the parcel).

The secondary wastewater treatment and disposal facility at Site 9 would consist of the same treatment components, and would require the same support facilities and infrastructure, as the facility described in Section 2.3.1 for the Preferred Alternative, and the slow-rate land application groves would total approximately 8 acres. However, an unnamed branch of Hiʻonamoa Gulch or the outfall from the concrete box culvert crossing the highway at the intersection of Maile Street and Māmalahoa Highway near the upper portion of the parcel could affect the selected configuration of the wastewater treatment facility and the land application groves. Potentially, to maximize energy efficiency by taking advantage of gravity flow, the headworks, lagoons and the subsurface constructed wetlands could be sited in the upper portion of the site, or the area closest to the highway. In addition, because the site is located across Māmalahoa Highway from the Pāhala community, it would require construction of piping and other utilities within the highway ROW, which would require approval by the State DOT. Also, depending on the selected configuration of the wastewater treatment facility and the land application groves, this alternative could require trenching and construction of piping across an unnamed branch of Hiʻonamoa Gulch within the site. Finally, this alternative would require additional access roads to facilitate both construction and operation of the treatment and disposal facility and a slightly longer transmission line given its increased distance from the existing LCCs.

As outlined in the PER Section 8 (Appendix B), Site 9 earned a lower ranking than Site 7 for the following criteria: presence of and/or proximity to archaeological/cultural sites, existing vehicle access, power and potable water availability, and distance from the area of the wastewater collection system. Site 7 had a lower ranking than Site 9 in one category: topography. With the distance between the two sites less than 300 feet, they were ranked equally for the criteria of proximity of treatment units to existing occupied buildings.

As with the Preferred Alternative, the Site 9 Alternative would close and abandon LCC 1 and LCC 2 following completion of the wastewater treatment and disposal facility and Phase 1 of the new collection system and would close and abandon the existing C. Brewer wastewater collection system following completion of Phase 2 of the new collection system.

Figure 2.8. Site 9 Alternative – Preliminary Site Plan for New Wastewater Treatment and Disposal Facility

2.6 No-Action Alternative

Under the No-Action Alternative, the County would continue to use the two existing LCCs in Pāhala and existing substandard gravity sewer lines. No additional properties would be added to the community sewer system under this alternative.

This alternative would not provide the Pāhala community with an acceptable wastewater collection, treatment, and disposal system; would not fulfill the purpose and need for action described in Section 2.2; and would result in non-compliance with the AOC between EPA and the County.

2.7 Development of Site Alternatives and Selection of Preferred Alternative

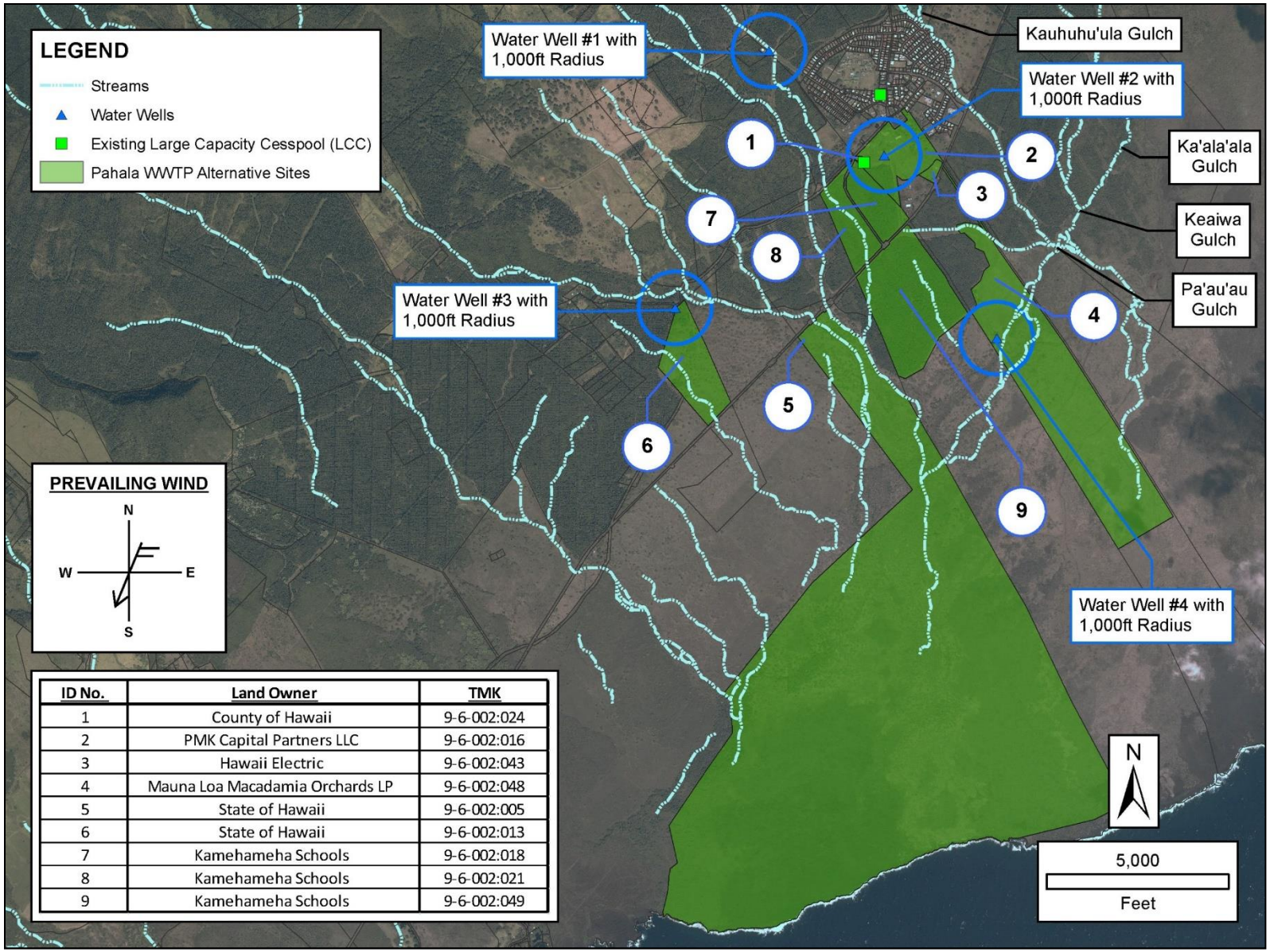
For several years, the County has considered various alternative sites in the Pāhala area for construction of a new wastewater treatment and disposal facility. The County has primarily considered sites that could be obtained at “minimal or no” cost and currently vacant sites to avoid displacement and relocation.

The County identified candidate sites based on three primary criteria. First, the site would have to be appropriate for the preliminary design of the treatment and disposal facility. For example, the site would need to have sufficient area to accommodate the facility and have soil conditions that are suitable for effluent management purposes. Second, access to the site would allow the County to meet the various requirements of the AOC that stipulated closure of the LCCs by June 2021.[2] Third, the environmental impacts of construction of the treatment and disposal facility should be considered. For example, the site would need to be located where a treatment and disposal facility would not create nuisance impacts (e.g., odor or visual impacts) to the community.

Based on these three primary criteria, and considering additional suggestions from the Pāhala community obtained during Community Outreach meetings in December 2017, the County identified nine candidate sites for the proposed wastewater treatment and disposal facility. Figure 2.9 shows the locations of these nine sites, identifies the landowners for each, and depicts their proximity to the existing LCCs. The County evaluated the suitability of each candidate site according to the following process:

1. Twenty-one criteria within four general categories (environmental, social and cultural; location and site; land use and availability; and collection system and service area) were established and defined for the analysis.
2. Six “fatal flaw” conditions were identified. Sites with a fatal flaw were eliminated from further consideration.
3. Relative weighting factors were established for each category and criteria. Environmental, social and cultural considerations, and location and site characteristics were weighted highest (35 percent each), the collection system and service area category was weighted at 20 percent, and the land use and availability category was weighted at 10 percent.
4. Sites were mapped using Geographic Information System. Data such as size, soil type, location of subsurface and surface water, topography, zoning and prevailing wind direction were determined.
5. Each site was evaluated and scored for the twenty-one criteria.

[2] In September 2019, EPA accepted the County’s request to extend the Pahala LCC closure date from June 2021 to April 2023.



ID No.	Land Owner	TMK
1	County of Hawaii	9-6-002:024
2	PMK Capital Partners LLC	9-6-002:016
3	Hawaii Electric	9-6-002:043
4	Mauna Loa Macadamia Orchards LP	9-6-002:048
5	State of Hawaii	9-6-002:005
6	State of Hawaii	9-6-002:013
7	Kamehameha Schools	9-6-002:018
8	Kamehameha Schools	9-6-002:021
9	Kamehameha Schools	9-6-002:049

Figure 2.9. Locations of Nine Candidate Sites Considered for New Wastewater Treatment and Disposal Facility

6. A weighted ranking was determined for each site based on the weighting factors established in Step 3.
7. A preferred site was identified, based on the weighted high scores.

As a result of this process, the County identified three sites (Sites 7, 8, and 9) as reasonable alternatives for construction of the wastewater treatment and disposal facility under the Proposed Action. The final scores for Sites 7, 8, and 9 were 4.33, 4.06, and 4.10 respectively, out of a total possible score of 5. Based on this analysis, Site 7 was selected as the Preferred Alternative. The site is easily accessible, has good soils for a land application system, and is close to the existing LCCs. Site 8 has a stream bisecting the parcel lengthwise that complicates siting of the treatment and disposal facility. Site 9 also has some surface water within the parcel but is also more difficult to access given its location relative to existing roads. Site 9 would require construction of additional access roads to facilitate construction and operation of the treatment and disposal facility and would also require a longer transmission line given its distance from the existing LCCs.

Additional information on the specific scoring criteria and the results of the weighted analysis can be found in the PER (Appendix B).

Section 2.3 describes the Preferred Alternative under the Proposed Action, including the preferred site (Site 7) for construction of the treatment and disposal facility. Sections 2.4 and 2.5 describe the other two sites (Sites 8 and 9, respectively) identified as reasonable alternatives for construction of the treatment and disposal facility under the Proposed Action. Section 2.8.1 describes the six sites (Sites 1-6) that were eliminated from consideration as reasonable alternatives.

2.8 Alternatives Considered but Not Carried Forward

2.8.1 Other Site Alternatives

During evaluation of site alternatives, six “fatal flaw” conditions were identified, and sites with a “fatal flaw” were eliminated from further consideration. For more information on fatal flaw conditions, refer to the PER (Appendix B).

(a) Alternative Site 1: LCC Parcel

Site 1 (TMK 9-6-002:024) is owned by the County of Hawaiʻi. This parcel is only 0.41 acres, precluding it from being suitable for a wastewater treatment facility due to parcel size. As a result of this “fatal flaw,” Site 1 was removed from further consideration.

(b) Alternative Site 2: Macadamia Nut Plant Site

Site 2 (TMK 9-6-002:016) is located adjacent to the 0.41-acre County LCC parcel. This parcel occupies about 64.8 acres, is privately owned and contains an active macadamia nut processing facility that occupies only a portion of the entire parcel. The site is located near the Pāhala community meaning it would be close the collection system, limiting the environmental impacts related to construction of the influent and fire protection lines.

However, due to the soil type, Site 2 would require an area of approximately 200 acres to accommodate the slow-rate land application basins. The unoccupied area of Site 1 is located on the northern portion of the parcel. As a result, the proposed treatment and disposal site would be nearly adjacent to a residential area and the Pāhala Hongwanji Mission. Use of this site would potentially have adverse impacts to residents and the Pāhala Hongwanji Mission. For these reasons, use of Site 2 for the treatment and disposal facility is not considered a reasonable and feasible alternative.

(c) Alternative Site 3: HELCO Substation

Site 3 (TMK 9-6-002:043) is owned by HELCO and occupies 4.46 acres. It is currently used as a substation to supply electrical power to the Pāhala community. The size of the parcel and the requirement for approval from the State of Hawaiʻi Public Utilities Commission made use of Site 3 for the treatment and disposal facility not a reasonable and feasible alternative.

(d) Alternative Site 4: Mauna Loa Macadamia Nut Parcel

Site 4 (TMK 9-6-002:048) is located east of Māmalahoa Highway and occupies about 339 acres. The parcel is privately owned and contains an active macadamia orchard. An unnamed gulch runs east-west between the highway and orchard area that would need to be crossed by influent and fire protection lines. The state may require a Stream Channel Alteration Permit should the two lines alter the stream banks. Placing the lines below the stream might require separate pump stations for the lines to access the treatment and disposal facility. The only access to Site 4 is from Māmalahoa Highway. Approval would be needed to construct within the right-of-way. Due to the soil type, Site 4 would require an area of approximately 200 acres to accommodate the slow-rate land application basins. For these reasons, use of Site 4 for the treatment and disposal facility is not considered a reasonable and feasible alternative.

(e) Alternative Site 5: State of Hawaiʻi

Site 5 (TMK 9-6-002:005), a vacant parcel owned by the State of Hawaiʻi, is located about 3,300 feet south of Maile Street below Māmalahoa Highway and occupies about 2,160 acres. Hiʻonamoa and Moaʻula gulches lie between Maile Street and Site 3 and influent and fire protection lines would need to cross the gulches to reach the site. A Stream Channel Alteration Permit would be required should the two lines alter the stream banks. Approval would also be required to construct within the state right-of-way. Due to the soil type at Site 5, approximately 200 acres would be required to accommodate the slow-rate land application basins. For these reasons, use of Site 5 for the treatment and disposal facility is not considered a reasonable and feasible alternative.

(f) Alternative Site 6: State of Hawaiʻi

Site 6 (TMK 9-6-002:013), a vacant parcel owned by the State of Hawaiʻi, is located about 1.25 miles feet south of Maile Street above Māmalahoa Highway and occupies about 75.8 acres. Influent and fire protection lines would need to cross two, and possibly three, gulches to reach the site. A Stream Channel Alteration Permit would be required if the lines alter the stream banks. Approval would also be required to construct utilities within the highway ROW. Because Site 6 lies above the highway, one or two pump stations might be required for the influent line. Due to the soil type at the site, approximately 200 acres of this soil type would be required to accommodate the slow-rate land application basins. For these reasons, use of Site 6 for the treatment and disposal facility is not considered a reasonable and feasible alternative.

2.8.2 Other Wastewater Treatment Alternatives

As previously discussed, wastewater flows from a community are highly variable, and peak flow rates from small community wastewater collection systems are typically three to five times higher than the average flow rates. The City and County of Honolulu standards take this variability into account, and application of the standards results in conservatively designed facilities that are protective of human health and the environment in anticipated operational conditions. The selected wastewater treatment alternative must be capable of achieving these standards and receiving discretionary and ministerial approvals. The following other wastewater treatment alternatives were evaluated.

(a) Septic Tank Alternatives

Several septic tank alternatives were identified and considered. Additional details on each alternative can be found in the PER (Appendix B).

- Community Septic Tank. Based on current design criteria and current flow projections, an approximately 800,000-gallon community septic tank would be necessary to provide the extended detention times needed to optimize treatment performance, to avoid the need for frequent septage pumping, and to account for peak flow rates. A community septic tank of this size would require pumping on a 3-year interval. Septic tanks produce hydrogen sulfide, reduced sulfur compounds, and other odorous gases; a community septic tank would concentrate these emissions to a single point source, requiring treatment with a dual-stage scrubber to avoid nuisance odor conditions. More significantly, a community septic tank would not be capable of achieving the effluent quality standards (less than 30 mg/L of both BOD_5 and TSS) specified in HAR 11-62. Therefore, use of a community septic tank is not considered to be feasible.

- Converting LCC to Seepage Pit. Converting LCC 1 to a seepage pit regulated as an injection well (LCC 2 could not be converted as it is on private land) would lead to numerous potential compliance issues with HAR 11-23-07, which regulates injection wells. The condition and structure of LCC 1 is unknown, and HAR 11-62-25 requires all new and proposed effluent disposal systems to have a backup system. No such system could be feasibly constructed as new injection wells are not allowed. A DOH variance necessitating renewal applications every 5 years (which are not certain to be approved) would also be required. No additional flow or connections would be allowed, meaning the proposed new collection system could not conform to the project purpose, meet currently applicable Hawai’i County Code requirements, or be expandable to serve the rest of the community.

- Leachfield Disposal. To meet DOH’s leachfield design criteria, a minimum of 30 acres of land would be required to meet loading rate and redundancy requirements. Achieving even distribution of effluent over a leachfield of this size would be challenging. Therefore, leachfield disposal is not considered to be feasible.

- Conversion to Individual Wastewater Systems. Many of the lots in Pāhala are too small to construct individual septic systems, and for those that could accommodate a septic tank, the soils may have percolation rates that are too slow to allow for seepage pits based on HAR 11-62-34 regulations. Residents with insufficient space for a seepage pit may need to import fill soil to create elevated mound systems or convert to household aerobic treatment units. Conversion to individual wastewater systems is therefore not considered feasible.

- Package Plants. Package plants are pre-manufactured treatment facilities that may be used to treat wastewater in small communities or on individual properties. Typical flows for this technology range between 10,000 and 250,000 gallons per day. Although they have the advantage of a small footprint and associated capital cost, these plants have limited storage and equalization capacity, require the addition of chemicals, and are operationally complex. In addition, they are energy intensive, and the solids produced must be properly handled and disposed. Package plants do not commonly achieve denitrification or phosphorus removal without additional unit processes. Often, package plants utilize proprietary equipment, adding to operational costs and equipment availability

issues when replacements are unavailable or the equipment becomes obsolete. Because of the need for daily operations and maintenance, on-site chemical storage and chemical addition, mechanical complexity, lack of operational flexibility under changing conditions, energy consumption and sludge handling concerns, package plants were removed from consideration for the Proposed Action. Additional issues include access for construction equipment, ownership of the units, and operation and maintenance of the units either by the County of Hawai'i on private property or by individual property owners in this remote location.

(b) Other Treatment Alternatives

Several other treatment alternatives were considered for the project. Additional details can be found in the PER (Appendix B).

- Option 1: Aerated Lagoons/Constructed Wetland/Land Application (Proposed Treatment Method). Option 1 consists of an aerated lagoon treatment system with a constructed wetland and disinfection, followed by land application for effluent management. This is the proposed treatment method for the Pāhala wastewater treatment and disposal facility.

- Option 2: R-1 Treatment/Land Application. Option 2 consists of a treatment system designed to produce recycled water that meets DOH R-1 recycled water criteria. The R-1 treatment system would be followed by land application.

- Option 3: R-1 Treatment/Seasonal Water Recycling. Option 3 consists of a treatment system similar to Option 2 to produce R-1 recycled water. The recycled water would then be used to irrigate nearby macadamia nut orchards. A water recycling analysis no irrigation is typically needed between October and March because precipitation exceeds evaporation during those months. During months when irrigation is unnecessary, recycled water could be land applied.

- Option 4: R-1 Treatment and Storage for 100 Percent Recycling. Option 4 adds a seasonal storage reservoir for recycled water. HAR 11-62 requires a disposal system for all recycled water systems to provide a means for disposal of water that does not meet R-1 standards or disposal of excess water should the seasonal storage reservoir capacity be exceeded during an exceptionally wet year. Storage in open reservoirs can also lead to algae growth and odor issues, requiring additional treatment to meet R-1 criteria before irrigation.

- Option 5: Maximum Practical Treatment. Option 5 consists of implementing advanced wastewater treatment processes that represent maximum practical treatment, eventually producing R-1 water. The same issues associated with utilizing or storing R-1 water described for Options 3 and 4 would apply to Option 5.

The treatment alternatives described above were removed from consideration due for several reasons, as described below. Additional details can be found in the PER (Appendix B).

- Labor Requirements. Options 2 through 5 require daily site visits from operators based in Hilo or Kona to conduct sampling required for R-1 compliance. These options also consist of mechanical treatment technology that requires more operator attention. Option 1 (preferred alternative) requires weekly visits by treatment plant operators based in Hilo or Kona, with periodic maintenance visits as needed.

- Operational Complexity. Options 2 through 5 require Grade IV certification through HAR 11-61 due to the complexity of treatment processes. Generally, the County has difficulty attracting and retaining Grade IV operators. Option 1 requires an operator certification level of Grade 1, the lowest level established by HAR 11-61.

- Energy Consumption. Options 2 through 5 require a substantial amount of electrical energy due to the use of mechanical processes. Option 1 requires significantly less energy due to the use of natural treatment systems.

- Sludge Management. Options 2 through 5 would require an anaerobic digester for sludge management, with solids trucked to a landfill on a weekly basis. Option 1 would require sludge removal from lagoons approximately once every 15 to 20 years. The resulting solids are well-digested and inoffensive.

Additionally, Living Machine® technology was suggested during community outreach meetings. The technology has been implemented in buildings but there is no evidence of the technology being used at a municipal scale. The proposed non-proprietary treatment system (aerated lagoons and subsurface flow wetland) uses essentially the same natural treatment processes as the Living Machine®, but on a municipal scale.

2.8.3 Other Effluent Management Options

Several effluent management options were evaluated for feasibility as an alternative to land application. The options described below were removed from consideration due to their lack of feasibility and other concerns as outlined herein.

- Ocean Discharge. Ocean discharge of treated effluent is not considered a viable option for Pāhala due to the long distance from the site to the shoreline, the high cost to construct an outfall, stringent receiving water quality standards, high ocean water monitoring costs, and the difficulty and length of time required to secure permits.

- Subsurface Disposal via Injection Wells. Per HAR 11-23, disposal to groundwater via an injection well is not allowed west (mauka) of the DOH UIC line. Because the town of Pāhala is located mauka of the UIC line, an injection well is not a viable option.

- Water Recycling. Water recycling was considered as an alternative effluent management option but removed from consideration due to the low irrigation demand in the Pāhala area and DOH requirements for all water recycling programs to have a 100-percent backup system. Storage systems could be constructed but could lead to issues as described in Section 2.8.2.

- Drain Field. A drain field (i.e., a leachfield) is an alternative effluent management option, but was removed from consideration due to the reasons outlined in Section 2.8.2, most notably the large amount of land required for a drain field and difficulties with distributing effluent across such a large area.

2.9 Relationship to 2007 Final Environmental Assessment

In August 2007, the County of Hawaiʻi DEM issued a Final EA for the Nāʻālehu-Pāhala LCC Conversion project. The County then made a Negative Declaration, also referred to as a FONSI, regarding the project on August 10, 2007, and published a notice of the determination in the August 23, 2007 issue of the Office of Environmental Quality Control (OEQC) publication *The Environmental Notice*.

As described in that Final EA, the County DEM initiated the project to address the closure of the LCCs within the Nāʻālehu and Pāhala communities. Although that Final EA addressed both communities, the proposed improvements were essentially similar for both communities. For Pāhala, the proposed project was to construct new sewer collection systems located primarily within the public ROWs and to replace the existing LCCs with six DOH-approved septic tanks for wastewater treatment and reuse of LCC 1 as a seepage pit for the effluent disposal system.

After the issuance of the 2007 Final EA and Negative Declaration/FONSI, the County conducted additional study and evaluation of the proposed LCC conversion project. The County eventually concluded that the LCC conversion project described in the 2007 Final EA would not meet the need to provide a collection system and a treatment and disposal facility, close the LCCs, and provide for the future needs of the Pāhala community. This determination was based on several factors, including the following:

- The capacity, structure, and condition of LCC 1 are not known; the County attempted to determine the structure and condition of LCC 1 via inspection by closed circuit television but could not ascertain its condition due to technological limitations. Additionally, poor results from soil percolation tests influenced the County to consider looking at a larger land area to construct a secondary treatment system to fulfill a longer-term vision of a higher level of wastewater treatment and options for plant expansion for possible community growth.

- HAR 11-62-25 requires new and proposed effluent disposal systems to have a backup disposal system capable of handling the peak flow. However, a second seepage pit would most likely not be allowed as the site is located mauka of the UIC line. Also, if the existing seepage pit were to fail, a replacement could not be constructed.

- The Kaʻū Community Development Plan was adopted as Ordinance No. 2017-66 in October 2017. This plan requires the County to provide for eventual construction of a collection system and treatment and disposal facility to serve the entire Pāhala community. Although the Kaʻū Community Development Plan was adopted subsequent to the 2007 Final EA, the Pāhala LCC Replacement Project would need to be consistent with the plan. Increasing flow to the converted existing LCC used as a seepage pit would not be allowed because it is located mauka of the UIC line. Therefore, the use of the existing LCC as a disposal system could prevent the County from providing the community's desired future wastewater needs.

- As discussed in Section 2.8.2(a), the use of a community septic tank would present odor concerns and would not be capable of meeting state effluent quality standards. Also, the County would need a variance to HAR 11-62 from DOH to install the system as proposed in the 2007 Final EA, which is not a long-term sustainable option.

Based on the above considerations, the County has decided not to move forward with the Pāhala LCC Conversion Project described in the 2007 Final EA and Negative Declaration/FONSI, and is instead evaluating the alternatives described in this Final EA.

2.10 Other Considerations

2.10.1 Zoning Considerations

Lands within the Pāhala community are designated "Urban" by the State Land Use Commission. The wastewater treatment and disposal project site is designated "Agricultural."

The 14.9-acre treatment and disposal facility would be owned by the County of Hawai‘i and managed and operated by the County of Hawai‘i DEM. The treatment and disposal facility would be a “public use” as defined by HCC § 25-1-5, as a use conducted by or a structure or building owned or managed by the federal government, the State of Hawai‘i, or the County to fulfill a governmental function, activity, or service for public benefit and in accordance with public policy.

To ensure compliance with relevant code, the County would obtain a Plan Approval from the Planning Department for the treatment and disposal facility. Also, the County would submit a Special Permit application through the Planning Department to the County Planning Commission.

2.10.2 Land Transfer

Construction of the portions of the collection system located within County ROWs would not require further land transfer approvals. As previously discussed, three segments of the planned collection system would be located within privately owned parcels. The County would obtain easements from the landowner(s) as part of the design process.

HCC Chapter 23 (Subdivisions) states that all subdivision plats and all streets or ways within the County created for the purpose of partitioning land shall be approved by the County Planning Department Director. Further, HCC § 23-11 includes requirements on lot sizes. The County would subdivide the 14.9-acre treatment and disposal facility based on HCC § 23-11, which states the following:

> *“standards of this chapter shall not be applicable to public utility or public rights-of-way subdivisions and their remnant parcels; provided that the County Planning Department Director, upon conferring with the County Director of Public Works and Manager-Chief Engineer of the County Department of Water Supply, may require necessary improvements to further the public welfare and safety.”*

Lastly, HCC § 23-12 (Submission of application and plans; filing) states the following:

> *“(a) A person desiring to subdivide land or desiring to partition land by creation of a street within the County shall submit an application for subdivision and preliminary and final plans and documents for approval as provided in this chapter and State law; (b) No subdivision plat may be filed with the Bureau of Conveyances or Land Court until submitted to and approved by the Planning Department Director.”*

The County has conducted a Phase 1 Environmental Site Assessment of the entire 42.5-acre parcel comprising Site 7. This review did not identify any recognized environmental concerns or liabilities associated with acquiring portions of Site 7.

2.10.3 Hawai‘i Revised Statutes (HRS) Chapter 205 Considerations

Lands within the Pāhala community are designated as “Urban” by the State Land Use Commission. The wastewater treatment and disposal project site is designated as “Agricultural.” According to HRS § 205-4.5, permissible uses within the agricultural districts are the following:

> *“(a) Within the agricultural district, all lands with soil classified by the Land Study Bureau's detailed land classification as overall (master) productivity rating class A or B shall be restricted to the following permitted uses:*
>
> *(1) Cultivation of crops, including crops for bioenergy, flowers, vegetables, foliage, fruits, forage, and timber;*
>
> *(2) Game and fish propagation;*

(3) Raising of livestock, including poultry, bees, fish, or other animal or aquatic life that are propagated for economic or personal use;

(4) Farm dwellings, employee housing, farm buildings, or activities or uses related to farming and animal husbandry.

(5) Public institutions and buildings that are necessary for agricultural practices;

(6) Public and private open area types of recreational uses, including day camps, picnic grounds, parks, and riding stables, but not including dragstrips, airports, drive-in theaters, golf courses, golf driving ranges, country clubs, and overnight camps;

(7) Public, private, and quasi-public utility lines and roadways, transformer stations, communications equipment buildings, solid waste transfer stations, major water storage tanks, and appurtenant small buildings such as booster pumping stations, but not including offices or yards for equipment, material, vehicle storage, repair or maintenance, treatment plants, corporation yards, or other similar structures;

(b) Uses not expressly permitted in subsection (a) shall be prohibited, except the uses permitted as provided in Sections 205-6 and 205-8."

Under HRS § 205-6, use of agricultural lands for non-agricultural purposes requires approval of a Special Permit by the County Planning Commission who submits the petition to the Land Use Commission, Office of Planning and State Department of Agriculture for their review and comment. HRS § 205-6 (Special permit) states the following:

"(a) …the county planning commission may permit certain unusual and reasonable uses within agricultural and rural districts other than those for which the district is classified. Any person who desires to use the person's land within an agricultural or rural district other than for an agricultural or rural use, as the case may be, may petition the planning commission of the county within which the person's land is located for permission to use the person's land in the manner desired. Each county may establish the appropriate fee for processing the special permit petition..."

Based on the above, a Special Permit application for the proposed treatment and disposal facility would be prepared by DEM for submittal to the County Planning Commission.

2.11 Project Schedule and Implementation

Information regarding project schedules, including EPA compliance dates, project updates and milestones can be found on the EPA website at: https://www.epa.gov/uic/county-hawaii-administrative-order-consent-closure-cesspools-pahala-and-naalehu.

The County will also provide information about the construction schedule for the collection system and the treatment and disposal facility to the DOE Facilities Development Branch Public Works Administrator on request. Impacts and mitigation measures for addressing construction-related dust, traffic, and noise are presented in Sections 3.14.2, 3.17.2, and 3.18.2. Further, the County will coordinate with the DOE Student Transportation Services Branch Manager and the School in order to minimize construction-related impacts to student transportation services.

If funds are available, appropriated by County Council, and encumbered in accordance with applicable law, the County of Hawai'i DEM is the County agency authorized to implement each phase of the project's completion including:

- Project schedules and budgets;
- Completion of the HRS Chapter 6E (Historic Preservation) process;

- Conduct and monitoring of necessary field investigations, as required;
- Preliminary and final design;
- Preparation of construction contract documents including plans, specifications, and boilerplate;
- Obtaining required plan and document approvals and clearances;
- Arranging for funding and coordination of right of entry, easement, and property acquisition;
- Ensuring required permits are identified and obtained;
- Coordinating construction contract advertisement, bidding, award recommendations, payments, and reimbursements with County of Hawai‘i Department of Public Works Contracting, CWSRF, and EPA;
- Construction management, construction and field inspection of the proposed action;
- Development of O&M Manuals and preparation of record drawings;
- Operator training;
- Filing required reports and certifications;
- Operation, maintenance, and repair of the constructed facilities; and
- Collecting sewer user charges.

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3 DESCRIPTION OF EXISTING CONDITIONS, IMPACTS AND MITIGATION MEASURES

3.1 Climate

3.1.1 Existing Conditions

(a) All Alternative Sites

Climate on the Island of Hawai‘i and more broadly throughout the state can be characterized as having low day-to-day and month-to-month variability. Differences in the climate of various areas are generally attributed to local differences in geology and topography that create microclimates with different temperature, humidity, wind and rainfall, and associated local ecosystems (University of Hawai‘i at Hilo, 1998).

The climate of Pāhala is typical of the predominantly dry condition found in the Ka‘ū District. The National Oceanic and Atmospheric Administration (NOAA) designates the Ka‘ū area as a Humid Tropical Zone with transitional lowland areas in locations between windward and leeward regions. The area receives less orographic rainfall since it is not oriented normal to trade wind flow and exhibits a distinctive summer dry season.

Temperatures in the Ka‘ū District generally range between 70 and 80 degrees Fahrenheit during daylight hours and between 60 and 70 degrees Fahrenheit during night hours. The National Weather Service maintains a rainfall gauge at Pāhala. For calendar year 2017, the Hawai‘i Rainfall Summary shows a total of 40.58 inches rain at Pāhala, about 71 percent of the average of 57.00 inches. Below-average totals were also observed at two other rainfall gauges nearby at Kahuku Ranch and South Point.

Prevailing trade winds in the Ka‘ū District area are from the southeast and usually dominate from April to November. Wind speeds average about 15 miles per hour and vary between approximately 10 to 20 miles per hour. Winds from the southwest occur less frequently, mainly during the winter associated with “Kona” storms (Department of Geography, 1998).

Climate conditions in the Ka‘ū District are likely to change in coming decades. Average annual precipitation is also likely to change, but climate models are uncertain in projections for Hawai‘i. Based on ensemble model projections available through the U.S. Environmental Protection Agency’s (EPA’s) Climate Resilience Evaluation and Awareness Tool (CREAT) Climate Scenarios Projection Map, projections for the area surrounding Pāhala range from a minor decrease in annual precipitation (up to a 1.2-percent decrease) to up to a 17.3-percent increase by 2060, depending on the model scenario (hot/dry vs. warm/wet) (EPA, 2020). Climate models also predict changes in the intensity of storm events. Projections range from a 1.0-percent to a 19.8-percent increase in 100-year storm intensity by 2035, depending on the scenario used for the modeling (“stormy” vs. “not as stormy”). By 2060, projections range from a 1.9-percent to a 38.5-percent increase in storm intensity (EPA, 2020). Another climate concern for coastal areas and islands is sea level rise.

3.1.2 Impacts and Mitigation Measures

(a) All Alternative Sites

There is the potential for construction-related and operational greenhouse gas emissions under the proposed action. Heavy equipment during construction may temporarily emit greenhouse gases during their operation and trucks used to transport supplies and equipment may cause

emissions outside of the Pāhala area. Operation of the wastewater system under the Proposed Action also has the potential for minor greenhouse gas emissions due to operations at, and one-per-week vehicle trips to, the proposed treatment and disposal facility site. These emissions are expected to be minor and are not expected to contribute substantially to emissions from the Pāhala area.

Changes in average annual temperature are unlikely to impact the proposed wastewater treatment and disposal facility and its effluent because there is no discharge to surface water sources and therefore the temperature of streams in the area is unlikely to be impacted by the project. Because all project locations are at least 3.3 miles from the coast and at least 580 feet above mean sea level (msl), sea level rise is not expected to impact the proposed project.

The large amount of uncertainty in climate projections makes it difficult to determine potential impacts of increased storm intensity on the project, but it is likely that there is some change in storm intensity in the next few decades. The new infrastructure under the Proposed Action would be designed to collect sanitary wastewater only; the community’s stormwater would be managed by other means. Some nominal inflow of stormwater into wastewater collection systems through manhole covers and other hydraulic pathways is normal and can be expected to increase with increasing storm intensity in the future. Because the proposed wastewater treatment and disposal facility does not intercept stormwater flows, there is unlikely to be a direct impact on inflow to the plant, although more intense or more frequent storms could impact the open aerated lagoons, subsurface flow constructed wetland, and land application processes from precipitation falling directly on these systems. Hazards related to hurricanes, such as wind, rain, and flood loads, would be taken into account during detailed design. Applicable regulations and standards, including International Building Code (IBC) 2006, would be adhered to. All potentially affected processes would be bermed to contain the 100-year, 24-hour storm event while maintaining at least two feet of freeboard to account for the uncertainty of the climate model projections.

(b) No-Action Alternative

Under the No-Action Alternative, the existing large capacity cesspools (LCCs) are at risk of impacts due to climate change, specifically changes in precipitation and storm intensity. The nature of the LCCs makes them more exposed to these threats, potentially leading to impacts to groundwater, surface water, and other resource areas.

3.2 Topography

3.2.1 Existing Conditions

The Pāhala community lies on the slope of Mauna Loa, west (mauka) of Māmalahoa Highway and occupies an area of about 0.61 square miles. The developed area of Pāhala slopes down at about 6 percent from the northwest to the southeast, from an elevation of 1,000 feet above msl to 800 feet above msl over a distance of 3,500 feet. The slope of the streets in the community approximately follows the contours to maintain level or appropriately sloped grades to allow vehicle travel. On certain streets, this condition results in house lots on the downhill side of the street to be several feet below the road surface, while those on the uphill side lie several feet above.

(a) Preferred Alternative (Site 7)

The 42.5-acre preferred location for the Proposed Action is generally situated on a southeast facing slope with an average slope of approximately 8.7 percent and a maximum of 18.9 percent. The elevation of the parcel ranges from 580 to 780 feet above msl.

(b) Alternative Site 8

The 45.2-acre Site 8 parcel faces approximately southeast with an average slope of approximately 9 percent and a maximum of 28.2 percent. The elevation of the parcel ranges from approximately 540 to 740 feet above msl. An unnamed branch of Hiʻonamoa Gulch crosses the site from northwest to southeast near the center of the parcel.

(c) Alternative Site 9

The 157-acre Site 9 parcel faces approximately southeast with an average slope of approximately 7 percent and a maximum of 10 percent. The elevation of the parcel ranges from approximately 300 to 600 feet above msl. Two unnamed south-flowing branches of Hiʻonamoa Gulch cross portions of the parcel.

3.2.2 Impacts and Mitigation Measures

(a) Preferred Alternative (Site 7)

Construction of the new wastewater collection system would require trenching in locations throughout the Pāhala community, primarily within the right-of-way (ROW) of public streets plus three segments within easements. Trenches would typically be about 3 feet wide and at least 6 feet deep. Due to the existing topography, several locations may also require installation of pumps. Once the line is placed in the trench, the affected area would be backfilled to restore the existing topography, resulting in minimal localized effects to the site topography.

The construction of the wastewater treatment and disposal facility would involve grading, excavating, and fill activities on approximately 14.9 acres at Site 7. Excavation to depths of approximately 4 to 10 feet would be required to provide necessary capacity for the lagoons, constructed wetlands, and planted groves. An approximately 4-foot tall berm would be constructed on all four sides of the groves to contain rainfall from a 100-year, 24-hour storm event. As discussed in Section 3.7.2, stormwater and erosion control plans would be developed, necessary construction permits would be obtained, and appropriate stormwater and erosion control measures would be implemented.

Abandonment of the two LCCs and the existing wastewater collection system would not affect topography within the affected areas.

(b) Alternative Site 8

Under this alternative, the topographic impacts and mitigation measures would be similar to those described above for the Preferred Alternative (Site 7), with the following differences:

- Construction of an additional 1,600 feet of collection system piping to reach Site 8 would require additional trenching. The affected areas would be backfilled to restore the existing topography.
- Due to the steeper slopes at Site 8, construction of the wastewater treatment and disposal facility would require grading, excavating, and fill activities on approximately 4 additional acres to accommodate the terracing required to construct the slow-rate land application groves on the steeper site.

(c) Alternative Site 9

Under this alternative, the topographic impacts and mitigation measures would be similar to those described above for the Preferred Alternative (Site 7); however, an additional 3,200 feet of trenching would be required to extend the collection system piping, potable water line, and fire protection line to Site 9. The affected areas would be backfilled to restore the existing topography.

(d) No-Action Alternative

The No-Action Alternative would not involve grading, excavation, or fill activities, and therefore would not impact topography in the Pāhala area.

3.3 Geology

3.3.1 Existing Conditions

(a) All Alternative Sites

The Island of Hawai‘i was formed by the activity of five shield volcanoes. These shield volcanoes are Kohala (extinct), Mauna Kea (has had activity during recent geologic time), Hualalai (last erupted in 1801), and Mauna Loa and Kilauea (both of which are still active).

The project site is situated at the eastern end of the island and on the lower, southeastern flank of the Mauna Loa Volcano. This volcano appears to be made up of at least two huge shield volcanoes built around two separate eruptive centers, referred to as the Mauna Loa shield. The Mauna Loa shield has been built principally by eruptions along two rift zones that extend in a southwest and east-northeast direction from the caldera. Rift zones are elongated areas of ground fissures where volcanic activity such as earthquakes and volcanic eruptions are concentrated. In contrast, few eruptions have taken place along the lower northeast rift zone.

Pāhala is situated on the slopes of Mauna Loa. The surrounding area consists of several inter-stratified beds of volcanic ash that sit upon the exposed bedrock. The Pāhala area is known to contain lava tubes, which often occur in many places around the Island of Hawai‘i. Generally, a lava tube is a natural conduit or void that forms when molten lava flows beneath the hardened surface of a previous lava flow. When the volcanic eruption stops, and the lava drains out, a lava tube forms in the void. Lava tubes can range in size from a few inches to more than 25 feet in diameter. The tubes are generally not visible from the surface and the diameter and length can usually be identified only through subsurface probing or geophysical surveys. The presence of lava tubes underneath the proposed collection system site and the alternative wastewater treatment and disposal facility sites is possible but unknown. The County is in the process of performing non-intrusive geophysical surveys of sites for the Proposed Action, which would be followed by geotechnical investigations where necessary to confirm the presence or absence of lava tubes.

3.3.2 Impacts and Mitigation Measures

(a) All Alternative Sites

Grading, excavating, and fill activities during construction of the wastewater treatment and disposal facility and the new collection system would occur no deeper than approximately 10 feet below grade and thus would have negligible impacts on the geology in the Pāhala area. If subsurface investigations determine that voids (such as lava tubes) are present, the site plan for the facility and/or collection system may require adjustments where practicable. If/when bedrock is encountered during excavation for the Proposed Action, removal would be accomplished using hydraulic and/or pneumatic hammers consistent with other construction activities on the Hawaiian Islands. Standard local practice for underground cavities encountered during excavations is to collapse unstable sections and backfill the void with engineered materials. Should any unanticipated archeological sites or materials be encountered, all work in the affected area would cease and the Hawai‘i State Historic Preservation Division (SHPD) would be notified. Work in that area would cease until clearance to proceed from SHPD. An archeological monitoring plan will be prepared during design where deemed necessary by SHPD for their approval prior to ground disturbing activities.

Abandonment of the two LCCs and the existing wastewater collection system would not affect geology within the affected areas.

Impacts and mitigation measures associated with seismic hazards are discussed in Section 3.4.

(b) No-Action Alternative

The No-Action Alternative does not involve any construction activities or modification to the existing conditions, and therefore would not cause any impacts to geology in the Pāhala area.

3.4 Seismic Hazard

3.4.1 Existing Conditions

(a) All Alternative Sites

Earthquakes in the Hawaiian Islands are primarily associated with volcanic eruptions resulting from the inflation or shrinkage of magma reservoirs beneath, which shift segments of the volcano. The Island of Hawaiʻi experiences thousands of earthquakes each year; however, most are so small that they can only be detected by instruments. Although difficult to predict, an earthquake of sufficient magnitude could cause structural or other damage to public facilities including wastewater collection systems. The seismic risk classification of the Island of Hawaiʻi is Zone 4 (County of Hawaiʻi, 2007).

Earthquakes may occur before or during an eruption or may result from the underground movement of magma that comes close to the surface. On the Island of Hawaiʻi, earthquakes directly associated with the movement of magma are concentrated beneath the active Kilauea and Mauna Loa Volcanoes. Typically, the risk of seismic activity and degree of ground movement decreases with the distance from these active volcanoes. A few of the island's earthquakes are less directly related to volcanism. These originate in the zones of structural weakness at the base of the volcanoes or deep within the earth beneath the island.

Several destructive earthquakes have occurred on the Island of Hawaiʻi. The locations of larger damaging on-island earthquakes since 1868 have generally occurred in the southeast portion of the island near Kilauea, with the most recent destructive earthquake on this south flank occurring on June 26, 1989 with a magnitude of 6.1. More recently, a magnitude 6.9 earthquake occurred on May 4, 2018 offshore and east of Kilauea, though this earthquake was classified as non-destructive.

3.4.2 Impacts and Mitigation Measures

(a) All Alternative Sites

Hawaiʻi County Code (HCC) § 5-3 indicates the "International Building Code, 2006 Edition" (IBC) – copyrighted and published in 2006 by the International Code Council, Incorporated – is adopted by the County. Chapter 5 is the applicable code for the construction of buildings, structures, and facilities in the County. The purpose of the seismic provisions in the IBC is primarily to safeguard against major structural failures and loss of life; limiting damage or maintaining functions is not a primary purpose. At a minimum, structures are to be designed and constructed to resist the effects of ground motions from seismic events. The seismic hazard characteristics described in the IBC are based on the seismic zone and proximity of the site to active seismic sources.

The wastewater treatment and disposal facility would be designed and constructed to meet the requirements of the 2006 IBC and HCC Chapter 5 and would comply with seismic loadings established for the County of Hawaiʻi. This would minimize the potential for an uncontrolled release of untreated or partially treated sanitary wastewater, or emergency generator diesel fuel

from the facility during a seismic event. The County would also develop a facility management plan in accordance with applicable rules and regulations.

(b) No-Action Alternative

The No-Action Alternative includes no construction or modification to existing conditions, and therefore would not impact seismic hazard in the Pāhala area.

3.5 Volcanic Hazard

3.5.1 Existing Conditions

(a) All Alternative Sites

In 1997, the USGS prepared an updated volcanic hazard zone map for the Island of Hawaiʻi. The map shows lava flow hazard zones for the five on-island volcanoes. The current map divides this island into zones ranked from 1 (highest hazard) through 9 (lowest hazard) based on the probability of coverage by lava flows. Hazard zones from lava flows are based mainly on the location and frequency of both historic and prehistoric eruptions. Hazard zones also consider the larger topographic features of volcanoes that affect the distribution of lava flows.

Pāhala has been assigned a rating of Zone 3, which designates areas that are less hazardous than Zones 1 and 2 because of the greater distance from recently active vents and (or) because of topography. One to five percent of Zone 3 areas have been covered by eruptions since 1800, and 15 to 75 percent have been covered within the past 750 years.

3.5.2 Impacts and Mitigation Measures

(a) All Alternative Sites

Based on the volcanic hazard map, the potential for damage is moderate, given the distance between the Pāhala community and active vents and hazards. At this time, the County has no construction restrictions in Zone 3 areas. Thus, at this time, the volcanic hazard designation would not affect the construction and operation of a collection system or treatment and disposal facilities. Although the potential for volcanic activity in or around Pāhala is present, the likelihood of that impact is relatively small. In the event of a volcanic eruption that threatens the Pāhala area, it is likely that damage would occur to residences, the treatment and disposal facility, the collection system, and other assets in the area. There are no mitigation measures to prevent the potential impacts from volcanic activity, and the impacts would be similar regardless of the location of the treatment and disposal facility or treatment system employed.

(b) No-Action Alternative

The No-Action Alternative involves no change to the status quo, so the current risk faced by Pāhala and the LCCs would remain consistent.

3.6 Soils

3.6.1 Existing Conditions

(a) All Alternative Sites

Figure 3.1 shows the soil types in the Pāhala area, based on the U.S. Department of Agriculture Natural Resources Conservation Service (NRCS) Soil Survey of the Island. Soils at all alternative sites for the proposed wastewater treatment and disposal facility are primarily classified as Map Unit 521 – Nāʻālehu medial silty clay loam, 3 to 10 percent slopes. This soil profile consists of approximately 17 inches of medial silt loam over hydrous silty clay loam with a depth to bedrock greater than 59 inches. This soil series has moderately high to high permeability characteristics, and generally consists of well-drained soils that formed in volcanic ash. As shown in Figure 3.1,

the northwest half of Site 8 is composed of a slightly different soil type, Map Unit 522 – a Nāʻālehu medial silty clay loam, 10 to 20 percent slopes.

The western portion of the collection system and the wastewater treatment and disposal facility alternative sites consist of ash fields on pāhoehoe lava fields with soils that are well drained with a runoff class of low. The remainder of the area for the collection system has a soil classified as Map Unit 567 – Puʻuʻeo- Nāʻālehu complex, 3 to 10 percent slopes with land consisting of basic volcanic ash fields over aʻa lava flows. Soils in these areas are somewhat excessively drained with a runoff class of very low.

3.6.2 Impacts and Mitigation Measures

(a) All Alternative Sites

The collection system would be constructed below the travelways or shoulders of the streets in the Pāhala community. These were previously disturbed when the streets and shoulders were originally constructed, and therefore the collection system would not create new adverse impacts to soils in the area.

Construction of the wastewater treatment and disposal facility would require removal of macadamia nut trees and clearing and excavating for construction of various improvements as described in Section 2.3.1. The soils within the proposed treatment and disposal facility at Site 7, as well as similar locations at Sites 8 and 9 that are also part of the macadamia nut orchard, were previously disturbed during planting of the macadamia nut trees. A high-density polyethylene (HDPE) or concrete liner would be placed below the excavated areas for the lagoons and subsurface flow wetland, mitigating adverse impacts to soils in the area as well as groundwater.

The proposed location for slow-rate land application basins would also require excavation to allow placement of the soil medium (approximately 8 acres for Sites 7 and 9, and approximately 12 acres for Site 8). Although the soils would be disturbed, the natural permeability characteristics of the soil would mitigate adverse impacts due to construction. The Proposed Action would incorporate appropriate stormwater and erosion control measures in accordance with approved plans to ensure that soil erosion and transport during construction activities are minimized. Continued operation of the land application basins is not expected to cause adverse impacts to surrounding soils due to the physical and biological treatment that would occur as effluent percolates through the soil and is taken up by planted vegetation.

Abandonment of the two LCCs and the existing wastewater collection system would not affect soils within the affected areas.

(b) No-Action Alternative

The No-Action Alternative would not involve any direct or indirect impacts to soils. Continued use of the existing LCCs and wastewater collection system would not result in impacts to soils in the Pāhala area.

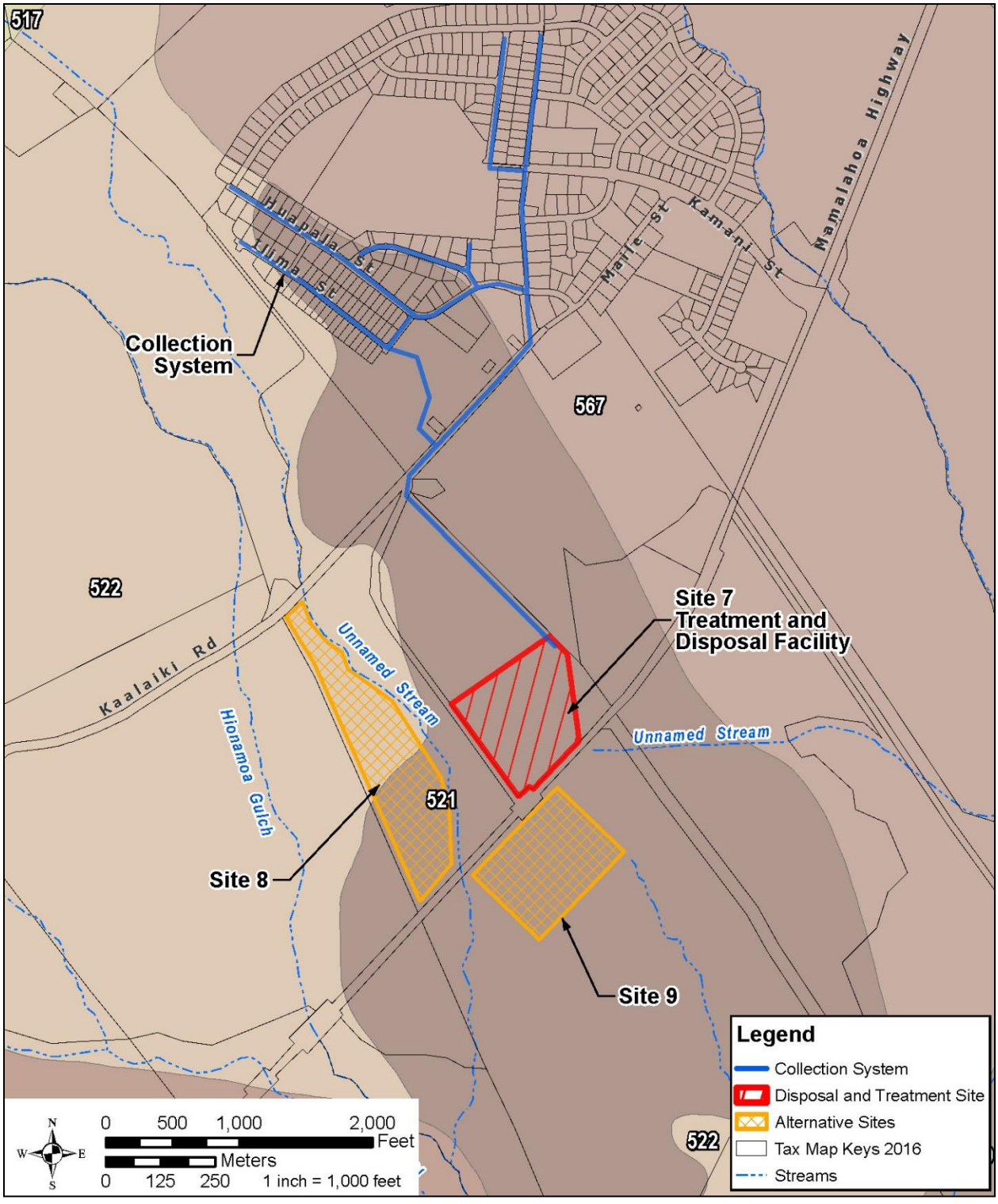

Figure 3.1. Pāhala Area Soils Map

3.7 Surface Water

3.7.1 Existing Conditions

The Pāhala community is located between two surface water sources, Pāʻauʻau Gulch to the north and east, and an unnamed branch of Hiʻonamoa Gulch to the south and west. The USGS topographic map shows flows from Pāʻauʻau Gulch end about 6,500 feet from the coast, while the unnamed branch flows into Hiʻonamoa Gulch about 3,000 feet southwest of Maile Street. Flows from Hiʻonamoa Gulch end about 6,000 feet from the coast. Figure 3.1 illustrates the known streams and gulches within the Pāhala area.

(a) Preferred Alternative (Site 7)

There are no surface water sources located within the Pāhala community near the existing or proposed wastewater collection system or the existing LCCs. Similarly, there are no surface water sources located within Site 7. The National Wetlands Inventory (NWI) Wetlands Mapper and USGS topographic maps identify no wetland features or streams within Site 7, at the two LCCs, or within the proposed collection system area. Biological and archeological field survey reports do not indicate any standing water or evident wetland vegetation within Site 7. On August 2018, a biological field survey was conducted at Site 7 and results of the field work indicated that no wetlands were observed on the site. The man-made drainage feature along Māmalahoa Highway along the edge of the parcel conducts flow generated from surface runoff underneath the highway and downslope to the east. Conditions within the ditch itself close to or on the property would not likely satisfy the hydric soil requirement to be defined as a wetland.

(b) Alternative Site 8

The unnamed branch of Hiʻonamoa Gulch crosses the Site 8 parcel from northwest to southeast near the center of the parcel. The gulch is classified as a riverine wetland in the NWI, but it is unknown whether this has been confirmed through a field survey and delineation. No other wetlands or surface water bodies are known to be located on this parcel.

(c) Alternative Site 9

Two unnamed south-flowing branches of Hiʻonamoa Gulch cross portions of the Site 9 parcel. Also, an unnamed east-flowing branch of Pāʻauʻau Gulch originates in the Site 9 parcel near the southeast boundary of the Site 7 parcel; this branch flows into Pāʻauʻau Gulch approximately 4,000 feet east of the Site 9 parcel. These gulches are classified as riverine wetlands in the NWI, but it is unknown whether this has been confirmed through a field survey and delineation. No other wetlands or surface water bodies are known to be located on this parcel.

3.7.2 Impacts and Mitigation Measures – Construction Activities

(a) Preferred Alternative (Site 7)

Given the cumulative areal extent of disturbance for the wastewater treatment and disposal facility and the new collection system, the Proposed Action would require coverage under a National Pollutant Discharge Elimination System (NPDES) construction stormwater permit. The NPDES permit would include best management practice (BMP) measures such as use of silt fences or filter socks along the perimeter of each construction site and sediment traps at drainage inlets. Further, to minimize the potential for inadvertent leaks or spills of fuels and other petroleum products, construction vehicles and equipment would be well maintained and kept at a temporary staging area where runoff is controlled.

Construction trenches would require the contractor to submit erosion control and stormwater control plans to the County and the Department of Health (DOH). Typically, the plans would require installation of erosion and sediment control BMPs. This may include the use of perimeter

controls, such as silt fences or filter socks. These BMPs would be used to surround all construction sites, including material storage and staging areas and all construction sites related to the collection system, to control pollutants in stormwater flow from the sites during construction.

The construction contract documents would require that a Site-Specific Construction BMP plan be prepared, addressing the measures that will be implemented onsite to prevent stormwater pollution. This may include spill response measures, waste management procedures, and other pollution prevention activities. The NPDES permit would also require periodic BMP inspections (and maintenance of associated documentation) to ensure the construction activities are compliant with the BMPs, Stormwater Pollution Prevention Plan (SWPPP), and NPDES permit.

Construction of the treatment and disposal facility would result in an increase in impervious surfaces. HCC § 27-20 requires an on-site drainage plan to accommodate any runoff caused by a proposed development, and requires all runoff to be retained within the site under conditions up to the design storm event. An on-site drainage system within the developed area would collect runoff via grated inlets or swales. These flows would be conveyed to on-site drainage detention systems, such as subsurface linear infiltration or depressed detention basins, to detain flows and volumes to their pre-development condition. Typically, a 1-hour, 10-year storm event is used to determine the size of the on-site drainage system. As stated in HCC § 27-20:

> *“(e) All developments requiring a site drainage plan under Section 25-2-72(3) shall submit such a plan for review and approval by the director of public works. The site drainage plan shall comply with sections 27-20(a) and (b) and section 27-24, and shall include a storm water disposal system to contain run-off caused by the proposed development, within the site boundaries, up to the expected one-hour, ten year storm event, as shown in the department of public works “Storm Drainage Standards,” dated October 1970, or any approved revision, unless those standards specify a greater recurrence interval. Expected runoff may be calculated by any nationally-recognized method meeting with approval of the director of public works. Runoff calculations shall include the effects of all improvements.*
>
> *(f) Storm water shall be disposed into dry wells, infiltration basins, or other approved infiltration methods. The development shall not alter the general drainage pattern above or below the development.”*

To ensure that there is no adverse impact on adjacent or downstream properties due to post-development flows, landscape buffers with dirt berms would be constructed around most of the perimeter of the property, acting as secondary containment in the event of a large storm event. The planted groves for the land application system would be constructed with an approximately 4-foot-high berm on all four sides to contain the peak treated effluent flows plus rainfall from a 100-year, 24-hour storm event. Once the berms are constructed, no adverse effects to the surrounding areas would be likely for a storm of that magnitude. See Section 3.23 for more information regarding stormwater drainage.

Overall, the potential for construction-related impacts on surface water resources is temporary and adherence to BMPs will minimize the potential for these impacts to occur.

Abandonment of the two LCCs and the existing wastewater collection system would not affect surface waters within the affected areas. A single NPDES permit would be secured for all elements of the project, including LCC closure.

(b) Alternative Sites 8 and 9

All of the same information presented above for the Preferred Alternative (Site 7) is relevant to Alternative Sites 8 and 9. The same permits would be required, and the same or similar construction practices and BMPs would be implemented to mitigate potential impacts.

One difference between the Preferred Alternative (Site 7) and Alternative Sites 8 and 9 is the presence of south-flowing branches of Hi‘onamoa Gulch in Sites 8 and 9, as shown in Figure 3.1. Depending on the selected configuration of the wastewater treatment facility and the land application groves, Alternative Sites 8 or 9 could require trenching and construction of piping across the unnamed branches of the gulch. A Stream Channel Alteration Permit would be required should the piping alter the stream banks. Extra attention would be required to ensure that BMPs are implemented to prevent erosion and sedimentation that could impact the surface water bodies. To avoid this potential impact for Site 9 and to minimize costs, the headworks, lagoons and the subsurface constructed wetlands could be sited in the upper portion of the site, or the area closest to the highway which would result in other impacts. The potential for impacts to surface water is greater at Sites 8 and 9 due to the presence of these unnamed streams.

(c) No-Action Alternative

The No-Action Alternative includes no construction activities, and therefore would not lead to a construction-related impact to surface water.

3.7.3 Impacts and Mitigation Measures – Operation of Wastewater System

(a) Preferred Alternative (Site 7)

EPA defines land treatment as “the application of appropriately pre-treated municipal and industrial wastewater to the land at a controlled rate in a designed and engineered setting. The purpose of the activity is to obtain beneficial use of these materials, to improve environmental quality, and to achieve treatment goals in a cost-effective and environmentally sound manner” (EPA, 2006).

The soils at the Preferred Alternative site (Site 7) are suitable for slow-rate land treatment. Slow-rate land treatment consists of irrigation of land and vegetation with treated effluent. Significant further treatment is provided as the water percolates through the soil and the vegetation uses the nutrients in the effluent as fertilizer and transpires a portion of the applied water. The proposed wastewater treatment and disposal facility would be designed to intermittently apply treated effluent to native trees and vegetation growing on permeable soils. After an application period or wetting period, the surface can dry, and oxygen can enter the soil matrix, which aids aerobic biological treatment. The proposed project estimates a reduction of greater than 99 percent in the annual load of five-day biochemical oxygen demand (BOD_5), total suspended solids (TSS), and phosphorus to the environment compared to the current LCCs, and a decrease of 83 percent in the annual load of nitrogen compared to the existing LCCs. As a result, operation of the collection system and the treatment and disposal facilities would not create adverse impacts to surface water resources of the Pāhala area.

(b) Alternative Sites 8 and 9

All of the same potential impacts described for the Preferred Alternative (Site 7) would apply for Alternative Sites 8 and 9. However, the presence of streams on both Sites 8 and 9, as shown in Figure 3.1, heightens the risk of potential impact from the wastewater treatment and disposal facility on surface water resources. BMPs could help mitigate these potential impacts, and siting of the facility and land application sites would be important to avoid adverse impacts to surface water sources.

(c) No-Action Alternative

The No-Action Alternative includes no modifications to the existing landscape. As such, any impacts to surface water resources would be caused by the existing LCCs. Closure of the LCCs is mandated by EPA regulations due to increased risk of impacts to water supplies and public health from continued use of LCCs.

3.8 Groundwater

3.8.1 Existing Conditions

Groundwater occurs within portions of geologic formations where aquifers receive and store water. Depending on geology of the area, many areas on the island rely on groundwater wells to obtain drinking water. To protect the quality of underground sources of drinking water from contamination by subsurface disposal of fluids, Hawaiʻi has adopted the Underground Injection Control (UIC) program administered by the DOH Safe Drinking Water Branch. Hawaiʻi Revised Statues (HRS) 340 E and Hawaiʻi Administrative Rules (HAR) 11-23 (Underground Injection Control) set forth the requirements related to protection of underground sources of drinking water.

Under HAR 11-62, Appendix F, a minimum separation of 1,000 feet from existing wells is required for wastewater treatment sites.

(a) Preferred Alternative (Site 7)

On April 3, 2018, in response to the pre-assessment notification, the DOH Safe Drinking Water Branch indicated that the proposed wastewater treatment and disposal project site at Site 7 is located above the UIC line and, as such, on top of underground sources of drinking water. To avoid impacts to drinking water wells, sewage injection wells cannot be constructed above the UIC line.

The State of Hawaiʻi Department of Land and Natural Resources (DLNR) Commission on Water Resource Management (CWRM) maintains information on various types of wells throughout the state. The CWRM indicated that one County and one private well are located in the Pāhala area. The CWRM confirmed that the County well and storage tank are located approximately 5,300 feet north of Site 7. The USGS topographic map shows the tank lies at about 1,120 feet above msl, which is approximately 480 feet higher in elevation than Site 7. A private well is located within TMK 9-6-002:016, the parcel that contains the existing LCC 1 and lies adjacent to Site 7. The CWRM has indicated this well is used for agricultural purposes, not for domestic purposes.

(b) Alternative Sites 8 and 9

The existing conditions discussed above for the Preferred Alternative (Site 7) are similar to Alternative Sites 8 and 9. Compared to the Preferred Alternative (Site 7) parcel, Site 8 is located a similar distance away, while Site 9 lies further away from the existing County drinking water well and the private well. There is a well to the southeast of the Site 9 parcel, but the parcel is not located within a 1,000-foot radius of the well.

3.8.2 Impacts and Mitigation Measures

(a) Preferred Alternative (Site 7)

The approximately 6-foot trenches needed to support the collection system would be relatively shallow in relation to groundwater resources in the Pāhala area. Thus, construction of the collection system would not affect groundwater resources in the area.

The treatment and disposal facility would require excavation for the lagoons, subsurface constructed wetland, and the planted groves. Preliminary plans show the lagoons would require about 10 feet of excavation, the subsurface constructed wetland about 4 feet and the planted

groves about 6 feet. Construction activities would follow an approved SWPPP to minimize potential adverse impacts to groundwater resources and stormwater during construction activities.

The lagoons and the subsurface constructed wetlands would be lined to prevent infiltration to the groundwater. As previously described, the incoming sewage would be treated in the lagoons, further treated in the subsurface wetland, and then disinfected prior to application of effluent to the planted groves. The use of a slow-rate land application system following treatment in lagoons and the subsurface constructed wetlands would be very effective at removing pollutants and nutrients from the effluent. Compared to the existing LCCs, the proposed wastewater treatment and disposal facility would decrease loading of BOD_5, TSS, and phosphorus by greater than 99 percent, and the release of nitrogen by 83 percent.

For these reasons, and because of the separation (both elevation and horizontal distance) between Site 7 and the uphill County drinking water well, construction and operation of the treatment and disposal facility would not affect groundwater resources in the Pāhala area.

While use of the two existing LCCs has not resulted in documented impacts to groundwater or drinking water resources, abandonment of the LCCs would remove a potential source of such impacts. Abandonment of the existing wastewater collection system would not affect groundwater within the affected areas.

(b) Alternative Sites 8 and 9

The groundwater impacts and mitigation measures discussed above for the Preferred Alternative (Site 7) would also apply to Sites 8 and 9. The construction of the proposed collection system and the treatment and disposal facility at either Site 8 or Site 9 would not affect groundwater resources in the Pāhala area. As discussed above, the closure of the LCCs would remove a potential source of adverse impacts to groundwater and drinking water resources.

(c) No-Action Alternative

The No-Action alternative has the potential to adversely impact groundwater resources due to the continued operation of the existing LCCs. EPA regulations mandate the closure of LCCs to prevent potential impacts on groundwater resources.

3.9 Flood Risk

3.9.1 Existing Conditions

(a) All Alternative Sites

The Pāhala community is located between two surface water sources, Pāʻauʻau Gulch to the north and east, and an unnamed branch of Hiʻonamoa Gulch to the south and west. The USGS topographic map shows flows from Pāʻauʻau Gulch end about 6,500 feet from the coast, while the unnamed branch flows into Hiʻonamoa Gulch about 3,000 feet southwest of Maile Street. Flows from Hiʻonamoa Gulch end about 6,000 feet from the coast. The unnamed branch of Hiʻonamoa Gulch runs through Alternative Sites 8 and 9 and approximately 200 to 600 feet west of the Site 7 parcel.

The Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM), Community Panel No. 155166 1800F, effective date September 29, 2017 shows no special flood hazard areas present in the project area and that most of the Pāhala area is located in *Zone X*, which designates areas determined to be outside the 0.2- percent annual chance (500-year) floodplain. A small portion of the community of Pāhala, including some land within the collection system project site, is located within *Zone X – Other Flood Areas*, indicating areas within the 0.2-

percent annual chance (500-year) floodplain, or areas with a 1-percent annual chance of flooding with average flood depths less than 1 foot.

According to the FIRM, both existing LCCs are also located within *Zone X*. However, LCC 1 is very close to the edge of the 500-year floodplain.

On April 16, 2018, in response to the pre-assessment notification, the State of Hawaiʻi DLNR, Engineering Division stated the responsibility for conducting research as to the flood hazard designation for the project site lies with the project proponent. Also on April 16, 2018 and in response to the pre-assessment notification, the County of Hawaiʻi Department of Public Works confirmed that the proposed treatment and disposal facility site at Site 7 is designated as *Zone X* on the FIRM and is outside the 500-year floodplain. See Appendix A for the responses to pre-assessment consultation letters.

3.9.2 Impacts and Mitigation Measures

(a) All Alternative Sites

The Proposed Action would not result in construction of new above-ground infrastructure within the 500-year floodplain. Although a small portion of the proposed collection system is located within the 500-year floodplain, the associated trenching operations would be temporary and would not alter the 500-year floodplain. Thus, no impacts to the existing floodplain are expected from the Proposed Action. For information related to stormwater management and impacts, please refer to Section 3.23.

Abandonment of the two LCCs and the existing wastewater collection system would not affect floodplains within the affected areas.

(b) No-Action Alternative

The No-Action Alternative, specifically the continued operation of LCC 1, could lead to impacts during a flooding event. LCC 1 is located very close to an area mapped as within the 0.2-percent annual chance (500-year) floodplain. The existing collection system is substandard and in poor condition. A large flood could potentially cause the collection system and/or LCC to overflow as a result of stormwater inflow and result in an uncontrolled release of raw sewage, thus potentially contaminating flooded areas and creating a public health hazard.

3.10 Agricultural Lands

3.10.1 Existing Conditions

In November 1965, the Land Study Bureau (LSB) at the University of Hawaiʻi issued L.S. Bulletin No. 6, *Detailed Land Classification–Island of Hawaiʻi*. The LSB compiled and interpreted data on geology, topography, climate, water resources, soils, and crops and conducted field investigations to create a land classification for the island. Bulletin No. 6 assigned two types of ratings for each land type: the overall or master productivity rating, which reflects degree of overall suitability for agricultural use, ranging from A (Very Good) to E (Very Poor); and selected use ratings, which indicate the degree of suitability for selected use alternatives. Bulletin No. 6 has not been revised or re-issued and remains as the reference document for lands classified by the LSB.

In addition to the LSB rating, the State of Hawaiʻi has developed the Agricultural Lands of Importance to the State of Hawaiʻi (ALISH) Classification System. This system was developed and compiled in 1977 by the State Department of Agriculture with assistance from the NCRS, U.S. Department of Agriculture (formerly the Soil Conservation Service) and the College of Tropical Agriculture at the University of Hawaiʻi as part of a national effort to inventory important farmlands. Lands not considered for classification within this system are developed urban lands (over ten acres), natural or artificial bodies of water (over ten acres), public use lands, forest

reserves, lands with slopes in excess of thirty-five percent, and military installations (except undeveloped areas over ten acres). The ALISH Classification System identifies the following three categories of land (equivalent NRCS categories in parentheses):

- Prime Agricultural Lands (Prime Farmlands) – Land that has the soil quality, growing season, and moisture supply needed to produce sustained high yields of crops economically when treated and managed according to modern farming methods.
- Unique Agricultural Lands (Unique Farmlands) – Land that has a special combination of soil quality, location, growing season, and moisture supply, and is used to produce sustained high-quality yields of a specific crop when treated and managed according to modern farming methods.
- Other Important Agricultural Land (Additional Farmland of Statewide and Local Importance) – Land other than Prime or Unique Agricultural Land that is also of statewide or local importance to agricultural use.

Figure 3.2 and Figure 3.3 show the LSB and ALISH classifications, respectively, in the project areas.

The 2012 Census of Agriculture-County provides the most recent information related to acreage planted for various fruits and nuts across the state and for each county. These data show a total of 18,006 acres of macadamia nuts were planted in the state, 17,387 acres of which were planted in the County, comprising about 96.6 percent of the state total.

(a) Preferred Alternative (Site 7)

The LSB rating indicates the collection system project site as “not rated”, the rating assigned to developed communities, and a master productivity rating of “D 129” (poor) for about 50 percent of the proposed wastewater treatment and disposal facility at Site 7, with the remainder “B” (good). D 129 includes soils from the Māmalahoa series, deep depth, volcanic ash, stony, well drained, and very poorly suited for machine tillability.

The ALISH map, Figure 3.3, shows the collection system is located in “unclassified” lands. The ALISH map shows the proposed wastewater treatment and disposal facility at Site 7 would be located on approximately 20 percent “prime”, 40 percent “other” and 40 percent “unclassified” land.

(b) Alternative Site 8

Site 8 is located on a mix of “prime” and “other” agricultural land, with slightly more than 50 percent classified as “prime.” There is no “unclassified” land at Site 8. Depending on the selected site plan, the land application groves would potentially be located on land classified as “prime.”

(c) Alternative Site 9

Site 9 is made up primarily of “unclassified” land, with sections of both “prime” land (northwest corner of the parcel) and “other” land (northeast and southwest edges of the parcel). The proposed facility would likely be sited at the northern end of Site 9, on land that is a mix of “unclassified” and “prime” land.

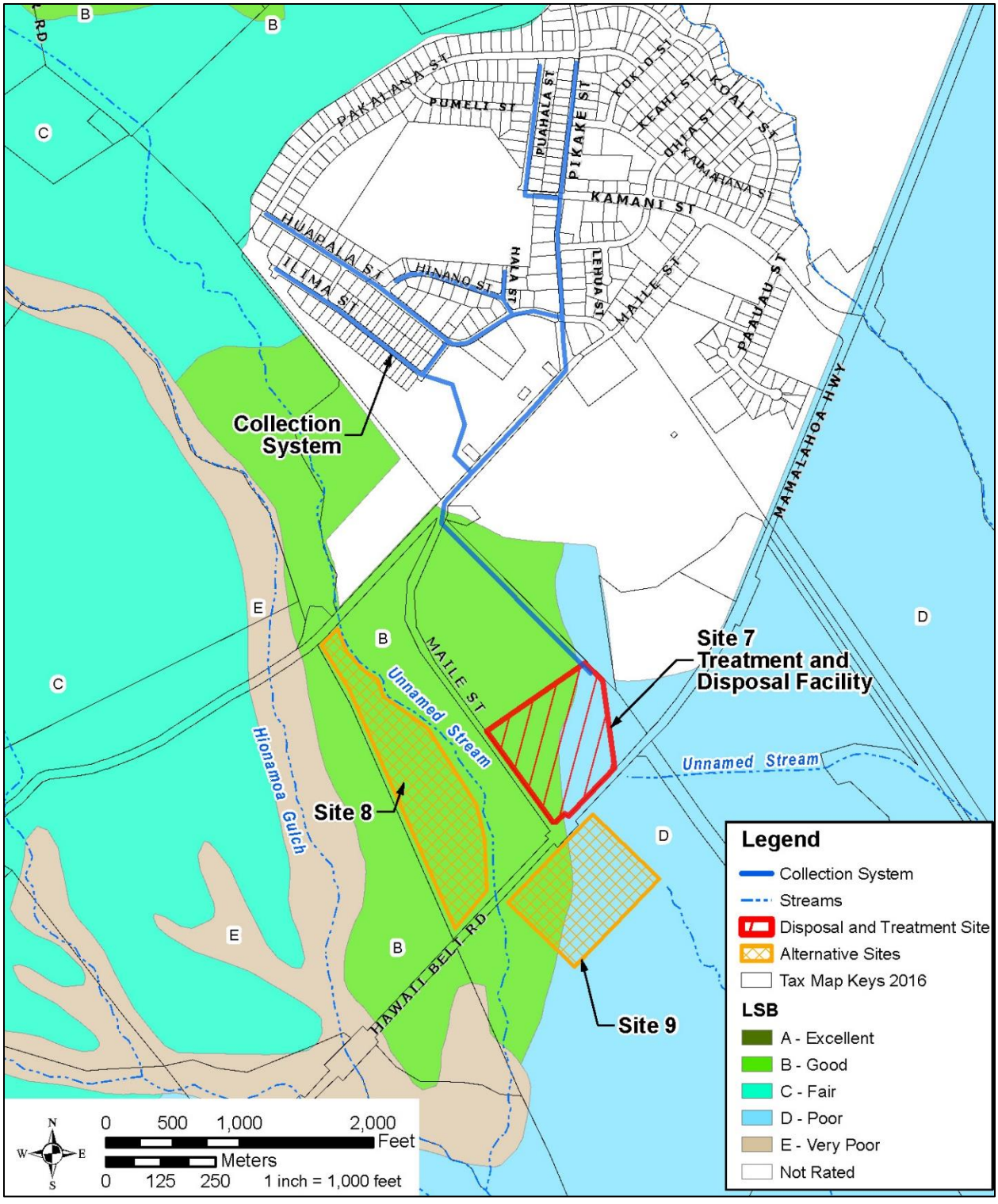

Figure 3.2. Pāhala Area Land Study Bureau (LSB) Ratings Map

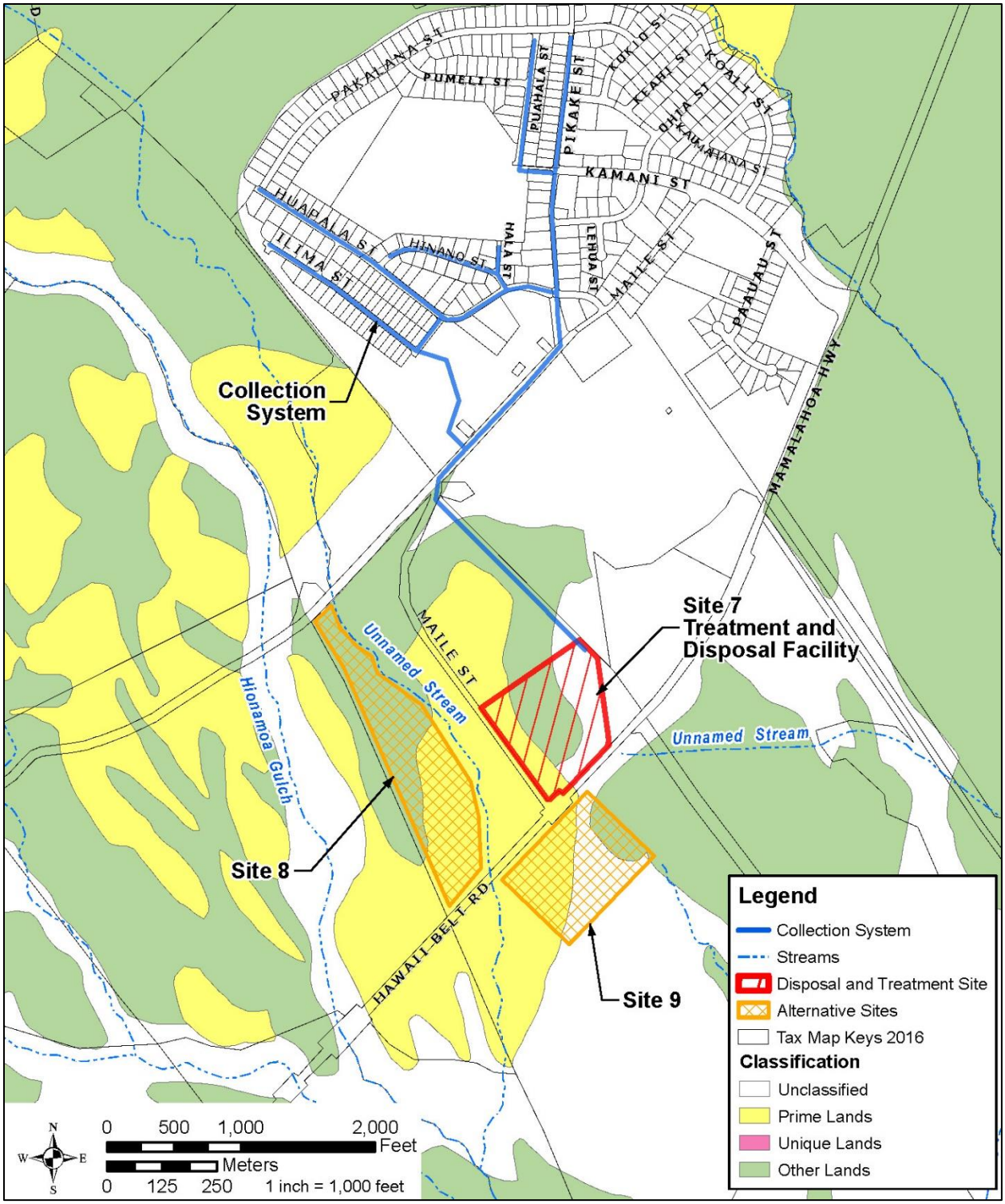

Figure 3.3. Pāhala Area Agricultural Lands of Importance to the State of Hawaiʻi (ALISH) Classification Map

3.10.2 Impacts and Mitigation Measures

(a) Preferred Alternative (Site 7)

Construction of the collection system within the County roads would not affect agricultural lands or the acreage utilized for the macadamia nut orchard. Construction of the wastewater treatment and disposal facility at Site 7 would require removal of approximately 14.9 acres of macadamia nut trees. This removal would amount to less than 0.1 percent of the total County lands planted with macadamia nut trees, which would not substantially affect the total macadamia nut acreage in the state or the County.

Abandonment of the two LCCs would reduce the potential for contamination of groundwater that is used for irrigation of agricultural lands. Otherwise, abandonment of the LCCs and the existing wastewater collection system would not affect agricultural lands within the affected areas.

See Section 5.8 regarding consistency with the Farmland Protection Policy Act.

(b) Alternative Site 8

As discussed above, construction of the collection system within the County roads would not affect agricultural lands or the acreage utilized for the macadamia nut orchard. Construction of the wastewater treatment and disposal facility at Site 8 would require removal of approximately 18.9 acres of macadamia nut trees, which would not substantially affect the total macadamia nut acreage in the state or the County.

Under HRS 205, use of agricultural lands for non-agricultural purposes requires approval of a Special Permit by the County Planning Commission who, for projects greater than 15 acres, submits their decision to the State of Hawaiʻi Land Use Commission (LUC) for their approval. The LUC approval process involves a presentation by the County and review of comments from the Office of Planning. The Commission can approve the County decision, add, amend, or revise any conditions from the County. The additional time required for the discretionary Special Permit approval would make it difficult for Site 8 to meet the conditions of the AOC.

(c) Alternative Site 9

As discussed above, construction of the collection system within the County roads would not affect agricultural lands or the acreage utilized for the macadamia nut orchard. Construction of the wastewater treatment and disposal facility at Site 9 would require removal of approximately 14.9 acres of macadamia nut trees, which would not substantially affect the total macadamia nut acreage in the state or the County.

(d) No-Action Alternative

The No-Action Alternative would not impact agricultural lands. Continued operation of the existing LCCs could introduce pathogens and other contaminants to groundwater that is used for irrigation of agricultural lands.

3.11 Solid and Hazardous Waste

3.11.1 Existing Conditions

(a) All Alternative Sites

In July 2017, a Phase 1 Environmental Site Assessment (ESA) was prepared for the County of Hawaiʻi in accordance with best practices and the requirements presented in the American Society for Testing and Materials (ASTM) Standard Practice E 1527-13 (ASTM E 1527-13). The Phase 1 ESA was conducted on the entire 42.5-acre parcel comprising Site 7 (preferred alternative), including the 14.9-acre location for the proposed treatment and disposal facility.

Details on the Phase 1 ESA objectives and guidelines can be found by reviewing ASTM E 1527-13.

A review was conducted of standard environmental (regulatory) records and specified historical records covering Site 7. A review of historical aerial photographs (1972, 1977, 1985, 1992 and 2001) identified no recognized environmental concerns (RECs). The site was identified as sugar cane land from 1972 to 1977 and was converted to a macadamia nut orchard by 1985.

The surrounding area, including Sites 8 and 9, consisted primarily of sugar cane and vacant land prior to use for macadamia nut production. No properties adjacent to Site 7 had a historical use that would represent a REC.

The Phase 1 ESA concluded no further assessment of the Site 7 parcel and proposed project site for RECs is recommended at this time. While no Phase 1 ESA was conducted for Sites 8 and 9, similar results to those for Site 7 might be expected given their similar historical and current uses.

3.11.2 Impacts and Mitigation Measures

(a) All Alternative Sites

Construction activities would involve the use of equipment containing fuel and other petroleum products that could be hazardous if released. Construction contract documents would require that a Site-Specific Construction BMP plan be prepared, and that materials and equipment to clean up leaks or spills be kept on the project site during construction. In addition, contract documents would include specifications for weekly inspections and reports to ensure the construction activities comply with BMPs. These measures would mitigate adverse impacts to the project site and surrounding area from potential releases of these materials.

The proposed wastewater treatment and disposal facility would have an emergency generator that would use diesel fuel stored in an above-ground double-walled, concrete encased tank. A leak from the inner tanks would be contained in the interstitial space between the walls of the tank. Tanks of this nature are equipped with a monitor system to detect leaks in the inner wall. It is expected that at least a 250-gallon fuel capacity would be required to provide the desired 3-day backup supply of fuel for the proposed project. According to EPA, above-ground double-walled concrete tanks do not require an additional secondary spill containment system around its base. The fuel tank design would incorporate overfill prevention features to minimize potential spills.

Ongoing operation of the proposed collection system and treatment and disposal facility is not expected to result in the creation of any hazardous waste on a regular basis.

The lagoons would need to be cleaned of sludge approximately every 20 years, and the material removed at that point would be substantially degraded from biological activity. Municipal sewage sludge is typically not considered a hazardous waste, and the material would be tested prior to end use or disposal to verify compliance with applicable requirements. The sludge removed from the facility could be landfilled, composted, or applied to land as a soil amendment and fertilizer in accordance with state and federal requirements.

The Proposed Action includes closure of existing LCCs in Pāhala. LCCs are considered underground injection wells and are regulated by EPA and the State of Hawai'i DOH's UIC rules. Under the Proposed Action, the existing LCCs are considered waste management units and would be closed in accordance with DOH UIC regulations.

Abandonment of the existing wastewater collection system would not result in the generation of solid or hazardous waste. Any sanitary wastewater remaining in the existing collection system would be diverted to the new collection system prior to closure.

(b) No-Action Alternative

The No-Action Alternative would maintain the existing LCCs in Pāhala. Under State DOH rules, LCCs are considered waste management wells and are regulated by the DOH UIC program. Ongoing operation of LCCs is no longer allowed by EPA and their closure is mandated.

3.12 Flora

3.12.1 Existing Conditions

(a) All Alternative Sites

In August 2018, a botanical field study was undertaken along the streets and areas adjacent to the proposed wastewater collection system and at the preferred location (Site 7) for the proposed wastewater treatment and disposal facility. Botanical field studies were not conducted for Site 8 or Site 9; however, similar results to those for Site 7 might be expected since these sites are also currently used for macadamia nut production. Appendix C shows the Biological Survey Report.

The area surveyed for the proposed collection system is along existing roadways within Pāhala. The survey in these areas indicated the vegetation was composed of maintained yards with ornamental plants.

The field survey for the proposed 14.9-acre wastewater treatment and disposal facility at Site 7 indicated 52 species of vascular plants: two ferns, one gymnosperm, and 49 species of angiosperms (flowering plants). Only two species (*Ipomoea indica* and *Waltheria indica*, 4 percent of the total number of observed species) are regarded as native to the Hawaiian Islands and both are indigenous (native, but also distributed elsewhere in the Pacific). Being widely distributed indigenous species, neither is listed as threatened, endangered, or of any special concern.

The field study indicated no species of plants currently listed or proposed for listing under either federal or State of Hawaiʻi endangered species regulations were present along the alignment for the proposed wastewater collection system or at the preferred site (Site 7) for the wastewater treatment and disposal facility. The field survey determined that federally delineated Critical Habitat was not present in the Pāhala area. No equivalent designation exists under State law in Hawaiʻi.

The macadamia nut orchard at Sites 7, 8, and 9 is a valuable commercial botanical resource but not an environmentally sensitive one. Similarly, the Cook pines (*Araucaria columnaris*) that line Maile Street along the western border of Site 7 and elsewhere are considered an important part of the community landscape element.

3.12.2 Impacts and Mitigation Measures

(a) All Alternative Sites

Based on the results of the botanical field study, construction of the new collection system and new wastewater treatment and disposal facility is not likely to cause any adverse impacts on federally or state-listed threatened, endangered, or special concern botanical species in the Pāhala area and would not impact federally delineated Critical Habitat. The Proposed Action would require removal of several of the Cook pines (*Araucaria columnaris*) that line Maile Street along the western border of Site 7. All other Cook pines found elsewhere would be retained with no changes.

On April 23, 2018, as part of the pre-assessment consultation process, the U.S. Fish and Wildlife Service (FWS) provided a letter with recommended measures to avoid and minimize impacts to flora (see letter with reference number 01EPIF00-2018-TA-0275 in Appendix A). On February 15, 2019, EPA and the County of Hawaiʻi concluded consultation with FWS in accordance with

Section 7 of the Endangered Species Act. This consultation did not identify any potential effects to listed plants; however, the Proposed Action would adhere to additional biosecurity protocols provided by FWS to prevent the introduction of invasive species (see 01EPI1F00-2019-1-0153 in Appendix C-1).

Abandonment of the two LCCs and the existing wastewater collection system would not affect flora within the affected areas.

(b) No-Action Alternative

The No-Action Alternative includes no modifications to the existing LCC system, and therefore would not impact flora.

3.13 Fauna

3.13.1 Existing Conditions

(a) All Alternative Sites

Mammalian Survey:

In August 2018, a biological field survey was conducted for mammalian species at the preferred site (Site 7). With the exception of the endangered Hawaiian hoary bat (*Lasiurus cinereus semotus*), or ōpe‘ape‘a as it is known locally, all terrestrial mammals currently found on the Island of Hawai‘i are alien species, and most are ubiquitous. The biological survey was limited to visual and auditory detection coupled with visual observation of scat, tracks, and other animal signs. The survey identified no mammalian species within the survey area at Site 7. There was also no indication that pigs (*Sus scrofa*) utilize the survey area, despite reports from the community that the area is occasionally used for hunting. The biological survey report is included as Appendix C.

Biological field surveys were not conducted for Site 8 or Site 9; however, similar results to those for Site 7 might be expected since these sites are also currently used for macadamia nut production.

Avian Survey:

The biological field survey conducted in August 2018 also identified avian species in the Site 7 area. Six avian count stations were sited roughly equidistant from each other; two were placed along the proposed wastewater collection system alignment and four were placed within the proposed location for the 14.9-acre wastewater treatment and disposal facility at Site 7.

The avian survey found a total of 175 individual birds of 13 species representing nine separate families. Avian diversity and densities were very low, which is consistent with the current site use as a mature macadamia nut orchard with limited ground cover and few weedy or shrubby species. All of the recorded avian species are established alien species. No native avian species were recorded during this survey of Site 7. Biological field surveys were not conducted for Site 8 or Site 9; however, similar results to those for Site 7 might be expected since these sites are also currently used for macadamia nut production.

The findings of the avian survey are consistent with the location of Site 7 (and Sites 8 and 9) and the monoculture of macadamia nut trees present at all sites. The field survey report indicated that endemic Hawaiian Petrel (*Pterodroma sandwichensis*) and Newell’s Shearwater (*Puffinus newelli*) have been recorded flying over the general area between April and the end of November each year. The petrel is listed as endangered and the shearwater as threatened under both federal and state endangered species statutes. As discussed in the August 2018 report, these seabirds are susceptible to impacts from outdoor lighting, which can result in seabird disorientation, fallout, and injury or mortality. Seabirds are attracted to lights and after circling the

lights they may become exhausted and collide with nearby wires, buildings, or other structures or they may land on the ground. Downed seabirds are subject to increased mortality due to collision with automobiles, starvation, and predation by dogs, cats, and other predators. Young birds (fledglings) traversing the project area between September 15 and December 15, in their first flights from their mountain nests to the sea, are particularly vulnerable.

3.13.2 Impacts and Mitigation Measures

(a) All Alternative Sites

The field survey recorded no species of animals currently listed or proposed for listing under either the federal or state endangered species statutes. The preliminary proposed site plan shows no new infrastructure constructed above the existing tree line that could present a hazard to waterbirds.

The operations building at the proposed wastewater treatment and disposal facility would include down-shielded light fixtures mounted below the roof overhang. The light fixtures near the headworks and ultraviolet light (UV) disinfection system would also be down-shielded. These lights would be used only in the event of an emergency at night. All fixtures would meet requirements for outdoor lighting as set forth in HCC 14 (General Welfare). These measures would help avoid or minimize any potential adverse impacts to the Hawaiian Petrel and Newell's Shearwater.

After construction of the wastewater treatment and disposal facility is completed, the new lagoons would potentially attract various species of waterbirds, including the listed Hawaiian coot (*Fulica alai*), the endemic sub-species of the Hawaiian stilt (*Himantopus mexicanus knudseni*), and Hawaiian goose (*Branta (=Nesochen) sandvicensis*). Experience at other County wastewater facilities with aerated lagoons (e.g., the Kealakehe wastewater treatment plant) has demonstrated that the aerated lagoon wastewater treatment process can present a highly attractive breeding area for local bird species.

On April 23, 2018, as part of the pre-assessment consultation process, the FWS provided a letter with information on various avoidance and minimization measures to avoid adverse impacts to listed species (see letter with reference number 01EPIF00-2018-TA-0275 in Appendix A). The letter included measures for the Hawaiian hoary bat, the Hawaiian hawk (*Buteo solitarius*), and Hawaiian goose. FWS also recommended further consultation to determine whether the lagoons, despite their potential attractiveness to nesting seabirds, could represent a sub-optimal breeding environment.

EPA and the County of Hawaiʻi concluded consultation with FWS in accordance with Section 7 of the Endangered Species Act. On December 21, 2018, the designated non-federal representative for consultations under Section 7 of the Endangered Species Act, on behalf of EPA and the County of Hawaiʻi, requested concurrence from the FWS that the Pāhala LCC Replacement Project is not likely to adversely affect federally listed threatened and endangered species or critical habitat. On February 15, 2019, the FWS provided a letter that concluded: "The Service has analyzed potential impacts to listed species due to the implementation of [the] project. Based on the inclusion of the avoidance and minimization measures listed above, the Service anticipates that any potential impacts will be discountable or insignificant and therefore we concur that the Pāhala LCC Replacement Project may affect, but is not likely to adversely affect the endangered Hawaiian hoary bat, Hawaiian Hawk, Hawaiian goose, Hawaiian Petrel, Band-rumped Storm-Petrel [(*Oceanodroma castro*)], Hawaiian Stilt, and Hawaiian Coot, and the threatened Newell's Shearwater" (see letter with reference number 01EPIF00-2019-I-0153 in Appendix C-1). The Proposed Action would incorporate the avoidance and minimization measures cited in the FWS letter, including (but not limited to) avoiding impacts to potential Hawaiian hoary bat habitat during

the bat birthing and pup rearing season; conducting a Hawaiian hawk nest survey prior to any work during the nesting season; avoiding activities near active nests; and avoiding nighttime construction during the seabird fledging period. The FWS letter also includes suggestions for biosecurity protocols to prevent the introduction of harmful invasive species into local natural areas and areas with native habitat. These measures would be incorporated into the Proposed Action.

The existing wastewater collection system is an aging system that has flaws and cracks that can provide access to pests such as rats and cockroaches. When the new collection system is installed, the existing system would be plugged, and the subsequent lack of use would reduce available habitat and pest food sources. The new collection system would be more resistant to developing cracks and openings, resulting in fewer opportunities for pests to access the sewer as compared to the existing system.

Closure and abandonment of the existing LCCs would eliminate potential pest attractants. In addition, the wastewater treatment and disposal facility would be located farther from the Pāhala community than the existing LCCs, thus conveying sewage to a more distant facility that would incorporate design elements to reduce attractiveness to pests. These design elements would include features such as appropriate removal and management of waste from screening mechanisms to reduce food sources; use of aerators in lagoons to agitate water sources that otherwise could attract mosquitoes; and intermittent dosing of effluent to avoid standing water in groves. The Proposed Action would not be expected to contribute to pest-related concerns in Pāhala.

Abandonment of the two LCCs and the existing wastewater collection system would not affect fauna within the affected areas.

(b) No-Action Alternative

The No-Action Alternative includes no modifications to the existing LCC system, and therefore would not be likely to impact fauna.

3.14 Air Quality

3.14.1 Existing Conditions

(a) All Alternative Sites

Ambient air quality standards (AAQS) have been established at both the national (NAAQS) and state level for six criteria pollutants: carbon monoxide, nitrogen dioxide, sulfur dioxide, lead, ozone, and particulate matter (PM_{10} and $PM_{2.5}$). The state has also set a standard for hydrogen sulfide. Hawaiʻi ambient air quality standards are comparable to the national standards, although in some cases the Hawaiʻi standards are more stringent than the national standards, such as for carbon monoxide. For some other parameters, such as particulate matter, the national standards are more restrictive.

The DOH operates a network of air quality monitoring stations at various locations around the state. In December 2016, the DOH issued the Annual Summary 2015 Air Quality Data report (the most recent report) which provides the results from the network of air quality monitoring stations. The DOH maintains a monitoring station at the Kaʻū High School and Pāhala Elementary School. Established August 2007, the station was placed to monitor SO_2 and $PM_{2.5}$ from volcanic emissions. Criteria pollutant levels remain below federal and state ambient air quality standards throughout the state.

Existing air quality in the project area is affected mostly by air pollutants from vehicular, industrial, natural and/or agricultural activities and processes. Also, volcanic emissions affect air quality on

the Island of Hawai‘i more than the other islands in the state. Since 1983, volcanic emissions from eruptions of Kīlauea Volcano have periodically affected the project area.

A recent analysis by the USGS shows the composition of volcanic smog (vog) depends on how much time the volcanic plume has had to react with the atmosphere. In areas closer to the volcano, such as Pāhala, vog contains both aerosols and unreacted sulfur dioxide (SO_2) gas. SO_2 gas is colorless and invisible, but the tiny particles in vog create a visible light-colored haze by scattering sunlight and thus reduce visibility.

Vog concentrations on the Island are primarily dependent on the amount of SO_2 emitted from Kīlauea, the distance from the source vents, and the wind direction and speed on a given day. From May through September, the main wind direction in the Hawaiian Islands is from the northeast (trade winds) which occur about 80 to 95 percent of the time. Under trade wind conditions, vog travels around the southern part of the island. Most of the vog stays below 6,000 to 8,000 feet above msl, the usual height of the trade wind inversion. This layer of the atmosphere increases in temperature with altitude, inhibiting the rise of cooler, vog-laden air. When trade winds are absent, which occurs most often during winter months, the entire Island, or even the entire state can be affected by vog.

Volcanic eruptions are considered natural events and therefore EPA may exclude the exceedances of the 1-hour NAAQS from attainment determinations.

Consistent with its rural nature, the Pāhala area has no major stationary sources of air pollution. Further, the low level of vehicle traffic on Māmalahoa Highway and on the streets in the community limits mobile sources of emissions.

3.14.2 Impacts and Mitigation Measures

(a) All Alternative Sites

Short-term impacts on air quality could occur during construction of the proposed wastewater collection system and the wastewater treatment and disposal facility. Short-term impacts from fugitive dust emissions would likely occur during the construction phases. To a lesser extent, exhaust emissions from mobile construction equipment, traffic disruption associated with wastewater collection system construction, and from workers commuting to the construction site may also affect air quality during the period of construction. State HAR, 11-60.1 (Air Pollution Control) requires that there be no visible fugitive dust emissions at the property line. Hence, an effective dust control plan would be implemented to ensure compliance with state regulations. During construction, fugitive dust emissions would be controlled to a large extent by watering of active work areas, the use of wind screens, keeping adjacent paved roads clean, and by covering open-bodied trucks. Other dust control measures may include limiting the area that can be disturbed at any given time and/or mulching or chemically stabilizing areas where construction is not actively occurring. These dust control measures would be most applicable to construction activities at the wastewater treatment and disposal facility project site.

After construction, motor vehicle traffic from County employees and others visiting the treatment and disposal facility project site would be a minor source of increased air pollutant emissions. As discussed in Section 3.17 (Traffic), management of the facility requires weekly visits by a single operator based in Hilo and any intermittent visits for maintenance purposes. Given the low ambient levels of pollutants and infrequent visits to the facility, any increases would not result in exceedance of federal or state AAQS for the six criteria pollutants.

The treatment and disposal facility would have an emergency standby diesel-powered generator for use during periods of outage of the commercial electrical service. The generator would also

be operated periodically for testing to ensure proper operation. The operation and testing should not cause an exceedance of air quality standards.

Wastewater treatment plants can be a source of nuisance odors to the surrounding community if not properly designed or operated. Typically, nuisance odors are most commonly associated with anaerobic (without oxygen) conditions and with processing of residual solids. Incoming raw sewage flows to the proposed wastewater treatment and disposal facility would first be routed to the headworks, which is the facility where the solids are removed from the flows.

As previously discussed, to mitigate potential nuisance odors, the headworks would be equipped with an odor control system with a GAC scrubber to remove odor. A package GAC scrubber passes the odorous air through a bed of activated carbon, which adsorbs the odorous constituents within the pore spaces of the carbon. The County currently operates GAC scrubbers at other facilities, and it has been proven to be an effective means of odor control both locally and nationwide. The treatment lagoons would be equipped with mechanical aerators capable of maintaining sufficiently aerobic (with oxygen) conditions within the water column, which would prevent nuisance odor conditions from occurring under normal operating conditions. The disposal groves would be irrigated with fully treated and aerobic secondary effluent from the treatment process; irrigation with secondary effluent is not associated with development of nuisance odor conditions.

Also, as previously discussed, the aerated lagoon plant design would not result in the migration of aerosols outside of the site boundaries under normal operating conditions. In addition, disinfection processes selectively kill pathogens or render them incapable of reproduction or harm to humans. As outlined in the Preliminary Engineering Report (PER) Section 3.2 (Appendix B), continuous disinfection of the treated effluent would be provided to protect human health and the environment. The land application groves would incorporate a distribution system at the ground surface which will not produce aerosols (Appendix B, Section 4.5.1).

Overall, construction and operation of the wastewater collection system and treatment and disposal facility would not result in significant impacts to air quality of the Pāhala area. Mitigation measures would be implemented, as appropriate, to minimize any potential impacts. By locating the facility at least 0.5 miles away from the developed area of the community (including the Ka‘ū High School and Pāhala Elementary School), the Proposed Action would provide a buffer to mitigate potential concerns associated with nuisance odors or aerosol migration that could arise outside of normal operating conditions.

Abandonment of the two LCCs and the existing wastewater collection system would not affect air quality within the Pāhala area.

(b) No-Action Alternative

The No-Action Alternative includes no modifications to the current LCC system, and therefore is not likely to impact ambient air quality in the Pāhala area. Historically, air quality in the Pāhala area has met ambient standards during operation of the LCCs.

3.15 Archaeological and Cultural Resources

3.15.1 Existing Conditions

(a) Preferred Alternative (Site 7)

A 2016 survey of available information identified the presence of one historic site in the immediate vicinity of the proposed wastewater collection system. In Pāhala, the Ka‘ū High and Pāhala Elementary School is listed on the State of Hawai‘i register of historic places. No other historic sites were identified within the areas planned for improvements.

In November 2016, as part of the initial planning for LCC closure, the County contracted for a 1-day archaeological field inspection of Site 7, including the preferred location for the proposed wastewater treatment and disposal facility. The purpose of the inspection, which involved pedestrian sweeps of the entire 42.5-acre parcel, was to determine if any historic properties or significant archaeological features were present. The inspection report stated that it is apparent that ground modifications undertaken during the plantation period destroyed any evidence of pre-contact agriculture or settlement activities. Furthermore, bulldozing associated with the creation of the macadamia nut orchard appears to have leveled any plantation-era land features.

The 2016 inspection identified surface artifacts as the only evidence of past human activity on Site 7. Artifacts included a single traditional artifact as well as more numerous late post-contact artifacts. The single traditional artifact was a crudely shaped discoidal hammerstone found on the ground surface near the northern edge of Site 7 near Maile Street. No other cultural material (either traditional or post-contact) was observed in this area, suggesting that the hammerstone reflects an isolated artifact rather than a buried cultural deposit. Given the possible agricultural activity that may have taken place in the region during the pre-contact period, it is not surprising that a traditional artifact was found within the inspection parcel.

The 2016 inspection stated that, while the historical ground modifications have likely limited the archaeological potential of the site, the discovery of both pre- and post-contact surface artifacts within the 42.5-acre Site 7 parcel, as well as evidence from plantation-era documents that the opening of a lava tube containing human remains once existed in the southeastern corner of the parcel, indicate that further archaeological studies may be necessary by SHPD before any development can be initiated. The 2016 inventory report stated that, at minimum, an Archaeological Inventory Survey (AIS) was necessary to fully document, map, date and collect the surface artifacts. It may also be necessary to test for the presence of subsurface cultural deposits through hand excavation or mechanical trenching. The report also stated it would be advisable to limit the development footprint to exclude the southeastern corner of the 42.5-acre parcel.

Prior to conducting the AIS testing plan, SHPD needed to approve the AIS testing plan. To meet this requirement, the County submitted the AIS plan to SHPD on March 22, 2018. On April 25, 2018, SHPD requested clarification. Responses were submitted to SHPD on July 31, 2018 including the findings from the 2016 field survey report and a map of the proposed wastewater treatment and disposal facility. The map showed that the preferred site for the facility would avoid the area in which the traditional artifact was found during the 2016 inventory.

On August 20, 2018, SHPD approved the AIS plan and, between September 18, 2018 and January 10, 2019 a team of qualified archaeologists conducted a pedestrian survey of the proposed project site and completed subsurface trenching to determine the presence of archaeological resources. The work was undertaken in accordance with SHPD requirements, with the AIS approach accepted by SHPD in their August 20, 2018 letter. The results of the survey and subsurface trenching showed no burials or lava tube openings were identified on site. The completed AIS submitted to SHPD in March 2019 documents that a sealed lava tube opening is located east of the proposed wastewater treatment and disposal facility site, outside the proposed property boundary, and outside of the area of potential effect considered in consultation with

SHPD as required by Section 106 of the National Historic Preservation Act (NHPA). The AIS was made available to the public on EPA and County websites.[3,4]

The AIS investigation was designed to comply with both federal and State of Hawai'i environmental and historic preservation review requirements. Use of federal (EPA) funding means that the project is a federal undertaking, requiring compliance with NEPA and Section 106 of the NHPA. As a project utilizing County funds, the project is also subject to historic preservation requirements found in HRS § 6E-8 and HAR § 13-275.

The AIS background research related to the collection system identified two properties that were issued State Inventory of Historic Places (SIHP) designations for identification purposes—specifically, the historic Wood Valley Road/Coastal Road corridor (SIHP # 50-10-69-31088) and the historic Volcano Road corridor (SIHP # 50-10-69-31089). Both corridors were assessed as significant under Criterion (d) for yielding important information for research on former rights of way in the history of the Pāhala community. The AIS stated that constructed elements of the portions of these road alignments in the area of the collection system have been thoroughly impacted by the development of modern roadways, becoming Pīkake Street (SIHP # 50-10-69-31088) and Maile Street (SIHP # 50-10-69-31089), in Pāhala within the original corridors. Due to the impacts and changes to these roads in Pāhala over time, these historic properties only maintain integrity of location of the old corridor. The AIS concluded SIHP #s -31088 and -31089 are not eligible for inclusion on the National Register of Historic Places or the Hawai'i Register.

As part of the AIS, the entire collection system and wastewater treatment and disposal facility sites were covered in close pedestrian sweeps. The AIS found both project sites have been completely altered by past residential/town and agricultural development. Historic remnants of the sugar plantation are present throughout Pāhala and surrounding the project sites, but these remnants are all located outside the limits of the collection system and the treatment and disposal facility sites.

The AIS confirmed no significant artifacts or cultural deposits were observed on the ground surface within the proposed wastewater treatment and disposal facility site as the area experiences ongoing disturbance by macadamia harvesting operations and stormwater runoff. Further, no cultural deposits or lava tubes were encountered during the subsurface trenching. Lastly, although outside of the area of potential effect considered in consultation with SHPD, research conducted during the AIS showed a sealed lava tube opening is located east and outside of the proposed wastewater treatment and disposal facility site.

On March 29, 2018, the County, as the EPA designated representative, initiated consultation for this project pursuant to Section 106 of the NHPA. Consultation letters were delivered to invite comments from organizations that may attach religious or cultural significance to properties affected by the Proposed Action. A total of 14 letters were mailed to various Native Hawaiian Organizations (NHOs) requesting comments (see Section 10); no responses have been submitted to the County. The list of NHOs was generated by EPA for NHPA Section 106 and HRS Chapter 6E compliance using the U.S. Department of the Interior, Office of Native Hawaiian Relations, Native Hawaiian Organization Notification List (Updated December 4, 2017). The HRS Chapter 6E determination and Section 106 review packet were submitted to SHPD with the Draft

[3] On March 11, 2019, the AIS was posted on the EPA web site: https://www.epa.gov/sites/production/files/2019-06/documents/cover-letter-draft_archaeological_inventory_survey_pahala_wwtp-optim-2019-03-11.pdf.
[4] The AIS was made available for download from the County's website: http://records.co.hawaii.hi.us/weblink/1/edoc/100962/Draft%20Archeological%20Inventory%20Survey%20-%20Pahala%20WWTP%20and%20Sewer%20System.pdf.

AIS on March 13, 2019. In addition, the County sent a letter to SHPD on October 9, 2019, again requesting acceptance of the previously submitted Draft AIS findings.

On September 23, 2018, notice of availability of the Draft EA was published in the OEQC *The Environmental Notice.* Subsequently, on September 26, 2018, a public notice was published in the *Hawaii Tribune Herald*, *West Hawaii Today* newspapers, and the online *Kaʻū News Brief.* The public notice announced that a public information meeting was to be conducted by the County on October 10, 2018 in Pāhala at the Kaʻū Gym Multi-Purpose Conference Room to discuss the Draft EA as it related to DEM's compliance with HRS 343 requirements. A second part of the meeting addressed Section 106 of the NHPA involving consultation with NHOs and Native Hawaiian descendants with ancestral lineal or cultural ties to, cultural knowledge or concerns for, or cultural religious attachment to the proposed project area. During the October 10 meeting, attendees were invited to provide information about the proposed project area. Eight persons placed their names on a sign-in sheet to contribute during the second part of the meeting related to Section 106; however, no comments or information from the public were forthcoming during this meeting.

To request clarification of comments received on the Draft EA, a letter was sent to the Pele Defense Fund requesting information about potential known lava tubes in the project area via certified mail on November 14, 2018 but no response was received.

(b) Alternative Sites 8 and 9

Alternative Sites 8 and 9 have similar existing conditions for historical resources as presented above. Although Sites 8 and 9 were not surveyed, they are both currently used as macadamia nut orchards and thus would be expected to exhibit similar ground modifications as Site 7. The ground modifications from the plantation period would have destroyed any evidence of pre-contact agriculture or settlement activities, in addition to extensive disturbance from bulldozing during creation of the macadamia nut orchard.

3.15.2 Impacts and Mitigation Measures

(a) Preferred Alternative (Site 7)

Based on the AIS, no properties eligible for inclusion on the National Register of Historic Places or the Hawaiʻi Register are present within the area of potential effects for the Preferred Alternative, and no significant artifacts or cultural deposits on the ground surface and no cultural deposits or lava tubes were encountered during subsurface testing. Thus, in accordance with federal regulations (36 CFR § 800.5), the AIS results support a determination of "no historic properties affected." Further, under HRS § 6E-8 and in accordance with HAR § 13-275-7(a)(1), the County of Hawaiʻi DEM's project effect determination is "no historic properties affected." Under 54 U.S.C. § 300308, the term ''historic property'' means any prehistoric or historic district, site, building, structure, or object included on, or eligible for inclusion on, the National Register.

Based on the above, in accordance with 36 CFR § 800.4(d) EPA reached a finding of "no historic properties affected for the project or undertaking." On September 26, 2019, EPA sent a letter to SHPD to document their determination that no historic properties will be affected by the undertaking and to request concurrence from SHPD. The potential for encountering unexpected archeological resources within the site of the proposed treatment and disposal facility is low due to historical ground modifications and ongoing harvesting activities; however, the Proposed Action would incorporate appropriate mitigation measures should archeological resources be discovered during construction. Specifically, the construction contract documents would state that, should archeological features such as walls, platforms, pavement or mounds, or remains such as artifacts, burial sites, or concentrations of shells or charcoal, be encountered during construction activities, work shall cease immediately and the find shall be protected from further damage. The contractor would immediately contact SHPD (at 808.981.2979), who would assess the

significance of the find and recommend appropriate mitigation measures, if necessary. The AIS and NHPA Section 106 consultation correspondence can be found in Appendix D and Appendix D-1, respectively.

To date, SHPD has not responded to the County's Draft AIS submittal from March 13, 2019; the EPA letter from September 26, 2019 requesting concurrence with the determination that no historic properties will be affected by the undertaking; or the County's follow-up letter from October 9, 2019 requesting concurrence with the Draft AIS findings. In accordance with 36 CFR § 800.4(d)(1)(i) and as specified in the September 26 letter, because no response was received within 30 days of SHPD receipt of the adequately documented finding, EPA has fulfilled their Section 106 responsibilities for this undertaking. However, construction would not proceed until SHPD has approved the Draft AIS.

Abandonment of the two LCCs and the existing wastewater collection system would not affect archaeological and cultural resources within the affected areas.

(b) Alternative Sites 8 and 9

Under these alternatives, the potential impacts to archaeological and cultural resources and the necessary impact avoidance and minimization measures would likely be similar to those described above for the Preferred Alternative (Site 7). If Site 8 or Site 9 are selected for development, an AIS, including subsurface testing, would be conducted to confirm the presence or absence of resources on the proposed wastewater treatment and disposal facility site. If archaeological sites are discovered during construction, work would cease and SHPD would be contacted (at 808.981.2979) to determine appropriate mitigation measures, if necessary. EPA and the County of Hawaiʻi would consult with SHPD in accordance with Section 106 of the NHPA and would incorporate impact avoidance and minimization measures as necessary to result in a finding of no adverse effects to historic properties.

(c) No-Action Alternative

The No-Action Alternative would not result in any disturbance to land within the Pāhala area and is therefore not expected to have any adverse impacts on archaeological or cultural resources.

3.16 Socioeconomic Characteristics

3.16.1 Existing Conditions

(a) All Alternative Sites

In March 2017, the State of Hawaiʻi Department of Business, Economic Development and Tourism released 2016 population estimates for the state and counties. This analysis estimates that Hawaiʻi County had a resident population of 198,449 persons in 2016, which represents an annual increase of 1.2 percent from 2010.

The U.S. Census Bureau provides the American Community Survey (ACS), which updates selected demographic, social, and economic information for various years. This includes age, racial composition, and economic information, including employment and household income by Census Designated Place for several locations in Hawaiʻi County. The version of the ACS referenced is the 2012-2016 5-Year Estimates, released in 2017. See Table 3.1 below.

The ACS shows the Pāhala population has a similar age distribution to Hawaiʻi County, although Pāhala has a higher proportion of individuals in the "Under 5 to 19" age category, 28.5 percent compared to 24.4 percent for the County. The median age for Pāhala is 42.4 years compared to 41.8 years for the County.

Overall, Pāhala is characterized by a racial composition that includes a greater proportion of minorities than the County at large. The racial distribution includes a much lower proportion of White residents, a much higher proportion of Filipino residents, and lower populations of other minority groups, including Native Hawaiians when compared to the County. There are also more residents of two or more races in Pāhala than in the County.

Pāhala has a higher proportion of residents that have completed high school and some college than the County overall, but a lower proportion with college degrees (bachelor's and graduate or professional degrees). From an economic perspective, Pāhala generally has more households in lower income brackets than the County, and a lower median household income.

Lastly, Pāhala had a higher proportion of employment in agriculture, forestry, fishing, hunting, and construction (31.9 percent), and in education and health care (22.1 percent), compared to the County (12.6 percent and 19.7 percent, respectively).

A subset of social resources is environmental justice. Environmental justice considers sensitive populations, such as children, minorities, and low-income communities. Sensitive populations are identified in two Executive Orders (EOs):

- EO 12898, *Federal Actions to Address Environmental Justice in Minority and Low-Income Populations*, serves to avoid the disproportionate placement of adverse environmental, economic, social, or health impacts from federal actions and policies on minority and low-income populations.
- EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks*, states that federal agencies will identify and address environmental health and safety risks from their activities, policies, or programs that may disproportionately affect children.

As noted above and in Table 3.1 below, Pāhala has a higher proportion of low-income, minority, and children residents as compared to the County as a whole. For purposes of this assessment, and to correspond with the available ACS demographic characteristic data, "low income" is defined as having a household income of less than $24,999; "minority" is defined as any race population other than White; and "children" is defined as the "Under 5 to 19" age category.

3.16.2 Impacts and Mitigation Measures

(a) All Alternative Sites

In the short term, construction projects under the Proposed Action would require a number of contractors and their subcontractors. Construction contract documents would reference HRS 103B, which requires the contractor (including subcontractors) to include not less than 80 percent Hawai‘i residents in the work force. This would limit the importation of workers from outside the local area and the associated increase in demand for local housing.

The Proposed Action would generate employment as the contractor would need workers to undertake construction of the improvements for the wastewater collection system and the wastewater treatment and disposal facility. This employment would generate wages and salaries paid to the contractor and subcontractor work forces. The wages and salaries paid to the work force would in turn generate purchases of goods and services, which would result in taxes paid to the State of Hawai‘i. In addition, the contractor and their subcontractors would need to purchase equipment, supplies, and materials, some of which would be purchased from local suppliers and vendors. Direct purchases of equipment, supplies, and materials by the contractor would also generate taxes. Overall, the Proposed Action would result in positive employment benefits which would result in higher levels of income and overall economic benefits to the local economy.

Table 3.1
Demographic, Economic, and Social Characteristics of Pāhala and Hawaiʻi County

Item	Pāhala		Hawaiʻi County	
	Total	Percent	Total	Percent
Demographic Characteristics				
Total population	1,341	-----	193,680	-----
Under 5 to 19 years	382	28.5	47,258	24.4
20 to 34 years	193	14.4	34,475	17.8
35 to 59 years	306	22.8	61,978	32
60 to 74 years	367	27.4	36,993	19.1
75 years and over	94	7.0	13,170	6.8
Median age	42.4	-----	41.8	-----
Race				
White	106	7.9	64,255	33.2
African American (incl. American Indian/Alaska Native)	0	0.0	1,897	1.0
Chinese	10	0.7	1,844	1.0
Filipino	484	36.1	17,794	9.2
Japanese	54	4.0	17,981	9.3
Other Asian	46	3.4	3,722	1.9
Native Hawaiian	50	3.7	20,980	10.8
Other Pacific Islander	18	1.3	4,725	2.4
Some other race	1	0.1	3,230	1.7
2 or more races	572	42.7	54,564	28.2
Social Characteristics				
Less than 9th grade	98	10.9	3,681	2.7
High school to HS graduate	489	54.5	50,586	37.3
Some college to associate degree	204	22.7	43,761	32.3
Bachelor's degree	97	10.8	24,704	18.2
Graduate or professional degree	10	1.1	12,649	9.3
Household Income Characteristics				
Less than $24,999	130	33.6	17,337	26.3
$25,000 to 49,999	73	18.9	13,615	20.6
$50,000 to $99,999	126	32.6	20,291	30.7
$100,000 to $199,999	48	12.4	12,201	18.5
$200,000 or more	10	2.6	2,563	3.9
Median household income	$47,625	-----	$53,936	-----
Employment Characteristics				
Agriculture, forestry, fishing and hunting	120	26.2	3,713	4.4
Construction	26	5.7	6,806	8.2
Manufacturing and wholesale-trade	0	0	3,701	4.4
Retail trade	16	3.5	10,858	13.0
Transportation, warehousing, and utilities	14	3.1	4,250	5.1
Information tech, finance, insurance, and real estate	9	2.0	5,677	6.8
Professional, scientific, and technical services	48	10.5	8,709	10.4
Education and health care	101	22.1	16,437	19.7
Arts, entertainment, recreation	75	16.4	13,316	16.0
Other services, public administration	49	10.7	10,015	12.0

Source: 2012-2016 American Community Survey (5-Year Estimates) Hawaiʻi Geographic Area Profiles – Census Designated Places: Neighbor Islands.

The Proposed Action is not likely to directly impact long-term employment or education trends because the wastewater operator would likely be based in Hilo or Kona, meaning the project would not involve long-term relocation of any staff to Pāhala. Additionally, the proposed wastewater collection system and treatment and disposal facility would not be designed to encourage or accommodate substantial population growth in Pāhala.

Despite the relatively high proportions of low-income, minority, and children residents in Pāhala compared to the County overall, the Proposed Action would not result in disproportionately high and adverse human health or environmental effects on these sensitive populations. As discussed in Section 2.3.1 and Section 3.14.2, the design and location of the proposed wastewater treatment and disposal facility would minimize odor and air quality impacts. Construction of the wastewater collection system would result in intermittent and unavoidable noise from construction vehicles and equipment within the Pāhala community, including noise associated with the removal of bedrock. However, as discussed in Section 3.18.2, construction activities within the community would comply with provisions of HAR 11-46 (Community Noise Control). This includes obtaining a noise permit for any activities that would generate noise exceeding the permissible sound levels specified in HAR 11-46. The permit would limit excessive noise sources to daytime hours; would require the use of best available control technology to control noise levels from excessive noise sources; and would require the applicant to notify affected members of the public in advance of any planned nighttime construction activity (which must not exceed the permissible sound levels). Overall, the Proposed Action is expected to result in positive human health and environmental effects to Pāhala residents by providing a cleaner and longer-lasting wastewater treatment system.

The financial impact of the project on individual newly accessible property owners (due to the requirement to connect to the new wastewater collection system, per HCC § 21-5) was raised by the community during the December 2017 public meetings and the October 2018 public meeting for the Draft EA. Although not required by HAR 11-200, the County voluntarily convened an additional public meeting on March 21, 2019 to gain further input from newly accessible property owners and fulfill a County commitment made in October 2018 to research and provide financing options available to owners of parcels that would become newly accessible to the County collection system. Available programs discussed included:

- U.S. Department of Housing and Urban Development (HUD) with County of Hawaiʻi Office of Housing and Community Development Residential Repair Program – Community Block Grant Program, and
- U.S. Department of Agriculture – Rural Development (USDA-RD) Program.

As noted during the March 2019 presentation, these programs may change in the coming years and additional options may be added to this preliminary list. Hawaiʻi Legislature, Senate Bill 221 SD1, which could amend HRS 342D to establish a low-interest loan program offering financial assistance to cesspool owners to connect to wastewater treatment systems approved by the DOH, was also discussed; however, this bill was subsequently not passed during the 2019 legislative session.

Abandonment of the two LCCs, which do not require substantial maintenance and operation, and abandonment of the existing wastewater collection system would have no impact on socioeconomic resources within Pāhala.

(b) No-Action Alternative

The No-Action Alternative includes no modifications to the current sewage system, and therefore is not expected to impact socioeconomic or demographic conditions in the Pāhala area.

3.17 Traffic

3.17.1 Existing Conditions

(a) All Alternative Sites

Māmalahoa Highway (State Highway Route 11) is the major north-south roadway for the Pāhala area. This minor arterial highway provides two lanes, one lane in each direction, and shoulders within a 60-foot ROW. Pāhala is located about 51 miles south of Hilo and has two major access roads, Kamani Street on the northern end and Maile Street on the southern end.

In November 2010, State of Hawaiʻi Department of Transportation (DOT) conducted the most recent traffic counts on Māmalahoa Highway at the Pāʻauʻau Bridge, mile marker 51.32, located just north of Kamani Street. The counts provide 24-hour and peak-hour counts for traffic in both directions. The 24-hour period counts show a total two-way volume of 2,449 vehicles, with 1,212 vehicles southbound and 1,237 vehicles northbound. The peak morning hours occurred between 7:00am to 8:00am and had a total two-way volume of 186 vehicles with 108 vehicles southbound and 78 vehicles northbound. The peak afternoon hours occurred between 4:00pm to 5:00pm and had a two-way volume of 219 vehicles with 104 vehicles southbound and 115 vehicles northbound.

Within Pāhala, vehicle traffic primarily occurs on streets under the jurisdiction of the County of Hawaiʻi. The streets typically carry two-way traffic, one lane in each direction, within roadways with improved surfaces of 22 to 24 feet wide with no curbs and sidewalks. The shoulders consist mostly of grass swales which also serve to carry surface runoff along with the streets. These roadways carry vehicle traffic from adjacent and nearby residential areas. As a result, the traffic volumes are relatively low, which is consistent with traffic generation by a rural community.

The wastewater collection system and the wastewater treatment and disposal project site are located outside of the Māmalahoa Highway ROW.

3.17.2 Impacts and Mitigation Measures

(a) Preferred Alternative (Site 7) and Alternative Site 8

Under these two alternatives, the wastewater collection system and the wastewater treatment and disposal facility would be located outside of the Māmalahoa Highway ROW and would not require any disturbance or other impacts within the Māmalahoa Highway ROW. However, work on the collection system would require excavation of open trenches within the ROWs of several other roads within the Pāhala community (Maile, ʻIlima, Huapala, Hīnano, Hala, Puahala, Pīkake, and Kamani Streets). The contractor would be required to obtain permits to work within the County ROW and implement traffic control plans in the area of each open trench site that provide procedures for controlling traffic in the work area, including the placement of Manual on Uniform Traffic Control Device compliant signs, traffic delineators or barriers, lane closures, flaggers to direct traffic, and special duty officers to oversee conditions at the site. The traffic control plans would provide directions to temporarily divert traffic or close travel lanes during the construction period and would include measures to allow for emergency access during construction. Normally, such plans call for these diversions or closures during non-peak travel times to minimize disruptions to traffic flow. Typically, one traffic lane is kept open for two-way traffic during working hours and two lanes are kept open after hours. When not in use, trenches would be covered with steel plates or surrounded by traffic barriers to prevent accidents. The County would be required to approve any traffic control plans. Any scheduled road closures would be required to be coordinated at least two weeks in advance with the Police Department for County approval. Additionally, the County would coordinate with the DOE Student Transportation Services Branch

Manager and the School in order to minimize construction-related impacts to student transportation services.

Construction of the proposed wastewater treatment and disposal facility would require transport of construction equipment and supplies to the construction site, including excavators and other heavy equipment. Deliveries to the construction site could require temporary stoppage of traffic on Maile Street to safely unload equipment and supplies. To minimize traffic disruptions, contractors typically try to conduct these activities during off-peak traffic hours. No long-term road closures would be required.

The wastewater treatment and disposal facility would require only weekly visits by a single operator based in Hilo or Kona and intermittent visits for maintenance purposes. As such, no impacts to traffic are expected from wastewater treatment and disposal facility staff. Sludge removal would occur approximately every 20 years, so no impacts to traffic are expected due to truck activity associated with sludge removal.

Abandonment of the two LCCs and the existing wastewater collection system would not affect transportation within the Pāhala area.

Information regarding project schedules, including EPA compliance dates, project updates and milestones, can be found on the EPA website at: https://www.epa.gov/uic/county-hawaii-administrative-order-consent-closure-cesspools-pahala-and-naalehu. The County will also provide information about the construction schedule for the treatment and disposal facility and the collection system to the DOE Facilities Development Branch Public Works Administrator on request.

(b) Alternative Site 9

Transportation impacts under this alternative would be identical to those for the Preferred Alternative (Site 7) and Site 8, except it would require construction of piping and other utilities within the Māmalahoa Highway ROW to provide connections to the new wastewater treatment and disposal facility in Site 9. This would require obtaining an easement from the State DOT for work within the highway ROW and could delay the start of construction.

(c) No Action Alternative

The No-Action Alternative would not impact traffic in the Pāhala area because no modifications to the current system would be made.

3.18 Noise

3.18.1 Existing Conditions

(a) All Alternative Sites

The A-weighted decibel scale (dBA) is a logarithmic scale generally used to measure noise levels because it can account for the sensitivity of the human ear across the frequency spectrum. The Occupational Safety and Health Administration (OSHA) regulates workplace noise with standards for two different types of noise: constant and impulse. The OSHA limit for constant noise is 90 dBA for eight hours; however, the National Institute for Occupational Safety and Health recommends a constant noise limit of 85 dBA for eight hours to minimize hearing loss induced by occupational noise. The OSHA maximum sound level for impulse noise is 140 dBA. In areas where workplace noise exceeds these sound levels, employers must provide workers with personal protective equipment to reduce noise exposure.

HAR 11-46 (Community Noise Control) sets forth various permissible sound levels by zoning districts or land uses. According to HAR § 11-46-3 and § 11-46-4, Class A zoning districts include

all areas equivalent to lands zoned as residential, conservation, preservation, public space, open space, or similar type. Class B zoning districts include all areas equivalent to lands zoned for multi-family dwellings, apartment, business, commercial, hotel, resort, or similar type. Class C zoning districts include all areas equivalent to lands zoned agriculture, country, industrial, or similar type.

All alternative sites for the proposed wastewater treatment and disposal facility are in Class C zoning districts. The proposed wastewater collection system would primarily be located in Class A zoning districts. The maximum permissible sound levels in each zoning district are presented below in Table 3.2 and apply to stationary noise sources and equipment related to agricultural, construction, industrial activities.

Table 3.2
Permissible Sound Levels by Zoning District

Zoning District	Daytime: 7am to 10pm	Nighttime: 10pm to 7am
Class A	55 dBA	45 dBA
Class B	60 dBA	50 dBA
Class C	70 dBA	70 dBA

HAR 11-46 recognizes that construction noise must often exceed the established permissible sound levels and provides procedures by which an applicant may obtain a noise permit from DOH for excessive noise sources. The DOH may consider several factors in determining whether to grant the noise permit, including (but not limited to) the use of best available control technology to control noise levels; the extent and impact of nighttime activities; notification of the public of planned nighttime construction activity; and whether the noise emitting activity is in the public interest.

According to HAR § 11-46-5(4) (Exemptions), the operation of emergency generators can be exempted if they are installed and used as required for the purpose of protecting public health and safety.

There are no current significant sources of noise impacting the proposed project areas. The proposed wastewater treatment and disposal facility would be located in active macadamia nut orchards where the primary source of noise is ongoing orchard operations. The proposed wastewater collection system would primarily be located in residential areas with background noise levels typical of a residential zone.

3.18.2 Impacts and Mitigation Measures

(a) All Alternative Sites

In the short term, noise levels would increase in the Pāhala area due to construction activities along the wastewater collection system and at the site of the proposed wastewater treatment and disposal facility. Noise is expected to be intermittent and unavoidable because construction vehicles and heavy equipment generate noise as part of normal operations. Mitigation of noise from construction activities to inaudible levels is not practical in all cases due to the intensity and exterior nature of the work. Depending on the results of geotechnical surveys, construction of the collection system and the wastewater treatment and disposal facility could involve excavation to a depth that would require removal of bedrock. If necessary, this would likely be accomplished by using backhoe-mounted hydraulic and/or pneumatic hammers to break up the bedrock for removal, resulting in temporarily elevated impulse noise levels.

Construction activities for the Proposed Action would need to comply with provisions of HAR 11-46 (Community Noise Control). The majority of construction activity would occur during daytime hours, and construction at the site of the proposed wastewater treatment and disposal facility is not expected to result in exceedances of the 70 dBA Class C zoning district noise threshold outside of the property boundary or in residential areas. However, construction of the collection system would take place near residences in the Pāhala community. The construction contractor would be required to obtain a noise permit for any activities that would generate noise exceeding the permissible sound levels specified in HAR 11-46. The permit would limit excessive noise sources to daytime hours; would require the use of best available control technology to control noise levels from excessive noise sources; and would require the applicant/contractor to notify affected members of the public in advance of any planned nighttime construction activity (which must not exceed the permissible sound levels). Further, the *Noise Reference Manual, Big Island Edition* also limits the use of certain types of equipment to hours of 9:00 a.m. to 5:30 p.m. Monday to Friday. DOH would be expected to grant the noise permit because the Proposed Action is in the public interest. After a permit has been issued, the contractor may request a modification the permit.

Construction contract documents would require that workers are provided with, and wear, appropriate personal protective equipment to reduce noise exposure to below the OSHA maximum sound level.

After construction, the proposed wastewater treatment and disposal facility is not expected to be a significant source of additional ambient noise during routine operation. Operational noise would be confined to the aerators within the lagoons, emergency generator operation, and vehicle movements at the facility. HAR 11-46-5(4) exempts operation of emergency generators from the provisions of HAR 11-46 when installed and used as required and necessary for the protection of public health and safety, provided the best available control technology is implemented. Emergency generator operation would occur only during emergencies and periodic testing and thus would be infrequent. In addition, construction and operation of the proposed wastewater treatment and disposal facility would not be anticipated to have any direct or indirect noise impact on the Ka‘ū High School or Pāhala Elementary School, due to the distance between the proposed facility and the schools. Therefore, the Proposed Action is not likely to create an adverse impact to the noise environment in the Pāhala area.

Abandonment of the two LCCs and the existing wastewater collection system would not affect the noise environment in the Pāhala area.

(b) No-Action Alternative

The No-Action Alternative involves no construction activities or changes to the current system. Therefore, no impacts to the noise environment in the Pāhala area would occur.

3.19 Visual Considerations and Light Pollution

3.19.1 Existing Conditions

(a) All Alternative Sites

The February 2005 County General Plan identified a number of sites as important visual resources contributing to the natural beauty of the Ka‘ū District. These visual resources typically consist of scenic resources including major land forms, open spaces, viewing points, scenic drives, and other physical features. The natural beauty of the landscape in the southern part of the Ka‘ū District is characterized by vistas from the mountain slopes to the oceans. The coastline is highlighted by Manuka Bay, Green Sands Beach, and Punaluu Black Sand Beach. Some of the natural beauty sites identified in the Ka‘ū District most pertinent to the Pāhala area include: 1)

view of Mauna Loa from the highway; 2) scenic view of the shoreline between Pāhala and Punaluu; and 3) the lava flows of 1868, 1887, and 1907.

The Pāhala community consists almost entirely of single-family residential units and the related utility lines that service the homes. Generally, residential units are set back from the adjacent roadway so the views of nearby areas are not obstructed.

Exterior lighting is often used to enhance the safety and security of persons and property. Excessive and inappropriate exterior lighting, however, can generate light pollution. As described in Section 3.13.1, outdoor lighting can also result in adverse effects to seabirds by attracting them at night and causing disorientation, fallout, and injury or mortality. The County of Hawaiʻi regulates outdoor lighting under HCC Section 14-50. Streets in the Pāhala community are lined with street lights mounted on utility poles. The three alternative sites for the proposed wastewater treatment and disposal facility (Sites 7, 8, and 9) are used for macadamia nut production, with no existing outdoor lighting.

3.19.2 Impacts and Mitigation Measures

(a) Preferred Alternative (Site 7)

The Proposed Action is not expected to adversely affect the views or viewsheds identified in the County General Plan. The wastewater collection system would be installed below the streets and therefore would not impact views. The operations building, headworks cover structure, UV disinfection system cover structure, and low berms or walls around the basins would be the only above-grade structures and would not exceed 25 feet in height. The existing Cook pine trees along Maile Street, most of which would remain with no changes, would continue to obstruct the viewplanes from Maile Street. The facility site would be adjacent (mauka) to, and visible from, Māmalahoa Highway (State Route 11); however, impacts to the viewplane would be mitigated by the planted trees in the disposal groves and by the rise in elevation between the highway and the facility.

Exterior lighting at the proposed wastewater treatment and disposal facility would be designed in accordance with HCC Section 14-50 and would be limited to manually switched lights under the roof overhang at the entrance to the operations/electrical building, at the headworks area, and at the UV disinfection system. Lights would be installed with down-shielding to prevent excess light pollution. When authorized personnel are not present on site, lights would not be on. Also, per consultation with FWS to avoid impacts to seabirds, nighttime construction activities would not take place during the seabird fledging period (September 15 to December 15). In addition, construction and operation of the proposed wastewater treatment and disposal facility would not be anticipated to have any direct or indirect visual impacts on the Kaʻū High School or Pāhala Elementary School, due to the distance between the proposed facility and the schools.

Abandonment of the two LCCs and the existing wastewater collection system would not affect visual resources or light pollution within the affected areas.

(b) Alternative Sites 8 and 9

Under Alternative Sites 8 and 9, the visual and light pollution impacts and mitigation measures would be similar to those discussed above for the Preferred Alternative (Site 7). Pine trees would be maintained between the wastewater treatment and disposal facility and public views from the adjacent streets to minimize visual impacts, except where necessary to accommodate the driveway into the facility. The planted trees in the proposed slow-rate land application basins would partially replace removed trees and exterior lighting at the facility would be minimal.

(c) No-Action Alternative

The No-Action Alternative would not change the current conditions in the Pāhala area and no visual impacts would occur.

3.20 Public Services – Police Protection

3.20.1 Existing Conditions

(a) All Alternative Sites

The Hawaiʻi County Police Department provides police services to the Kaʻū District, which includes Pāhala and other nearby communities. A single police station is located in Nāʻālehu, which serves the entire Kaʻū District. The Kaʻū Patrol District encompasses 700 square miles and is bound by the Kona District at Kaulanamauna and the Puna District at Keauhou Landing. Its officers operate out of a central station in Nāʻālehu and a substation in Hawaiʻi Ocean View Estates subdivision.

3.20.2 Impacts and Mitigation Measures

(a) All Alternative Sites

The Proposed Action is expected to create no additional demand for police protection and related services since it will not increase the resident population or visitors to the area. The Proposed Action should have minimal impact on the police department's operations or ability to provide adequate protection services to the surrounding community. If necessary, off-duty police staff may be hired to assist with directing traffic during construction activities.

Operation of the proposed wastewater treatment and disposal facility is not expected to impact the Police Department. The facility would have a security fence around the perimeter with a locked entry gate.

Abandonment of the two LCCs could reduce the need for police protection services to handle public health threats in the event that there is damage to the LCCs (e.g., from volcanic or seismic activity). Otherwise, abandonment of the two LCCs and the existing wastewater collection system would not affect police protection services in the County.

(b) No-Action Alternative

The No-Action Alternative would not impact police protection services due to continued operation of the existing LCCs. In the event that there is damage to the LCCs from some unforeseen event (e.g., volcanic or seismic activity), police protection services may be required to handle public health threats resulting from damage to the LCCs.

3.21 Public Services – Fire Protection

3.21.1 Existing Conditions

(a) All Alternative Sites

Fire protection and related services are provided from a fire station located in Pāhala. The station and a volunteer station provide 24-hour fire protection and emergency medical services (EMS). The County has contracted with the State DOH for emergency medical ambulance services.

3.21.2 Impacts and Mitigation Measures

(a) All Alternative Sites

The proposed wastewater treatment and disposal facility would include a fire protection line to be used in the event of a fire. The emergency generator would include a double-walled diesel fuel tank of a type allowed by the County. The Proposed Action would not affect the operations of fire

protection and EMS services in Pāhala and the proposed wastewater treatment and disposal facility would not require additional fire protection services on site. The construction plans would be submitted to the Fire Department for review during the project design phase.

The treatment and disposal facility would be designed according to National Fire Prevention Association (NFPA) 820 “Standard for Fire Protection in Wastewater Treatment and Collection Facilities.” In accordance with Hawai‘i Fire Department requirements, Fire Department access and water supply to the proposed Site 7 would be designed to comply with Chapter 18 of NFPA 2006 Uniform Fire Code as amended by the County.

Abandonment of the two LCCs could reduce the need for fire protection services to handle public health threats in the event that there is damage to the LCCs (e.g., from volcanic or seismic activity). Otherwise, abandonment of the two LCCs and the existing wastewater collection system would not affect fire protection services in the County.

(b) No-Action Alternative

The No-Action Alternative would not impact fire protection services due to continued operation of the existing LCCs. In the event that there is damage to the LCCs from some unforeseen event (e.g., severe flood, volcanic or seismic activity), fire protection services may be required to handle public health threats resulting from damage to the LCCs.

3.22 Infrastructure – Water System

3.22.1 Existing Conditions

(a) All Alternative Sites

The County of Hawai‘i Department of Water Supply (DWS) provides water service to the Pāhala community from groundwater sources. The water lines are primarily located along or under the roadways in the area. In response to the pre-assessment notification, on April 5, 2018, the DWS noted that the wastewater treatment and disposal facility site is not serviced by the DWS. The nearest point of connection to the DWS system is at an existing 6-inch waterline at the intersection of Huapala Street and Maile Street, approximately 2,000 feet northeast of Site 7. Sites 8 and 9 are an additional 1,600 to 3,200 feet, approximately, from the DWS connection point.

All alternatives would be designed according to NFPA 820 "Standard for Fire Protection in Wastewater Treatment and Collection Facilities." In accordance with Hawai‘i Fire Department requirements, Fire Department access and water supply to the proposed Site 7 would be designed to comply with Chapter 18 of NFPA 2006 Uniform Fire Code as amended by the County.

3.22.2 Impacts and Mitigation Measures

(a) Preferred Alternative (Site 7)

The proposed wastewater treatment and disposal facility would require new potable water and fire protection lines. Water would be provided by extending the existing DWS water main and by installing a service line to connect the new facility (specifically, the headworks operations building) to that extended water main. The lines would require trenching, primarily on Maile Street, and construction plans would identify the horizontal and vertical clearances required to avoid existing water system and collection system lines. As required by DWS, construction plans would show the estimated maximum daily water usage calculations prepared by a professional engineer licensed in the State of Hawai‘i. After review of the calculations, DWS would determine if enough water is available and a water commitment could be issued.

Abandonment of the two LCCs and the existing wastewater collection system would not affect water system infrastructure in Pāhala.

(b) Alternative Sites 8 and 9

Under Alternative Sites 8 and 9, the water system infrastructure impacts and mitigation measures would be similar to those described above for the Preferred Alternative (Site 7). Compared to Site 7, approximately 1,600 feet of additional pipe within the ROW of Lower Maoula Road would need to be installed to provide Site 8 with potable water and fire protection lines. To provide Site 9 with potable water and fire protection lines, approximately 3,200 feet of additional pipe within the ROW of Maile Street and across Māmalahoa Highway would need to be installed.

(c) No-Action Alternative

The No-Action Alternative includes no modifications to the existing water infrastructure, and therefore would not cause any impacts to the water system in Pāhala.

3.23 Infrastructure – Drainage System

3.23.1 Existing Conditions

(a) Preferred Alternative (Site 7)

There is no existing County stormwater drainage system in Pāhala. Existing stormwater runoff from the Pāhala District generally collects along the paved roadways within each subdivision and sheet flows towards Māmalahoa Highway, then disperses into open swales or grassed areas.

Current drainage patterns at the preferred site (Site 7) are influenced by two existing culverts that allow stormwater to flow across the Māmalahoa Highway in the vicinity of the proposed wastewater treatment and disposal facility, as depicted in Figure 3.4. The first is a box culvert located at the intersection with Maile Street that conveys stormwater under the highway. The second culvert is located approximately 600 feet east of the Maile Street intersection and was used to convey sugar mill flume water across the highway for disposal. The site slopes from approximately north to south (mauka to makai) such that, during rain events, surface flows pass through the existing orchard to the southern (makai) end where the flows eventually drain through the culvert at the Maile Street-Māmalahoa Highway intersection to the areas below (makai) the highway. Most of the land surface area below the existing macadamia nut orchard contains little to no vegetation to absorb or slow these flows. The gradient of Site 7 and surrounding area results in this natural pattern of surface flows which also existed when the area was planted in sugar cane and is not considered flooding.

(b) Alternative Sites 8 and 9

Similar to Site 7, Alternative Sites 8 and 9 slope from approximately north to south (mauka to makai) such that, during rain events, surface flows pass through the existing orchard to the southern (makai) end. For Site 8, the flows are eventually interrupted by Māmalahoa Highway where they may be diverted to other culverts along the road to the areas below (makai) the highway. The unnamed branch of Hiʻonamoa Gulch crosses the Site 8 parcel from northwest to southeast near the center of the parcel and creates a depression or incision in the topography that may influence site drainage.

For Site 9, the surface flows pass through the existing orchard and continue downgradient to areas south of Site 9 that contain a larger extent of the same orchard. Two unnamed south-flowing branches of Hiʻonamoa Gulch cross portions of the Site 9 parcel. Also, an unnamed east-flowing branch of Pāʻauʻau Gulch originates in the Site 9 parcel near the southeast boundary of the Site 7 parcel; this branch flows into Pāʻauʻau Gulch approximately 4,000 feet east of the Site 9 parcel. These features also influence the topography and existing drainage at Site 9.

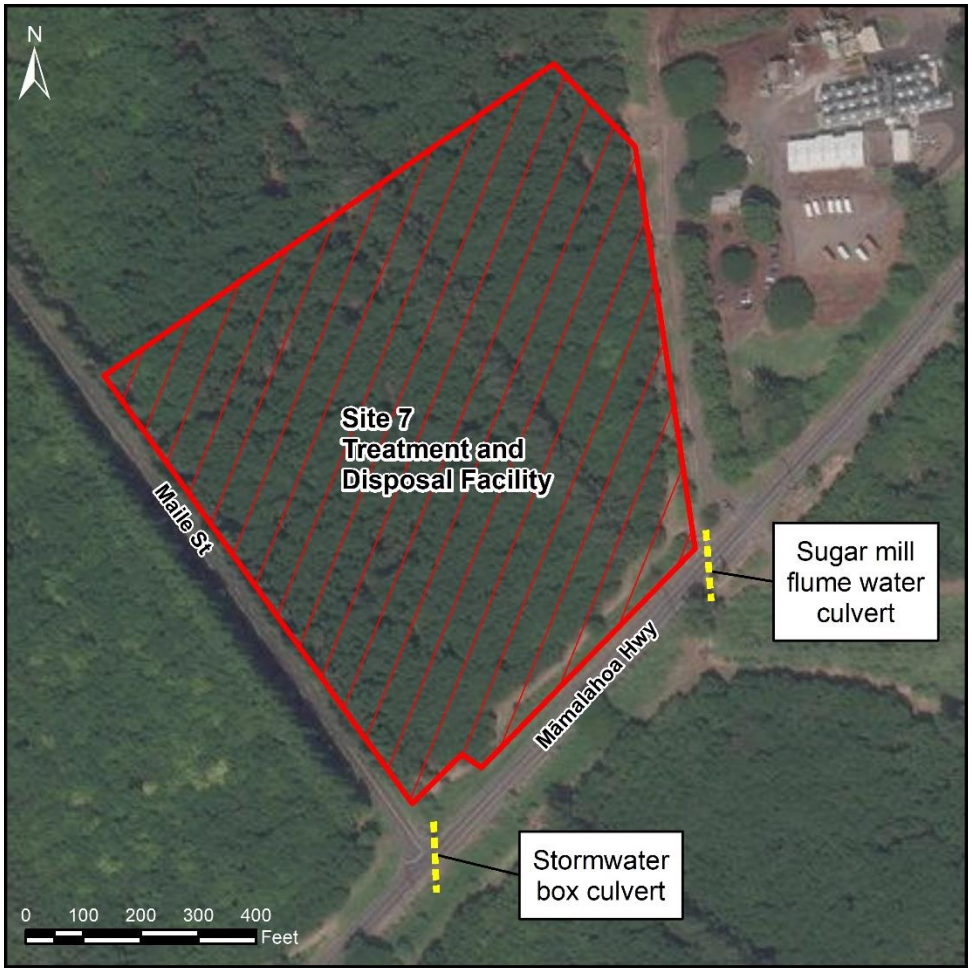

Figure 3.4. Stormwater Culverts Near Site 7

3.23.2 Impacts and Mitigation Measures

(a) Preferred Alternative (Site 7)

The Proposed Action would incorporate appropriate stormwater and erosion control measures in accordance with approved plans to ensure that soil erosion and transport during construction activities are minimized. Construction of the proposed wastewater collection system would require trenches for new lines, and silt fences or filter socks would be used to minimize runoff from the disturbed area. The proposed wastewater treatment and disposal facility would include an on-site drainage system to address stormwater surface runoff caused by new impervious surfaces at the facility. The site would include a system to collect runoff via grated inlets or swales, and flows would be conveyed to on-site drainage detention systems, such as subsurface linear infiltration or depressed detention basins. Landscape buffers with dirt berms would also be constructed around most of the perimeter of the facility to act as secondary containment in the event of a large storm event. The on-site stormwater management system would meet the requirements of HCC § 27-20, which mandates drainage plans to accommodate runoff caused by the facility for a design storm event.

To meet the requirements of HCC § 27-20 (f), the project "shall not alter the general drainage pattern above or below the development." Thus, for the design storm event, no increase in flow amount would be directed to either of the culverts at the highway as a result of the site

development. A drainage study would be prepared during the design process to evaluate the improvements necessary to comply with HCC 27 requirements. Construction of the wastewater treatment and disposal facility would create an increase in impervious areas; however, the County standards are intended to protect nearby properties and areas from runoff from a developed area, thus adherence to the County standards would prevent adverse impacts to surrounding properties from new development.

The wastewater treatment processes would be designed to accommodate peak flows, including precipitation that falls on the area occupied by the aerated lagoon treatment system. The PER Section 2.2 (Appendix B), outlines the anticipated peak wastewater flows from the community, based on the applicable flow standard. Sufficient operational freeboard would be available to contain and to equalize lagoon flows. In addition, the slow-rate land application groves would be designed to completely contain both peak effluent flows and precipitation from a 100-year, 24-hour storm event. A geotechnical engineering assessment of berm stability would be conducted during the design process.

The tree groves would be designed in accordance with EPA's "Process Design Manual, Land Treatment of Municipal Wastewater Effluents." Effluent would be applied at a hydraulic loading rate that is a small percentage of the percolation rate of the soil, ensuring sufficient capacity for assimilation of peak effluent flow rates and precipitation from the design storm event and ensuring that design flows would not impact surrounding properties.

Stormwater runoff generated mauka of the wastewater treatment and disposal facility would be directed around the perimeter of the site via diversion swales that convey flow back to the existing drainage pattern that flows to the existing culvert at the Maile Street and Māmalahoa Highway intersection. During heavy rain events, stormwater may temporarily back up behind the culvert. Based on the roadway flooding concerns expressed by the community during the Pāhala public information meetings held in December 2017 and October 2018, the State DOT Hawaiʻi District office was contacted to discuss drainage at the facility site and the culvert at the Maile Street and Māmalahoa Highway intersection. On February 20, 2019, the District office confirmed via telephone that the DOT owns and maintains the culvert and that they have no record of the roadway being inundated by stormwater drainage at the Maile Street and Māmalahoa Highway intersection during precipitation events. There would be no changes to this culvert under the Proposed Action and the proposed facility would not be located within the area of the culvert.

Figure 2.3 shows the intersection of Maile Street and Māmalahoa Highway lies at about 580 feet above msl. Figure 2.2 shows the Pāʻauʻau Gulch crosses under Māmalahoa Highway about 0.88 miles north of that intersection at approximately 780 feet above msl or about 200 feet higher in elevation than the culvert at the Maile Street and Māmalahoa Highway intersection. Due to this distance and the elevation difference, surface flows at Site 7 would not affect the gulch. Similarly, the Kaimani Street and Māmalahoa Highway intersection lies about 0.84 miles north of the proposed facility and at about 780 feet above msl. Surface flows at the facility would also not affect that intersection.

Abandonment of the two LCCs and the existing wastewater collection system would not affect drainage or runoff in the affected areas.

(b) Alternative Sites 8 and 9

Under Alternative Sites 8 and 9, the stormwater drainage infrastructure impacts and mitigation measures would be similar to those described above for the Preferred Alternative (Site 7). The wastewater treatment and disposal facility design would incorporate appropriate stormwater and erosion control measures similar to those above. However, additional drainage design

considerations or erosion control measures may be needed in order to prevent stormwater runoff from impacting the unnamed branches of Hiʻonamoa Gulch that intersect both Sites 8 and 9.

(c) No-Action Alternative

The No-Action Alternative would not result in a change to the impervious area within or near Pāhala and would therefore not lead to an increase in runoff or other impacts to drainage in the area.

3.24 Infrastructure – Electrical and Communications Systems

3.24.1 Existing Conditions

(a) All Alternative Sites

Electrical services to the Pāhala area are provided by Hawaiian Electric Light Company (HELCO) via pole-mounted overhead lines located along the roadways within the community. The HELCO lines are located along Māmalahoa Highway, leading to a substation west of the intersection of Kamani Street and the highway.

Hawaiian Telcom is the primary telecommunications provider within the County of Hawaiʻi and has overhead lines for telephone service in the Pāhala community.

3.24.2 Impacts and Mitigation Measures

(a) All Alternatives

The wastewater treatment and disposal facility would require electrical power. The natural treatment systems proposed require relatively low energy input as compared to other treatment options evaluated. It is anticipated that HELCO would bring overhead power lines to the selected site and supply 480-volt, 3-phase power to the facility via a pole-mounted transformer. This would be connected to a service panel with a meter. The floating surface aerators would consume the majority of the electricity supplied to the site. An electrical room would house the electrical gear and plant control equipment. Exterior lighting at the site would be limited to manually switched lights at the entrance to the operations/electrical building and at the headworks area. A standby power system would be provided in the form of a diesel generator and aboveground fuel tank with capacity to support three consecutive days of operation. In addition, the electrical service panel would be equipped with a manual transfer switch and generator receptacle to allow connection of a portable trailer-mounted generator in the event of emergency generator failure during an extended power outage.

A land-line and/or cellular telephone telemetry system would be used to connect the wastewater treatment and disposal facility to DEM and facilitate communication with staff in Hilo or Kona.

To avoid damaging existing buried infrastructure during construction, the construction contractor would be required to call the one-call center prior to any construction activities to allow demarcation of underground utilities to occur.

Abandonment of the two LCCs and the existing wastewater collection system would not affect electrical and communications infrastructure in the area.

(b) No-Action Alternative

The No-Action Alternative would not require any electrical power and includes no construction activities that could disrupt buried utility infrastructure. Therefore, no impacts to electrical and telecommunications infrastructure would occur.

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4 CUMULATIVE EFFECTS

The Proposed Action (construction of a new wastewater treatment and disposal facility and a new collection system, closure of existing large capacity cesspools (LCCs), and connection of newly accessible properties to the sewer system), in combination with other past, present, or reasonably foreseeable actions at or near Pāhala, could contribute to cumulative improvements and impacts on certain environmental resources. Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time.

4.1 Scope of Analysis

This section identifies the other past, present, or reasonably foreseeable actions at or near Pāhala that were considered and evaluated in this cumulative improvements and impacts analysis.

4.1.1 Geographic Scope of Analysis

The extent of the cumulative effects analysis is generally limited to the geographic/natural boundaries of the affected resource areas. The Council on Environmental Quality (CEQ) handbook on *Considering Cumulative Effects Under the National Environmental Policy Act* indicates that the geographic extent for this analysis should be defined on a case-by-case basis and is dependent on the affected resources (CEQ, 1997).

In defining the geographic scope for consideration of cumulative effects, the U.S. Environmental Protection Agency (EPA) considered the resources that would be affected by the Proposed Action (i.e., within the project impact zone); the type and intensity of those effects; and whether those affected resources extend beyond the project impact zone. As discussed throughout Section 3, the effects of the Proposed Action would generally be limited to the footprint of the project and the immediate vicinity, plus minor transportation-related impacts during construction; the Proposed Action would not adversely affect historic properties or protected species; it would not adversely affect surface waters that are part of a larger watershed (other than potential for temporary, minor construction-related runoff impacts that would be mitigated by adherence to BMPs); and the affected macadamia nut orchard is not part of a larger forest parcel that provides valuable habitat. Based on these considerations, EPA limited this cumulative effects assessment to include past, present, and reasonably foreseeable actions located within the Pāhala community or within 1 mile of the proposed location of the wastewater treatment and disposal facility. This scope is expected to more than fully encompass the full extent of resource areas that would potentially experience discernable effects from the Proposed Action and is commensurate with the type and intensity of the effects of the Proposed Action.

The community of Nāʻālehu, located approximately 11 miles southwest of Pāhala, is also considering options for closure of LCCs and development of a new wastewater treatment system. The Nāʻālehu Large Capacity Cesspools Closure Project (Nāʻālehu Project) is similar in concept to the Proposed Action in that it proposes the closure of existing LCCs and the construction of a new system for a similarly sized community. EPA analyzed whether this and other similar projects throughout the Kaʻū District would have the potential to affect the same resources as the Proposed Action. A typical, similar construction project would be expected to result in temporary, localized impacts during construction including impacts from the use of construction-related vehicles and equipment (e.g., changes in traffic patterns and increases in noise and air emissions), disturbance of soil and vegetation, and generation of construction and demolition debris; and potential long-term, localized impacts including changes in stormwater runoff and infiltration, removal of vegetation, and changes in visual resources. These direct and indirect effects, if managed in

accordance with applicable environmental regulations, would not be expected to extend beyond the vicinity of the project construction sites and local communities.

For these reasons, the future Nāʻālehu Project, while located in the Kaʻū District, is outside the geographic scope of this cumulative effects analysis and, for the reasons described above, is not expected to have a significant cause-and-effect relationship with the direct and indirect effects of the Proposed Action due to its distance from Pāhala. In addition, the National Environmental Policy Act (NEPA) does not require consideration of socioeconomic impacts that are unrelated to an impact on the physical environment (40 CFR § 1508.14). Therefore, cumulative economic effects of the Nāʻālehu Project combined with the Proposed Action on the County-wide economy, tax base, and borrowing capacity were not analyzed in this environmental assessment.

4.1.2 Past, Present, and Reasonably Foreseeable Actions within Geographic Scope of Analysis

Only one significant project has occurred within the geographic scope of analysis in the recent past – specifically, the construction of a new gymnasium at Kaʻū High School and Pāhala Elementary School in the center of Pāhala, more than one-half mile north of the site of the wastewater treatment and disposal facility. The gym was constructed to also serve as a community shelter during emergencies. Construction began in October 2012 and completed in early 2016.

The school's LCC was previously replaced with a Department of Health (DOH)-approved septic system that included two new laterals at the property line on Hala Street and Kamani Street to allow eventual connection to the new collection system. Following completion of the Proposed Action, the State Department of Education will connect the Kaʻū High School and Pāhala Elementary School (including the Kaʻū District Gym and Shelter) to the new collection system and will properly close the onsite septic system.

There are no current projects in or around Pāhala, and no reasonably foreseeable actions (other than connection of the Kaʻū High School and Pāhala Elementary School to the new collection system) are planned based on review of the County's Capital Improvement Plan and the Kaʻū Community Development Plan (CDP). The CDP includes policies for long-term improvements regarding the extension of wastewater systems in the Pāhala community in the Kaʻū District. These long-term goals were considered in preliminary design of the Proposed Action; the wastewater treatment and disposal facility and collection system would be designed to be expandable should the County or community decide in the future that expansion is necessary. However, the CDP does not present a timeline for this expansion; no substantial planning or scoping of a collection system expansion has been conducted, and this expansion is unlikely to occur within the next 10 to 20 years. This action therefore is not considered reasonably foreseeable for purposes of the cumulative effects discussion and is not included in the analysis below.

4.2 Cumulative Improvements and Impacts Analysis

This analysis identified the following potential cumulative effects resulting from the Proposed Action, construction of the Kaʻū District Gym and Shelter, and connection of the Kaʻū High School and Pāhala Elementary School to the new collection system:

- Installation of new exterior lighting, resulting in potential nighttime light pollution and distraction to night-flying birds;
- Removal of vegetation and construction of new impervious surfaces, resulting in a potential increase in stormwater runoff; and

- Increase in influent flows from the Kaʻū High School and Pāhala Elementary School to the new wastewater treatment and disposal facility.

Both the Proposed Action and the Kaʻū District Gym and Shelter construction have incorporated mitigation measures to reduce nighttime light pollution and impacts to night-flying birds. Specifically, the Kaʻū District Gym and Shelter incorporated minimal use of security lighting, which are shielded in accordance with the County's exterior lighting standards, and outdoor parking lights are turned off at 11:00 p.m. to avoid impacts to birds and bats. As discussed in Section 3.19.2, the Proposed Action would incorporate lighting that complies with the County's exterior lighting standards and FWS guidance, and the new facility would generally be dark at night, with exterior lighting used only for emergency maintenance purposes. Adherence to these requirements would minimize the potential cumulative light pollution impacts from these projects.

To reduce stormwater impacts, the Kaʻū District Gym and Shelter incorporated new dry wells and grass parking, instead of paved parking, to the extent allowable by the Hawaiʻi Planning Department. The Proposed Action would incorporate permanent BMPs such as subsurface linear infiltration or depressed detention basins to detain flows and volumes to their pre-development conditions. Additionally, due to the relatively young and porous geology of the Kaʻū district, any increases in stormwater runoff generated by these projects are anticipated to infiltrate to groundwater without presenting cumulative erosion concerns.

Finally, while the connection of the Kaʻū High School and Pāhala Elementary School to the new wastewater treatment and disposal facility would increase the treatment capacity requirements for the wastewater treatment and disposal facility, this was accounted for in the facility's preliminary design. Based on the above, the Proposed Action is not expected to result in any significant cumulative improvements or impacts to the environment in combination with other past, present, or reasonably foreseeable actions.

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5 FEDERAL CROSS CUTTER REQUIREMENTS

This project may be funded by federal funds provided by U.S. Environmental Protection Agency (EPA) through the State of Hawai'i's Clean Water State Revolving Fund (CWSRF) Program. As such, the State of Hawai'i Department of Health (DOH) must conduct an environmental review of projects funded under the CWSRF as required under the Code of Federal Regulations (CFR), using the EPA-approved State Environmental Review Process. In addition, the State must comply with the federal cross-cutting authorities set forth in 40 CFR § 35.3145 for the CWSRF. These requirements are set forth as "cross cutters" described as follows.

In addition to the cross cutters required by the EPA-approved State Environmental Review Process, EPA guidance for conducting environmental reviews for Special Appropriations Act Project (SAAP) grants requires the inclusion of one additional cross cutter—specifically, the Clean Water Act, which has been added at the end of this section (see Section 5.19).

5.1 Archaeological and Historic Preservation Act (54 U.S.C. § 312502)

The Archaeological and Historic Preservation Act (AHPA), also known as the Archaeological Recovery Act and the Moss-Bennett bill, was passed and signed into law in 1974. It amended and expanded the Reservoir Salvage Act of 1960. The AHPA built upon the national policy, set out in the Historic Sites Act of 1935, "*to provide for the preservation of historic American sites, buildings, objects, and antiquities of national significance.*" The AHPA expanded the policy by focusing attention on significant resources and data but does not require that they be shown to be of "national" significance. The AHPA required that federal agencies provide for *"...the preservation of historical and archeological data (including relics and specimens) which might otherwise be irreparably lost or destroyed as the result of...any alteration of the terrain caused as a result of any Federal construction project of federally licensed activity or program*."

54 United States Code (U.S.C.) § 312502 (a)(1) states: "*When any Federal agency finds, or is notified, in writing, by an appropriate historical or archeological authority, that its activities in connection with any Federal construction project or federally licensed project, activity, or program may cause irreparable loss or destruction of significant scientific, prehistorical, historical, or archeological data, the agency shall notify the Secretary, in writing, and shall provide the Secretary with appropriate information concerning the project, program, or activity.*"

54 U.S.C. § 312502 (b)(1) states: "*When any Federal agency provides financial assistance by loan, grant, or otherwise to any private person, association, or public entity, the Secretary, if the Secretary determines that significant scientific, prehistorical, historical, or archeological data might be irrevocably lost or destroyed, may, with funds appropriated expressly for this purpose-*

(A) Conduct, with the consent of all persons, associations, or public entities having a legal interest in the property, a survey of the affected site; and

(B) Undertake the recovery, protection, and preservation of the data (including analysis and publication)."

The proposed collection system will be constructed primarily within existing County streets and two short segments within private easements in the Pāhala community that have been previously disturbed when the streets were constructed. Preliminary analysis shows the proposed treatment and disposal facility will be constructed in an area that does not contain archaeological resources. An Archaeological Inventory Survey (AIS), which included subsurface testing, was conducted to confirm the presence/absence of archaeological resources on the preferred site. The AIS confirmed no significant artifacts or cultural deposits were observed on the ground surface within the proposed treatment and disposal facility site as the area experiences ongoing disturbance by

macadamia harvesting operations and stormwater runoff. Further, no cultural deposits or lava tubes were encountered during the subsurface trenching. For more information, please refer to Appendix D.

The contract drawings will state that, should archaeological sites such as walls, platforms, pavements or mounds, or remains such as artifacts, burials, concentrations of shell or charcoal be encountered during construction activities, work shall cease immediately and the find shall be protected from further damage. The contractor shall immediately contact the State Historic Preservation Division (SHPD), who will assess the significance of the find and recommend an appropriate mitigation measure, if necessary.

5.2 Bald and Golden Eagle Protection Act (16 U.S.C. § 668-668c)

The Bald Eagle Protection Act (16 U.S.C. §668-668c) prohibits any act to take, possess, sell, purchase, barter, offer to sell, purchase or barter, transport, export or import, at any time or in any manner any bald eagle commonly known as the American eagle or any golden eagle, alive or dead, or any part, nest, or egg thereof of the foregoing eagles.

No bald or golden eagles are found in Hawaiʻi.

5.3 Clean Air Act (42 U.S.C. § 7401 et seq.)

Over the years, there have been a series of legislations affecting air quality and a number amendments adopted related to air quality. The Air Pollution Control Act of 1955 was the first federal legislation involving air pollution and was followed by the Clean Air Acts of 1963 and 1970. The Clean Air Act of 1970 (1970 CAA, 42 U.S.C. § 7401 et seq.) authorized the development of comprehensive federal and state regulations to limit emissions from both stationary (industrial) sources and mobile sources.

The 1970 CAA set forth four major regulatory programs affecting stationary sources: the National Ambient Air Quality Standards (NAAQS), State Implementation Plans (SIPs), New Source Performance Standards, and National Emission Standards for Hazardous Air Pollutants. In Hawaiʻi, the DOH, Clean Air Branch, Air Quality program is defined by Hawaiʻi Administrative Rules (HAR) 11-60.1 and serves as the SIP approved by EPA.

The DOH operates a network of air quality monitoring stations at various locations around the state. In December 2016, the DOH issued the Annual Summary 2015 Air Quality Data report (the most recent report) which provides the results from the network of air quality monitoring stations. The DOH maintains a monitoring station the grounds of the Kaʻū High and Pāhala Elementary School. Established August 2007, the station was placed to monitor SO_2 and $PM_{2.5}$ from volcanic emissions. In 2015, Hawaiʻi was in attainment of the state annual SO_2 standard. In 2015, Hawaiʻi was in attainment with the annual NAAQS for particulate matter with a diameter of 2.5 micrometers or less ($PM_{2.5}$).

Volcanic eruptions are considered natural events and therefore EPA may exclude the exceedances of the 1-hour NAAQS from attainment determinations.

The quality of air in the general Pāhala area is considered "Good." The rural nature of Pāhala area has no major stationary sources of air pollution. Existing sources of air pollution are emissions from motor vehicles traveling along Māmalahoa Highway and on the streets in the community; the low level of vehicle traffic tends to limit mobile sources of emissions.

Potential short-term effects from dust and exhaust due to construction activities will be minimized with BMPs such as water sprinkling and proper equipment maintenance. No long-term impacts on air quality resulting from operation of the collection system and the wastewater treatment and disposal facility are anticipated.

5.4 Coastal Barrier Resources Act (16 U.S.C. § 3501)

In 1982, Congress passed the Coastal Barrier Resources Act (CBRA) (16 U.S.C. § 3501) to minimize the loss of human life; wasteful expenditure of federal revenues; and the damage to fish, wildlife, and other natural resources associated with the coastal barriers along the Atlantic and Gulf coasts and along the Great Lakes by restricting future federal expenditures and financial assistance which have the effect of encouraging development of coastal barriers, such as federal flood insurance through the National Flood Insurance Program.

The Coastal Barrier Resources Reauthorization Act of 2000 reauthorized the CBRA and directed the U.S. Fish and Wildlife Service (FWS) to complete a Digital Mapping Pilot Project that includes digitally produced draft maps for up to 75 John H. Chafee Coastal Barrier Resources System (CBRS) areas and a report to Congress that describes the feasibility and costs for completing digital maps for all CBRS areas.

Based on its location, the CBRA is not applicable to Hawaiʻi.

5.5 Coastal Zone Management Act (16 U.S.C. § 1451)

The Coastal Zone Management Act of 1972 (CZMA) (16 U.S.C §§ 1451-1464) was passed to establish a national policy to preserve, protect, develop, and where possible, restore or enhance, the resources of the Nation's coastal zone for this and succeeding generations and to encourage coastal states to develop and implement coastal zone management (CZM) programs. Each federal agency activity within or outside the coastal zone that affects any land or water use or natural resource of the coastal zone shall be carried out in a manner which is consistent to the maximum extent practicable with the enforceable policies of approved state management programs. Each federal agency carrying out an activity subject to the Act shall provide a consistency determination to the relevant state agency designated under § 1455(d)(6) of this title at the earliest practicable time.

In 1977, Hawaiʻi enacted HRS 205A (Coastal Zone Management). The CZM area encompasses the entire state, including all marine waters seaward to the extent of the state's police power and management authority, including the 12-mile U.S. territorial sea and all archipelagic waters. The objective and policies of the CZM Program are set forth in HRS § 205A-2. See detail discussion in Section 6 (Plans, Policies and Controls). A summary follows.

(1) Recreational Resources

Objective:
Provide coastal recreational opportunities accessible to the public.

Policies:
(A) Improve coordination and funding of coastal recreational planning and management; and
- *(i) Provide adequate, accessible, and diverse recreational opportunities in the coastal zone management area by: Protecting coastal resources uniquely suited for recreational activities that cannot be provided in other areas;*
- *(ii) Requiring replacement of coastal resources having significant recreational value, including but not limited to surfing sites, fishponds, and sand beaches, when such resources will be unavoidably damaged by development; or requiring reasonable monetary compensation to the state for recreation when replacement is not feasible or desirable;*
- *(iii) Providing and managing adequate public access, consistent with conservation of natural resources, to and along shorelines with recreational value;*
- *(iv) Providing an adequate supply of shoreline parks and other recreational facilities suitable for public recreation;*

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

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

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

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

All project locations are at least 3.3 miles from the shoreline and, as such, the Proposed Action will not affect coastal recreational resources.

(2) Historic Resources

Objective:

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

Policies:

(A) Identify and analyze significant archaeological resources;

(B) Maximize information retention through preservation of remains and artifacts or salvage operations; and

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

The proposed wastewater collection system will be constructed along the existing County streets and two short segments within easements in the Pāhala community that have been previously disturbed when the streets were constructed. Preliminary analysis shows the treatment and disposal facility will be constructed in an area that does not contain archaeological resources. An AIS, which included subsurface testing, was conducted to confirm the presence or absence of archaeological resources on the project site. The AIS confirmed no significant artifacts or cultural deposits were observed on the ground surface within the proposed treatment and disposal facility site as the area experiences ongoing disturbance by macadamia harvesting operations and stormwater runoff. Further, no cultural deposits or lava tubes were encountered during the subsurface trenching. For more information, please refer to Appendix D.

The contract drawings will state that, should archaeological sites such as walls, platforms, pavements or mounds, or remains such as artifacts, burials, concentrations of shell or charcoal be encountered during construction activities, work will cease immediately and the find will be protected from further damage. The contractor will immediately contact SHPD, who will assess the significance of the find and recommend an appropriate mitigation measure, if necessary.

(3) Scenic and Open Space Resources

Objective:

(A) Protect, preserve, and where desirable, restore or improve the quality of coastal scenic and open space resources.

Policies:

(A) Identify valued scenic resources in the coastal zone management area;

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

(C) Preserve, maintain, and, where desirable, improve and restore shoreline open space and scenic resources; and

(D) Encourage those developments which are not coastal dependent to locate in inland areas.

All project locations are at least 3.3 miles from the shoreline and, as such, coastal scenic and open space resources will not be affected.

(4) Coastal Ecosystems

Objective:

(A) Protect valuable coastal ecosystems, including reefs, from disruption and minimize adverse impacts on all coastal ecosystems.

Policies:

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

(B) Improve the technical basis for natural resource management;

(C) Preserve valuable coastal ecosystems, including reefs, of significant biological or economic importance;

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

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

All project locations are at least 3.3 miles from the shoreline and, as such, coastal ecosystems will not be adversely affected.

(5) Economic Uses

Objective:

(A) Provide public or private facilities and improvements important to the State’s economy in suitable locations.

Policies:

(A) Concentrate coastal dependent development in appropriate areas;

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

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

(i) Use of presently designated locations is not feasible;

(ii) Adverse environmental effects are minimized; and

(iii) The development is important to the State’s economy.

All project locations are at least 3.3 miles from the shoreline. The collection system and the treatment and disposal facility will be sited in suitable locations to serve the Pāhala community.

(6) Coastal Hazards

Objectives:

(A) Reduce hazard to life and property from tsunami, storm waves, stream flooding, erosion, subsidence, and pollution.

Policies:

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

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

(C) Ensure that developments comply with requirements of the Federal Flood Insurance Program;

(D) Prevent coastal flooding from inland projects.

All project locations are at least 3.3 miles from the shoreline and at least 580 feet above mean sea level (msl). Based on the location, the proposed collection system and wastewater treatment and disposal facility will not be subject to (and will not exacerbate) coastal hazards and do not include improvements related to tsunami, storm waves, stream flooding erosion, subsidence and pollution.

(7) Managing Development

Objective:

(A) Improve the development review process, communication, and public participation in the management of coastal resource and hazards.

Policies:

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

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

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

In December 2017, a total of five community outreach sessions regarding the project were conducted in the Pāhala community. A public information meeting for the Draft EA was held in October 2018. The collection system and wastewater treatment and disposal facility are at least 3.3 miles from the coast, at least 580 feet above msl, and do not involve management of coastal resources and hazards.

(8) Public Participation

Objective:

(A) Stimulate public awareness, education, and participation in coastal management.

Policies:

(A) Promote public involvement in coastal zone management processes;

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

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

In December 2017, a total of five community outreach sessions were conducted in the Pāhala community. A public information meeting for the Draft EA was held in October 2018. All project locations are at least 3.3 miles from the coast and at least 580 feet above msl.

(9) Beach Protection

Objective:
(A) Protect beaches for public use and recreation.

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

All project locations are at least 3.3 miles from the shoreline. The collection system and the wastewater treatment and disposal facility project does not include improvements that would affect public use beaches.

(10) Marine Resources

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

Policies:
(D) Ensure that the use and development of marine and coastal resources are ecologically and environmentally sound and economically beneficial;
(E) Coordinate the management of marine and coastal resources and activities to improve effectiveness and efficiency;
(F) 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;
(G) 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
(H) Encourage research and development of new, innovative technologies for exploring, using, or protecting marine and coastal resources.

All project locations are at least 3.3 miles from the shoreline. The collection system and the wastewater treatment and disposal facility project does not include improvements that would affect development of marine and coastal resources.

5.6 Endangered Species Act (16 U.S.C. § 1531)

On December 28, 1973, the Endangered Species Act (16 U.S.C. § 1531) was passed and, over the years, has been amended a number of times. The stated purpose of the original Act was to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved, to provide a program for the conservation of such endangered species and threatened species, and to take such steps as may be appropriate to achieve the purposes of various related treaties and conventions. The provisions of the Act are administered by the FWS and the National Oceanic and Atmospheric Administration (NOAA), National Marine Fisheries Service (NMFS). The FWS has primary responsibility for terrestrial and freshwater organisms, while NOAA/NMFS is mainly responsible for marine wildlife.

Section 7 of the Act, Interagency Cooperation (16 U.S.C. § 1536), states each federal agency shall, in consultation with and with the assistance of the Secretary of the Interior, ensure that any action authorized, funded, or carried out by such agency (an "agency action") is not likely to

jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of habitat of such species which is determined, after consultation as appropriate with affected states, to be critical, unless such agency has been granted an exemption for such action.

In August 2018, a biological resources field survey was conducted on the preferred project site. The results of the survey show that, due to the proposed alignment of the collection system along existing roadways, vegetation in the collection system area consists entirely of maintained yards with ornamental plants.

The field survey of the 14.9-acre preferred site for the proposed wastewater treatment and disposal facility indicates that the site is comprised of a macadamia nut orchard of mature trees, unmaintained areas outside the orchard dominated by Guinea grass, lanes of windbreak trees oriented between orchard units, and (mostly) mowed road verge areas. A total of 52 species of vascular plants: two ferns, one gymnosperm, and 49 species of angiosperms (flowering plants) were identified during the survey. Only two species (4 percent) identified during the survey are regarded as native to the Hawaiian Islands and both are indigenous (native, but also distributed elsewhere in the Pacific). Being widely distributed indigenous species, neither is listed as threatened or endangered or of any special concern.

The August 2018 field survey included assessment of mammalian species. With the exception of the endangered Hawaiian hoary bat (*Lasiurus cinereus semotus*), or ʻōpeʻapeʻa as it is known locally, all terrestrial mammals currently found on the Island of Hawaiʻi are alien species, and most are ubiquitous. The field survey reported no mammalian species within the survey area. This also included no indication that pigs (*Sus scrofa*) utilize the survey area.

The field survey also included an assessment of avian species, and recorded a total of 175 individual birds of 13 species, representing nine separate families, during station counts. Avian diversity and densities were very low, in keeping with the current usage of the site as a mature macadamia nut orchard, with minimal ground cover and few weedy or shrubby species. All of the avian species recorded during the course of the survey are established alien species. No native avian species were recorded during the course of the survey. The field survey recorded no species of plants or animals currently listed or proposed for listing under either the federal or State of Hawaiʻi endangered species statutes.

On December 21, 2018, the designated non-federal representative for consultations under Section 7 of the Endangered Species Act, on behalf of EPA and the County of Hawaiʻi, requested concurrence from the FWS that the Pāhala LCC Replacement Project is not likely to adversely affect federally listed threatened and endangered species or critical habitat.

On February 15, 2019, the FWS provided a letter that concluded: "The Service has analyzed potential impacts to listed species due to the implementation of [the] project. Based on the inclusion of the avoidance and minimization measures listed above, the Service anticipates that any potential impacts will be discountable or insignificant and therefore we concur that the Pāhala LCC Replacement Project may affect, but is not likely to adversely affect the endangered Hawaiian hoary bat, Hawaiian Hawk, Hawaiian goose, Hawaiian Petrel, Band-rumped Storm-Petrel, Hawaiian Stilt, and Hawaiian Coot, and the threatened Newell's Shearwater" (see letter with reference number 01EPIF00-2019-I-0153 in Appendix C-1). The Proposed Action will incorporate the avoidance and minimization measures cited in the FWS letter, including (but not limited to) avoiding impacts to potential Hawaiian hoary bat habitat during the bat birthing and pup rearing season; conducting a Hawaiian hawk nest survey prior to any work during the nesting season; avoiding activities near active nests; and avoiding nighttime construction during the seabird fledging period.

5.7 Environmental Justice Executive Order 12898

Executive Order 12898, Environmental Justice (full title Federal Actions to Address Environmental Justice to Minority and Low Income Populations), was signed on February 11, 1994. The intent of Executive Order 12898 is to avoid disproportionately high adverse human health or environmental effects of projects on minority and low income populations. Executive Order 12898 also requires federal agencies ensure that minority and low-income communities have adequate access to public information related to health and the environment.

The 2016 American Community Survey (ACS) (5-Year Estimates) is the most recent information related to socioeconomic conditions in the state and County. The 2016 ACS includes Hawaiʻi Geographic Area Profiles – Census Designated Places: Neighbor Islands. The ACS noted it is the Census Bureau's Population Estimates Program that produces and disseminates the official estimates of the population for the nation, states, counties, cities and towns and estimates of housing units for states and counties.

For purposes of this assessment, and to correspond with the available ACS demographic characteristic data, “low income” is defined as having a household income of less than $24,999; “minority” is defined as any race population other than White; and “children” is defined as the “Under 5 to 19” age category.

Pāhala has more households in the “less than $24,999” income bracket (33.6 percent) than the County as a whole (26.3 percent).

Overall, Pāhala is characterized by a racial composition that includes a greater proportion of minorities (92.1 percent non-White) than the County at large (66.8 percent non-White). The racial distribution includes a much lower proportion of White residents, a much higher proportion of Filipino residents, and lower populations of other minority groups, including Native Hawaiians when compared to the County. There are also more residents of two or more races in Pāhala than in the County.

Pāhala has a similar age distribution to Hawaiʻi County, although Pāhala has a higher proportion of individuals in the “Under 5 to 19” age category (28.5 percent) compared to the County as a whole (24.4 percent).

Based on the above, Pāhala has a higher proportion of low-income, minority, and children residents as compared to the County as a whole. However, the Proposed Action will not result in disproportionately high and adverse human health or environmental effects on these sensitive populations. The design and location of the proposed wastewater treatment and disposal facility will minimize odor and air quality impacts. Construction of the wastewater collection system will result in intermittent and unavoidable noise from construction vehicles and equipment within the Pāhala community, including noise associated with the removal of bedrock. However, construction activities within the community will comply with provisions of HAR 11-46 (Community Noise Control). This includes obtaining a noise permit for any activities that will generate noise exceeding the permissible sound levels specified in HAR 11-46. The permit will limit excessive noise sources to daytime hours; will require the use of best available control technology to control noise levels from excessive noise sources; and will require the applicant to notify affected members of the public in advance of any planned nighttime construction activity (which must not exceed the permissible sound levels). Overall, the Proposed Action is expected to result in positive human health and environmental effects to Pāhala residents by providing a cleaner and longer-lasting wastewater treatment system.

5.8 Farmland Protection Policy Act (7 U.S.C. § 4201)

The Agriculture and Food Act was passed in 1981 and contained the Farmland Protection Policy Act (FPPA) (7 U.S.C. § 4201). The stated purposes of the FPPA are to: 1) minimize the

extent to which federal programs contribute to the unnecessary and irreversible conversion of farmland to nonagricultural uses; and 2) assure that federal programs are administered in a manner that, to the extent practicable, will be compatible with state, unit of local government, and private programs and policies to protect farmland. "Farmland" subject to FPPA requirements does not have to be currently used for cropland.

The FPPA is administered by the U.S. Department of Agriculture (USDA), National Resources Conservation Service (NRCS). "Farmland", as used in the FPPA, includes prime farmland, unique farmland, and land of statewide or local importance, as defined by the State of Hawaiʻi Department of Agriculture.

Per the Agricultural Lands of Importance to the State of Hawaiʻi (ALISH) Classification System, the collection system is located in "unclassified" lands and the proposed wastewater treatment and disposal facility will be located on approximately 20 percent "prime", 40 percent "other" and 40 percent "unclassified" land.

The proposed collection system will be located primarily within the streets and shoulders in Pāhala and therefore will not affect farmlands. The preferred location for the proposed wastewater treatment and disposal facility is located within an existing macadamia nut orchard. The 2012 Census Agriculture shows about 17,378 acres in the County are planted with macadamia nuts. As such, removal of the 14.9-acre area required for the Proposed Action at the preferred site will not significantly affect macadamia nut production in the state or the County.

In accordance with the implementation procedures for the FPPA site assessment criteria (7 CFR 658), EPA is coordinating with the local NRCS field office to complete a Farmland Conversion Impact Rating Form for the Pāhala LCC Replacement Project. This form is used to assess the potential adverse effects on the protection of farmland; support the consideration of alternative actions; and assess compatibility with state and local programs and policies to protect farmland. After the site is selected, EPA will return a finalized copy of the form to the NRCS field office in accordance with 7 CFR 658.4(g).

5.9 Fish and Wildlife Coordination Act (16 U.S.C § 661)

The Fish and Wildlife Coordination Act (16 U.S.C § 661), enacted on March 10, 1934, was amended on August 12, 1958. The purpose of the Act is to recognize the vital contribution of wildlife resources to the Nation, the increasing public interest and significance, and to provide that wildlife conservation shall receive equal consideration and be coordinated with other features of water-resource development programs through the effectual and harmonious planning, development, maintenance, and coordination of wildlife conservation. The Act defines wildlife and wildlife resources as birds, fishes, mammals and all other classes of wild animals, and all types of aquatic and land vegetation upon which wildlife is dependent (16 U.S.C. § 666b).

The Secretary of the Interior is authorized (1) to provide assistance to, and cooperate with, federal, state, and public or private agencies and organizations in the development, protection, rearing, and stocking of all species of wildlife, and their habitat; in controlling losses of the from disease or other causes; in minimizing damages from overabundant species; and in providing public shooting and fishing areas, including easements across public lands; (2) to make surveys and investigations of the wildlife of the public domain, including lands and waters acquired or controlled by any agency; and (3) to accept donations of land and contributions of funds in furtherance of the purposes of the Act.

Specifically, the Act states that "whenever the waters of any stream or other body of water are proposed or authorized to be impounded, diverted, the channel deepened, or the stream or other body of water otherwise controlled or modified for any purpose whatever, including navigation and drainage, by any department or agency of the United States, or by any public or private

agency under Federal permit or license, such department or agency first shall consult with the United States Fish and Wildlife Service" (16 U.S.C. § 662(a)). The consultation may result in a report of recommendations by FWS that should be adopted to prevent the loss of or damage to wildlife resources. The provisions of the Act do not apply to impoundments of water less than 10 acres.

The Pāhala LCC Replacement Project does not include any impoundment of water and therefore a Fish and Wildlife Coordination Act review and/or consultation pursuant to 16 U.S.C. § 662 is not required.

5.10 Floodplain Management (Executive Order 11988, as amended by Executive Orders 12148 and 13690)

Executive Order 11988, Floodplain Management, dated May 24, 1977 requires federal agencies to avoid, to the extent possible, the long- and short-term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct and indirect support of floodplain development wherever there is a practicable alternative.

In accomplishing this objective, "each agency shall provide leadership and shall take action to reduce the risk of flood loss, to minimize the impact of floods on human safety, health, and welfare, and to restore and preserve the natural and beneficial values served by floodplains in carrying out its responsibilities."

The Proposed Action is not located within a 100-year floodplain area, will incorporate stormwater BMPs to manage runoff in accordance with state requirements, and will be designed to ensure sufficient capacity for assimilation of peak effluent flow rates and precipitation from the design storm event. The Proposed Action therefore will not have an adverse impact on floodplains and will minimize the risk of flood-related impacts on surrounding properties.

5.11 Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. § 1801)

The 1996 Sustainable Fishery Act amendments to the Magnuson-Stevens Fishery Conservation and Management Act and subsequent Essential Fish Habitat (EFH) Regulatory Guidelines (NOAA, 2002) describe provisions to identify and protect habitats of federally managed marine and anadromous fish species. Under the various provisions, federal agencies that fund, permit, or undertake activities that may adversely affect EFH are required to consult with the NMFS.

Congress defines EFH as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity." EFH is further defined by the existing regulations (NOAA-NMFS, 2007; NOAA, 2002). "Waters" include aquatic areas and their associated physical, chemical, and biological properties that are used by fish and may include aquatic areas historically used by fish where appropriate; "substrate" includes sediment, hard bottom, structures underlying the waters, and associated biological communities; "necessary" means the habitat required to support a sustainable fishery and the managed species' contribution to a healthy ecosystem; and "spawning, breeding, feeding, or growth to maturity" covers a species' full life cycle.

All project locations are at least 3.3 miles from the shoreline. The Proposed Action will not adversely impact EFH.

5.12 Marine Mammal Protection Act (16 U.S.C. §§ 1361 *et seq.*)

The Marine Mammal Protection Act (MMPA) (16 U.S.C. §§ 1361 *et seq*.), protects all marine mammals. The MMPA includes a general moratorium on the taking and importing of marine mammals, and prohibits, with certain exceptions, the "take" of marine mammals in U.S. waters and by U.S. citizens on the high seas, and the importation of marine mammals and marine mammal products into the U.S. Jurisdiction for MMPA is shared by the FWS and NMFS. The FWS

Branch of Permits is responsible for issuing take permits when exceptions are made to MMPA. Under the exception for incidental taking, the FWS or the NMFS must find that the total taking over the five-year period will have a "negligible impact" and will not adversely affect the availability of the marine mammal species or stock for subsistence use by natives.

All project locations are at least 3.3 miles from the shoreline. The Proposed Action will not adversely impact marine mammal communities and will not encourage any "take" of marine mammals.

5.13 Migratory Bird Treaty Act (16 U.S.C. §§ 703 *et seq.*)

The Migratory Bird Treaty Act (MBTA) and Executive Order 13186 (Responsibilities of Federal Agencies to Protect Migratory Birds) provide for the protection of migratory birds. The MBTA of 1918, as amended (16 U.S.C. §§ 703-712) makes it unlawful to, among other things, pursue, hunt, take, capture, kill, transport or import any species listed under the Act. The Act implements conventions between the U.S., Great Britain, Mexico, Japan, and the former Soviet Union.

Executive Order 13186 was issued to assist federal agencies with their efforts to comply with the MBTA. It should be noted that the Executive Order does not constitute any legal authorization that in any way supersedes the requirements outlined in the MBTA. The Executive Order directs federal agencies undertaking actions that have or are likely to have a measurable adverse impact on migratory bird populations to develop and implement a Memorandum of Agreement with the FWS addressing the conservation of these populations.

The field survey at the preferred site (Site 7) found a total of 175 individual birds of 13 species, none of which are native to the Hawaiian Islands. Avian diversity and densities were very low, which is consistent with the current site use as a mature macadamia nut orchard with limited ground cover and few weedy or shrubby species. The field survey did indicate that endemic Hawaiian Petrel (*Pterodroma sandwichensis*) and Newell's Shearwater (*Puffinus newelli*) have been recorded flying over the general area between April and the end of November each year. Impact avoidance and minimization measures will be implemented, including down-shielding of lights and avoiding nighttime construction during the seabird fledging period. The Proposed Action will also avoid impacts to potential Hawaiian hoary bat habitat (woody plants greater than 15 ft tall) during the bat birthing and pup rearing season (June 1 through September 15), which in turn will also reduce the potential take of migratory birds due to tree clearing during that period.

5.14 National Historic Preservation Act (54 U.S.C. § 300101)

The National Historic Preservation Act (NHPA) of 1966 (54 U.S.C. § 300101) requires a federal agency undertaking an action/project consider of the effect of the project on any historic property defined as a district, site, building, structure, or object that is included in or eligible for inclusion in the National Register of Historic Places.

Section 106 of the NHPA (54 U.S.C. § 306108) requires a federal agency having direct or indirect jurisdiction over a federal or federally assisted undertaking to take into account the effect of the undertaking on any historic property. An "undertaking" includes a "project, activity, or program funded in whole or in part under the direct or indirect jurisdiction of a Federal agency" (54 U.S.C. § 300320). Because the Pāhala LCC Replacement Project will be funded using federal funds, it is considered an "undertaking" and is subject to the NHPA.

The Act requires the federal agency's preservation-related activities to be carried out in consultation with other federal, state, and local agencies, Indian tribes, Native Hawaiian organizations (54 U.S.C § 306102).

The proposed collection system will be constructed along the existing County streets and two short segments within private easements in the Pāhala community that have been previously

disturbed when the streets were constructed. Preliminary analysis shows the proposed treatment and disposal facility will be constructed in an area that does not contain archaeological resources. An AIS, which included pedestrian surveys and subsurface testing, was conducted to confirm the presence or absence of archaeological resources on the project site. Based on the AIS, no properties eligible for inclusion on the National Register of Historic Places are present within the area of potential effects for the Preferred Alternative, and no significant artifacts or cultural deposits on the ground surface and no cultural deposits or lava tubes were encountered during subsurface testing.

Based on the above and in accordance with 36 CFR § 800.4(d), EPA reached a finding of “no historic properties affected for the project or undertaking.” On September 26, 2019, EPA sent a letter to SHPD to document their determination that no historic properties will be affected by the undertaking and to request concurrence from SHPD. The potential for encountering unexpected archeological resources within the site of the proposed treatment and disposal facility is low due to historical ground modifications and ongoing harvesting activities; however, the Proposed Action will incorporate appropriate mitigation measures should archeological resources be discovered during construction. Specifically, the contract drawings will state that, should archaeological sites such as walls, platforms, pavements or mounds, or remains such as artifacts, burials, concentrations of shell or charcoal be encountered during construction activities, work will cease immediately and the find will be protected from further damage. The contractor will immediately contact SHPD, who will assess the significance of the find and recommend appropriate mitigation measures, if necessary.

The AIS and NHPA Section 106 consultation correspondence can be found in Appendix D and Appendix D-1, respectively. To date, SHPD has not responded to the County’s Draft AIS submittal from March 13, 2019; the EPA letter from September 26, 2019 requesting concurrence with the determination that no historic properties will be affected by the undertaking; or the County’s follow-up letter from October 9, 2019 requesting concurrence with the Draft AIS findings. In accordance with 36 CFR § 800.4(d)(1)(i) and as specified in the September 26 letter, because no response was received within 30 days of SHPD receipt of the adequately documented finding, EPA has fulfilled their Section 106 responsibilities for this undertaking. However, construction will not proceed until SHPD has approved the Draft AIS.

5.15 Protection of Wetlands (Executive Order 11990 (1977), as amended by Executive Order 12608 (1997))

Executive Order 11990, Protection of Wetlands, dated 1977 requires federal agencies to avoid, preserve, or mitigate effects of new construction projects on lands which have been designated wetlands. Executive Order 11990 states in order to avoid to the extent possible the long- and short-term adverse impacts associated with the destruction or modification of wetlands and to avoid direct or indirect support of new construction in wetlands wherever there is a practicable alternative, it is hereby ordered as follows: Section 1. (a) Each agency shall provide leadership and shall take action to minimize the destruction, loss or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands in carrying out the agency's responsibilities for (1) acquiring, managing, and disposing of federal lands and facilities; and (2) providing federally undertaken, financed, or assisted construction and improvements; and (3) conducting federal activities and programs affecting land use, including but not limited to water and related land resources planning, regulating, and licensing activities.

The National Wetlands Inventory (NWI) Wetlands Mapper and U.S. Geological Survey (USGS) topographic maps identify no wetland features or streams within Site 7, at the two LCCs, or within the proposed collection system area. Biological and archeological field survey reports do not indicate any standing water or evident wetland vegetation within Site 7. On August 2018, a

biological field survey was conducted at Site 7 and results of the field work indicated that no wetlands were observed on the site. The man-made drainage feature along Māmalahoa Highway along the edge of the parcel conducts flow generated from surface runoff underneath the highway and downslope to the east. Conditions within the ditch itself close to or on the property will not likely satisfy the hydric soil requirement to be defined as a wetland. Streams in the Pāhala area do not flow all the way to the sea, but terminate on Keoneʻeleʻele Flat to the southwest. Based on this information, the Proposed Action is not expected to impact wetland resources.

5.16 Rivers and Harbors Act (33 U.S.C. § 403)

Originally enacted on March 3, 1899, the Rivers and Harbors Appropriation Act of 1899 affects navigable waters of the U.S. Section 10 of the Act states the creation of any obstruction not affirmatively authorized by Congress, to the navigable capacity of any of the waters of the United States is prohibited; and it shall not be lawful to build or commence the building of any wharf, pier, dolphin, boom, weir, breakwater, bulkhead, jetty, or other structures in any port, roadstead, haven, harbor, canal, navigable river, or other water of the United States, outside established harbor lines, or where no harbor lines have been established, except on plans recommended by the Chief of Engineers and authorized by the Secretary of the Army; and it shall not be lawful to excavate or fill, or in any manner to alter or modify the course, location, condition, or capacity of, any port, roadstead, haven, harbor, canal, lake, harbor or refuge, or inclosure within the limits of any breakwater, or of the channel of any navigable water of the United States, unless the work has been recommended by the Chief of Engineers and authorized by the Secretary of the Army prior to beginning the same (33 U.S.C. § 403).

All project locations are at least 3.3 miles from the shoreline. The preferred location for the proposed wastewater treatment and disposal facility is sited about 1,500 feet east of the center line of Hiʻonamoa Gulch. The USGS topographic map shows the gulch stops about 5,500 feet from the shoreline. The Proposed Action will not directly affect any streams or gulches. Based on this, the collection system and the treatment and disposal facility will not affect navigable waters.

5.17 Safe Drinking Water Act (42 U.S.C. § 300f)

The Safe Drinking Water Act (SDWA) of 1974 (42 U.S.C. § 300f) was established to protect the quality of all waters actually or potentially designed for drinking use from both underground and aboveground sources. The SDWA authorizes EPA to establish minimum standards to protect potable water with which all owners or operators of public water systems must comply; to oversee the agencies which can be approved to implement these rules on EPA's behalf, such as state governments; and to encourage attainment of secondary standards (nuisance-related). Section 1424(e) of the SDWA of 1974 (Public Law 93-523, 42 U.S.C. 300 et. seq also established the Sole Source Aquifer program which states that no commitment for federal financial assistance (through a grant, contract, loan guarantee, or otherwise) may be entered into for any project which the EPA Administrator determines may contaminate such aquifer through a recharge zone so as to create a significant hazard to public health.

The Proposed Action does not establish a drinking water system, and no Sole Source Aquifers are present on the Island of Hawaiʻi. The Proposed Action will provide the infrastructure necessary to enable the County to comply with the SDWA by replacing the existing outdated and federally banned wastewater systems that pose a threat to underground sources of drinking water.

5.18 Wild and Scenic Rivers Act (16 U.S.C. §§ 1271-1287)

The Wild and Scenic Rivers Act, 16 U.S.C. §§ 1271-1287, declares that certain selected rivers with their immediate environments, which possess outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historical, cultural, or other similar values, shall be preserved in their free-flowing condition for the enjoyment of present and future generations.

The State of Hawaiʻi has no designated wild and scenic rivers. The Wild and Scenic Rivers Act is not applicable to this project.

5.19 Clean Water Act (33 U.S.C. § 1251 et seq.)

The Clean Water Act established the basis for regulating discharges of pollutants into waters of the U.S. Enacted in 1948, it was originally called the Federal Water Pollution Control Act but became known as the Clean Water Act with the amendments of 1972. Section 404 of the Clean Water Act regulates the discharge of dredged or fill material into waters of the U.S. and adjacent wetlands from development, water resource projects, mining or other infrastructure projects. Activities are regulated through a permit process that is administered under the responsibility of the U.S. Army Corps of Engineers. Permits may be issued as either Individual Permits for projects with potentially significant impacts or general permits for projects with only minimal adverse effects.

The NWI Wetlands Mapper and USGS topographic maps identify no wetland features or streams within Site 7, at the two LCCs, or within the proposed collection system area. Biological and archeological field survey reports do not indicate any standing water or evident wetland vegetation within Site 7. On August 2018, a biological field survey was conducted at Site 7 and results of the field work indicated that no wetlands were observed on the site. The man-made drainage feature along Māmalahoa Highway along the edge of the parcel conducts flow generated from surface runoff underneath the highway and downslope to the east. Conditions within the ditch itself close to or on the property would not likely satisfy the hydric soil requirement to be defined as a wetland.

Because no wetland resources are present and no impacts to wetlands are anticipated due to the nature and design of the Proposed Action, a Clean Water Act Section 404 permit is not required.

In addition to the above, the Clean Water Act was amended by the Federal Water Quality Act of 1987 which established provisions for a Clean Water State Revolving Fund (33 U.S.C. § 1383), a financial assistance program for water infrastructure projects. The program capitalizes on a partnership between EPA and states to provide loans to eligible recipients through state programs that act as environmental infrastructure banks providing low-interest loans. As stated in Section 2.1.2, the Pāhala LCC Replacement Project is being funded in part by the State of Hawaiʻi DOH Clean Water State Revolving Fund.

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6 PLANS, POLICIES AND CONTROLS

This section discusses the State and County of Hawaiʻi land use plans, policies and controls relating to the proposed project.

6.1 State Land Use Plans and Policies

6.1.1 Hawaiʻi State Plan

The Hawaiʻi State Plan, Hawaiʻi Revised Statues (HRS) 226, as amended, provides goals, objectives, policies, and priorities for the state. The purpose of the Hawaiʻi State Plan is to set forth a plan that shall serve as a guide for the future long-range development of the state; identify the goals, objectives, policies, and priorities for the state; provide a basis for determining priorities and allocating limited resources, such as public funds, services, human resources, land, energy, water, and other resources; improve coordination of federal, state, and county plans, policies, programs, projects, and regulatory activities; and to establish a system for plan formulation and program coordination to provide for an integration of all major state, and county activities. The proposed project's consistency with applicable objectives and policies is discussed in Table 6.1. Applicable policies from Part I and III of the Hawaiʻi State Plan are provided in this table. Part II does not apply to the Pāhala Large Capacity Cesspool (LCC) Replacement Project.

Table 6.1
Hawaiʻi State Plan Objectives and Policies

Objectives and Policies of the Hawaiʻi State Plan	Discussion
§ 226-4 State goals. In order to ensure, for present and future generations, those elements of choice and mobility that ensure that individuals and groups may approach their desired levels of self-reliance and self-determination, it shall be the goal of the State to achieve: (1) A strong, viable economy, characterized by stability, diversity, and growth, that enables the fulfillment of the needs and expectations of Hawaiʻi's present and future generations. (2) A desired physical environment, characterized by beauty, cleanliness, quiet, stable natural systems, and uniqueness, that enhances the mental and physical well-being of the people. (3) Physical, social, and economic well-being, for individuals and families in Hawaii, that nourishes a sense of community responsibility, of caring, and of participation in community life.	The Pāhala project will support the state economy by providing a wastewater collection system and a treatment and disposal facility to enhance the community and the physical well-being of the community.
§ 226-5 Objective and policies for population. (a) It shall be the objective in planning for the State's population to guide population growth to be consistent with the achievement of physical, economic, and social objectives contained in this chapter.	The Pāhala project does not include facilities or improvements that could guide or otherwise affect population growth in this area of Hawaiʻi.
§ 226-6 Objectives and policies for the economy--in general. (a) Planning for the State's economy in general shall be directed toward achievement of the following objectives:	The Pāhala project does not include facilities or improvements that affect the economy of this area of Hawaiʻi.
§ 226-7 Objectives and policies for the economy--agriculture. (a) Planning for the State's economy with regard to agriculture shall be directed towards achievement of the following objectives:	The Pāhala project does not include facilities or improvements which will affect agriculture of this area of Hawaiʻi. The area used for the treatment and disposal facility will not adversely impact the total macadamia nut production on the state or County.

Table 6.1
Hawaiʻi State Plan Objectives and Policies

Objectives and Policies of the Hawaiʻi State Plan	Discussion
§ 226-8 Objective and policies for the economy--visitor industry. (a) Planning for the State's economy with regard to the visitor industry shall be directed towards the achievement of the objective of a visitor industry that constitutes a major component of steady growth for Hawaiʻi's economy	The Pāhala project does not include facilities or improvements that will affect the visitor industry of this area of Hawaiʻi.
§ 226-9 Objective and policies for the economy--federal expenditures. (a) Planning for the State's economy with regard to federal expenditures shall be directed towards achievement of the objective of a stable federal investment base as an integral component of Hawaiʻi's economy.	The Pāhala project will include federal expenditures to provide a collection system and treatment and disposal facility for the community.
§ 226-10 Objective and policies for the economy--potential growth and innovative activities. (a) Planning for the State's economy with regard to potential growth and innovative activities shall be directed towards achievement of the objective of development and expansion of potential growth and innovative activities that serve to increase and diversify Hawaiʻi's economic base.	The Pāhala project does not include facilities or improvements that will affect the potential growth of this area of Hawaiʻi.
§ 226-10.5 Objectives and policies for the economy--information industry. (a) Planning for the State's economy with regard to telecommunications and information technology shall be directed toward recognizing that broadband and wireless communication capability and infrastructure are foundations for an innovative economy and positioning Hawaiʻi as a leader in broadband and wireless communications and applications in the Pacific Region.	The Pāhala project does not include facilities or improvements that will affect the information industry of this area of Hawaiʻi.
§ 226-11 Objectives and policies for the physical environment--land-based, shoreline, and marine resources. (b) To achieve the land-based, shoreline, and marine resources objectives, it shall be the policy of this State to: (1) Exercise an overall conservation ethic in the use of Hawaiʻi's natural resources. (3) Take into account the physical attributes of areas when planning and designing activities and facilities.	The Pāhala project site is located at least 580 feet above mean sea level and at least 3.3 miles from the shoreline. As such, it will not affect shoreline or marine resources.
§ 226-12 Objective and policies for the physical environment--scenic, natural beauty, and historic resources. (b) To achieve the scenic, natural beauty, and historic resources objective, it shall be the policy of this State to: (3) Promote the preservation of views and vistas to enhance the visual and aesthetic enjoyment of mountains, ocean, scenic landscapes, and other natural features.	The Pāhala project does not include facilities or improvements that will affect the scenic, natural beauty and historic resources of this area of Hawaiʻi.
§ 226-13 Objectives and policies for the physical environment--land, air, and water quality. (b) To achieve the land, air, and water quality objectives, it shall be the policy of this State to: (2) Promote the proper management of Hawaiʻi's land and water resources. (3) Promote effective measures to achieve desired quality in Hawaiʻi's surface, ground, and coastal waters.	The Pāhala project does not include facilities or improvements that will affect the physical environment of this area of Hawaiʻi.
§ 226-14 Objective and policies for facility systems--in general.	The Pāhala project is consistent with the County of Hawaiʻi plans for facilities.
§ 226-15 Objectives and policies for facility systems--solid and liquid wastes.	The Pāhala project does include facilities or improvements that will affect liquid waste facilities. The project provides a collection system and treatment and disposal facility for Pāhala community and closes LCCs in conformance with U.S. Environmental Protection Agency (EPA) requirements.

Table 6.1
Hawaiʻi State Plan Objectives and Policies

Objectives and Policies of the Hawaiʻi State Plan	Discussion
§ 226-16 Objective and policies for facility systems--water. (a) Planning for the State's facility systems with regard to water shall be directed towards achievement of the objective of the provision of water to adequately accommodate domestic, agricultural, commercial, industrial, recreational, and other needs within resource capacities.	The Pāhala project does not include facilities or improvements that will affect water facilities.
§ 226-17 Objectives and policies for facility systems--transportation. (a) Planning for the State's facility systems with regard to transportation shall be directed towards the achievement of the following objectives:	The Pāhala project does not include facilities or improvements that will adversely affect transportation systems serving this area of Hawaiʻi.
§ 226-18 Objectives and policies for facility systems--energy. (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:	The Pāhala project does not include facilities or improvements that will affect energy systems. Electrical service will be provided by Hawaiʻi Electric and Light Company (HELCO).
§ 226-18.5 Objectives and policies for facility systems--telecommunications. (a) Planning for the State's telecommunications facility systems shall be directed towards the achievement of dependable, efficient, and economical statewide telecommunications systems capable of supporting the needs of the people.	The Pāhala project does not include facilities or improvements that will affect telecommunications.
§ 226-19 Objectives and policies for socio-cultural advancement--housing. (a) Planning for the State's socio-cultural advancement with regard to housing shall be directed toward the achievement of the following objectives:	The Pāhala project does not include facilities or improvements that will affect housing.
§ 226-20 Objectives and policies for socio-cultural advancement--health. (a) Planning for the State's socio-cultural advancement with regard to health shall be directed towards achievement of the following objectives:	The Pāhala project does not include facilities or improvements that will affect the health of this area of Hawaiʻi.
§ 226-21 Objective and policies for socio-cultural advancement--education. (a) Planning for the State's socio-cultural advancement with regard to education shall be directed towards achievement of the objective of the provision of a variety of educational opportunities to enable individuals to fulfill their needs, responsibilities, and aspirations	The Pāhala project does include facilities or improvements that will affect the educational opportunities in this area of Hawaiʻi.
§ 226-22 Objective and policies for socio-cultural advancement--social services. (a) Planning for the State's socio-cultural advancement with regard to social services shall be directed towards the achievement of the objective of improved public and private social services and activities that enable individuals, families, and groups to become more self-reliant and confident to improve their well-being.	The Pāhala project does not include facilities or improvements that will affect social services of this area of Hawaiʻi.
§ 226-23 Objective and policies for socio-cultural advancement--leisure. (a) Planning for the State's socio-cultural advancement with regard to leisure shall be directed towards the achievement of the objective of the adequate provision of resources to accommodate diverse cultural, artistic, and recreational needs for present and future generations.	The Pāhala project does not include facilities or improvements that will affect the leisure activities.
§ 226-24 Objective and policies for socio-cultural advancement--individual rights and personal well-being. (a) Planning for the State's socio-cultural advancement with regard to individual rights and personal well-being shall be directed towards achievement of the objective of increased opportunities and protection of individual rights to enable individuals to fulfill their socio-economic needs and aspirations.	The Pāhala project does not include facilities or improvements that will affect individual rights.
§ 226-25 Objective and policies for socio-cultural advancement--culture. (a) Planning for the State's socio-cultural advancement with regard to culture shall be directed toward the achievement of the objective of enhancement of cultural identities, traditions, values, customs, and arts of Hawaiʻi's people.	The Pāhala project does not include facilities or improvements that will affect the cultural advancement.

Table 6.1
Hawaiʻi State Plan Objectives and Policies

Objectives and Policies of the Hawaiʻi State Plan	Discussion
§ 226-26 Objectives and policies for socio-cultural advancement--public safety. (a) Planning for the State's socio-cultural advancement with regard to public safety shall be directed towards the achievement of the following objectives:	The Pāhala project does not include facilities or improvements that will adversely affect public safety of this area of Hawaiʻi.
§ 226-27 Objectives and policies for socio-cultural advancement--government. (a) Planning the State's socio-cultural advancement with regard to government shall be directed towards the achievement of the following objectives:	The Pāhala project does not include facilities or improvements that will affect the advancement of government.
§ 226-101 Purpose. The purpose of this part is to establish overall priority guidelines to address areas of statewide concern. [L 1978, c 100, pt of § 2; am L 1984, c 236, § 14]	The Pāhala project does not include facilities or improvements that will affect overall priority guidelines of statewide concern.
§ 226-102 Overall direction. The State shall strive to improve the quality of life for Hawaii's present and future population through the pursuit of desirable courses of action in seven major areas of statewide concern which merit priority attention: economic development, population growth and land resource management, affordable housing, crime and criminal justice, quality education, principles of sustainability, and climate change adaptation.	The Pāhala project will affect short-term economic development and jobs during the construction period. The Pāhala project will not affect long-term economic development, population growth and land resource management, affordable housing, crime and criminal justice, quality education and climate change adaption. Removal of cesspools is consistent with the principles of sustainability.
§ 226-103 Economic priority guidelines. (a) Priority guidelines to stimulate economic growth and encourage business expansion and development to provide needed jobs for Hawaii's people and achieve a stable and diversified economy. (e) Priority guidelines for water use and development: (1) Maintain and improve water conservation programs to reduce the overall water consumption rate. (2) Encourage the improvement of irrigation technology and promote the use of nonpotable water for agricultural and landscaping purposes.	The Pāhala project will stimulate economic development and jobs during the construction period.
§ 226-104 Population growth and land resources priority guidelines. (a) Priority guidelines to effect desired statewide growth and distribution:	The Pāhala project will not affect population growth but may help protect the environment and improve water quality in nearby surface water resources.
§ 226-105 Crime and criminal justice. Priority guidelines in the area of crime and criminal justice:	The Pāhala project will not affect crime or criminal justice in the Pāhala area.
§ 226-106 Affordable housing. Priority guidelines for the provision of affordable housing:	The Pāhala project will not affect affordable housing in the Pāhala area.
§ 226-107 Quality education. Priority guidelines to promote quality education:	The Pāhala project will not affect education in the Pāhala area.
§ 226-108 Sustainability. Priority guidelines and principles to promote sustainability include: (5) Promoting decisions based on meeting the needs of the present without compromising the needs of future generations.	The Pāhala project will close two large capacity cesspools, replacing them with secondary treatment and disposal systems, thereby protecting groundwater resources for future generations, potentially benefitting the health and vitality of the area coastal and marine ecosystem.

Table 6.1
Hawaiʻi State Plan Objectives and Policies

Objectives and Policies of the Hawaiʻi State Plan	Discussion
§ 226-109 Climate change adaptation priority guidelines. Priority guidelines to prepare the State to address the impacts of climate change, including impacts to the areas of agriculture; conservation lands; coastal and nearshore marine areas; natural and cultural resources; education; energy; higher education; health; historic preservation; water resources; the built environment, such as housing, recreation, transportation; and the economy.	The wastewater treatment and disposal facility will be designed to contain the 100-year, 24-hour storm event while maintaining sufficient freeboard to account for the uncertainty of climate model projections.

6.1.2 State Functional Plans

The Hawaiʻi State Plan directs appropriate state agencies to prepare Functional Plans to address statewide needs, problems, and issues through recommended policies and actions. A total of 14 Functional Plans were prepared to implement the State Plan provisions in the areas of agriculture, transportation, conservation lands, education, tourism, water resources, energy, recreation, historic preservation, health, housing, higher education, employment, and human services. The following presents a review of the Functional Plans which are applicable to the proposed project.

(a) Agriculture Functional Plan

Objective B: Achievement of an orderly agricultural marketing system through product promotion and industry organization.

Policy B.2: Encourage the development of Hawai'i's agricultural industries.

Objective C: Achievement of optimal contribution by agriculture to the state's economy.

Discussion: Agriculture is the major source of economic activity in Kaʻū. The 2012 Census of Agriculture shows 18,006 acres of land in the State of Hawaiʻi were dedicated to growing macadamia trees, of which 17,378 acres were located in Hawaiʻi County. Though the proposed wastewater treatment and disposal facility project site is currently planted with macadamia trees, the proposed project will have negligible impact on the macadamia industry in Kaʻū as the 14.9-acre project site is relatively small compared to the 17,378 acres dedicated to macadamia production in Hawaiʻi County. Moreover, the project site is situated on poorer-quality agriculture land. According to the Land Study Bureau Agricultural Productivity Ratings Map about 50 percent of the project site is classified as having Good productivity, while the 50 percent has a productivity rating of Poor. Furthermore, according to the Agricultural Lands of Importance to the State of Hawaiʻi Classification System only 20 percent of the treatment and disposal project site is considered Prime Lands with roughly 40 percent deemed Other Lands, while the remaining 40 percent is Unclassified. Overall, the proposed wastewater treatment and disposal facility will be sited and designed to minimize the use of agricultural lands for non-agricultural purposes. Removal of 14.9 acres from macadamia nut production will not adversely affect the total macadamia nut acreage in the state or the County. Further, use of the 14.9-acre area for the treatment and disposal facility will not be contrary to the objective of contribution of agriculture to the state's economy.

(b) Historic Preservation Functional Plan

Objective B: Protection of Historic Properties

Policy B.2. Establish and make available a variety of mechanisms to better protect

historic properties.

Objective C: Management and Treatment of Historic Properties

Policy C.3. Explore innovative means to better manage historic properties.

Policy C.4. Encourage proper preservation techniques.

Discussion: The wastewater collection system will be constructed primarily within the existing County streets in the Pāhala community which has been previously disturbed when the streets were constructed. Preliminary analysis shows the wastewater treatment and disposal facility will be constructed in an area that does not contain archaeological resources. An Archaeological Inventory Survey (AIS), which included subsurface testing, was conducted to confirm the presence or absence of archaeological resources on the project site. The AIS confirmed no significant artifacts or cultural deposits were observed on the ground surface within the proposed treatment and disposal facility site as the area experiences ongoing disturbance by macadamia harvesting operations and stormwater runoff. Further, no cultural deposits or lava tubes were encountered during the subsurface trenching. Under HRS § 6E-8 and in accordance with HAR § 13-275-7(a)(1), the County of Hawaiʻi Department of Environmental Management's (DEM) project effect determination is "no historic properties affected." Construction will not proceed until the State Historic Preservation Division (SHPD) has approved the AIS. For more information, please refer to Appendix D.

The contract drawings will state that, should archaeological sites such as walls, platforms, pavements or mounds, or remains such as artifacts, burials, concentrations of shell or charcoal be encountered during construction activities, work shall cease immediately and the find shall be protected from further damage. The contractor shall immediately contact SHPD, who will assess the significance of the find and recommend an appropriate mitigation measure, if necessary.

6.1.3 State Land Use District

The State Land Use Law, HRS 205 (Land Use Commission), is intended to preserve, protect and encourage the development of lands in the state for uses that are best suited to the public health and welfare of Hawaiʻi's people. Under HRS 205, all lands in the State of Hawaiʻi are classified by the State Land Use Commission into four major categories referred to as State Land Use Districts. These districts are identified as the Urban District, Agricultural District, Conservation District, and Rural District.

Discussion: The wastewater treatment and disposal facility is located in the Agricultural District. Uses in the Agricultural District are governed by HRS 205. Permissible uses in the Agricultural District are set forth in HRS § 205-4.5 (a)(7) which states "Public, private, and quasi-public utility lines and roadways, transformer stations, communications equipment buildings, solid waste transfer stations, major water storage tanks, and appurtenant small buildings such as booster pumping stations, but not including offices or yards for equipment, material, vehicle storage, repair or maintenance, or treatment plants, or corporation yards, or other like structures."

HRS § 205-4.5(b) states: "Uses not expressly permitted in subsection (a) shall be prohibited, except the uses permitted as provided in sections 205-6 and 205-8." HRS § 205-6(a) states: "Subject to this section, the county planning commission may permit certain unusual and reasonable uses within agricultural and rural districts other than those for which the district is classified. Any person who desires to use the person's land within an agricultural or rural district other than for an agricultural or rural use, as the case may be, may petition the planning commission of the county within which the person's land is located for permission to use the

person's land in the manner desired." Based on the above, the County will apply for a Special Permit which will require approval by the County Planning Commission.

6.1.4 Chapter 344, State Environmental Policy

The State's Environmental Policy is contained in Chapter 344 of HRS. The purpose of HRS 344 is to *"establish a state policy which will encourage productive and enjoyable harmony between people and their environment, promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of humanity, and enrich the understanding of the ecological systems and natural resources important to the people of Hawaiʻi."*

HRS § 344-3 (Environmental policy) provides: It shall be the policy of the State, through its programs, authorities, and resources to:

> *Conserve the natural resources, so that land, water, mineral, visual, air and other natural resources are protected by controlling pollution, by preserving or augmenting natural resources, and by safeguarding the State's unique natural environmental characteristics in a manner which will foster and promote the general welfare, create and maintain conditions under which humanity and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of the people of Hawaiʻi.*
>
> *Enhance the quality of life by:*
>
> *(D) Establishing a commitment on the part of each person to protect and enhance Hawaiʻi's environment and reduce the drain on nonrenewable resources.*

HRS § 344-4 (Guidelines) states: In pursuance of the state policy to conserve the natural resources and enhance the quality of life, all agencies, in the development of programs, shall, insofar as practicable, consider the following guidelines:

> (2) *Land, water, mineral, visual, air, and other natural resources.*
>
> *(A) Encourage management practices which conserve and fully utilize all natural resources;*
>
> *(B) Promote irrigation and waste water management practices which conserve and fully utilize vital water resources;*
>
> *(C) Promote the recycling of waste water;*

Discussion: One of the purposes of the project is to close the LCCs which have been used for years for disposal of untreated sewage from Pāhala community. Although use of the LCCs has not resulted in known adverse effects to groundwater resources or the drinking water sources for the community, closure of the LCCs will remove this possible source of contamination. Thus, the Pāhala LCC Replacement Project will enhance the groundwater resources in the area. This will be compatible with the objective to prevent or eliminate damage to the environment. As discussed throughout Section 3, the Proposed Action will incorporate mitigation measures to protect and conserve natural resources.

6.1.5 Hawaiʻi Coastal Zone Management Program

The Coastal Zone Management (CZM) Program was created through passage of the Coastal Zone Management Act of 1972. Hawaiʻi's CZM Program, adopted as HRS Chapter 205A, provides a basis for protecting, restoring and responsibly developing coastal communities and resources. The Hawaiʻi CZM area includes all lands within the state and the areas seaward to the extent of the state's management jurisdiction. Thus, the Pāhala project is located in the CZM area.

A discussion of the project's consistency with the objectives and policies of the CZM Program is provided below.

(a) Recreational Resources

Objective:
Provide coastal recreational opportunities accessible to the public.

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

Discussion: All project locations are at least 3.3 miles from the shoreline and, as such, coastal recreational resources will not be affected.

(b) Historic Resources

Objective:
(B) 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:
(D) Identify and analyze significant archaeological resources;
(E) Maximize information retention through preservation of remains and artifacts or salvage operations; and
(F) Support state goals for protection, restoration, interpretation, and display of historic resources.

The wastewater collection system will be constructed primarily within the existing County streets within the Pāhala community which has been previously disturbed when the streets were constructed. Preliminary analysis shows the wastewater treatment and disposal facility will be constructed in an area that does not contain archaeological resources. An AIS, which included subsurface testing, was conducted to confirm the presence or absence of archeological resources on the project site. The AIS confirmed no significant artifacts or cultural deposits were observed on the ground surface within the proposed treatment and disposal facility site as the area experiences ongoing disturbance by macadamia harvesting operations and stormwater runoff. Further, no cultural deposits or lava tubes were encountered during the subsurface trenching. Under HRS § 6E-8, and in accordance with HAR § 13-275-7(a)(1), the County of Hawai‘i DEM’s project effect determination is “no historic properties affected.” Construction will not proceed until SHPD has approved the AIS. For more information, please refer to Appendix D.

The contract drawings will state that, should archaeological sites such as walls, platforms, pavements or mounds, or remains such as artifacts, burials, concentrations of shell or charcoal be encountered during construction activities, work shall cease immediately and the find shall be protected from further damage. The contractor shall immediately contact SHPD, who will assess the significance of the find and recommend an appropriate mitigation measure, if necessary.

(c) Scenic and Open Space Resources

Objective:

(B) Protect, preserve, and where desirable, restore or improve the quality of coastal scenic and open space resources.

Policies:

(E) Identify valued scenic resources in the coastal zone management area;

(F) 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;

(G) Preserve, maintain, and, where desirable, improve and restore shoreline open space and scenic resources; and

(H) Encourage those developments which are not coastal dependent to locate in inland areas.

Discussion: All project locations are at least 3.3 miles from the shoreline and, as such, coastal scenic and open space resources will not be affected.

(d) Coastal Ecosystems

Objective:

(A) Protect valuable coastal ecosystems, including reefs, from disruption and minimize adverse impacts on all coastal ecosystems.

Policies:

(F) Exercise an overall conservation ethic, and practice stewardship in the protection, use, and development of marine and coastal resources;

(G) Improve the technical basis for natural resource management;

(H) Preserve valuable coastal ecosystems, including reefs, of significant biological or economic importance;

(I) 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

(J) 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: All project locations are at least 3.3 miles from the shoreline and, as such, coastal ecosystems will not be adversely affected.

(e) Economic Uses

Objective:

(B) Provide public or private facilities and improvements important to the State's economy in suitable locations.

Policies:

(D) Concentrate coastal dependent development in appropriate areas;

(E) Ensure that coastal dependent developments such as harbors and ports, and coastal related development such as visitor 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

(F) 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:

(iv) Use of presently designated locations is not feasible;

(v) Adverse environmental effects are minimized; and

(vi) The development is important to the State's economy.

Discussion: All project locations are at least 3.3 miles from the shoreline. The collection system and the wastewater treatment and disposal facility have been sited in suitable locations to serve the Pāhala community.

(f) Coastal Hazards

Objectives:

(A) Reduce hazard to life and property from tsunami, storm waves, stream flooding, erosion, subsidence, and pollution.

Policies:

(C) Develop and communicate adequate information about storm wave, tsunami, flood, erosion, subsidence, and point and nonpoint source pollution hazards;

(D) Control development in areas subject to storm wave, tsunami, flood, erosion, hurricane, wind, subsidence, and point and nonpoint pollution hazards;

(F) Ensure that developments comply with requirements of the Federal Flood Insurance Program;

(G) Prevent coastal flooding from inland projects.

Discussion: All project locations are at least 3.3 miles from the shoreline and at least 580 feet above mean sea level (msl). Based on the location, the proposed collection system and wastewater treatment and disposal facility will not be subject to (and will not exacerbate) coastal hazards and do not include improvements related to tsunami, storm waves, stream flooding erosion, subsidence and pollution.

(g) Managing Development

Objective:

(A) Improve the development review process, communication, and public participation in the management of coastal resource and hazards.

Policies:

(D) Use, implement, and enforce existing law effectively to the maximum extent possible in managing present and future coastal zone development;

(E) Facilitate timely processing of applications for development permits and resolve overlapping or conflicting permit requirements; and

(F) 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: In December 2017, a total of five community outreach sessions regarding the project were conducted in the Pāhala community. A public information meeting for the Draft EA was held in October 2018. All project locations are at least 3.3 miles from the shoreline. The collection system and wastewater treatment and disposal facility do not involve management of coastal resources and hazards.

(h) Public Participation

Objective:

(B) Stimulate public awareness, education, and participation in coastal management.

Policies:

(D) Promote public involvement in coastal zone management processes;

(E) 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

(F) Organize workshops, policy dialogues, and site-specific mediations to respond to coastal issues and conflicts.

Discussion: In December 2017, a total of five community outreach sessions were conducted in the Pāhala community. A public information meeting for the Draft EA was held in October 2018. The County also conducted a meeting in March 2019 to gain further input from newly accessible property owners and to fulfill a County commitment made in October 2018 to research and provide financing options available to owners of parcels that will become newly accessible to the County collection system. All project locations are at least 3.3 miles from the shoreline.

(i) Beach Protection

Objective:

(A) Protect beaches for public use and recreation.

Policies:

(I) 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;

(J) 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

(K) Minimize the construction of public erosion-protection structures seaward of the shoreline.

Discussion: All project locations are at least 3.3 miles from the shoreline. The collection system and the wastewater treatment and disposal facility project does not include improvements that will affect public use beaches.

(j) Marine Resources

Objective:

(A) Promote the protection, use, and development of marine and coastal resources to assure their sustainability.

Policies:

(L) Ensure that the use and development of marine and coastal resources are ecologically and environmentally sound and economically beneficial;

(M) Coordinate the management of marine and coastal resources and activities to improve effectiveness and efficiency;

(N) 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;

(O) 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

(P) Encourage research and development of new, innovative technologies for exploring, using, or protecting marine and coastal resources.

All project locations are at least 3.3 miles from the shoreline. The collection system and the wastewater treatment and disposal facility project does not include improvements that will affect development of marine and coastal resources.

6.2 Hawaiʻi County Land Use Plans and Policies

6.2.1 Hawaiʻi County General Plan

The existing General Plan was adopted in 2005. According to that plan, a comprehensive review process is to be initiated no more than 10 years after the previous review. A lot has happened on the Island of Hawaiʻi since 2005, including population growth, natural disasters, technological advancements, and the emphasis on sustainability. These factors are being considered in the 2015 General Plan. The Planning Director is responsible for leading the review process and recommending amendments to the Plan. Since this review has not been completed, the 2005 General Plan will be used for analysis.

The February 2005 General Plan serves as a policy document outlining long range comprehensive development on the Island of Hawaiʻi, providing broad goals, objectives, policies, and implementing actions that portray the desired direction of the County's future. Purposes of the General Plan include:

- *Guide the pattern of future development in this County based on long-term goals.*
- *Identify the visions, values, and priorities important to the people of this County.*
- *Provide the framework for regulatory decisions, capital improvement priorities, acquisition strategies, and other pertinent government programs within the County organization and coordinated with State and Federal programs.*
- *Improve the physical environment of the County as a setting for human activities; to make it more functional, beautiful, healthful, interesting, and efficient.*
- *Promote and safeguard the public interest and the interest of the County as a whole.*

- *Facilitate the democratic determination of community policies concerning the utilization of its natural, man-made, and human resources.*
- *Effect political and technical coordination in community improvement and development.*
- *Inject long-range considerations into the determination of short-range actions and implementation.*

The planning process utilized for the current comprehensive review and revision of the General Plan included an assessment of the General Plan elements relative to new data, laws, and methods of analysis. Each study element was then analyzed and evaluated in relation to all other elements, County and district goals, and the land use pattern. Potentially, a change in one element could affect other elements as well as the land use pattern. Similarly, a change in County and district goals could potentially be reflected in all elements and in the land use pattern.

The comprehensive review of the General Plan gathered and assessed the data related to each element to identify present conditions and problems and future possibilities. The study elements utilized in the General Plan included the following:

***Economic**: Describes the human, capital, and natural resources used to produce goods and services for consumption in local and overseas markets.*

***Energy**: Describes the energy situation for the County and explains the incentive for promoting energy conservation and the development of indigenous energy resources including solar, wind, hydrologic, and geothermal.*

***Environmental Quality**: Identifies the factors affecting the island's environmental quality and describes the precautions and safeguards necessary to maintain and improve the quality of the environment for the physical, psychological, and social wellbeing of residents and visitors.*

***Flooding and Other Natural Hazards**: Pertains to the conservation and protection of life, improvements, and natural resources from excess runoff due to either man-made improvements, natural causes, or inundation from tsunamis and heavy seas.*

***Historic Sites**: Identifies sites and buildings of historical and cultural importance.*

***Natural Beauty**: Identifies areas of unique natural beauty that are a principle asset of the island, and encourages programs for their conservation, preservation, and integration with other elements.*

***Natural Resources and Shoreline**: Describes the valuable and often irreplaceable natural assets of the island and encourages programs for their proper management and protection.*

***Housing**: Addresses the requirements for and the quantity, quality, and distribution of housing units in the County. This element also addresses critical housing problems of the County.*

***Public Facilities**: Pertains to the location and distribution of facilities for education, public safety, social, health services and other government operations.*

***Public Utilities**: Describes the distribution of power, light, and water; the collection and disposal of solid waste and sewage; and the provision of other communication utilities that are essential to the efficient functioning of a community.*

***Recreation**: Examines the requirements of the County for active and passive outdoor activities, cultural events and pastimes, as well as attendant facilities and areas.*

> ***Transportation****: Describes the requirements for air and water transport terminal facilities linking the County with the rest of the State and overseas areas, and the island's network of streets, highways, and roads.*
>
> ***Land Use****: Studies the relationship of human activities to the uses of land and the location, spatial relationship, and topography. This element is subdivided into the following designations according to uses:*
>
> ***Agricultural****: Encompasses all types of agricultural endeavors and specified industrial uses, residential and ancillary community and public and accessory uses.*
>
> ***Commercial****: Comprised of industries in the retail trade and service categories and certain non-noxious enterprises from other industrial classifications.*
>
> ***Industrial****: Includes uses that may not be compatible with commercial areas (such as manufacturing and processing, wholesaling, large storage and transportation facilities, power plants, and government baseyards) as well as other industrial, manufacturing**,** or wholesaling uses.*
>
> ***Multiple Residential****: Includes duplexes, apartments, town houses and similar types of residential structures and ancillary community and public uses.*
>
> ***Open Space****: Includes conservation lands, forest and water reserves, natural and scientific preserves, and potential natural hazard areas.*
>
> ***Public Lands****: Includes Federal, State, County, and University owned lands.*
>
> ***Resort****: Consists primarily of areas with basic amenities and attributes that attract developments of visitor accommodations and related facilities.*
>
> ***Single-Family Residential****: Consists of single-family detached houses and ancillary community and public uses.*

Discussion: Based on the above, the Pāhala LCC Replacement project will be consistent with the Public Utilities element by providing a wastewater collection system designed to the applicable current standards used by the County. As previously described, the current collection system includes lines located the backyard of many of the parcels in the community. The County must obtain permission from each landowner to access lines on private property to inspect, maintain, repair, or replace the lines. The proposed collection system will be located within the public streets in the community or within accessible easements which allow the County to inspect, maintain, repair or replace the lines, all of which are essential to an efficient functioning community.

Pāhala currently disposes untreated sewage into LCCs, which have been banned by EPA. The proposed secondary treatment to replace the LCCs consists of aerated lagoons, a subsurface flow wetland, and a disinfection system. The disposal system consists of a slow-rate land application system that is a form of land treatment that is recognized by EPA. The treatment and disposal facility will provide a system to replace the banned LCCs which will be essential to an efficient functioning community.

The General Plan discusses sewers in Section 11.6. The plan states:

> *Adequate sewer disposal systems are vital to safeguard public health and preserve the environment. An adequate system is one that minimizes contamination of both the groundwater supply and the coastal waters, beaches and waterborne recreational areas and is not a visual and odor nuisance.*
>
> *About 77 per cent of the County's population is served by cesspools. There is an increasing need to create a better system than individual cesspools, particularly in highly*

urbanized and shoreline areas. This is due to the possible pollution of groundwater as well as cesspool seepage into coastal waters. More stringent pollution controls, especially in water quality standards, are being imposed by regulatory agencies. The State Department of Health (DOH) intends to promulgate rules that will prohibit cesspools in the County of Hawaii. [In 2017, the State passed Act 125 requiring all cesspools statewide to be upgraded/closed by 2050.]

Hawai‘i County presently operates municipal sewerage in Hilo, Pāpa‘ikou, Kapehu, Pepe‘ekeo and Kealakehe. The remaining communities are served by private wastewater treatment facilities or individual facilities such as cesspools or septic tanks.

In August 1991, the State Department of Health adopted rules that require the use of septic systems in the most critical wastewater disposal areas. Critical wastewater disposal areas are areas around the island where cesspools are permitted. Sewerage disposal system designs must be examined with the particular area in mind. However, it is important to note that the critical wastewater disposal areas may be eliminated in the near future when the State Department of Health implements the prohibition of cesspools.

Specific standards are discussed in Section 11.6.3 Standards which includes the following.

- *(a) Incorporate sewage works standards proposed in the "Sewerage Study for All Urban and Urbanizing Areas of the County of Hawai‘i" and the "Water Quality Management Plan for the County of Hawai‘i."*
- *(b) Sewerage systems shall be designed for a particular area, depending on topography, geology, density of population, costs, and other considerations of the specific area.*
- *(c) There shall be a minimum of visual and odor pollution emanating from sewerage treatment facilities.*
- *(d) Applicable standards and regulations of the State Department of Health, Chapter 23 "Underground Injection Control."*
- *(e) Applicable standards and regulations of the State Department of Health, Chapter 54 "Water Quality Standards."*
- *(f) Applicable standards and regulations of the State Department of Health, Chapter 55 "Water Pollution Control."*
- *(g) Applicable standards and regulations of the State Department of Health, Chapter 62, HRS, "Wastewater Systems."*
- *(h) Applicable standards and regulations of Chapter 342, HRS; Act 282, Session Laws of Hawai‘i 1985; and Act 302, Session Laws of Hawai‘i 1986, Relating to Environmental Quality.*
- *(i) All wastewater disposal systems shall conform to the applicable provisions of Chapter 11-62, Hawai‘i Administrative Rules for the Department of Health to ensure proper treatment and disposal of wastewater and to prevent further contamination of waterways, underground water sources, and the coastal waters.*

Discussion: The proposed secondary treatment to replace the LCCs consists of aerated lagoons, a subsurface flow wetland, and a disinfection system. The disposal system consists of a slow-rate land application system that is a form of land treatment that is recognized by EPA. The treatment and disposal facility will be designed to meet rules and regulations applicable to the facility which will replace the banned LCCs. The design drawings and related calculations and analysis will be submitted to the DOH for review and comment. The design of the facility will require approval by the DOH before the DOH will issue an approval to operate the treatment and disposal facility.

6.2.2 Kaʻū Community Development Plan

The County of Hawaiʻi General Plan calls for the preparation of community development plans (CDPs) "to translate the broad General Plan statement to specific actions as they apply to specific geographical areas." The Kaʻū CDP is one of nine CDPs for Hawaiʻi County. In October 2017, the Kaʻū CDP was adopted as Ordinance No. 2017-66. The purpose of CDPs is to implement the broad goals within the General Plan on a regional basis and to translate the broad General Plan statements into specific actions. CDPs are the forum for community input into managing growth and coordinating the delivery of government services to the community. CDPs designate detailed development patterns and direct physical development and public improvements by detailing land use policies and infrastructure priorities.

There are two types of County policies in the CDP:

> 1. "Land Use Policies" are the official land use policy guidance for the Kaʻū CDP planning area and shall be implemented through all County of Hawaiʻi actions. In addition, the Land Use Policies shall inform County recommendations to other agencies, including the State Land Use Commission regarding district boundary amendments, special permits, and other applications in Kaʻū.

There are two aspects of Land Use Policies:

> Policy Intent: These are general statements that express policy aims or objectives. From a legal standpoint, these "hortatory" policies are open to interpretation when applied in specific instances.
>
> Policy Controls: These limit the range of decisions that can be made in the future, like land use policies that specifically designate future settlement or transportation patterns. These binding, sometimes restrictive policy controls often include use of the term "shall," which, from a legal standpoint, means the policy is imperative or mandatory.

The CDP distinguishes these two aspects of Land Use Policy. The applicable one is:

> *2. "County Actions" are the official County policies to guide future County priorities and initiatives, including operating and capital budgets. These policies are not mandated, legally-binding, or self-implementing; rather, they often require additional legislative and administrative directives before being implemented (e.g., land acquisition, capital improvement appropriations, code changes, incentive measures).*

All of the CDP Land Use Policies are designed to preserve the preferred future settlement pattern and achieve the Community Objectives as Kaʻū grows. There are Land Use Policies designed to protect coastal areas, agricultural lands, mauka forests, scenic areas, sensitive ecosystems, cultural resources, and public access. The following Land Use Policies speak more generally to the preservation of the preferred settlement pattern in Kaʻū, including the relative location of residential, commercial, industrial, and resort areas.

A series of 15 policies are shown in the Kaʻū CDP to guide land uses within Pāhala. Figure 6.1 shows the land use policy map for Pāhala.

Policy 1 *Rehabilitate and develop within existing zoned urban areas already served by basic infrastructure, or close to such areas, instead of scattered development.*

Policy 2 *Concentrate commercial uses within and surrounding central core areas in Pāhala, Nāʻālehu, and Ocean View and do not allow strip or spot commercial development outside of the designated urban areas.*

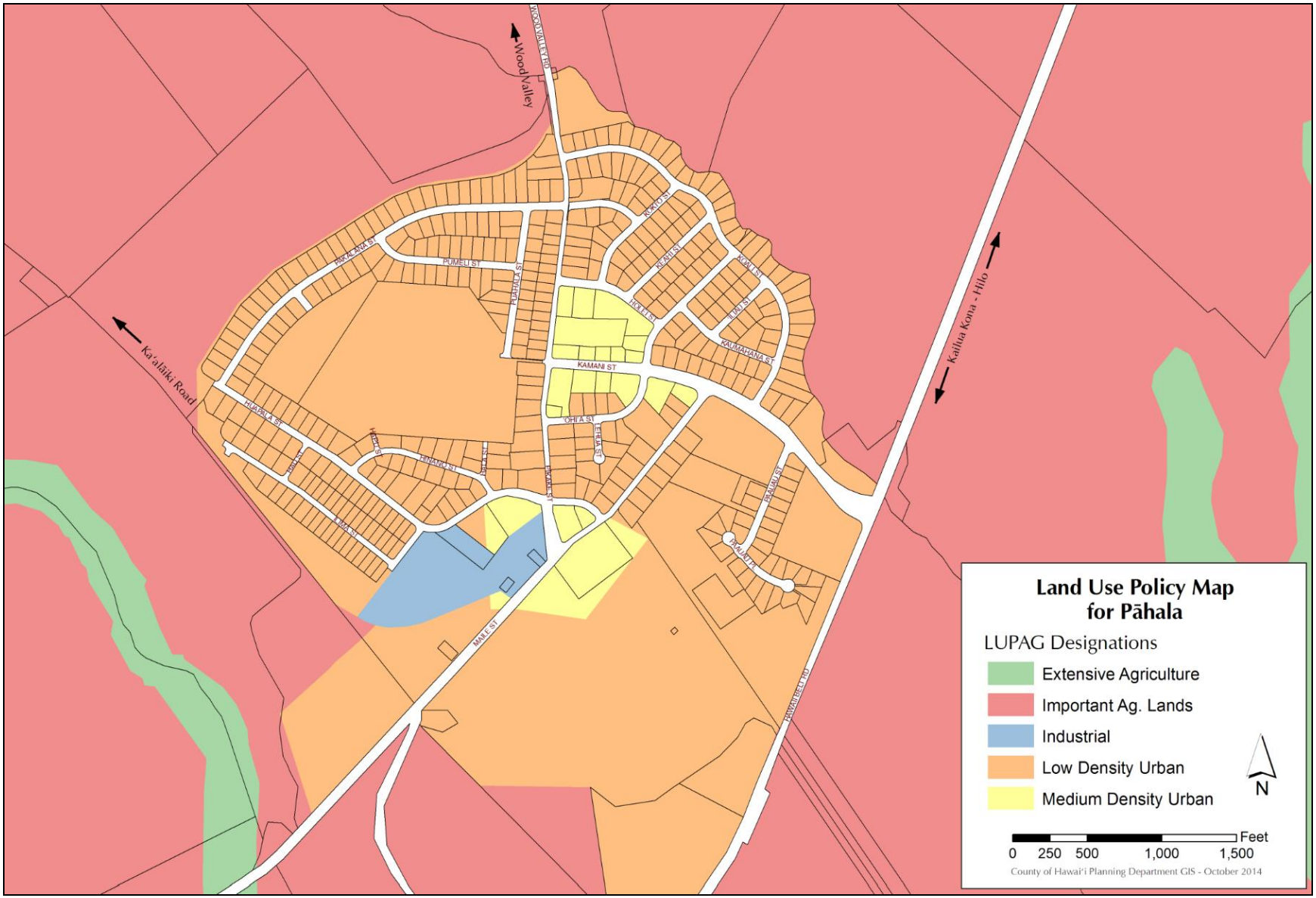

Figure 6.1. Community Development Plan Land Use Policy Map

Policy 3 Commercial facilities shall be developed in areas adequately served by necessary services, such as water, utilities, sewers, and transportation systems. Should such services not be available, the development of more intensive uses should be in concert with a localized program of public and private capital improvements to meet the expected increased needs.

Policy 4 Industrial development shall be located in areas adequately served by transportation, utilities, and other essential infrastructure.

Policy 7 With the adoption of the Kaʻū CDP, the Land Use Policy Map is adopted as the official policy for the Kaʻū CDP planning area. Future land use decisions in the Kaʻū CDP planning area shall be consistent with the Land Use Policy Map boundaries, designations, and policies herein, unless the CDP and the General Plan are in direct conflict.

Policy 8 In the "Low Density Urban (LDU)" Land Use Policy Map category in the Kaʻū CDP planning area, changes of zone shall only be permitted to Single-Family Residential (RS), Multiple-Family Residential (RM-7.5 or higher), Residential-Commercial Mixed Use (RCX-7.5 or higher), or Open (O).

In Pāhala, this policy supports a rezone of TMKs (3)9-6-002:016 & 023:034 from Agricultural (A-1a) and Industrial (ML-20 and MG-1a) to RS and/or O to take advantage of existing water and road infrastructure.

Policy 9 If infill capacity is exceeded in areas designated "Low Density Urban (LDU)" on the Land Use Policy Map in Pāhala, it would be appropriate to designate TMK (3)9-6-005:001 as LDU to take advantage of existing water and road connections.

Policy 39 The urban growth boundary between agricultural areas (designated "Important Agricultural Land" or "Extensive Agriculture") and developed areas (designated "Rural," "Low/Medium/High Density Urban," "Industrial," or "Resort") is parcel-specific in the Kaʻū CDP planning area, except at Punaluʻu and the Low/Medium Density Urban and Industrial nodes in Ocean View. Areas outside designated developed areas shall be preserved as agricultural lands, open space, scenic view planes, and natural beauty areas, unless the CDP and the General Plan are in direct conflict.

Policy 44 Through permit conditions, development agreements, deed restrictions, and/or other means, ensure that areas in the "Important Agricultural Land" and "Extensive Agriculture" Land Use Policy Map categories continue to be utilized for agricultural uses and not for speculative or other residential development.

Policy 69 Protect, restore, and enhance the sites, buildings, and objects of significant historical and cultural importance to Hawaiʻi.

Policy 70 Protect all rights, customarily and traditionally exercised for subsistence, cultural and religious purposes and possessed by ahupuaʻa tenants who are descendants of native Hawaiians who inhabited the Hawaiian Islands prior to 1778, subject to the right of the State to regulate such rights.

Policy 71 Review and comment by DLNR's State Historic Preservation Division (SHPD) shall be requested for any permit or entitlement for use which may affect any building, structure, object, district, area, or site that is over fifty years old, except as provided in HRS section 6E-42.2.

Policy 72 In the "Low Density Urban" (LDU) and "Medium Density Urban" Land Use

Policy Map categories, in those cases where provisions of the zoning and subdivision codes are inconsistent with the character of surrounding neighborhoods, variances or PUDs that maintain consistent village/town character should be encouraged.

Policy 73 The development of commercial facilities should be designed to fit into the locale with minimal intrusion while providing the desired services. Appropriate infrastructure and design concerns shall be incorporated into the review of such developments.

Policy 74 As appropriate to maintain community character while also accommodating drainage, walkability, maintenance, and other site-specific needs when improving existing roads in Pāhala, Nāʻālehu, and Waiʻōhinu, retain the current road design, including pavement width and lack of curbs, gutters, sidewalks, or paved shoulders and swales.

Policy 75 As appropriate to maintain community character while also accommodating drainage, walkability, maintenance, and other site-specific needs, new roads (both public and private) in the Kaʻū CDP planning area may be constructed without curbs, gutters, sidewalks, or paved shoulders and swales.

Policy 90 Implement protocols for receiving community input at meetings in Kaʻū during capital project siting and design. Consult with and solicit input from community members with generational knowledge to minimize the impact of proposed changes to the use of land on cultural practices, cultural sites, and culturally significant areas, including burials.

Discussion: The Pāhala LCC Replacement Project is consistent with land use policies as the improvements are designed to serve the designated areas shown in the Land Use Policy Map, which shows Pāhala as primarily low density urban. The collection system and the wastewater treatment and disposal facility will be consistent with the policy related to infill of commercial development within the Pāhala community. The collection system improvements are consistent with the policy to maintain the community character as the improvements will retain the existing pavement, including retention of streets, shoulders, and drainage systems.

Section 4.3 of the CDP protects agricultural land and open space from non-agricultural development with the CDP Land Use Policy Map, urban growth boundaries, limits on Special Permits and lots sizes, and restrictions on residential development. It also prioritizes agricultural subdivision standards, revisions in water catchment variance rules, stronger farm dwelling regulations and tax incentive programs, development of transfer of development rights and land bank programs, State Important Agricultural Land designations, and expedited lot consolidation in existing rural subdivisions.

Policy 40 Special permits of any kind in the "Important Agricultural Land" and "Extensive Agriculture" Land Use Policy Map categories should not be permitted in the Kaʻū CDP planning area, except for the following uses (as defined in HCC chapter 25):

- *Agriculture and Related Economic Infrastructure: Animal hospitals, Veterinary establishments, Fertilizer yards utilizing only manure and soil, for commercial use*
- *Cottage Industry related to Agriculture: Bed and breakfast establishments, Guest ranches, Lodges, Home occupations*
- *Community Facilities: Community buildings, Public uses and structures, Shooting ranges, ATV courses (in areas without cultural,*

natural resource, or scenic value)

- *Quarries whose permit conditions address geotechnical, engineering, safety, private road use, oversight, and any site-specific issues.*
- *Urban Uses in Ocean View: Uses consistent with the LDU, MDU, and Industrial LUPAG categories indicated on the Kaʻū CDP Land Use Policy Map in Ocean View, until the SLU boundaries are amended (from Agriculture to Urban).*

The Planning Commission shall also include in any Special Permit approval (or recommend for approval to the State Land Use Commission) appropriate performance conditions to achieve CDP objectives and implement CDP policies. (HRS 205-6(c) and Planning Commission Rules 6-3(a)(5)(G), 6-7, & 6-8)

Discussion: The collection system and the wastewater treatment and disposal facility will be owned the County of Hawaiʻi and managed and operated by the County of Hawaiʻi DEM. As such, the improvements will be a public use and structure. The DEM will file a Special Permit for review and approval by the County Planning Commission.

Section 5 of the CDP prioritizes improvements in infrastructure, facilities, and services, including Section 5.8 applicable to Environmental Management as shown below.

- *Environmental management facilities, including expanded sewer lines, the Ocean View transfer station, green waste facilities, and improvements in the Pāhala transfer station*

Policy 120 Extend the primary wastewater collection lines in Pāhala and Nāʻālehu so that infill development projects can connect wastewater systems built for new subdivisions to the County systems.

Discussion: The collection system will be consistent with Policy 120 as the improvements for the Pāhala LCC Replacement Project have been designed not to preclude expansion to accommodate the Pāhala community. Similarly, the wastewater treatment and disposal facility has been designed not to preclude expansion to accommodate the future needs of the Pāhala community. Future subdivisions would be accommodated, as capacity allows, on a first-come, first-served basis.

Further, the Preliminary Engineering Report (PER) Section 5.6 (Appendix B) provides information related improvements needed to wastewater services to the Pāhala community as envisioned in the CDP. The PER Section 5.6.2 states:

> "To accommodate the flow increase anticipated from the full buildout of the Pāhala wastewater collection system, the [wastewater treatment and disposal facility] (WWTP) will require facility upgrades. The recommended upgrades include headworks and odor control expansion within the 14.9-acre site. Additionally, the lagoon system will require modifications. Lagoon 1 will be converted to a complete mix aerated lagoon environment to accommodate wastewater treatment needs. In a complete mix aerated lagoon, sufficient mixing energy is provided to maintain the lagoon solids in suspension always. A completely mixed aerated lagoon system performs as an activated sludge process without solid recycle. The higher mixing energy, as compared to a partial mix lagoon, creates greater opportunity for contact between the naturally-occurring micro-organisms in the lagoon and dissolved organic matter. As a result, complete mix lagoons provide greater levels of treatment within a smaller volume than partial mix lagoons. However, facilities must be provided downstream of complete mixed lagoons to allow removal of settleable solids from the water column. To provide a place for solid settling, lagoons 2 through 4 will continue to act as partial mix aerated lagoons downstream of the complete

mix lagoon 1. Lagoon 4 will require no aeration and will continue to be covered to deprive algae of sunlight and allow suspended solids to settle out of the system effluent. Utilizing this lagoon system approach, the Pāhala WWTP will require modification at full buildout flow, but is not anticipated to expand beyond the initial build 14.9-acre site."

6.2.3 County of Hawai'i Zoning

Hawaiʻi County Code (HCC) Chapter 25 regulates land use in accordance with adopted land use policies. The code presents permitted uses and structures, development standards, and height controls for each zoning district.

The wastewater treatment and disposal facility will be owned the County of Hawaiʻi and managed and operated by the County of Hawaiʻi DEM. The facility will be a "public use" as defined by HCC § 25-1-5, as a use conducted by or a structure or building owned or managed by the federal government, the State of Hawaiʻi or the County to fulfill a governmental function, activity or service for public benefit and in accordance with public policy.

HCC § 25-2-71 (c)(1) states: *Plan approval shall be required in all applicable districts prior to the construction or establishment of public uses, structures and buildings and community buildings, as permitted under section 25-4-11.*

HCC § 25-4-11(c) states: *Public uses, structures and buildings and community buildings are permitted uses in any district, provided that the director has issued plan approval for such use.*

6.2.4 County of Hawai'i Special Management Area

Pursuant to the Hawaiʻi CZM Program, HRS Chapter 205A, the counties have enacted ordinances establishing Special Management Areas (SMAs) that are in close proximity to the shoreline. Any "development" within the SMA requires an SMA Use permit administered by the County of Hawaiʻi Planning Department. Through the SMA permit system, the County assesses and regulates developments proposed for areas located within the SMA. The Pāhala LCC Replacement Project is located within the Pāhala community which lies about 3.8 miles from the shoreline area and is not located within an SMA. As such, the project will not be subject to requirements of an SMA use permit.

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7 PUBLIC PARTICIPATION

7.1 Community Outreach Program

A community outreach program was conducted to exchange information about the Pāhala Large Capacity Cesspool (LCC) Replacement Project and to work with affected residents and the general community on how to implement the project on both personal and community levels.

These talk story sessions are designed to optimize community conversations in informal and comfortable sessions. The first round of community outreach on the current effort to implement the Pāhala LCC Replacement Project included five sessions as follows:

1. Tuesday, December 12, 2017 at 6:00 p.m. – Kaʻū Gym Multi-Purpose Conference Room
2. Wednesday, December 13, 2017 at 10:00 a.m. – Pāhala Community Center
3. Wednesday, December 13, 2017 at 6:00 p.m. – Pāhala Community Center
4. Thursday, December 14, 2017 at 10:00 a.m. – Kaʻū Gym Multi-Purpose Conference Room
5. Thursday, December 14, 2017 at 6:00 p.m. – Pāhala Community Center

The target outcomes for the first round of engagement were the following:

- **Assure residents the project team was there to listen**. In these talk story sessions, the project team emphasized the need to listen to understand the community and how to continue conversations. Further, the project team stressed in each session that these community outreach discussions are taking place very early in the planning and implementation process. Hence, it was stressed that, while there may be limited information at this time, the team was there to listen and convey questions and comments to Department of Environmental Management (DEM). That way, in the next round of meetings, DEM will be able to provide more information to address community concerns.

- **Help residents understand what is being proposed**. It was important to present project information in ways that are simple, accurate, relevant and conducive to continuing dialogue.

- **Establish a point of departure to move towards future actions and solutions**. Pāhala residents have had different experiences with wastewater disposal over the years. For some, they transitioned from a plantation-operated system to a County-run operation. For others, they installed their own systems. The talk story sessions were intended to clearly differentiate between previous efforts and the current proposed project.

- **Comply with U.S. Environmental Protection Agency (EPA) deadline of December 15, 2017, to hold initial public meeting**. DEM and EPA established a schedule for completion of key milestones. The talk story sessions comprised several initial public meetings and were organized to comply with this schedule. The approach was intended to initiate a process that engages all Pāhala residents, while recognizing that the project will affect some people directly during construction and operation of the new collection system and new wastewater treatment and disposal facility.

Invitations and announcements for the talk story sessions were intended to reach all audiences, as follows:

- Property owners with C. Brewer lines on their property were mailed letters from DEM inviting them to these sessions. The letters included stamped, mail-in postcards to facilitate the RSVP process.
- Fliers were hand-delivered to "newly-accessible properties."
- Organizational leaders were provided copies of fliers announcing meetings and asked to circulate among their members.
- Fliers were posted in public venues, such as the post office, the Pāhala Community Center and the Kaʻū Hospital.
- Several online announcements were included in Kaʻū News Briefs available at http://haunewsbriefs.blogspot.com/.

The format for each meeting was as follows:

1. **Introductions and Pāhala relationship**: Participants were asked to introduce themselves and describe their relationship to Pāhala. They were encouraged to talk about generational presence, length of residence, schools and so on.
2. **Life in Pāhala**: Participants were asked to discuss:
    - What they valued most about Pāhala;
    - Pāhala's biggest challenges; and
    - Their ideas and vision for the future of Pāhala.
3. **Experience with the existing sewer system**: Participants were asked to share their recollections and experience with wastewater disposal in Pāhala. They were also asked to share what they knew about the proposed project.
4. **The proposed project**: Project background and overview were presented in a slide presentation.
5. **Questions and comments**: Project representatives encouraged participants to ask questions and voice their reactions.
6. **What one message do you want DEM to hear?** Each participant was asked to share "one thing" that they wanted to share with the County.

This first round of community outreach met the following objectives:

- Residents understood the project team was there to listen. Participants responded enthusiastically to questions about Pāhala, and openly discussed previous experience with wastewater disposal in their town and concerns and views about the proposed project. When the project team could not respond to questions, participants were assured that their comments were noted and there will be follow up.
- Those who attended appeared to have acquired at least a rudimentary understanding about how the new collection, treatment, and disposal system would work. They were able to ask questions about transmission of wastewater to the treatment and disposal facility, and how the lagoons and land disposal system would work. Participants indicated they

knew that this system is different from wastewater disposal systems they may have previously experienced.

- Participants were able to discuss their understanding, or lack thereof, of the wastewater system and their own personal situation. By the end of each session, they expressed understanding that the proposed project is a departure from previous discussions and current operations.

- The milestone date for an initial community meeting (December 15, 2017) was met.

Online and paper versions of the Kaʻū News Briefs and the Kaʻū News Calendar reported on these meetings.

The proposed project was modified in response to the community input received and was described in the Draft Environmental Assessment (EA). A second round of meetings with the community was conducted in concert with the Draft EA public review and comment period (see Section 7.2 below).

Based on the first round of community outreach, the following community outreach activities have been conducted to continue to engage constructive and meaningful community input.

- **Information Follow-up**. Project representatives made a commitment to follow up on topics raised in the first round of community outreach. The following lists how topics were addressed in the Draft EA or other forms of communication.

    - *Site selection process.* Several participants asked why the tentative site was selected and suggested other sites. It is recommended that a summary table of previously considered sites and selection rationale, as well a related map, be presented. See Section 2 for site selection discussion.
    - *Flooding at tentative site.* Participants claimed that this site is prone to flooding. If possible, there should be some response. See Section 3.9 for further discussion.
    - *Cost range and homeowner assistance possibilities.* Property owner participants had many questions about how project implementation would affect them financially and personally. In response, the DEM convened separate meetings in October 2018 with property owners of 1) former C. Brewer properties with sewer lines that will connect to the proposed collection system and 2) “Newly accessible” properties that front roadways in which new sewer lines will be located. Hawaiʻi County Code (HCC) Chapter 21, Sewers, Section 21-5 requires that when new sewer lines are placed in public roadways, properties fronting such roadways must connect to these lines. An additional meeting was held by DEM in March 2019 to discuss funding programs available to owners of newly accessible parcels.
    - *Clarification on sewer fee structure.* There was often confusion about who pays what and why. Information on the fee structure should be presented clearly.
    - *Short-and long-term impact on macadamia nut cultivation.* It is recommended by the participants that a preliminary order of magnitude cost of project impact be estimated and presented in terms of the overall macadamia nut cultivation operation in Pāhala. Further, the project team should describe, in general terms, the possible lease arrangements with the future macadamia nut operator.
    - *Conceptual plan of full buildout*. Participants were concerned that the tentative site is not large enough to support serving all Pāhala, while still maintaining visual buffers. It is recommended that a very preliminary schematic be presented that shows full

buildout. As discussed in Section 4.1, the Kaʻū Community Development Plan calls for expansion to accommodate future needs but does not present a timeline for this expansion. As of this writing, no substantial planning or scoping of a collection system expansion has been conducted and this expansion is unlikely to occur within the next 10 to 20 years. This action was therefore excluded from the analysis of cumulative improvements and impacts.

- Other topics raised in the first round of community outreach tended to be related to details that will be determined as the project nears implementation. These topics are as follows, and information will be shared with the community when it becomes available.

    - *Conditions of existing pipes.* Participants raised questions about what was on their property and possible problems. It is recommended that information on previous County evaluation and potential future assessments be made available prior to or during construction.
    - *Possible land application trees.* Some information has already been provided, and status of selecting trees should be provided.
    - *Fencing around perimeter of wastewater treatment and disposal facility*. Options for fence location, height, and materials should be provided.
    - *Tour of Honokaa wastewater treatment plant*. Residents showed interest in attending a tour of the Honokaa plant with DEM and the project team.

- **Next Round of Meetings**. The next round of community meetings was conducted upon publication of the Draft EA (see below):

    - *Information meeting on the Draft EA*. The community had two opportunities to provide comments on this Draft EA. First, public notification was posted in local media, public venues, and mailed to property owners directly affected by the Proposed Action. These notifications included information on how the public could access the Draft EA on the Office of Environmental Quality Control (OEQC) website and submit comments. Second, DEM convened a voluntary and optional informational meeting.
    - *Meeting with property owners who will be directly affected by the proposed project.* As noted earlier, DEM convened separate meetings with property owners of 1) former C. Brewer properties with sewer lines that will connect to the proposed collection system and 2) “newly accessible” properties that front roadways in which new sewer lines will be located. The purpose of these meetings was to discuss how the proposed project will affect individual property owners in terms of cost, financing and logistics, such as construction timing and activities.

7.2 Outreach Since the Publication of the Draft EA

On September 10, 2018, letters containing information on the availability of the Draft EA, the comment period, and the October 10, 2018 public information meeting were mailed to all property owners on record adjacent to the proposed collection system. This direct mailout included an invitation from DEM to workshops conducted prior to the October 10 public information meeting. The workshop for owners served by C. Brewer lines was held on October 8, and the mailout for this meeting also included anyone with a current sewer account. The workshop for owners of newly accessible properties was convened on October 9. In addition to the direct mailout, online announcements for the October 8 and 9 workshops were available on the Kaʻū News Briefs

website. Fliers were posted in public venues such as the community shopping center, realtor office, grocery store, library, and the Pāhala Community Center.

On September 26, 2018, a public notice was published in both the Hawaii Tribune Herald and West Hawaii Today to advertise the October 10, 2018 public information meeting conducted by the County in Pāhala at the Kaʻū Gym Multi-Purpose Conference Room to discuss the availability of the Draft EA and process for submitting comments. A public notice was also published in the October 1, 2018 online and print editions of the Kaʻū Calendar and made available on the Kaʻū News Briefs web site http://kaunewsbriefs.blogspot.com.

All materials circulated, posted and published for the October 2018 meetings included the electronic link to the Draft EA at http://health.hawaii.gov/oeqc/. The Draft EA was made available online on the County of Hawaiʻi and EPA websites and in public libraries in Nāʻālehu and Pāhala beginning on September 23, 2018. Upon public request, 11 printed copies of the Draft EA were made available at both the Nāʻālehu and Pāhala libraries on November 7, 2018. The County's transmittal requested the library make the copies available for checkout. The Draft EA was also posted on the County of Hawaii and EPA websites at:

- http://records.co.hawaii.hi.us/weblink/1/edoc/96064/Pahala%20FINAL%20DRAFT%20EA%20and%20Appendices_508_9-11-18.pdf
- https://www.epa.gov/uic/proposed-pahala-community-large-capacity-cesspool-replacement-project-draft-environmental

The County provided staff at the October 10, 2018, public information meeting to personally assist commenters in preparing written comments on the Draft EA. In addition, during this meeting, the County identified community volunteers attending the meeting who were proficient in Hawaiian, Tagalog, and English to assist anyone who identified as needing assistance in providing written comments on the Draft EA.

The public notice also stated that a second part of the meeting on October 10, 2018 would address Section 106 of the National Historic Preservation Act (NHPA) involving consultation with Native Hawaiian Organizations and Native Hawaiian descendants with ancestral lineal or cultural ties to, cultural knowledge or concerns for, or cultural religious attachment to the proposed project area. Eight persons placed their names on a sign-in sheet to contribute during the Section 106 part of the meeting; however, no comments or information from the public were forthcoming during this meeting.

On October 26, 2018, letters were mailed to property owners on record adjacent to the proposed collection system informing them of the republished Draft EA and extension of the public comment period to December 10, 2018. Further, on November 8, 2019, the OEQC *The Environmental Notice* noted the republication of the Draft EA.

The County voluntarily convened an additional public meeting in Pāhala on March 21, 2019. The purpose of this meeting was to gain further input from newly accessible property owners and to fulfill a County commitment made in October 2018 to research and provide financing options available to owners of parcels that would become newly accessible to the County collection system. At the meeting, DEM provided the preliminary results of the County investigation into funding sources and options available for newly accessible property owners once the new collection system and wastewater treatment and disposal facility have been designed, permitted and constructed. Available programs discussed included:

- U.S. Department of Housing and Urban Development (HUD) with County of Hawaiʻi Office of Housing and Community Development Residential Repair Program – Community Block Grant Program, and
- U.S. Department of Agriculture – Rural Development (USDA-RD) Program.

As noted during the March 2019 presentation, these programs may change in the coming years and additional options may be added to this preliminary list. Hawaiʻi Legislature, Senate Bill 221 SD1, which could amend Hawaiʻi Revised Statues (HRS) Chapter 342D to establish a low-interest loan program offering financial assistance to cesspool owners to connect to wastewater treatment systems approved by the Department of Health (DOH), was also discussed; however, this bill was subsequently not passed during the 2019 legislative session.

7.3 Response to Comments and Revisions to the Draft EA

The Draft EA was released for public comment on September 23, 2018. Initially, a 30-day public comment period was planned; however, due to requests from the public for additional time, EPA and the County of Hawaiʻi agreed to republish the Draft EA on November 8, 2018 which extended the comment period. The comment period closed on December 10, 2018. Appendix E includes the EPA and County responses to comments received on the Draft EA on or before that date. In total, 77 comment letters were received, some of which included multiple individual or duplicate comments.

No substantial changes to the Proposed Action were necessary as a result of comments on the Draft EA. However, in response to comments received, the Final EA incorporates revisions to provide clarity through minor text changes and to provide additional information where necessary. Please refer to Appendix E for additional information. Additionally, the Final EA incorporates revisions to reflect minor changes to the scope of the Proposed Action (e.g., the use of ultraviolet instead of chlorine disinfection); to reflect the outcomes of consultations with state and federal agencies (e.g., Section 106 of the NHPA, Section 7 of the Endangered Species Act); and to provide additional clarifications and supporting statements beyond those specifically in response to comments. These revisions do not change any of the key findings presented in the Draft EA.

8 FINDINGS AND DETERMINATION

8.1 Chapter 343, Hawaiʻi Revised Statutes (HRS) – Department of Environmental Management (DEM) Finding of No Significant Impact (FONSI)

Short-term construction impacts include disruption to the project site and surrounding areas during construction, decline in air quality from construction activities, and increase in noise levels. Once construction has been completed, the short-term adverse impacts will no longer occur.

Based on analysis of the impacts, the County has determined a Finding of No Significant Impact (FONSI) for the Pāhala Large Capacity Cesspool (LCC) Replacement Project. The significance criteria to make this determination are set forth below and in Hawaiʻi Administrative Rules 11-200 (Environmental Impact Statement Rules).

8.1.1 Significance Criteria

1) Involve an irrevocable commitment to loss or destruction of any natural or cultural resources;

The Pāhala LCC Replacement Project collection system and wastewater treatment and disposal facility sites do not provide habitat for federal or State of Hawaiʻi listed or candidate threatened or endangered species of flora or fauna. The collection system will be constructed primarily within areas that were disturbed during construction of the existing County streets, plus three short segments within easements in the Pāhala community. The treatment and disposal facility site has previously been cleared, graded, and planted with a macadamia nut orchard. Thus, the proposed use of the Pāhala LCC Replacement Project sites will not result in the loss or destruction of natural resources.

Preliminary analysis shows the treatment and disposal facility will be constructed in an area that is unlikely to contain archaeological resources due to historical ground modifications. However, an Archaeological Inventory Survey (AIS), including subsurface testing, was conducted to test for the presence of archaeological resources on the project site. In March 2019, following completion of the AIS, and in accordance with Section 106 of the National Historic Preservation Act (NHPA), the County submitted the AIS for review by the Hawaiʻi State Historic Preservation Division (SHPD) to determine whether additional mitigation measures are appropriate to avoid or minimize adverse effects to archaeological resources.

The contract drawings will state that, should archaeological sites such as walls, platforms, pavements or mounds, or remains such as artifacts, burials, or concentrations of shell or charcoal be encountered during construction activities, work shall cease immediately and the find shall be protected from further damage. The contractor shall immediately contact the Hawaiʻi SHPD (at 808.981.2979), who will assess the significance of the find and recommend appropriate mitigation measures, if necessary.

Based on the above, and the findings of the AIS, construction of the wastewater treatment and disposal facility and related improvements is determined to have no effect on historic properties.

2) Curtail the range of beneficial uses of the environment;

The Pāhala LCC Replacement Project sites will use lands within the Pāhala community that have been used for County streets and planted with a macadamia nut orchard for a number of years. The treatment and disposal facility will occupy a total area of 14.9 acres within a portion the macadamia nut orchard. The remainder of the orchard will still be available for the production of

macadamia nuts. Thus, the Pāhala LCC Replacement Project will not curtail the beneficial uses of the environment.

3) Conflict 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;

The Pāhala LCC Replacement Project will not involve actions or activities that would adversely affect natural resources of the project sites. The Pāhala LCC Replacement Project will be consistent with the guidelines of Hawaiʻi Revised Statutes (HRS) 344, as it will provide treatment and disposal for wastewater from the Pāhala community. Moreover, the Pāhala LCC Replacement Project will construct a wastewater collection system according to County standards and a treatment and disposal facility according to DOH guidelines. Lastly, the Pāhala LCC Replacement Project will allow closure of LCCs that have been used to dispose untreated sewage into the subsurface. As such, the Pāhala LCC Replacement Project will not conflict with the state's long-term environmental policies or goals as expressed in HRS 344.

4) Substantially affect the economic or social welfare of the community or state;

The Pāhala LCC Replacement Project will allow the County to provide wastewater collection, treatment and disposal facilities meeting the needs of the Pāhala community. It will be an integral part of the infrastructure needed to maintain the health and welfare of the Pāhala community. Therefore, the Pāhala LCC Replacement Project will have a beneficial impact on the economic and social welfare of the community.

5) Substantially affect public health;

Pāhala LCC Replacement Project will involve the design, construction and operation of wastewater collection, treatment and disposal facilities that will maintain and enhance the public health of the Pāhala community. Thus, the Pāhala LCC Replacement Project will have a beneficial effect on public health.

6) Involve substantial secondary impacts, such as population changes or effects on public facilities;

The Pāhala LCC Replacement Project will be a public facility serving the Pāhala community. For the most part, construction of the Pāhala LCC Replacement Project is expected to involve the use of local contractors, which means that there will not be an extensive secondary effect on the population of the Island of Hawaiʻi or the Pāhala community. Thus, construction of the Pāhala LCC Replacement Project will not create secondary impacts, such as population changes or effects on public facilities.

7) Involve a substantial degradation of environmental quality;

The Pāhala LCC Replacement Project is anticipated to result in short-term impacts to noise, air quality, and traffic in the immediate vicinity of the project site during the period of construction. The collection system and the treatment and disposal facility sites do not contain federal or state-listed or candidate threatened or endangered species of flora or fauna. As discussed under Criterion #1, the project is determined to have no effect on historic properties, in accordance with the outcome of the NHPA Section 106 consultation and findings of the AIS.

Based on the above findings, the Pāhala LCC Replacement Project will not result in a substantial degradation of environmental quality.

8) Have a cumulative effect upon the environment or involves a commitment for larger actions;

The Pāhala LCC Replacement Project does not involve a commitment to further actions to other County of Hawaiʻi related projects in the vicinity. As a result, the Pāhala LCC Replacement Project will not have a cumulative effect upon the environment or involve a commitment by the County to larger actions.

9) Affect a rare, threatened or endangered species;

The Pāhala LCC Replacement Project sites do not contain federal or state-listed or candidate threatened or endangered species of flora. Also, the Pāhala LCC Replacement Project sites do not provide habitat for federal or state-listed or candidate threatened or endangered species of fauna. On February 15, 2019, the U.S. Fish and Wildlife Service (FWS) provided a letter that concluded that FWS has analyzed potential impacts to listed species due to the implementation of Pāhala LCC Replacement Project. Based on the inclusion of the avoidance and minimization measures, FWS stated that any potential impacts will be discountable or insignificant and therefore concurred that the Pāhala LCC Replacement Project may affect, but is not likely to adversely affect the endangered Hawaiian hoary bat, Hawaiian Hawk, Hawaiian goose, Hawaiian Petrel, Band-rumped Storm-Petrel, Hawaiian Stilt, and Hawaiian Coot, and the threatened Newell's Shearwater. The Pāhala LCC Replacement Project will incorporate the avoidance and minimization measures cited in the FWS letter, including (but not limited to) avoiding impacts to potential Hawaiian hoary bat habitat during the bat birthing and pup rearing season; conducting a Hawaiian hawk nest survey prior to any work during the nesting season; avoiding activities near active nests; and avoiding nighttime construction during the seabird fledging period.

10) Detrimentally affect air or water quality or ambient noise levels;

Operation of construction equipment will increase noise and exhaust emission levels in the immediate vicinity of the Pāhala LCC Replacement Project sites during the construction period. Once construction has been completed, the Pāhala LCC Replacement Project will contribute almost no additional noise or air emissions to the local area or detrimentally affect air or water quality. The treatment and disposal facility will include an odor control system to limit odors typically associated with a wastewater treatment facility.

11) Affects or likely to suffer damage by being located in an environmentally sensitive area such as a floodplain, tsunami zone, beach, erosion-prone area, geographically hazardous land, estuary, fresh water or coastal water;

The Flood Insurance Rate Map (FIRM), Community Panel No. 155166 1800F, effective date September 29, 2017 shows the Pāhala area is located in Zone X, area of minimal flood hazard above the 500-year flood level. This was confirmed by the County of Hawaiʻi Department of Public Works. A small portion of the collection system site is located within the Zone X defined as areas of 0.2-percent annual chance flood; areas of 1-percent annual chance flood with average depths of less than 1 foot.

The Pāhala LCC Replacement Project sites are not located within the tsunami evacuation zone. The sites are also outside of the County of Hawaiʻi Special Management Area and coastal shoreline area. Thus, the Pāhala LCC Replacement Project sites are not located in an environmentally sensitive area.

12) Substantially affect scenic vistas and viewplanes identified in county or state plans or studies;

The wastewater collection system will be within the County roadways beneath the surface of the travelways. Thus, the collection system will not affect viewplanes in the Pāhala area.

The treatment and disposal facility will consist of an operations building, headworks with a cover structure, aerated lagoons, subsurface constructed wetlands, UV disinfection system with a cover

structure, and a series of slow-rate land application basins with planted trees. The operations building, headworks cover structure, UV disinfection system cover structure, and low berms around the basins will be the only above-grade structures. The existing Cook pine trees along Maile Street, most of which will remain with no changes, will continue to obstruct the viewplanes from Maile Street. The facility site will be adjacent (mauka) to, and visible from, Māmalahoa Highway (State Route 11); however, impacts to the viewplane will be mitigated by the planted trees in the basins and by the rise in elevation between the highway and the facility. Thus, development of the Pāhala LCC Replacement Project sites will not present an adverse impact to the public views from other areas.

13) Require substantial energy consumption.

The Pāhala LCC Replacement Project is a new facility that will be planned and designed to minimize use of electrical power. Thus, it will not create a substantial increase in energy consumption.

8.1.2 Determination

Based on these findings and the assessment of potential impacts from the Pāhala LCC Replacement Project, the project does not require preparation of an Environmental Impact Statement and a FONSI is determined.

8.2 National Environmental Policy Act – EPA Finding of No Significant Impact (FONSI)

In 2006, a U.S. Environmental Protection Agency (EPA) Special Appropriations Act Project (SAAP) grant was awarded to the County of Hawaiʻi for the Kaʻū LCC Replacement Project (XP-96942401). The grant's federal funding amount is $1.842 million and currently expires in October 2020. The purpose of the award is for the design and construction of wastewater system improvements to replace LCCs in the Kaʻū District. The grant award and current work plan provide funding to replace the LCCs serving the Pāhala community.

EPA's award of a grant for the Pāhala LCC Replacement Project is a federal action requiring compliance with the National Environmental Policy Act (NEPA), 42 U.S.C. §§ 4321-4347. In accordance with NEPA, Council on Environmental Quality (CEQ) Regulations at 40 Code of Federal Regulations (CFR) §§ 1500-1508, and EPA NEPA regulations at 40 CFR Part 6, EPA and the County prepared a Draft EA describing the potential environmental impacts associated with, and the alternatives to, the proposed project. The Draft EA included a preliminary FONSI in Section 8.2 that documented EPA's finding that the proposed project is not expected to have a significant effect on the environment. In accordance with 40 CFR 6.203(b)(1), the preliminary FONSI was made available for public review and comment through the Draft EA comment period. The Final FONSI has been prepared separately from the Final EA and will be available on EPA's website and through public notice.

9 LIST OF PERMITS AND APPROVALS

State of Hawaiʻi Department of Health

Approval to Construct

Approval to Use

National Pollutant Discharge Elimination System Construction Stormwater Permit

Underground Injection Well Abandonment

Noise Permit

Noise Variance (only if required)

County of Hawaiʻi

Special Permit

Plan Approval

Grading Permit

Building Permit

Electrical Permit

Plumbing Permits

Fence Permit

Sign Permit (only if required)

Permit to Work Within County Right-of-Way

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10 CONSULTED PARTIES

10.1 Pre-Assessment Consultation

In accordance with the requirements of Hawai'i Administrative Rules Title 11 (State of Hawai'i Department of Health), Chapter 200 (Environmental Impact Statement Rules), Section 9 regarding early consultation, the following agencies were consulted during the pre-assessment phase of the Draft Environmental Assessment (EA). Each agency was sent a copy of a project summary and a request for their written comments on the project. Those who formally replied are indicated with a ▲. All written comments and responses are reproduced in Appendix A.

Federal

- ▲U.S. Army Corps of Engineers
- ▲U.S. Fish and Wildlife Service (FWS)
- U.S. Department of Agriculture National Resources Conservation Service
- National Oceanic and Atmospheric Administration
- National Park Service Hawaiʻi Volcanoes National Park

State of Hawaiʻi

- Department of Agriculture
- Department of Business, Economic Development and Tourism (DBEDT)
  - DBEDT, Hawaiʻi State Energy Office
  - DBEDT, Land Use Commission
  - ▲DBEDT, Office of Planning
- ▲Department of Accounting and General Services
- Hawaiʻi Emergency Management Agency
- Department of Health (DOH)
  - DOH, Office of Environmental Quality Control
  - DOH, Office of Director
  - DOH, Environmental Management Division
  - ▲DOH, Environmental Planning Office
  - ▲DOH, Clean Water Branch
  - ▲DOH, Safe Drinking Water Branch
  - ▲DOH, Wastewater Branch
- ▲Department of Land and Natural Resources (DLNR)
  - ▲DLNR, Engineering Division

▲DLNR, Division of Forestry and Wildlife

DLNR, State Historic Preservation Division

DLNR, Commission on Water Resources Management

Office of Hawaiian Affairs

▲Department of Transportation

▲Department of Hawaiian Home Lands

University of Hawaiʻi, Environmental Center

Hawaiʻi State Library

Hilo Regional Library

County of Hawaiʻi

▲Hawaiʻi Fire Department

Department of Parks and Recreation

▲Planning Department

▲Police Department

▲Department of Public Works

▲Department of Water Supply

Elected Officials

Congresswoman Tulsi Gabbard

State Senator Russell Ruderman

State Representative Richard H.K. Onishi

Councilmember Maile David

Native Hawaiian Organizations

Hawaiʻi Island Burial Council

Association of Hawaiian Civic Clubs

Charles Pelenui Mahi ʻOhana

Friends of ʻIolani Palace

Hawaiian Civic Club of Hilo

Kamehameha Schools

Kanu o kaʻĀina Learning ʻOhana

Koʻolau Foundation

Makuʻu Farmers Association

Na Koa Ikaika Ka Lāhui Hawaiʻi

Office of Hawaiian Affairs

Pacific Agricultural Land Management Systems

Partners in Development Foundation

Piʻihonua Hawaiian Homestead Community Association

Other

Hawaiʻi Gas

Hawaiian Electric Light Company

Hawaiian Telcom

Spectrum Hawaiʻi

Mr. Stason Nishimura

Mr. Lance Uno

Ms. Julia Neal

10.2 Agencies and Organizations Consulted on the Draft EA

Availability of the Draft EA for review and comment was published in the Office of Environmental Quality Control *Environmental Notice* dated September 23, 2018. The U.S. Environmental Protection Agency (EPA) directly notified the agencies, organizations, and individuals listed in Section 10.1 regarding the availability of the Draft EA for review and comment. Legal notice was posted in the Hawaiʻi Tribune Herald, West Hawaiʻi Today, and Kaʻū News Brief. Additionally, EPA concluded consultation with the Hawaiʻi State Historic Preservation Division in accordance with Section 106 of the National Historic Preservation Act, and with the FWS in accordance with Section 7 of the Endangered Species Act.

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