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IN REPLY REFER TO:
RD 20-030

July 15, 2020

Mr. Jonathan Likeke Scheuer, Chair
Land Use Commission
Department of Business, Economic Development & Tourism
State of Hawaii
235 South Beretania Street, Room 406
Honolulu, Hawaii 96813

Mr. Arthur D. Challacombe, Chair
Planning Commission
c/o Department of Planning and Permitting
City and County of Honolulu
650 South King Street, 7th Floor
Honolulu, Hawaii 96813

Dear Messrs. Scheuer and Challacombe:

Subject: Docket No. SP09-403
New Special Use Permit
Waimanalo Gulch Sanitary Landfill

In accordance with the November 1, 2019 State Land Use Commission Order Approving with Modifications the City and County of Honolulu Planning Commission's Recommendation to Approve Special Use Permit, the attached First Semi-Annual Report is submitted for your information. This report covers the period from June 2019 through April 2020, unless otherwise stated in the report.

The report is being concurrently submitted to the Planning Commission and Land Use Commission.

Sincerely,

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

Attachment

FIRST SEMI-ANNUAL REPORT

STATUS OF ACTIONS TAKEN TO COMPLY WITH THE STATE LAND USE COMMISSION'S ORDER DATED NOVEMBER 1, 2019
AND
STATUS OF OPERATIONS
WAIMANALO GULCH SANITARY LANDFILL

Prepared For:

Land Use Commission
State of Hawaii

Planning Commission
City and County of Honolulu

Prepared By:

Department of Environmental Services
City and County of Honolulu

June 2020

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PREFACE

This report was prepared in accordance with the State of Hawaii Land Use Commission's ("LUC") Order Approving With Modifications the City and County of Honolulu Planning Commission's Recommendations to Approve a Special Use Permit, dated November 1, 2019 ("LUC Order").

Under Condition No. 7 of the LUC Order, the Applicant (Department of Environmental Services, City and County of Honolulu, hereinafter "ENV") shall provide semi-annual reports to the Planning Commission of the City and County of Honolulu ("Planning Commission") and the LUC regarding the following:

a) The status of the efforts to identify and develop a new landfill site on Oahu,

b) The WGSL's operations, including gas monitoring,

c) ENV's compliance with the conditions imposed herein,

d) The Landfill's compliance with its Solid Waste Management Permit issued by the Department of Health and all applicable federal and state statutes, rules and regulations, including any notice of violation and enforcement actions regarding the landfill,

e) The City's efforts to use alternative technologies,

f) The extent to which waste is being diverted from the landfill and

g) Any funding arrangements that are being considered by the Honolulu City Council or the City Administration for activities that would further divert waste from the landfill.

This is the first semi-annual report submitted in accordance with Condition No. 7 and covers the period from June 2019 through April 2020, or as otherwise stated. The last report on the status of WGSL operations was submitted under a previous LUC order dated October 2, 2009 and covered the period from June 2018 through May 2019.

The second semi-annual report due in November 2020 will cover the six-month period from May 2020 through October 2020.

STATUS OF IDENTIFYING AND DEVELOPING NEW LANDFILL SITES ON OAHU

1. General

Condition No. 5 of the LUC Order requires that, by no later than December 31, 2022, ENV shall identify an alternative landfill site that may be used upon closure of WGSL. Upon identification of the alternative landfill site, ENV shall provide written notice to the Planning Commission and the LUC.

2. Current Status

The City has been engaged in an ongoing effort to identify a landfill site. Condition 4 of the prior LUC Order in Docket No. SP09-403, which was certified on October 22, 2009 ("2009 LUC Order"), stated:

"On or before November 1, 2010, the Applicant shall begin to identify and develop one or more new landfill sites that shall either replace or supplement the WGSL."

In accordance with Condition 4 of the 2009 LUC Order, the Landfill Advisory Committee (LAC) met in 2011 and 2012, and completed its final report on September 25, 2012. All committee meetings were open to the public and to public comment. In the final report, 11 potential sites were identified and ranked based on community criteria. Handouts provided to the LAC, the Group Memory of each meeting, and the final report are posted online at www.opala.org.

The City retained a consultant to further review and analyze the sites based on technical and engineering considerations. The report, "Assessment of Municipal Solid Waste Handling Requirements for the Island of Oahu", was completed in November 2017 and is available online at www.opala.org.

Funding has been requested and approved to begin planning for siting a new landfill based on the results of these reports. See section on Funding Arrangements in this report.

3. Integrated Solid Waste Management Plan

Hawaii Revised Statutes (HRS) Section 342G-24 requires each county to submit revised integrated solid waste management plans every 10 years with an interim status report submitted five years after every submission of a revised plan. The City has completed the most recent Integrated Solid Waste Management Plan, dated November 2019. The plan was completed after Solid Waste Advisory Committee meetings, DOH

review, and a public comment period. Comments from each step were incorporated. The Plan has been posted online at www.opala.org.

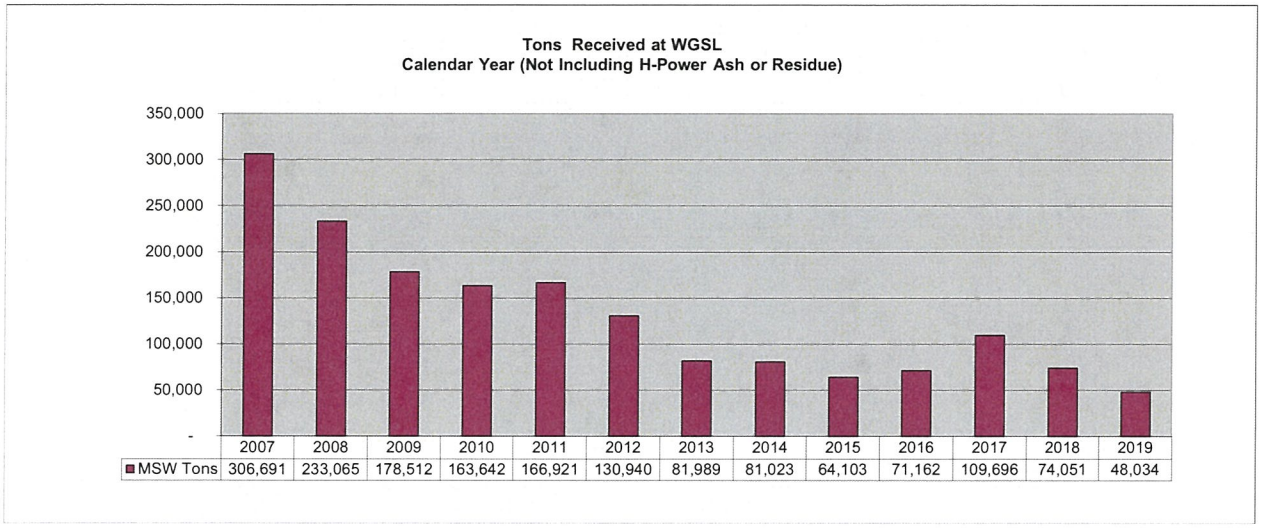
STATUS OF LANDFILL OPERATIONS

1. Tonnage

Over the period beginning June 1, 2019, through April 30, 2020, the Waimanalo Gulch Landfill received the following amounts of material:

H-POWER Ash..... 116,080 tons
H-POWER Residue..... ..... 26,700 tons
Municipal Solid Waste (MSW)..... 45,009 tons

The following graph illustrates the reduction of MSW delivered to the landfill generally as a result of diverting more waste to H-POWER. Note that the increase in MSW landfilled in 2017 was due to major refurbishment of the processing lines at H-POWER, a once in 30-year project. The 2020 tonnage is currently projected to be around 50,000 tons.



	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
MSW Tons	306,691	233,065	178,512	163,642	166,921	130,940	81,989	81,023	64,103	71,162	109,696	74,051	48,034

2. Remaining Capacity

As of March 15, 2019 (the date of the last aerial survey), the landfill has 1,192,570 cubic yards of MSW and 4,121,720 cubic yards of ash airspace remaining. Using the average fill rates and airspace utilization between February 14, 2018 and March 15, 2019 (time between surveys), the landfill has approximately 19 years of combined MSW and ash life remaining or would reach capacity in the year 2039. Note that advances in technology and additional landfill diversion, discussed further in this report, could reduce the City's use of the landfill, thereby slowing the rate of landfilling and delaying the date upon which the landfill will reach capacity to sometime after 2039.

The results of the 2020 survey will be reported in the next Annual Operating Report due to DOH on July 31, 2020 and will be reported in the next semi-annual report.

3. Current Status of WGSL

Activities conducted during the reporting period include MSW landfilling in Cells E-5, E-6 and E-7 and ash landfilling in Cells E-8 and E-9.

4. Gas Monitoring

The gas collection and recovery system at the landfill continues to expand to accommodate landfilling operations while maintaining compliance. New landfill gas collection wells and vacuum lines are being planned for installation later this year to improve collection efficiency.

ENV is also developing a landfill gas-to-energy RFP now that the landfill is close to crossing the threshold for a viable project.

COMPLIANCE WITH CONDITIONS OF ORDER

The LUC approved with modifications the Planning Commission's recommendations to approve a special use permit for WGSL and approved with modifications ENV's applications, subject to 17 conditions. The general description and status of each condition is as follows:

Condition No.	Description
1	**The WGSL shall close by no later than March 2, 2028. The WGSL shall not accept any form of waste after March 2, 2028.** Status: So noted
2	**The Applicant shall obtain all necessary approvals from the State Department of Health, Department of Transportation, Commission on Water Resources Management, and Board of Water Supply for all onsite and offsite improvements involving access, storm drainage, leachate control, water, well construction, and wastewater disposal.** Status: All applicable permits/approvals have been obtained.
3	**In accordance with Chapter 11-60.1 "Air Pollution Control," Hawaii Administrative Rules, the Applicant shall be responsible for ensuring that effective dust control measures during all phases of development, construction, and operation of the landfill expansion are provided to minimize or prevent any visible dust emission from impacting surrounding areas. The Applicant shall develop a dust control management plan that identifies and addresses all activities that have a potential to generate fugitive dust.** Status: Dust control measures and management plan have been provided for as part of the Solid Waste Management Permit issued by the DOH.
4	**The City and County of Honolulu shall indemnify and hold harmless the State of Hawaii and all of its agencies and/or employees for any lawsuit or legal action relating to any groundwater contamination and noise and odor pollution relative to the operation of the landfill.** Status: So noted.
5	**By no later than December 31, 2022, the Applicant shall identify an alternative landfill site that may be used upon closure of WGSL. Upon identification of the alternative landfill site, the Applicant shall provide written notice to the Planning Commission and the LUC.** Status: See section on Status of Identifying and Developing New Landfill Sites on Oahu in this report.

Condition No.	Description
6	**The Applicant shall continue its efforts to use alternative technologies to provide a comprehensive waste stream management program that includes H-POWER, plasma arc, plasma gasification and recycling technologies, as appropriate. The Applicant shall also continue its efforts to seek beneficial reuse of stabilized, dewatered sewage sludge.** Status: See section on Alternative Technologies in this report.
7	**The Applicant shall provide semi-annual reports to the Planning Commission and the LUC regarding the following: a) The status of the efforts to identify and develop a new landfill site on Oahu, b) The WGSL's operations, including gas monitoring, c) The Applicant's compliance with the conditions imposed herein, d) The Landfill's compliance with its Solid Waste Management Permit issued by the Department of Health and all applicable federal and state statutes, rules and regulations, including any notice of violation and enforcement actions regarding the landfill, e) The City's efforts to use alternative technologies, f) The extent to which waste is being diverted from the landfill and g) Any funding arrangements that are being considered by the Honolulu City Council or the City Administration for activities that would further divert waste from the landfill.** Status: Subsequent reports will be submitted every 6 months in May and November of each year.
8	**Closure Sequence "A" for the existing landfill cells at WGSL as shown on Exhibit "A12" must be completed, and final cover applied, by December 31, 2012.** Status: Closure Sequence "A" was commenced in June 2012 and the final cover was applied and substantially completed in December 2012.
9	**WGSL shall be operational only between the hours of 7:00 a.m. and 4:30 p.m. daily, except that ash and residue may be accepted at the Property 24 hours a day.** Status: The Solid Waste Management Permit issued by DOH requires that landfill operations be confined to between the hours of 7:00 a.m. and 4:30 p.m. Permission to extend hours to accommodate refuse loads during H-POWER outages shall be obtained from DOH on an as-needed basis.

Condition No.	Description
10	**The Applicant shall coordinate construction of the landfill cells in the expansion area and operation of WGSL with Hawaiian Electric Company (HECO), with respect to required separation of landfill grade at all times and any accessory uses from overhead electrical power lines.** Status: Coordination with HECO will be done to ensure that landfill construction and operations are adequately separated from overhead electrical power lines.
11	**The operations of the WGSL under 2008/SUP-2 (SP09-403) shall be in compliance with the requirements of Section 21-5.680 of the Revised Ordinances of the City and County of Honolulu 1990, to the extent applicable, and any and all applicable rules and regulation of the State Department of Health.** Status: Revised Ordinances of Honolulu § 21-5.680 is inapplicable to the WGSL as that Property is a public use and said ordinance therefore does not impact operations at WGSL. The operations of the WGSL are in compliance with any and all applicable rules and regulations of the DOH.
12	**The Planning Commission may at any time impose additional conditions when it becomes apparent that a modification is necessary and appropriate.** Status: So noted.
13	**Enforcement of the conditions to the Planning Commission's approval of 2008/SUP-2 (SP09-403) shall be pursuant to the Rules of the Planning Commission, including the issuance of an order to show cause why 2008/SUP-2 (SP09-403) should not be revoked if the Planning Commission has reason to believe that there has been a failure to perform the conditions imposed herein by this Decision and Order.** Status: So noted.
14	**The Applicant shall notify the Planning Commission and Land Use Commission of termination of the use of the Property as a landfill for appropriate action or disposition of 2008/SUP-2 (SP09-403).** Status: Respective notifications will be made prior to termination of the use of the property as a landfill.
15	**The Applicant shall report to the public every three months on the**

Condition No.	Description
	efforts of the City Council and the City Administration in regard to the continued use of the WGSL, including any funding arrangements being considered by the City Council and the City Administration. Status: See Condition No. 16 Status.
16	**The Applicant shall have a public hearing every three months in either Waianae, Maili, or Nanakuli to report on the status of their efforts to either reduce or continue the use of the WGSL.** Status: After November 1, 2019 (the date of the LUC Order), public hearings are being conducted in Nanakuli every 3 months to report on the status of efforts to either reduce or continue the use of the WGSL and the efforts of the City Council and City Administration in regard to the continued use of the WGSL, including any funding arrangements being considered by the City Council and the City Administration. ENV publishes public notice of the public hearings in the newspaper and posts notice on www.opala.org. Summaries of the hearings are posted online at opala.org. During the reporting period, 2 public hearings were held at Kapolei Hale on July 15, 2019 and October 21, 2019 and one public hearing was held at Kalanianaole Beach Park on January 21, 2020. For the 3 hearings held during this period, no members of the public attended. The public hearing that would have normally been scheduled at Kalanianaole Beach Park for April 14, 2020 was postponed due to the COVID-19 emergency. However, ENV took the following actions to keep the public informed and provide the information required by Conditions 15 and 16 of the LUC Order: 1. Information that ENV planned to share was posted online at www.opala.org. 2. ENV notified the public of the availability of the information by posting notices on the website and social media platforms. 3. The public was given the opportunity to submit questions about the content of the posted information. 4. Questions received within 30 days, as well as the responses to such questions, were to be compiled and posted online. No comments were received within the 30-day period in response to the April 14, 2020 postings.

Condition No.	Description
17	**If the landfill releases waste or leachate, the Applicant must immediately a) notify the surrounding community, including the Makakilo/Kapolei/Honokai Hale, Waianae Coast and Nanakuli-Maili Neighborhood Boards, Intervenors Schnitzer Steel Hawaii Corp., Ko Olina Community Association, Maile Shimabukuro and Colleen Hanabusa and b) take remedial actions to clean up the waste and to keep the waste from spreading. Such remedial actions shall include, but shall not be limited to, placing debris barriers and booms at the landfill's shoreline outfall to prevent waste from spreading into the ocean.** Status: So noted.

REGULATORY COMPLIANCE

1. Solid Waste Permit

The final solid waste permit for the proposed lateral expansion was approved by the State of Hawaii, Department of Health (DOH) on June 4, 2010. A permit renewal application was submitted on a timely basis to DOH in May 2014. In accordance with Hawaii Revised Statutes § 343H-4(e) and Hawaii Administrative Rules §11-58.1-04(3), the landfill is legally continuing operations under the conditions of the previous permit and the current operations plan submitted to DOH. The permit renewal is expected to be issued by DOH later in 2020. New cell construction and drainage improvements are complete.

During the reporting period, there were two incidents of note. Note that these were self-reported to DOH and have not resulted in a Notice of Violation.

On October 25, 2019, the landfill reported to DOH that due to heavy rainfall events in October, several leachate sumps were beyond the compliance level (note that the compliance level is well below the ground surface and there was no spill). Additional leachate pumping was dispatched as needed to catch up.

On November 6, 2019, Sea Life Park's contractor Nakasato Contracting inadvertently disposed of nine buckets of granular chlorine at the landfill. When the landfill operator observed the material, it was segregated, covered and then removed by a certified hazmat team.

2. Special Use Permit (SUP)

The proceedings at the Honolulu Planning Commission (Planning Commission) and LUC relating to File No. 2008/SUP-2 have concluded. On June 10, 2019, the Planning Commission filed its Findings of Fact, Conclusions of Law, and Decision and Order. The Planning Commission's records in the proceeding were transmitted to the LUC in September 2019, and the LUC met in October 2019 to consider the Planning Commission's decision. On November 1, 2019, the LUC filed its Findings of Fact, Conclusions of Law, and Decision and Order Approving With Modifications the City and County of Honolulu Planning Commission's Recommendation to Approve Special Use Permit in Docket No. SP09-403. A copy of the decision is available on the LUC's website at https://luc.hawaii.gov/wp-content/uploads/2019/11/SP09-403-final-FOFCOLDO-2019.pdf

3. Consent Decree

The City and Waste Management of Hawaii (WMH), the landfill operator, reached a Settlement Agreement with the U.S. Environmental Protection Agency (EPA) and DOH over alleged violations of the Clean Water Act and State law. The alleged violations arose primarily from storm events that occurred in the winter of 2010-2011, during construction of the WGSL's western diversion drainage system. The EPA and DOH alleged that following the large rain storms in December 2010 and January 2011, the City and WMH violated the Clean Water Act by discharging pollutants without National Pollutant Discharge Elimination System Permit authorization and by discharging pollutants in storm water in violation of the terms of the Notice of General Permit Coverage for Industrial Stormwater issued to the City.

On July 3, 2019, the U.S. District Court for the District of Hawaii entered the consent decree in United States of America and State of Hawaii Department of Health v. Waste Management of Hawaii, Inc. and City and County of Honolulu, Case No. 1:19-cv-00224.

In accordance with the consent decree, the City paid a civil penalty of $62,500 to the United States and $62,500 in lieu of a civil penalty to the state Department of Land and Natural Resources Division of Aquatic Resources. Similarly, WMH paid $150,000 to each entity.

Also in accordance with the consent decree, the City and WMH implemented enhancements to the landfill's western diversion drainage system, revised the facility's stormwater pollution control plan, and applied for an individual stormwater permit for WGSL. The City and WMH continue to comply with the detention basin operating and monitoring parameters set forth in the consent decree.

ALTERNATIVE TECHNOLOGIES AND LANDFILL DIVERSION

1. H-POWER

The H-POWER waste-to-energy facility, operated by Covanta, continues to process over 750,000 tons of municipal solid waste each year. The facility has operated reliably for over twenty-eight years and has disposed of about 19,000,000 tons of municipal solid waste, generating in excess of $55,000,000 annual net revenues from the sale of electricity, recovered metals and tipping fees, and avoided the importation of about 19,000,000 barrels of oil. The original refuse-derived fuel (RDF) facility was upgraded with state of the art air pollution control equipment (fabric filter bag houses) in 2009 and refurbishment of major equipment such as boiler water walls, shredders, and magnets has been ongoing since 2010.

The facility's capacity to process municipal solid waste was increased by 50% in 2012 with the addition of a third boiler, which utilizes mass-burn technology. The third boiler opened to commercial operations on April 2, 2013. It enables the facility to process and burn bulky waste that previously had to be disposed at the landfill. With the addition of the third boiler, and other efforts to divert waste from the landfill, H-POWER now plays an even larger role in reducing waste disposal at the landfill.

a. Sludge

The sludge receiving station at H-POWER commenced commercial operations in May 2015. The sludge processing system has the capacity to process 90 tons of sludge per day and is accepting dewatered sludge from Honouliuli, Waianae, and Kailua Wastewater Treatment Plants. The 20,000 tons per year of sludge currently produced by these plants is now being diverted from the landfill to H-POWER. In addition, a corresponding amount of bulky waste, which was required to bulk the sludge at the landfill, is now being disposed of at H-POWER.

ENV is also coordinating with Island Commodities Corporation (ICC) to devise various options for processing food waste rendering sludge at H-POWER and to schedule test loads. ICC is installing new equipment at their facility to further reduce the need for landfill or H-POWER disposal.

b. Medical Waste

The disposal of treated medical waste at H-POWER commenced on December 30, 2015. Due to safety concerns, however, medical sharps is not accepted at H-POWER and will continue to be disposed of at the landfill.

c. Tires

H-POWER's solid waste management permit issued by DOH allows acceptance of used auto tires collected by the City, including refuse collection, convenience centers and illegal dumping up to 400 tires per day or 65,000 tires per year.

d. Ash and Process Residue

The process residue generated by H-POWER was reduced by 50% after the trommel refurbishment project was completed in late 2017.

Emerging technologies are being explored for further reducing ash and process residue disposal at the landfill. An ash, residue and automobile shredder residue (ASR) recovery and recycling Request for Proposals (RFP) was re-issued in February 2020. One proposal was received and is under review.

e. Auto Shredder Residue (ASR)

Approximately 30,000 tons per year of ASR is disposed at WGSL. Although ASR was envisioned to be diverted to H-POWER, evaluation of ASR test data has concluded that the high Fluorine and Chlorine content of the material can be extremely harmful to the boiler. The matter is pending further evaluation and possible testing. Further, as indicated above, the City issued an RFP in February 2020 to recover/recycle ASR. The one proposal received considers ASR processing as a potential future option.

f. In-Feed Waste Processing Improvements and Baling

ENV and Covanta are planning in-feed waste processing improvements to the Refuse Derived Fuel (RDF) Waste Processing Facility that will include a mobile baling system. The project will allow processing of bulky waste into RDF. The mobile baler will provide flexibility to store waste during extended maintenance outages. The baled waste would be stored and processed later, further reducing diversion of waste to the landfill. As of this writing, equipment is being procured. After installation later this year, the equipment is projected to be tested and commissioned by the end of 2020.

g. Bulk Loads of Food Waste

Since March 1, 2017, bulk loads of commercially-generated spoiled food have been diverted from WGSL.

2. Sludge Re-use

Laie WWTP: Converts green waste mixed with sewage sludge into compost by using the Windrow process.

Sand Island WWTP: Processes sewage sludge into fertilizer pellets using the Synagro process. Please see table below summarizing annually the percentages of sludge that was reused and landfilled, respectively. Note that there are times, especially during calendar year 2016, when the farms experienced heavy rains and were not accepting the pellets.

Year	Reused %	Landfill %
2014	93%	7%
2015	97%	3%
2016	89%	11%
2017	94%	6%
2018	94%	6%
2019	91%	9%

3. Other Request For Proposals (RFPs) for Alternative Waste Disposal Technologies

Another technology seriously being considered by the City involves the processing and conversion of glass into a useful lightweight building material. This technology, which originated in Japan, promises to be an excellent glass recycling option and, if feasible, could eliminate the high cost of shipping glass to mainland recycling markets, while generating a marketable building material. As of this writing, the Glass RFP received one proposal that was determined to be too costly to pursue. The City decided to cancel the RFP indefinitely.

4. Materials Recycling

To present a complete waste flow picture for Oahu, the most current data available is for calendar year 2018. Although waste to the landfill and HPOWER is tracked every month by ENV, recycling data is provided by commercial recycling companies that are surveyed annually. Recycling data for 2018 was gathered and compiled during the first half of 2019; updated charts and analysis are posted below. Recycling data for 2019 will be compiled and will be posted on Opala.org by mid-year of 2020.

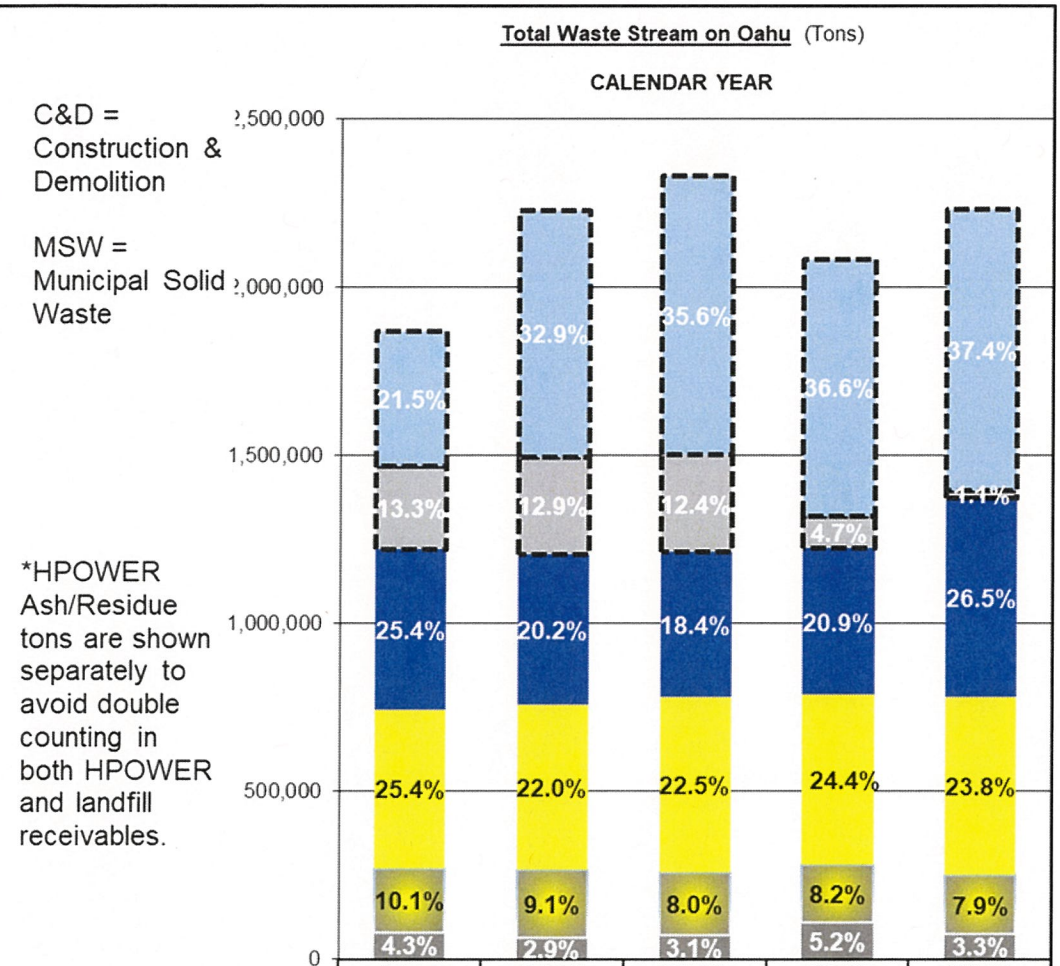
The island's waste data is presented in two charts:

1. TOTAL WASTE which includes Municipal Solid Waste (MSW) and Construction and Demolition (C&D) material, processed through recycling, waste-to-energy or landfilling; and
2. MSW only, processed through recycling, waste-to-energy or landfilling.

Both charts present data for the most recent five (5) calendar years (2014-2018). Moreover, this data shows how Oahu's waste has been diverted from the landfill through recycling and waste-to-energy.

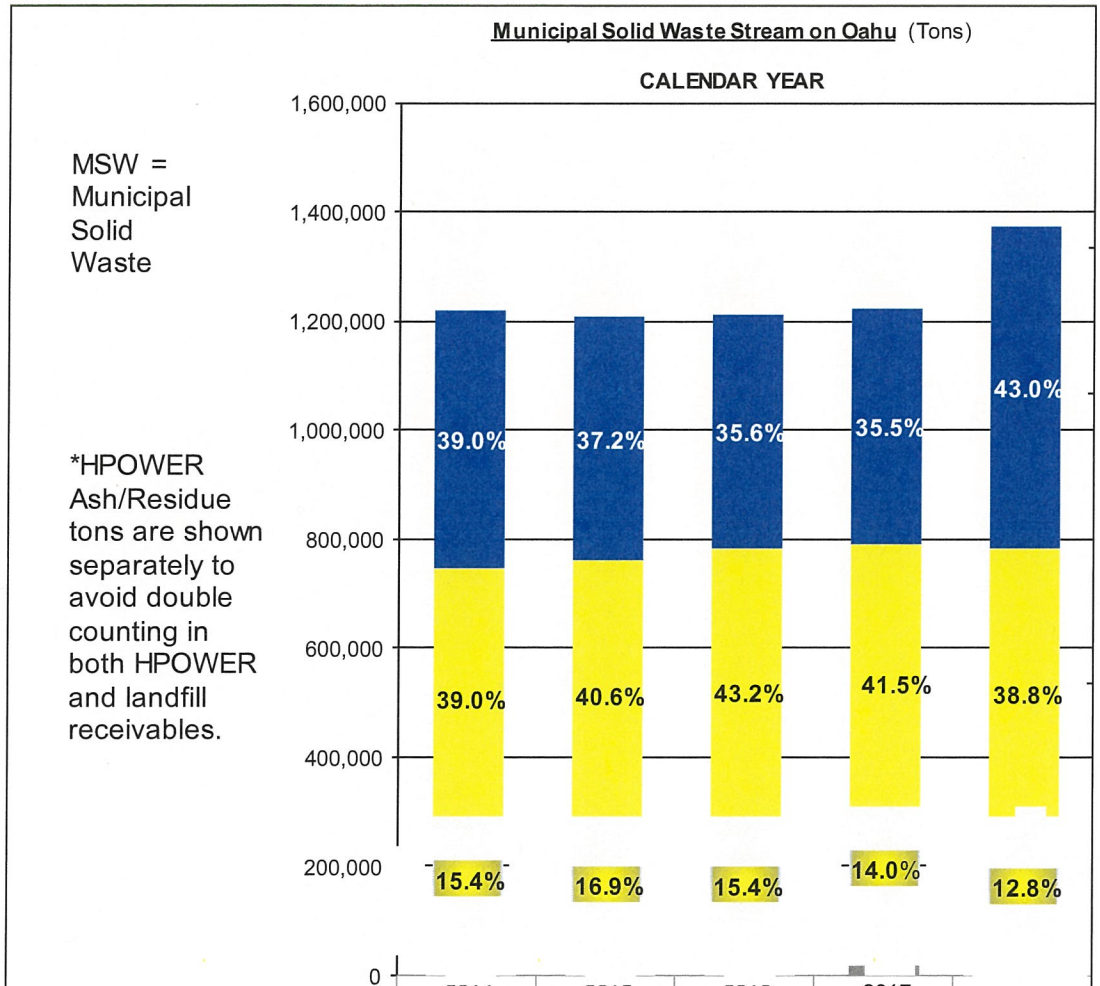
TOTAL WASTE data is presented in the chart below. For 2018, rates for C&D material recycling and disposal increased from the 2017, while recycling and waste-to--energy combined to divert nearly 89% of waste from the landfill.

There are two landfills on Oahu: the City's Waimanalo Gulch Sanitary Landfill (WGSL), which is designated for MSW, and the privately-owned PVT Landfill, which is permitted for Construction and Demolition (C&D) waste only.



	2014	2015	2016	2017	2018
C & D - Recycling	401,334	731,864	830,414	763,279	833,566
C & D Landfill	248,032	288,258	289,924	97,426	24,939
General Material Recycling (MSW)	475,953	449,152	430,831	434,933	590,535
HPOWER - Waste-To-Energy (MSW)	474,467	490,374	523,883	507,929	531,975
HPOWER (Ash & Residue - Landfill)*	188,399	203,698	186,000	170,730	175,721
MSW Landfill	81,023	64,103	71,162	109,696	74,427
Total Landfill Diversion % (MSW / C&D)	73.6%	76.1%	77.6%	82.7%	89.3%
TOTAL Tonnage	1,869,208	2,227,449	2,332,214	2,083,993	2,231,163

MSW ONLY data is presented in the chart below. Robust recycling and waste-to-energy rates continue to contribute to the steady decline of MSW tonnage going to the Waimanalo Gulch Sanitary Landfill. Considering MSW only and landfill diversion specific to the WGSL, the landfill diversion rate achieved through recycling and waste-to-energy is nearing 89%, and the general material recycling rate is almost 43%. Landfill diversion rates for the most recent five (5) years at WGSL are charted below, allowing for a better visual assessment of the data. Important to note that of the 13% of material landfilled at WGSL in 2017, little over 5% was MSW, with the rest consisting of ash and noncombustible residue from HPOWER.



	2014	2015	2016	2017	[illegible]
General Material Recycling (MSW)	475,953	449,152	430,831	434,933	590,535
HPOWER - Waste-To-Energy (MSW)	474,467	490,374	523,883	507,929	531,975
HPOWER (Ash & Residue - Landfill)*	188,399	203,698	186,000	170,730	175,721
MSW Landfill	81,023	64,103	71,162	109,696	74,427
Total Landfill Diversion % (MSW)	79.8%	79.8%	80.8%	78.4%	84.4%
TOTAL Tonnage (MSW)	1,219,842	1,207,327	1,211,876	1,223,288	1,372,658

Recycling data: The tables below provide detail of tons recycled by material type. The City has gathered annual recycling data since 1988 (except for 1989 and 1990). Note the upward trend of general material recycling from approximately 75,000 tons in 1988 to nearly 430,000 tons today. Recycling of construction and demolition (C&D) materials, such as concrete, rock and asphalt, contributed an additional 870,000 tons to the recycling rates, for a total of almost 1.3M tons recycled for 2018. C&D recycling rates tend to fluctuate based on the volume and type of construction projects undertaken from year to year but have risen significantly since 2015 due to ongoing major projects across the island.

Yearly Recycling Rates (tons)

Year	General Material Recycling	C&D Recycling	Total Recycled
2018	431,911	868,617	1,300,528
2017	434,933	763,279	1,198,212
2016	430,831	830,414	1,261,245
2015	449,153	731,865	1,181,018
2014	475,953	401,335	877,286
2013	477,011	257,287	734,298
2012	487,159	179,906	667,065
2011	490,061	181,087	671,148
2010	448,639	101,556	550,195
2009	426,947	116,670	543,617
2008	456,876	216,745	673,621
2007	453,282	148,952	602,234
2006	421,072	121,675	542,747
2005	417,669	193,829	611,498
2004	386,338	173,916	560,254
2003	366,639	106,773	473,412
2002	352,699	139,055	491,754
2001	367,300	114,070	481,370
2000	327,710	165,000	492,710
1999	314,075	225,200	539,275
1998	318,690	148,800	467,490
1997	313,394	204,400	517,794
1996	299,574	95,300	394,874
1995	294,340	44,400	338,740
1994	290,412	35,700	326,112
1993	241,600	30,000	271,600
1991	167,152	0	167,152
1988	73,992	0	73,992

Oahu Recycling 2018	
Material Type	**Amount in tons**
PAPER	
Corrugated Cardboard	43,562
Newspaper	12,758
Office Paper	7,581
Other Paper	849
METALS	
Ferrous (includes autos)	134,988
Non-Ferrous (includes aluminum)	16,196
GLASS	14,571
PLASTIC	5,127
TIRES	7,211
AUTO BATTERIES	6,605
ELECTRONIC SCRAP	1,170
GREEN WASTE (yard trimmings)	111,907
WOOD WASTE/PALLETS	13,942
CONSTRUCTION & DEMOLITION (rock, concrete, asphalt)	868,617
FOOD WASTE	38,667
OTHER REUSE (Goodwill, Salvation Army)	16,778
TOTAL	1,300,528

The City's efforts to increase residential recycling rates have continued with its ongoing efforts to educate residents about the value and benefits of its three cart curbside program, and the continued promotion of its condominium recycling assistance program. Additionally, the City requires commercial sector recycling through mandatory laws established by City ordinance, and provides assistance to businesses to setup and expand their recycling programs.

a. Curbside Recycling – Curbside recycling participation remains strong and material recovery rates are increasing every year. ENV completed the final phase expansion of the fully-automated 3-cart curbside recycling program in May 2010. There are currently 160,000 homes participating in the program, capturing material at a rate of 23,000 tons of mixed recyclables and 75,000 tons of green waste per year. Increased public experience with identifying and sorting recyclables is producing higher results for the City's curbside recycling program. The program continues to be evaluated to identify strategies for improving participation and efficiencies.

b. Multi-Material Recycling Centers – Recycling is available to those without curbside collection service. There are two City recycling drop-off locations in Haleiwa, one fronting its Waialua Base Yard (Emerson Rd) and the other at its Kawailoa Transfer Station. Both locations feature several 96-gallon blue carts, complete with instructional signage and stickers for the community to use. All

blue cart recyclables are acceptable, including plastics (1 & 2), glass bottles and jars, metal cans, newspaper, paper bags, corrugated cardboard and white and colored office paper.

c. Condominium Recycling -- The City continues to promote condominium recycling through a program that reimburses condominium properties for costs associated with the start-up of a recycling program, and additionally provides technical assistance, educational materials, wheeled carts and guidance in establishing collection services.

d. Electronic Waste (e-waste) – A State law requiring manufacturers to provide take-back programs for electronic waste went into effect January 1, 2010, and is administered by DOH. In general, the covered electronics include computers and televisions. Collection and recycling of e-waste has increased, but the law is weak in its requirements for the manufacturers to achieve recovery goals or to provide consumer convenience in take back programs. DOH is looking for ways to strengthen the collection programs, and has proposed bills in the most recent four State legislative sessions (2012, 2013, 2014, and 2015). In 2015 the law was amended to require electronic device manufacturers to establish drop-off locations for e-waste and prohibited mail-back only recycling options for some devices. ENV will continue to work in collaboration with DOH and local e-waste recycling companies to support local programs and legislative proposals.

e. Business Recycling Programs -- The City continues to provide assistance to commercial sector recycling efforts and to ensure compliance with mandatory recycling policy established in the mid 1990's, which requires office buildings to recycle office paper, bars/restaurants to recycle glass and a variety of food operations to recycle food waste. It is no longer mandatory for ADF glass to be sorted by the liquor establishments but the recyclers still receive ADF glass through their commercial accounts. The City suspended the ADF portion of the glass relating to the glass ordinance but the City still receives the State Subsidy for ADF glass that the recyclers are collecting. Disposal site bans/restrictions divert materials from landfill and H-POWER, including green waste, cardboard, metals, tires, auto batteries, and e-waste. The City provides technical assistance to businesses for designing and implementing recycling programs through how-to guides, workshops and on-site support, and works collaboratively with the State's Green Business Program.

f. Plastic Bag Ban – As of July 1, 2015, businesses are prohibited from providing plastic checkout bags and non-recyclable paper bags to their customers at the point of sale. Per ORD 12-8, amended by ORD 14-29, ENV is responsible for implementing and enforcing the ban. Prior to the ban's effective date, ENV mailed compliance surveys and tip sheets to approximately 10,000 potentially-affected businesses and asked them to return the compliance forms and indicate how they planned to comply with the ban. Public notices were placed in the Star Advertiser and MidWeek in May. All information pertaining to the ban is also

posted online on Opala.org. On July 1, 2015, City staff began enforcing the ban. The City mailed out a Plastic Bag Ban Compliance Form dated March 7, 2016 with a return date of April 29, 2016. Retail industry feedback based on the returned forms indicates that about 35% of businesses will not provide bags. 28% of businesses indicated they were exempt from the ban. Of the remaining 37% offering bags, 13% are offering paper bags, 7% are offering reusable bags, 3% are offering compostable bags, and 15% are offering some combination of the three types of allowable bags. Businesses are required to submit annual compliance information to verify their compliance with the ban. The ban was amended by ORD 17-37, in 2017 to require businesses to charge a minimum of 15 cents per bag for reusable, recyclable paper or compostable bags to customers at the point of sale, effective July 1, 2018. Beginning January 1, 2020, compostable bags were banned and plastic film bags were no longer considered to be reusable bags. The ban was amended by Ordinance 19-30 changing the definition of "plastic" and amending the definitions for "plastic checkout bag" and "plastic film bag". This ordinance also bans polystyrene foam food ware, disposable plastic service ware and disposable plastic food ware. Ordinance 19-30 will take effect on January 1, 2021.

g. Public education – Public education regarding recycling is ongoing and includes the distribution of brochures and print materials, dissemination of information via the Opala.org website, WasteLine e-newsletter and annual events such as Tour de Trash. Source reduction will be another component to add to our Public education program.

   Composting workshops – Composting workshops presented by City staff have been reinstated as part of the City's public education program. The workshop teaches residents to manage green waste at home by utilizing the green cart for large type green waste such as large diameter branches and to compost, aerobically, the grass trimmings, leaves and small diameter branches. The City is also gathering information to provide food waste composting through the use of worms called vermiculture and beneficial microbes with the Bokashi method.

   Recycling education in the schools -- Recycling education shows presented by the Honolulu Theatre for Youth (HTY) combined with classroom activity books educate our youth to become expert recyclers and encourage them to support their family to properly sort their waste at home. Every year, the program reaches approximately 20,000 students and teachers. The tenth 2019-20 season included an "Opala Remix", a recycling performance workshop type show at local schools concluded in late February. Due to the large demand, additional shows were added to expand the educational outreach. The program ended prior to the COVID-19 emergency declaration ordered in late March.

FUNDING ARRANGEMENTS

The following funding arrangements for the landfill and alternate technologies have been requested and approved for the Fiscal Year 2021 Capital Improvements Budget:

- Project #2010046 Oahu Sanitary Landfill (District Boundary Amendment for current landfill site and planning for future landfill site) $501,000.

- Project #2014052 Leeward Refuse Collection Baseyard and Convenience Center (Future baseyard and convenience center) $7,502,000.

- Project #2018050 Solid Waste to Energy Facility (H-POWER) Conversion Technologies (H-POWER ash reuse facility) $15,002,000.

- Project #2014065 Solid Waste to Energy Facility (H-POWER) Improvements (improvements and refurbishment projects for the H-POWER facility) $8,003,000.

CONCLUSION

The foregoing report is submitted in accordance with reporting requirements set forth in the LUC Order dated November 1, 2019. This report focuses on the status of ENV's efforts to identify and develop one or more landfill sites that shall either replace or supplement the WGSL and the 17 Conditions contained in the LUC Order. Also discussed are the further progress of WGSL operations and the City's active efforts to reduce waste volume that is directed to the landfill.

The City intends to continue its efforts to ensure proper solid waste management for the people of Oahu, in close coordination with applicable regulatory agencies and decision-makers.