

Materials for Committee Members

Mayor's Community Advisory Committee on Landfill Site Selection
Department of Environmental Services
City & County of Honolulu

January 20, 2011

In order to assist this Committee with its task we have prepared the following information contained in the folders each of you will receive. The contents are for the Committee's reference and use:

1. The Advisory Committee Member's Description of Service – this is essentially a job description to help identify what you will be asked to do.
2. Summary of Planned Meeting Content – this is a summary of the meetings that are planned.
3. A Summary of Regulatory Requirements for MSW and Ash, and C&D Landfills – this contains the regulations under which the disposal of these forms of waste is governed.
4. An excerpt from the City's Integrated Solid Waste Management Plan Update, 2008, containing Section 1, Overview of Existing Solid Waste Management System – this excerpt is based on the use of data from 2006, but provides a good summary of the City's system for the handling and management of solid waste on O'ahu.
5. The City previously identified two potential landfill sites that may be available to this Committee for consideration. To assist this Committee the City has prepared two letters to document the availability of the sites.

One letter is to the State Department of Land and Natural Resources requesting the availability of the potential landfill site known as Waimānalo North, located in Waimānalo, O'ahu.

The second letter is to the U. S. Marine Corps requesting the availability of a potential landfill site in the Bellows Air Force Station, also located in Waimānalo, O'ahu.

6. Finally, the Committee is provided with a CD containing: A complete copy of the Solid Waste Integrated Management Plan Update, 2008; and a copy of the Final EIS for the Waimānalo Gulch Sanitary Landfill, 2008.

Additional information will be furnished to the Committee as the series of meetings progress.

Advisory Committee Member's Description of Service
Advisory Committee on Landfill Site Selection
City and County of Honolulu

January 20, 2011

The members of this Committee are asked to provide advisory recommendations to the City concerning the selection of a future site for a landfill that will accept Municipal Solid Waste (MSW), ash and residue from facilities such as H-POWER, and construction and demolition debris waste (C&D) for the Island of O'ahu.

The City Administration asks that the Advisory Committee identify the optimal landfill site recognizing that its role is advisory and that the final decision will rest with the Administration and City Council. Once this decision is made the final siting process will require public hearings and environmental and land use processes that are outside of the Committee's role of providing advisory recommendations.

The Committee will be working with R. M. Towill Corporation (RMTC) who has been selected by the City to assist with this process. All Committee meetings will be facilitated and Committee members will be asked to: attend meetings of the Committee; review information provided to you about landfill siting requirements (federal, state and City & County of Honolulu); and ask questions and work through processes that will assist with identifying the optimal site(s) for a landfill.

Committee members will be asked to raise issues and questions based on their own background and expertise, as well as those of the communities they live in. They are also encouraged to share the information discussed at the meetings with others. Committee members will be asked to listen with an open mind and to honestly put issues of concern on the table with the intent of working through these issues in a collaborative problem solving manner.

The Committee will be working with sites previously identified by the City in various reports that have been prepared over several decades. Additional information to assist the Committee in its deliberations will be provided.

It is expected that there will be approximately 7 meetings to allow the Committee sufficient time to review and consider all of the information that will be provided. These meetings are expected to span a period of approximately 6 months with meetings planned to occur once every 3 to 4 weeks. All meetings are planned to take place during the day.

In the weeks to come, we will be contacting each of you to provide additional information and detail.

The City thanks you for agreeing to assist with this important task.

Summary of Planned Meeting Content

Mayor's Community Advisory Committee on Landfill Site Selection
Department of Environmental Services
City & County of Honolulu

January 20, 2011

Meeting 1

- Introduction and Description of the Committee's objectives, ground rules, and administration
- Solid Waste and Description of the City's Solid Waste Management System

Meeting 2

- Site Visit to Waimānalo Gulch Sanitary Landfill, H-POWER, and other facilities
- Relationship of facilities to the City's Solid Waste Management System

Meeting 3

- Review landfill engineering necessary to the siting of a landfill: Present siting requirements from Federal, State, and City & County of Honolulu
- Previous alternative landfill sites considered by the City
- Request Committee's identification of additional sites for consideration and obtain Committee's preliminary siting criteria

Meeting 4

- Request additional community-based siting criteria from Committee
- Consultant's description of process for developing measurable criteria to score and rank landfill sites

Meeting 5

- Review alternative LF sites under consideration and apply RCRA Subtitle D and State/City & County of Honolulu siting criteria. Provide results to Committee.
- Distribute Draft Landfill Siting Evaluation Sheets to Committee and review landfill evaluation process. Review how data is measured and scored in the data sheets. Revise as required based on Committee's input.
- Discuss and obtain Committee's weighting of the criteria

Meeting 6

- Present results of the analysis
- Reveal sites selected by the Committee and discuss
- Discuss content of the Committee's Report to the Mayor
- Consultant directed to prepare the Committee's Draft Report to the Mayor.

Meeting 7

- Discuss Draft Report to the Mayor with Committee. Revise as required and prepare Final Report.
- Submit the Committee's Report to the Mayor and conclude the Committee's role.

Summary of Regulatory Requirements for Municipal Solid Waste; Ash (and Residue); and Construction and Demolition Debris Landfills

January 20, 2011

The following summary of regulatory requirements is taken from Hawai'i Revised Statutes, Chapter 342H¹, Solid Waste Pollution., and assumes the total disposal of 450,000 to 500,000 tons per year (TPY).

Ash is included in Hawai'i regulations as part of the definition of "solid waste" or "waste" where ash is referred to as "residues from air pollution control facilities". Ash is referred to in a similar way in the Resource Conservation and Recovery Act (RCRA) Subtitle D, definition of "wastes" (that definition is referenced in the Hawai'i regulations). Ash is specifically listed as a "special waste". Regulations relating to ash are in RCRA Subtitle D, Subchapter 5, Special Waste Management. It requires that ash be disposed in a monofill that meets the requirements of RCRA Subtitle D, Subchapter 2, Solid Waste Disposal Facilities. The Subchapter 2 requirements are for MSW and ash and are summarized in the following table in the column titled MSW/Ash.

The definitions related to these categories of landfill follow this table.

Regulation Topic	MSW/Ash	C&D
Leachate controls	Considered as part of the design requirements.	The engineering report must include a Leachate Management Plan, but there are no specific requirements.
Explosive gas controls	Operators must have routine monitoring program and develop a control plan if limits are exceeded.	Not addressed
Liner requirements	The upper component must consist of a minimum 30-mil flexible membrane liner with a hydraulic conductivity of 1×10^{-7} cm/second. The lower component must consist of at least a two-foot layer of compacted soil with a hydraulic conductivity of no more than 1×10^{-7} cm/sec. It must tie into the leachate collection system.	A minimum of two feet thick layer of soil, with a maximum permeability of 1×10^{-5} cm per second
Daily cover requirements	At least six inches of soil.	Not addressed directly in the Regs, but the Operations Plan that is required may include daily cover.
Interim cover	Included in the Operations Plan	A minimum of six inches as

¹ Revised statutes downloaded from the Department of Health web page on December 21, 2010.

Regulation Topic	MSW/Ash	C&D
		required by DOH.
Final cover	<p>There are two provisions:</p> <ul style="list-style-type: none"> The final cover shall consist of eighteen inches of earthen material to minimize infiltration and six inches of earthen material. Permeability less than or equal to the bottom liner. 	Two feet of soil, or as approved by DOH.
Alternative Daily Cover (ADC)	Allowed if approved by DOH; use of plastic materials as ADC may conserve significant space.	Not addressed, but might be allowed through the Operations Plan, if approved by DOH.
Closure/Post closure/financial assurance	Required	Requires the same provisions as an MSW landfill.
Ground-water monitoring	Required, with extensive monitoring, testing, and reporting provisions.	A minimum of three wells is specified, if required by DOH.
Siting requirements	RCRA Subtitle D requirements	Lesser restrictions

The definitions from the Hawai'i regulations relating to the table are below:

"Ash" Means the residue including any air pollution flue dust or bottom ash from combustion or the incineration of material including solid wastes.

"Construction and demolition waste" Means solid waste, largely inert waste, resulting from the demolition or razing of buildings, roads, or other structures, such as concrete, rock, brick, bituminous concrete, wood, and masonry, composition roofing and roofing paper, steel, plaster, and minor amounts of other metals, such as copper. Construction and demolition waste does not include cleanup materials contaminated with hazardous substances, friable asbestos, waste paints, solvents, sealers, adhesives, or similar materials. Permit requirements are in Section 11-58.1-19.

"Solid waste" or **"waste"** Means garbage, refuse, and other discarded materials, including solid, liquid, semi-solid, or contained gaseous materials resulting from industrial, commercial, mining, and agricultural operations, sludge from waste treatment plants and water supply treatment plants, and residues from air pollution control facilities and community activities, but does not include solid or dissolved materials in domestic sewage or other substances in water sources such as silt, dissolved or suspended solids in industrial waste water effluents, dissolved materials in irrigation return flows, or other common water pollutants, or source, special nuclear, or by-product material as defined by the federal Atomic Energy Act of 1954, as amended (68 Stat. 923).

"Special wastes" Means any solid waste which, because of its source or physical, chemical, or biological characteristics, require special consideration for its proper processing or disposal, or both. This term includes, but is not limited to, asbestos, used oil, lead acid batteries, municipal waste combustion ash, sewage sludge that is non-hazardous, medical wastes, tires, white goods, and derelict vehicles.

"Municipal solid waste landfill unit" or "MSWLF unit" Means a discrete area of land or an excavation that receives household waste, and that is not a land application unit, surface impoundment, injection well, or waste pile, as those terms are defined under 40 CFR section 257.2. A MSWLF unit also may receive other types of RCRA subtitle D wastes, such as commercial solid waste, nonhazardous sludge, conditionally exempt small quantity generator waste, and industrial solid waste. The landfill may be publicly or privately owned. A MSWLF unit may be a new MSWLF unit, an existing MSWLF unit, or a lateral expansion.

RCRA Subtitle D Wastes are defined in RCRA as *"Solid waste means any garbage, or refuse, sludge from a wastewater treatment plant, water supply treatment plant, or air pollution control facility and other discarded material, including solid, liquid, semi-solid, or contained gaseous material resulting from industrial, commercial, mining, and agricultural operations, and from community activities, but does not include solid or dissolved materials in domestic sewage, or solid or dissolved materials in irrigation return flows or industrial discharges that are point sources subject to permit under 33 U.S.C. 1342, or source, special nuclear, or by-product material as defined by the Atomic Energy Act of 1954, as amended (68 Stat. 923)."*

Section 1

Overview of Existing Solid Waste Management System

1.1 Background

The Hawaii Revised Statutes (HRS), Chapter 342G, requires each county to develop an integrated solid waste management plan (Plan) and revise the Plan once every five years. Beyond the State of Hawaii (State) solid waste management planning requirement, the City and County of Honolulu (the City) adopted legislation¹ that requires the development of a 25-year plan that is updated every 5 years. Therefore, in 2005, the City Refuse Division of the Department of Environmental Services (Refuse Division) began preparing a revised Plan that identifies the infrastructure, operating systems, policies and funding mechanisms to manage the City's solid waste through 2030.

Over the past 25 years the City and County of Honolulu has progressed its management of solid waste from an all manual collection system to an eighty-five percent automated system; constructed three major waste transfer stations and six convenience centers; established the H-POWER waste-to-energy facility, which over the past eighteen years has converted over 10 million tons of refuse to 550 million kilowatt hours of electricity and saved the importation of over 600 million barrels of imported oil; increased the material recycling recovery rate from 5% to some 35% and significantly reduced the volume of waste to landfill.

This Plan continues the City's primary solid waste management objective set forth in previous plans and used to design an integrated system to maximize the recovery of solid waste and minimize the amount of waste that requires landfill disposal.

The Plan begins with an overview of Honolulu's existing solid waste management system (Section 1) and a look at the current and projected waste stream (Section 2). Sections 3 through 11 of the Plan discuss individual elements of the City's solid waste management system, including the details of the current system and future options until 2030. Financial issues including costs and rates are addressed in Section 12. To comply with HRS Chapter 342G, the timeframe for the financial analysis is detailed for the first six years of the Plan's implementation, and provides 5-year highlights until 2030. The Plan contains an implementation strategy in Section 13, a detailed

¹ Section 9-.13 of the Revised Ordinances of Honolulu 1990

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roadmap for how the City will manage waste between July 1, 2009 (beginning of FY 2010) and June 30, 2014 (end of FY 2014), and initiatives that are necessary for the City to manage solid waste through 2030. Section 14, describes the Enterprise Zone program and its relevance to solid waste industries on Oahu.

With assistance from City staff, R. W. Beck gathered data to characterize how solid waste is managed within the City including a list of programs and quantities managed. The components of the current solid waste management system include:

- Solid waste collection;
- Transfer stations;
- Energy recycling;
- Landfilling;
- Recycling and bioconversion (green waste);
- Source reduction;
- Special waste management;
- Household hazardous waste (HHW) management; and
- Public education.

Each of these components, as well the City's current and future demographics, is described in more detail below.

1.2 Demographics

The population of Oahu is unique because in addition to a resident population of over 912,000 in 2005, there are 4.7 million visitors to the island each year. Therefore, it is important to consider the "de facto" population when evaluating waste management options. The de facto population is defined by the Hawaii State Department of Business, Economic Development, and Tourism as "the number of persons physically present in an area, regardless of military status or usual place of residence; it includes visitors present but excludes residents temporarily absent."

Table 1-1 shows the projected resident population and the projected de facto population of Honolulu every five years from 1995 through 2030. The de facto population was about 4.5 percent higher than the residential population in 1995. By 2030, it is projected to be nearly 8 percent higher, suggesting that visitors will comprise a growing portion of the population that generates the waste that must be managed. These data indicate why in Honolulu it is necessary to consider de facto population when planning for waste management.

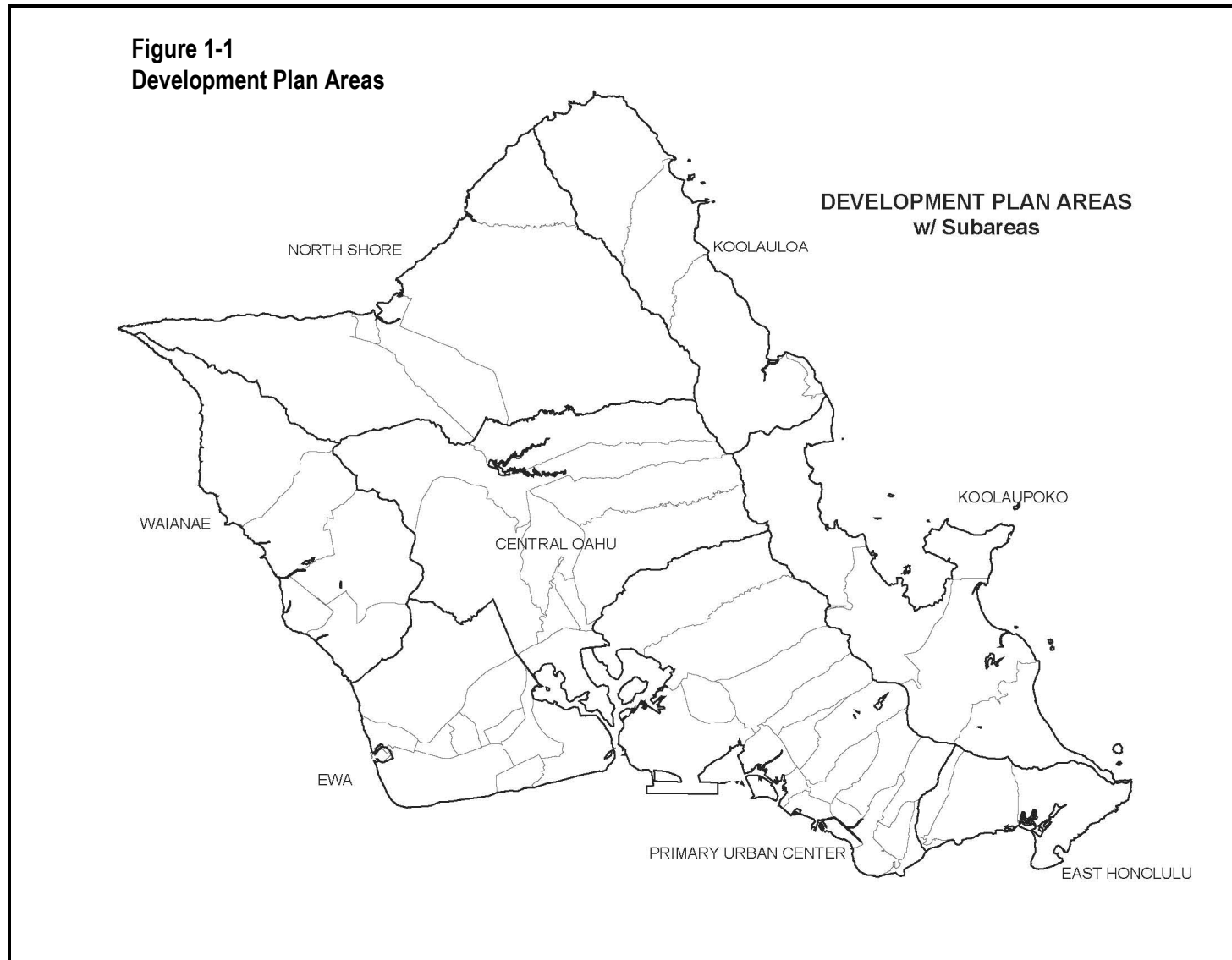
Table 1-1
Residential and De Facto
Population

Year	Resident Population	De Facto Population
2005	912,900	960,940
2010	952,650	1,006,850
2015	995,550	1,056,950
2020	1,037,250	1,095,080
2025	1,078,050	1,151,770
2030	1,117,300	1,197,930

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Figure 1-1 shows the Development Plan Areas that the Honolulu Department of Planning and Permitting (DPP) uses when it collects and analyzes demographic data. The DPP projects change in each of the Development Plan Areas. The projections indicate that during the planning period, the resident population is expected to continue to be concentrated on the southern half of the island with the highest growth rate expected in Ewa. Although the DPP does not provide the de facto population by Development Plan Area, it does project growth in visitor accommodation units. The projections suggest that visitor accommodations will continue to be concentrated in the Primary Urban Center with significant growth in Ewa.

Figure 1-1
Development Plan Areas



Section 1

Different types of businesses generate different amounts and types of waste. Thus, a look at the commercial sector on Oahu can provide information about the waste generated. Nearly 40 percent of the half million jobs on Oahu were in the service sector with another 18 percent in retail in 2005. Table 1-2 shows that nearly three-quarters of the jobs in 2005 were located in the Primary Urban Center. Most of the remainder of the commercial activity is in Ewa, Central Oahu, and Koolaupoko. The number of jobs on Oahu is projected to increase by 4.0 percent during the planning period. The majority of jobs will continue to be located in the Primary Urban Center. The largest rate of job growth is projected to be in Ewa. Some areas, such as East Honolulu and Waianae, are projected to experience a decrease in jobs over the planning period.

Table 1-2
Jobs by Sector
2005

	Military	Admin	Hotel	Culture	Utilities	Industria I	Real Estate	Services	Retail	Constr	Total
Primary Urban Center	20,115	29,124	15,747	1,369	33,943	24,701	27,799	143,970	72,254	10,675	379,697
Ewa	354	1,274	257	349	1,063	1,683	1,553	11,147	2,590	7,296	27,566
Central Oahu	12,229	3,294	94	714	2,158	1,910	2,136	19,878	8,331	5,344	56,088
East Honolulu	0	248	168	53	451	221	592	3,094	1,481	550	6,858
Koolaupoko	7,500	2,158	25	752	1,346	1,098	1,284	14,786	6,337	854	36,140
Koolauloa	33	141	269	409	238	103	228	3,279	1,005	128	5,833
North Shore	126	59	8	451	142	373	153	1,465	1,130	93	4,000
Waianae	47	401	230	532	193	112	244	3,588	1,306	237	6,890
OAHU TOTAL	40,404	36,699	16,798	4,629	39,534	30,201	33,989	201,207	94,434	25,177	523,072

Source: Honolulu DPP

1.3 Solid Waste Collection

1.3.1 Residential Curbside Collection

The Refuse Division (Refuse Division) of the Department of Environmental Services of the City provides municipal solid waste (MSW) collection for all single-family residences and a limited number of multi-family properties, non-residential customers, and City agencies on the island of Oahu. The Refuse Division serves nearly 200,000 accounts as shown in Table 1-3.

Table 1-3
Refuse Division Collection Customers
FY 2006

Single Family Households-	
Manual	21,013
Automated	154,580

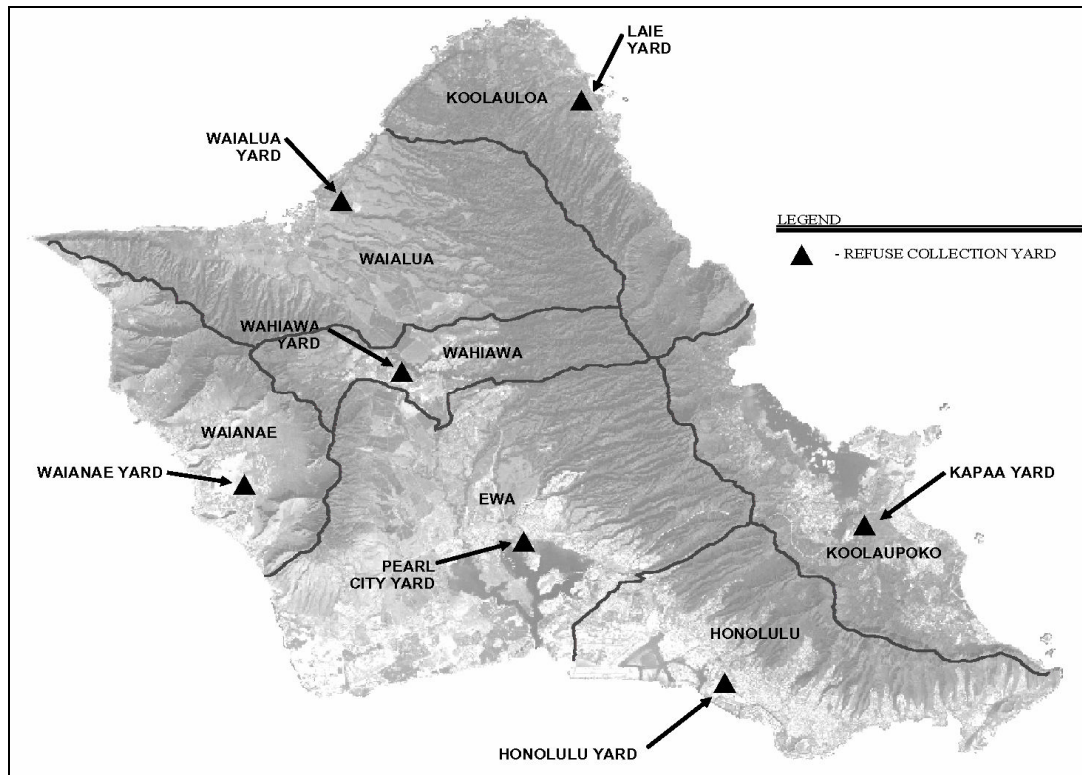
Overview of Existing Solid Waste Management System

Apartment Units	18,348
Multi-Family Households	2,682
Church/School	139
Other City/Government Agencies	56
City Parks	84
Highway Routes	1,956
Stake Routes	404
OAHU TOTAL	199,262

Residential MSW is collected by the Refuse Division curbside two times each week. Most routes are collected using automated vehicles with one staff person on each vehicle. Manual service, using three-manned trucks, is currently used in a few areas on the island where access is limited including areas of steep terrain or one-way or narrow streets. Bulky items are collected by the Refuse Division on a monthly basis and recycled or delivered to the Waimanalo Gulch Landfill (Landfill). Green waste is collected every other week by the Refuse Division and composted by a private company. No direct user fee is currently charged to residential generators for any of the collection services.

The geographic area served by the Refuse Division covers approximately 600 square miles. In order to more efficiently provide service, the Refuse Division has seven collection districts, each with its own yard, located throughout the island. Figure 1-2 provides a map of the island showing the boundaries of the collection districts and the locations of the yards serving them.

Figure 1-2
Division Collection Districts



The Honolulu District has the largest population, with a high density of homes and some neighborhoods with older, narrow streets and dense commercial development. This District includes generators served mostly by private haulers including the Wakiki tourist area, the major business area downtown, and the densely populated multifamily area of Makiki. The narrow streets with restricted turning area limit the potential for automated collection in some areas of this District.

The Ewa District is one of the fastest growing areas on the island, as described earlier (although the boundaries of the Development Plan areas do not correspond exactly to the boundaries of the Collection Districts, there is significant overlap). Both the Honolulu Program of Waste Energy Recovery (H-POWER) energy recycling plant and the Landfill are located in this District, so waste collected here is frequently delivered directly to these facilities rather than to a transfer station. Both single- and multi-family homes are located in this District and most receive automated collection.

The Koolau District is on the windward side of the island and receives more precipitation, resulting in generation of more green waste, than in the Districts on the leeward side. This District has single-family dwellings that are accessible by automated vehicles, as well as some multi-family dwellings and agricultural land.

The Wahiawa District is in the center of the island and includes Mililani, a residential area experiencing high growth. There are both single- and multi-family homes in this District.

Overview of Existing Solid Waste Management System

The Waianae District is on the western side of the island where it is relatively dry. As a result, there is less green waste generated than elsewhere. Single family homes and agricultural land comprise much of this District. Koolauloa, on the northeastern part of the island is sparsely populated with single-family homes.

Table 1-4 summarizes the average number of daily routes operated, by yard. Some of the average daily routes are fractional since the same number of routes is not always operated daily. Based on this data, approximately 55 automated cart routes are operated by the Refuse Division every Monday through Saturday.

Table 1-4
Automated Collection Routes by Yard

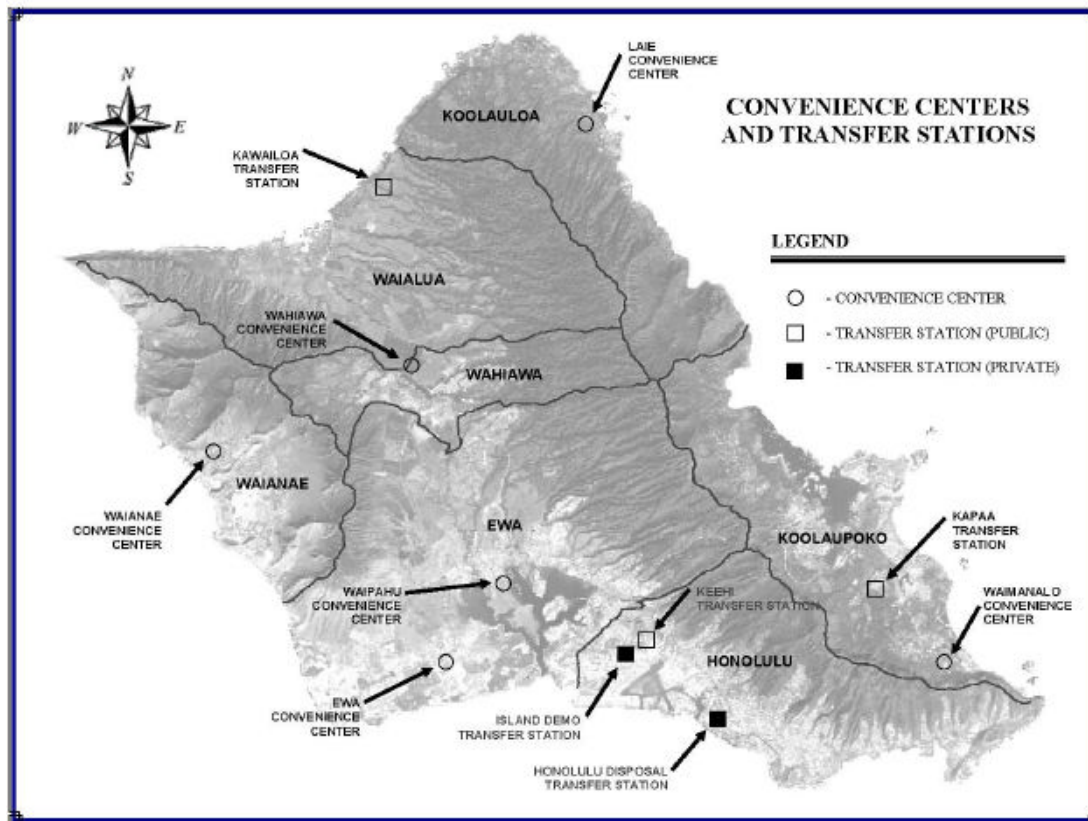
Yard	Average Daily Refuse Routes
Honolulu	17
Kapaa	8.33
Laie	1.67
Pearl City	17.33
Wahiawa	6
Waialua	1
Waianae	4
Total	55.3

Source: Operations Cost Study, R.W. Beck, Inc.. Draft April 2007.

1.3.2 Convenience Centers

In addition to curbside collection, the Refuse Division operates six convenience centers throughout the City where residents can drop off up to two loads of waste per day. Figure 1-3 indicates their location on a map. Residents can also drop-off MSW and recyclables at one of the three transfer stations (described in Section 1.4) or at the Landfill. Residents drop off MSW and other materials at all of these sites at no cost.

Figure 1-3
Convenience Centers and Transfer Stations



Only residential waste is accepted at the convenience centers, including residential MSW, green waste, auto batteries, and appliances. Refuse is separated as follows and delivered to the appropriate disposal or recycling location:

- *Combustable MSW* which is sent to the H-POWER energy recycling plant.
- *Non-combustable MSW* which is disposed at the landfill.
- *Yard waste* which is delivered to the mulching and composting operation.
- *Large appliances, tires, and auto batteries* which are set aside for separate collection and delivery to recycling facilities.

Table 1-5 shows the amount of material received at each of these facilities in FY 2006. More than 36,000 tons of MSW was received at the convenience centers, most of which was non-combustible and sent to the Landfill. Another 5,582 tons of green waste was received at the convenience centers and transported to one of two Hawaiian Earth Products (HEP) facilities for composting. Section 5 on Special Wastes addresses how the other materials collected at the convenience centers are managed.

Overview of Existing Solid Waste Management System

Waipahu, located in the center of Ewa, receives most of the MSW delivered to the convenience centers while the majority of the green waste is delivered to Waimanalo and Laie which are located on the wetter, windward side of Oahu. All the convenience centers receive significant amounts of special wastes including white goods, tires, batteries, and propane tanks.

Table 1-5
Receipts at Convenience Centers, July 1, 2005 through June 30, 2006

Name	Combustible Refuse (Tons)	Non-Combustible Refuse (Tons)	Green Waste (Tons)	White Goods (Units)	Tires (Units)	Batteries (Units)	Propane Tanks (Units)
Waimanalo	2,369	1,625	1,509	2,777	4,220	1,749	710
Ewa	0	6,051	867	3,590	4,879	2,777	755
Waipahu	0	10,341	459	5,745	5,401	2,348	988
Laie	2,143	1,797	1,477	3,525	3,348	1,139	564
Waianae	0	5,733	439	4,320	6,373	2,885	606
Wahiawa	247	5,825	831	4,028	5,581	2,600	906
TOTAL	4,759	31,372	5,582	23,985	29,802	13,498	4,529

1.3.3 Commercial Solid Waste Collection

Except for the limited number of businesses served by the Refuse Division, shown in Table 1-3, commercial MSW is collected by private haulers. The private haulers compete to haul waste from these generators, including commercial and industrial facilities, condominiums, and military bases. Waste received from condominiums and apartments is considered commercial waste if collected by a private hauler. Condominium and apartment complexes can receive public collection, if their development meets the physical requirements of the City. These requirements are given to the developers during the planning stages of their development. Developers have the option to either meet these requirements or opt for private collection of their trash. Most private haulers deliver their waste directly to the City disposal facilities at H-POWER or the Waimanalo Gulch Sanitary Landfill. A small number of commercial loads are delivered to the City transfer stations. Honolulu Disposal Service, the largest private hauler, operates its own transfer station, which is permitted at 1000 tons per day. On a daily basis, the City determines which of its disposal facilities receive commercial waste and notifies the private haulers accordingly. Construction and demolition waste is not permitted at either H-POWER or the Waimanalo Gulch Sanitary Landfill, and is required to be taken to the privately-owned C&D landfill operated by PVT in Nanakuli. In FY 06 some 384,000 tons of commercial waste were disposed of at H-POWER and 114,000 tons at the Waimanalo Gulch Sanitary Landfill. Approximately 200,000 tons of C&D waste were received at the PVT landfill.

1.4 Transfer Stations

The Refuse Division operates three transfer stations in Kapaa, Keehi, and Kawaiiloa, shown on Figure 1-3. These transfer stations serve to consolidate waste from MSW collection trucks into large transfer trailers for more efficient and economical transport to H-POWER or the Landfill. Residents may also dispose of their MSW and special waste materials at the transfer stations for free. The tipping fee for businesses and commercial users at the transfer stations is \$110.60 per ton plus 12 percent for recycling and a 35 cent per ton state surcharge.

The Keehi and Kapaa transfer stations are the largest transfer stations operated by the City, each with a design throughput of 500 tons per day. This throughput is exceeded at times at both facilities.

The Keehi Transfer Station is located at 606 Middle Street on a 5-acre site in Honolulu, between Nimitz Highway and the H-1 Freeway. It is operated by a staff of 24, including supervisors, equipment operators, truck drivers, scale attendants, and ramp attendants. The transfer station is open from 4:00 a.m. to 6:00 p.m., Monday through Saturday. The primary customer during the morning is the Refuse Division. Due to the congested traffic from the large trucks in the morning hours, public self-haul customers are allowed to deliver waste from 12:00 p.m. to closing.

The Kapaa Refuse Transfer Station is located at Kapaa Quarry Access Road. The transfer station has 31 authorized positions, including supervisors, equipment operators, truck drivers, scale attendants, and ramp attendants. This facility operates seven days a week from 7:00 a.m. to 6:00 p.m. The primary customers are the Refuse Division haulers, private haulers, public self-haulers, commercial self-haulers, and small contractors. Waste types received include residential, commercial, institutional (small), and combustible construction and demolition.

The Kawaiiloa Refuse Transfer Station is located on 62-180 Kawaiiloa Drive next to the closed Kawaiiloa Landfill. The facility is operated by six employees, including the lead operator, two equipment operators, and three truck drivers. The primary customers are the Refuse Division collection vehicles and residential self-haulers. Waste types received include residential, green, and combustible construction and demolition. The facility operates seven days a week from 7:00 a.m. to 3:30 p.m. The convenience center located at the same facility operates from 7:00 a.m. to 6:00 p.m., seven days a week.

A total of 239,065 tons of combustible MSW and 31,229 tons of non-combustible MSW were delivered to the City's transfer stations between July 1, 2005 and June 30, 2006. The majority of this waste goes to the Keehi transfer station in southern Oahu. In addition a total of 4,404 tons of green waste were delivered to Kawaiiloa and Keehi transfer stations. In the Kapaa collection area, green waste was directed to the nearby composting location. Over 15,000 white goods and 15,000 tires were also handled at these facilities. Table 1-6 shows the quantities of materials by type transferred at each of the three public transfer stations.

Overview of Existing Solid Waste Management System

Table 1-6
Receipts at Transfer Stations, July 1, 2005 through June 30, 2006

Name	Location	Combustible Refuse (Tons)	Non-Combustible Refuse (Tons)	Green Waste (Tons)	Scrap Metal (Tons)	White Goods (Units)	Tires (Units)	Batteries (Units)	Propane Tanks (Units)
Kawailoa	Northern Oahu	17,560	0	2,196	0	2,742	5,560	2,052	645
Keehi	Southern Oahu	142,775	0	2,208	0	0	0	1,316	0
Kapaa	Eastern Oahu	78,730	31,229	0	1,925	12,594	10,337	4,929	2,124
Total		239,065	31,229	4,404	1,925	15,336	15,897	8,297	2,769

In addition to the three City transfer stations, two additional private transfer stations operate on Oahu, the Honolulu Disposal transfer station and the Island Demo transfer station. The Honolulu Disposal transfer station accepts MSW from the company's own trucks. The Island Demo facility receives construction and demolition debris (C&D), sorts materials for recycling, and transfers the non-recyclable portion to disposal facilities.

1.5 H-POWER

H-POWER is a waste-to-energy (WTE) facility operated by the City through a sale/lease-back arrangement with DFO Partners, Bank of America, Inc., and the Ford Credit Corporation, and managed through a full-service vendor contract since 1990. The facility, located in Campbell Industrial Park on property owned by the City, uses combustion technology to recycle combustible solid waste materials into energy. The MSW is processed into refuse-derived fuel (RDF) that is used as fuel to generate electricity. Approximately 90 percent of the volume and 70 to 75 percent of the weight of the MSW received at H-POWER is diverted from the landfill, and converted into renewable electric energy. The ash and residue from H-POWER are delivered to the Waimanalo Gulch Landfill.

The City has a waste supply commitment with the facility operator to deliver 561,600 tons of solid waste per year to H-POWER. The majority of residential and commercial MSW collected on the island is delivered here. In FY 2006, 602,520 tons of waste was recycled for renewable energy recycling at H-POWER. An additional 153,801 tons was characterized as suitable for energy recycling at H-POWER, but had to be redirected from the H-POWER facility to the Landfill, because of capacity limitations or the need for periodic maintenance. A total of 71,381 vehicles delivered waste (or would have delivered waste, if not diverted, to the Landfill at facility closure) to H-POWER in 2006. Nearly half of these were Refuse Division vehicles. The other half were private haulers delivering waste from commercial generators. The current tipping fee paid by the private haulers and other commercial vehicles at the H-POWER is \$91 per ton (includes \$0.35 state surcharge and 12 percent City recycling surcharge).

The City currently has a power purchase agreement with Hawaiian Electric Company (HECO) to purchase the electricity generated at H-POWER. Over 320 million kilowatt hours of electricity were generated in FY 2006. The sale of electricity to HECO generated nearly \$35 million in revenues for the City.

Section 1

H-POWER also extracts ferrous metals from the waste using magnets and non-ferrous metals from the ash using an eddy current. Approximately 18,600 tons of ferrous metals and 2,100 tons of non-ferrous metals were recycled in FY 2006 from H-POWER. The sale of ferrous and non-ferrous metal generated approximately \$1.5 million per year for the City.

As previously discussed, H-POWER is presently operating beyond its design capacity. To attempt to address this situation, the City has announced its intention to expand H-POWER to increase overall capacity and operating efficiency. More details on the expansion of H-POWER are provided in Section 8.

1.6 Landfills

The Landfill is the only permitted landfill accepting MSW on Oahu. It has been in operation since September 1989. The Landfill is owned by the City. Operations of the Landfill are under contract to Waste Management of Hawaii Inc. (WMI), except for the scales which are operated by the City.

The Landfill is located in Kapolei on the leeward side of Oahu in Waimanalo Gulch, Kahe Valley. The Landfill property is 200 plus acres. About half of the property is permitted for landfilling and support operations.

It is the intent of the City that the Landfill accept two types of MSW: 1) noncombustible MSW and 2) ash and residue from the H-POWER facility.

In FY 2006 (July 1, 2005 to June 30, 2006), the Landfill received 337,667 tons of MSW. However, nearly half of this was combustible MSW diverted from H-POWER, as shown in Table 1-7. Additionally, the Landfill received 88,380 tons of ash and 79,443 tons of residue from the H-POWER waste-to-energy facility. Per the permit renewal issued by the State in April 2003, the peak daily disposal rate can not exceed 3,300 tons per day of MSW and 800 tons per day of ash and residue. In FY 2006, the landfill averaged 930 tons per day of MSW and 460 tons per day of ash and residue.

Table 1-7
Received at Waimanalo Gulch Landfill
FY 2006

Material	Total Delivered (Tons)	Average Daily Delivery (Tons)	Daily Amount Allowed by Permit (Tons)
MSW	153,801+183,866 ¹	930	3,300
Ash + Residue	88,380 + 79,443	460	800
Total	505,490	1,390	4,100

¹ 153,801 tons of MSW was combustible MSW diverted from H-POWER due to closure because of capacity or maintenance issues.

Of the 183,866 tons that directly entered the Landfill in 2006 (apart from the 153,801 tons that were diverted from H-POWER as described above), 22 percent was residential bulky or non-combustible waste delivered by the Refuse Division, 17 percent was sludge delivered by private

Overview of Existing Solid Waste Management System

haulers from the City's wastewater treatment plants, and 16 percent was from the City's convenience centers. The remaining 45 percent was non-combustible materials delivered by other entities.

R. W. Beck conducted a composition study of the MSW delivered to the landfill in September 2006 as part of the planning process to identify materials that have the potential for landfill diversion. Description of the results of the composition study are discussed in Section 2 and the full report is included in Appendix A.

The current tipping fee paid by the private haulers and other commercial vehicles at the Landfill is \$91. This includes a \$0.35 per ton state surcharge and a 12 percent City recycling surcharge.

On March 14, 2008, an amendment to the State Special Use Permit was approved that requires the Landfill to cease accepting any additional waste material and be closed in accordance with an approved closure plan by November 1, 2009, or until the approved area reaches permitted capacity, whichever occurs first. To extend the life of the Landfill beyond 2009, the Landfill would need to be expanded. An expansion would require completion of an Environmental Impact Statement, which is currently in draft stages of development (the Environmental Impact Statement Preparation Notice was issued in November 2006 and the Draft Environmental Impact Statement was issued on May 23, 2008). More details of this process are provided in Section 8.

In addition to the Waimanalo Gulch Landfill, a private landfill (PVT) is located in Nanakuli and is permitted to accept C&D waste and petroleum contaminated soils. Information on the exact quantity of material received at this facility was not available, but is estimated at approximately 200,000 tons per year. This estimate is used for planning purposes only.

1.7 Recycling and Bioconversion

1.7.1 Recycling

The City has implemented recycling programs that have contributed to an increase of residential, commercial, and industrial recyclables from approximately 74,000 tons in 1988 to approximately 609,698 (another 18,675 was reported as reused resulting in a total of 628,373 diverted) in 2005.

In January of each year, recyclers report to the City the quantity of each material recycled over the past year. At the time of preparation of this Plan the recyclable data available was for 2005. Rather than estimating the amounts of recyclables for FY06 it was determined that the actual 2005 data would be used throughout the report. All other waste material quantities are based on FY06 data.

Some of the more notable recovery programs, excluding energy recycling, that have contributed to this increase include:

- The island-wide, Community Recycling Bin program;
- The curbside green waste collection program, serving 150,000 households;
- The curbside island-wide bulky item collection program;

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This Section provides an overview of these programs.

1.7.1.1 Recycling Collection Programs

The Refuse Division partners with schools and shopping centers to provide seventy-seven 40 cubic yard drop-off bins island-wide (Community Recycling Bins.) The locations are listed at www.opala.org. Forty additional recycling bins are planned in both schools and City parks.

The Community Recycling Bins are divided into two sections: one for mixed containers and one for paper. Mixed containers include aluminum, glass, and plastics. Paper includes newspaper, corrugated cardboard, and white and color office paper. The host school receives the revenue from the sale of recyclables as an incentive for siting a drop box on their property. Since the program began in 1990, participating schools have received more than \$1 million in this revenue sharing agreement. Employees and students of the participating schools can also deposit recyclable materials in the drop boxes which results in extra revenue to the host school and lower disposal costs. The City recently negotiated a new contract with Honolulu Disposal Service to manage the Community Recycling Bins, as well as to process and market the materials collected. Under this new contract, schools and other organizations will receive \$15 per ton for paper (an increase from \$1 per ton) and \$75 per ton for the mixed containers (an increase from \$45 per ton). The vast majority of these recyclables are processed outside of Hawaii. More information on recycling markets is provided in Section 9. In FY 2006, 10,488 tons of paper and 1,842 tons of commingled containers were collected at these Community Recycling Bins.

In addition to the Community Recycling Bins program, residents can bring appliances, batteries, and tires to the six convenience centers and three transfer stations for recycling as described in Section 1.3.2. Appliances and other bulky items are collected at the curb, island-wide in all residential areas, on a monthly basis and recycled. These programs are described in more detail in the subsequent sections on Special Waste and Bioconversion.

The City has been evaluating mixed curbside recycling for single-family residents. As part of this effort, the City is presently conducting pilot programs to determine the best way to implement a City-wide program. A discussion of these pilot programs is included in Section 4.

The majority of multi-family residences on the island are serviced by private waste haulers. These haulers offer a variety of recycling services and container options for their multi-family customers. The City provides a list of six companies that provided recycling collection to multifamily units on the island on its web site. Residents in multi-family units that do not have recyclables collected by a private hauler may self-haul recyclables, using maintenance personnel and/or volunteer residents.

1.7.1.2 Advance Disposal Fee on Glass

The City administers the Glass Recycling Program with funding and authorization from the State of Hawaii's advance disposal fee (ADF) program. The advance disposal fee is 1.5 cents for every glass container that is not part of the Deposit Beverage Container Program (DBCP). In turn, the City receives a grant from the State, from which they pay glass processors 8 cents per pound (\$160 per ton) for non-deposit glass (wine, spirit, and food jars, primarily). Deposit glass containers are generally not processed through this system, as there is an incentive for processors to return those materials through the DBCP that pays a 2-cent-per container handling fee.

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1.7.1.3 Deposit Beverage Container Program (HI5)

In the State of Hawaii, a 5-cent deposit per beverage container (DBC) is charged for the purchase of glass, aluminum, and plastic containers defined under the law. A 1-cent non-refundable container fee is also assessed to support the costs of recycling and program administration. Beverages included under the law are soft drinks, beer, juices, water, teas, and sports drinks. Excluded beverages include wine, milk, and hard liquor. Residents receive a 5-cent deposit refund per container, or an equivalent segregated weight payment for loads of 200 containers or more, when containers are brought to a redemption center to be recycled. In turn, Certified Redemption Centers are reimbursed by the DOH for the 5-cent deposit, and also receive a handling fee, currently set at 2 cents per container on Oahu.

Currently, over 60 Redemption Centers are privately operated throughout the island. Redemption centers operate on different schedules, with some offering very limited days and hours of operation. Redemption center locations and hours of operation are listed at www.opala.org.

Currently all redemption center operators are transporting the redeemed DBCs to Reynolds Recycling, Honolulu Recovery Systems, Island Recycling or RRR Recyclers Services for processing and marketing. The quantity of deposit beverage containers redeemed in FY 2006 from Oahu was approximately 925 million units.

In 2008, the City will offer schools and organizations event bins to increase collection of HI5 containers. The bins have three sections so that aluminum, plastic, and glass deposit containers can be collected separately. Each school or organization will receive the 5 cents for each beverage container.

1.7.1.4 Commercial Recycling

The recycling of “targeted” materials is required by law for most businesses and government agencies on Oahu. Mandatory recycling laws affect restaurants, bars, hotels, office buildings, shopping centers, retail and grocery stores, hospitals, food courts, food manufactures and processors, golf courses, parks, tree trimmers (as yard waste), auto shops, and appliance dealers.

Most large businesses on Oahu are affected by the City’s recycling ordinances. The requirements identify the types of businesses that are required to implement a recycling system and which materials are targeted. Table 1-8 summarizes the laws impacting the commercial sector.

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**Table 1-8
Commercial Recycling Ordinances**

Material	Generator Type	Ordinance Requirement	Ordinance Number
Green Waste	Commercial and government	Restricted to a maximum of 10% per load at H-POWER & and transfer stations Banned at landfill	9-1.7
Cardboard	Commercial and government	Restricted to a maximum of 10% per load at all disposal facilities	9-1.7
Tires, auto batteries, white goods, scrap metal	All generators	Banned at all disposal facilities	9-1.7
Glass	Bars and restaurants	Recycling required	9-3.1
Office paper, newspaper, cardboard	Office building with 20,000 square feet of more	Recycling required	9-3.1
Food waste	Hotels, restaurants, grocery stores, food courts, food manufacturers/processors, hospitals meeting specific size criteria	Recycling required	9-3.1
City agencies	Newspaper, cardboard, office paper, aluminum, glass, plastics	Recycling required	9-1.11

Some of the mandatory recycling ordinances are enforced at the point of generation. The City conducts annual site inspections of businesses that are required to recycle. If during a site inspection the business is not in compliance with the mandatory recycling ordinance(s), a City Recycling Specialist will work with management to improve and/or correct the system. Other recycling ordinances are enforced at the point of disposal. Inspectors monitor trucks unloading at the landfill, H-POWER, and transfer stations. By visual inspection, an inspector determines if a truckload is over the limit on restricted material or contains any amount of banned material. The offending vehicle/hauler can be denied access to City disposal facilities for up to two weeks per violation.

As required, City offices recycle paper, cardboard, and other materials at approximately 20 of its buildings. The City collects paper in 96-gallon wheeled carts labeled with the type of paper that is included in the program. Cardboard is either put in specially designated dumpsters or flattened

Overview of Existing Solid Waste Management System

and stacked at buildings that do not have dumpsters. A contractor collects, processes, and markets the material collected. Table 1-9 shows the tons of paper and cardboard recycled from City offices in 2004, 2005, and 2006.

Table 1-9
City Office Building Recycling (Tons)

Material	2004	2005	2006⁽¹⁾	Jan-May 2007
White Office Paper	40.5	87	67.0	18
Colored Office Paper	18.5	25	18.2	6
Newspaper	5.3	31	21.4	8
Cardboard	15.6	25	18.1	6
Total:	80.0	168	124.7	39

(1) May and June data were extrapolated from previous 10 months

The City also promotes commercial recycling through the Partnership for the Environment (Partnership). The Partnership was created by the City and the business community to enhance the recycling resources for businesses in an effort to divert more materials from the landfill. The City initiated the program and its recycling staff provides technical assistance, education, and leadership training. An extensive resource guide and recycling manual had been produced and is available for businesses interested in starting recycling programs. In addition, the City's Recycling Specialist assists businesses with recycling, waste reduction, and waste diversion issues and conducts waste assessments upon request.

1.7.1.5 Other Recycling Programs

- **The State of Hawaii** – Funding for public school disposal is provided by the State of Hawaii. Collection is provided by private haulers under contract to the State. The schools that host City recycling bins can use them for school generated recyclables.
- **Backhauling** – During 2005, large retailers “backhauled” 12,188 tons of corrugated cardboard by shipping these materials back to the mainland in empty shipping containers.
- **H-POWER** – Over 18,000 tons of metals are extracted and recycled each year at H-POWER.
- **Schnitzer Steel Hawaii (formerly Hawaii Metals Recycling)** – This company is the oldest and largest recycling company in the islands, exporting more than 100,000 tons of scrap metal annually. All metals, including junk cars and white goods are recycled at Schnitzer.
- **Unitek** - Unitek recycles the islands used tires. The tire treads are shredded and burned as fuel to generate electricity, or ground into crumb rubber to be used in landscaping. Tire recycling is described in more detail in Section 1.9.
- **Computer recycling** - Described in Section 1.9.

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1.7.2 Bioconversion

1.7.2.1 Green Waste

Green waste is one of the few materials that can be collected, processed and reused on Oahu. In addition, green waste is one of the largest components of the waste stream so diversion can have an impact on landfill life and recycling goals.

The City provides curbside collection of green waste twice per month to over 150,000 households on the island. Approximately two-thirds of the households place green waste in bags and bundles at the curb (using a manual collection system), while one-third use the automated blue-bin collection system (as of March 2006) for green waste. The City replaced the blue bins with green bins between 2006 and 2008. The new automated green bin collection system is expected to increase the amount of green waste collected by making it more convenient for households to recycle. The City collected approximately 35,000 tons of green waste through the curbside residential program and the drop-off program, including convenience centers and transfer stations, in FY 2006. With the expansion of the automated collection system, the City expects to increase green waste recycling to approximately 50,000 to 80,000 tons annually.

A total of nearly 10,000 tons of green waste was collected at convenience centers and transfer stations in FY 2006. Residents may also drop off green waste at one of two of the composter's sites, one at Kailua (Windward) and the other at Campbell Industrial Park.

Residential green waste, along with commercial green waste and food waste, are composted by HEP at a 17 acre site at the Campbell Industrial Park and a 26-acre site in Kailua. Mulch is available free to City residents and compost can be purchased directly from the composters or at local garden shops. The City also encourages residents to leave grass clippings on the lawn after mowing to return the nutrients to the soil².

Green waste generated by commercial and government sources is banned from disposal pursuant to Revised Ordinances of the City and County of Honolulu 1990 (ROH), Chapter 9-1.7. Trucks hauling commercial and government waste are limited to a maximum of ten percent green waste per load at H-POWER and at City transfer stations. The material is completely banned from landfill disposal. HEP accepts this material for a fee and processes it into soil amendment products. Generators are also encouraged to consider small-scale do-it-yourself mulching and composting. A landfill ban for all green waste went into effect in January 2003, although the City has been restricting most green waste at disposal facilities since the mid 1990s.

The City reported that in 2005 approximately 200,200 tons of green waste was generated and 79,500 tons, or 40 percent, was recycled.

1.7.2.2 Food Waste and Biosolids

Oahu has been recycling food waste for decades, primarily by hog farmers and a local company, Island Commodities. However, diversion of food waste became more widespread in the 1990s. In 1997, the City passed a mandatory recycling ordinance (ROH Chapter 9-3.1) for large commercial food waste generators, such as restaurants, grocery stores, food courts, hotels, hospitals and manufacturers. Food waste is being recycled through a mix of technologies. For

² The City discourages residents from raking grass clippings into the street as this can block storm sewers.

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example, food waste is used as animal feed (low technology) composted (medium technology) and converted into biodiesel for use in vehicles, such as City vehicles (high technology). The City reports that a total of 32,450 tons of food waste was recycled on Oahu in 2005.

Biosolids are also processed and reused on Oahu. Biosolids from the Honouliuli Waste Water Treatment Plant in Ewa were composted at the Navy facility in Kalaeloa (former Barbers Pt.) until 2006. Approximately 10,000 tons were composted in 2005. The City has contracted with Synagro to generate fertilizer pellets from approximately 20,000 tons of sewage sludge from the Sand Island Wastewater Treatment Plant.

1.7.3 Processing and Markets

Honolulu Recovery Systems processes and markets materials collected at the community recycling bins. Another processor, Island Recycling, handles the office paper collected from City offices. Recyclers process and sell commodities on the mainland (usually the west coast) or the Pacific Rim, usually through brokers. Typically, materials are baled or otherwise reduced in volume before being shipped to market. In some cases, end products are processed and used in final products locally. Some of these Oahu recyclers also accept materials generated on other Hawaiian islands.

There are unique challenges to marketing recyclables from a remote island and these are highlighted in Section 9. However, the City has undertaken several initiatives to develop and promote end uses for materials on the island and these include:

- The City adopted the specifications for using crushed glass in road construction in 1993;
- The City buys only recycled-content paper to support the recycled paper market;
- The City continues to explore other types of products made from recycled material - such as recycled plastic lumber - which could be used in place of products currently being purchased;
- The City has also showcased recycled-content products at the Honolulu Zoo;
- The City coordinates a display at the annual “Made In Hawaii” festival at the Blaisdell Center each August, which showcases goods that are made locally from recycled materials; and
- The annual Discover Recycling Fair features in September recycled products as well.

Markets are developing locally for materials that are generated in high volumes, have relatively low value, and for which large and costly production facilities are unnecessary. These materials include organics (untreated wood, green waste, food waste), aggregate (concrete, brick, aggregate), glass, and waste tires. In the case of glass and tires, some of these materials are still shipped off-island; however, it is not always cost-effective to do so.

1.7.4 Amount Diverted through Recycling and Bioconversion

The Refuse Division reports that 609,698 tons were recycled in 2005, the most recent year for which data were available. Another 18,675 tons were reused as described in Section 1.8

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resulting in a total of 628,373 tons diverted in 2005. Table 1-10 shows that two types of material, construction and demolition debris and metal (particularly ferrous metal) comprised over half of all material recycled. Paper, other metal, glass, plastic, green waste, tires, auto batteries, electronic scrap, wood waste and pallets, and sewage sludge were also recycled.

Table 1-10
Total Tons Recycled
Calendar Year 2005

Material	Tons	Percent of Total Recycled
Corrugated Cardboard	45,334	
Newspaper	18,372	
Magazines	14	
Office Paper	3,568	
Mixed Waste Paper	5,746	
Telephone Books	521	
Total Paper	73,555	12.1%
Ferrous	145,391	
Non-Ferrous	14,078	
Total Metals	159,470	26.2%
Glass	19,313	3.2%
Plastic	3,753	0.6%
Tires	8,719	1.4%
Auto Batteries	4,761	0.8%
Chemicals/Oils	15,374	2.5%
Green Waste	79,500	
Wood	8,229	
Food Waste	32,447	
Total Organics	120,176	19.7%
Sewage Sludge	10,270	1.7%
Construction & Demolition Debris	193,829	31.8%
E-Scrap	478	0.1%
TOTAL	609,698	100.00%

Source: Honolulu Department of Environmental Services.

1.8 Source Reduction and Reuse

Source reduction is any action that causes a net reduction in the generation of solid waste before the waste is collected. Source reduction programs include, but are not limited to replacing

Overview of Existing Solid Waste Management System

disposable materials and products with reusable ones, reducing packaging, reducing the volume of green waste set out for collection through home composting or leaving grass clippings on the lawn, and reusing materials ranging from paper and containers to clothes.

1.8.1 Existing Programs

Reusing products is part of Hawaii's heritage and contributes to saving landfill capacity. Although sometimes difficult to identify all reuse activities, Table 1-11 indicates a total of 18,675 tons were reported as reused on Oahu in 2005.

Table 1-11
Reported Reuse, 2005
(tons)

Furniture	3,530
Appliances	2,757
Misc. Household	2,321
Clothing/Textiles	10,059
Hardware Fixtures	6
Freon	2
Total	18,675

Some of the programs operating on Oahu that contribute to the tonnage diverted for source reduction or reuse include:

- **Thrift Stores** – Numerous nonprofit organizations around Oahu are involved in reuse operations. Some provide pickup service; others ask that items be delivered to their location or collection box sites. A donation of goods to a qualified nonprofit organization with 501(c) (3) status may provide a tax deduction for the donor. Residents can check the City's website www.opala.org for a list of these organizations.
- **Aloha Shares Network** — Aloha Shares Network accepts surplus materials from businesses and residents and distributes them to nonprofits and schools.
- **Nanakuli Housing Corporation** — The Base Yard at Sand Island receives construction materials donated by contractors, homeowners, and businesses and distributes these to families needing materials to repair their homes. By diverting these materials from disposal, the amount of materials going to landfills is reduced while giving a tax donation opportunity to donors. Families with very limited income, including the elderly and disabled, are their focus.
- **Grasscycling** – Grasscycling is the practice of leaving grass clippings on the lawn after mowing. The City grasscycles at all City parks and recreation facilities. The www.opala.org website also promotes grasscycling, educating readers on the benefits of grass cycling, such as the return of nutrients to the soil, and reducing the amount of waste disposed.

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- **Backyard composting** – The City has partnered with HEP to offer free composting workshops at both HEP locations. Residents learn about composting, receive free mulch, and tour compost facilities. The City provides free backyard composting handbooks upon request. Residents can also learn about home composting on the web site. In addition, the City’s Recycling Office will train interested high school students in the techniques of small-scale home composting.
- **Business Waste Prevention Guide** – The Waste Prevention Guide for businesses is available on the website, www.opala.org. It provides information about producing less waste and dealing with excess waste. Businesses can produce a large amount of waste in daily operations and therefore may have an opportunity for cost savings by reducing waste.
- **Freecycle™ Honolulu** – This is an email-based exchange that “connects people with things they want to throw away with others who would like to have those things.” All items posted are available at no cost.

1.9 Special Waste Management

Special waste is any material in the solid waste stream that requires unusual handling and/or has disposal restrictions or that the City desires to handle separately. Special wastes typically are not collected with other municipal solid waste. They require specialized processing, preparation, or treatment before reuse, recycling, or disposal. These materials include:

- Asbestos;
- Used motor oil;
- Auto batteries ;
- Combustion residue (Ash);
- Municipal wastewater sludge;
- Agricultural waste;
- Medical waste;
- Tires;
- White goods;
- Derelict vehicles;
- Construction and demolition debris;
- Foreign wastes; and
- Electronic waste.

White goods and other bulky items are collected at the curb on a monthly basis. White goods, tires, and batteries are collected at the City’s convenience centers and transfer stations. Asbestos, medical waste, and foreign wastes can be disposed at the landfill after certain procedures related to their handling have been followed. While municipal wastewater sludge can also be landfilled after being treated, the City is working with private vendors to keep this material out of the landfill. Some special wastes, such as used motor oil and auto batteries also

Overview of Existing Solid Waste Management System

are handled by businesses on Oahu. Section 5 describes requirements and existing programs on Oahu to handle special wastes, as well as options for future management.

1.10 Public Education

The City maintains an active and innovative Education and Awareness program about their solid waste management programs. The cornerstone of these programs is the City's website, www.opala.org. Other programs and educational materials used by the City include:

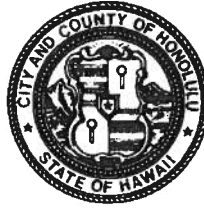
- Waste Line, an electronic newsletter;
- Videos;
- Tour de Trash;
- School Teacher Kits;
- Partnership for the Environment, a coalition of businesses working with the City to reduce waste;
- Print advertisements;
- Refuse and Recycling Guide;
- Environmental Concern Line; and
- Special events and public education campaigns.

These programs are described in more detail in Section 7.

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY AND COUNTY OF HONOLULU

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PETER B. CARLISLE
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DIRECTOR

MANUEL S. LANUEVO, P.E., LEED AP
DEPUTY DIRECTOR

ROSS S. TANIMOTO, P.E.
DEPUTY DIRECTOR

IN REPLY REFER TO:
RE 10-060

January 7, 2011

Mr. William Aila, Acting Chairperson
Department of Land and Natural Resources
State of Hawaii
P. O. Box 621
Honolulu, Hawaii 96809

Dear Mr. Aila:

Subject: Use of Land Owned by the State of Hawaii (Tax Map Key: 4-1-008:013)
for a Future Landfill for the Island of Oahu

The City and County of Honolulu (City) is currently undertaking an island-wide site inventory of potential locations for a new landfill. Land owned by the State of Hawaii, (Tax Map Key: 4-1-008:013) has been identified as a possible location for a new landfill facility. Attached is a map that shows the proposed location of the site.

The City understands that the site of any new landfill is very difficult with many community and technical issues to be overcome. Therefore, we would like to receive any preliminary comments, concerns, or objections you may or may not have on the potential use of the indicated site. A written reply concerning this request would be greatly appreciated.

Thank you in advance for your response on this important issue. Should there be any questions please contact Steven Serikaku, P.E., of the Refuse Division Planning Branch at 768-3428.

Sincerely,

A handwritten signature in black ink, appearing to read "T. Steinberger".

Timothy Steinberger, P.E.
Director

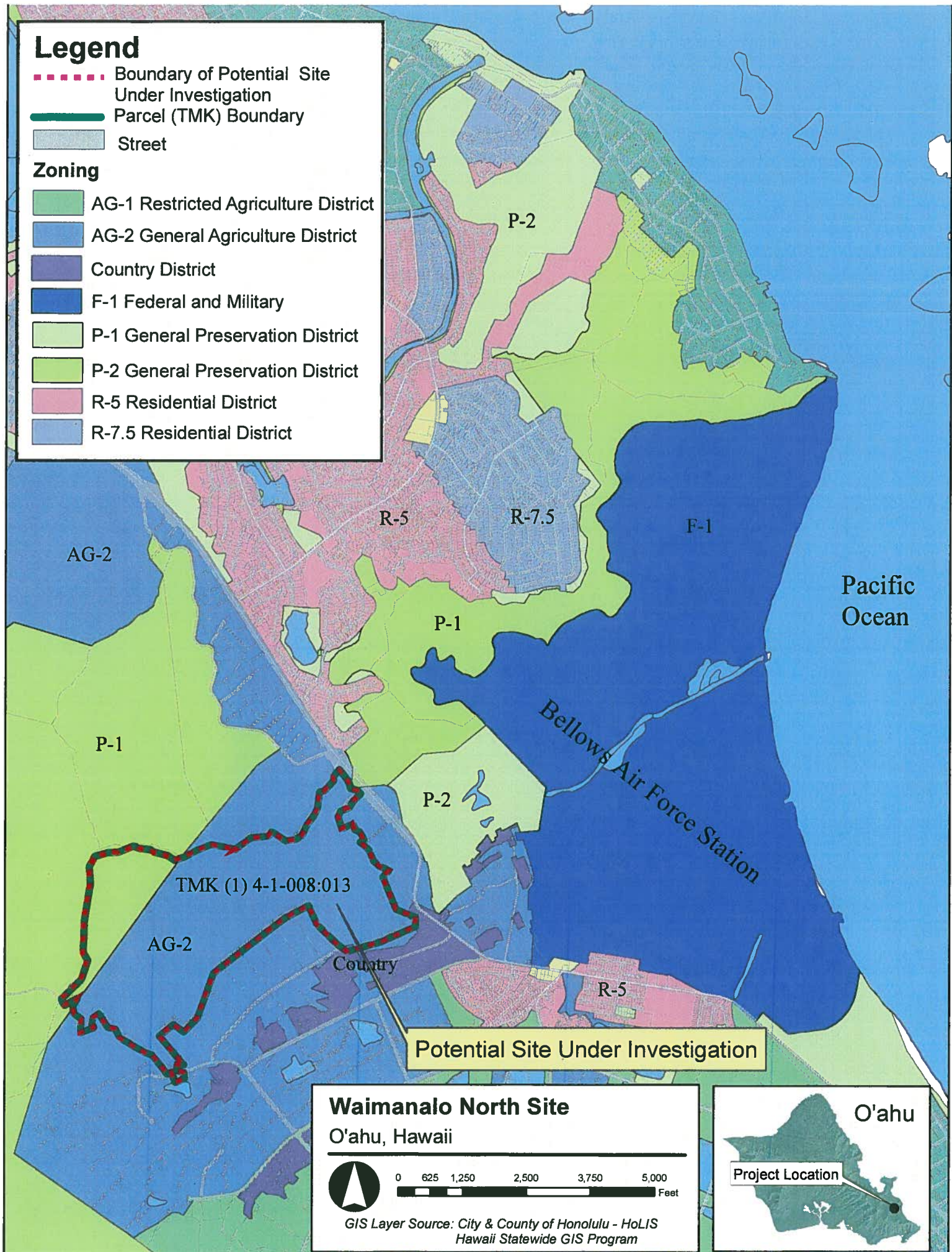
Attachment

Legend

- Boundary of Potential Site Under Investigation
- Parcel (TMK) Boundary
- Street

Zoning

- AG-1 Restricted Agriculture District
- AG-2 General Agriculture District
- Country District
- F-1 Federal and Military
- P-1 General Preservation District
- P-2 General Preservation District
- R-5 Residential District
- R-7.5 Residential District

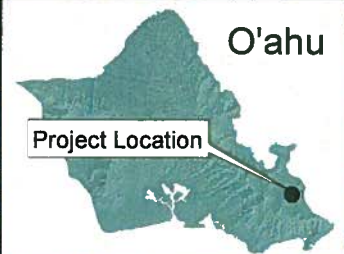


Waimanalo North Site

O'ahu, Hawaii



GIS Layer Source: City & County of Honolulu - HoLIS
Hawaii Statewide GIS Program



DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY AND COUNTY OF HONOLULU

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IN REPLY REFER TO:
RE 10-061

January 7, 2011

Colonel Robert Rice
Base Commander
Building 216
Box 63002
Marine Corps Base Hawaii
Kaneohe, Hawaii 96863-3002

Dear Colonel Rice:

**Subject: Use of Land Located Within Bellows Air Force Station for
a Future Landfill for the Island of Oahu**

The City and County of Honolulu (City) is currently undertaking an island-wide site inventory of potential locations for a new landfill. Land located within the Bellows Air Force Station has been identified as a possible location for a new landfill facility. Attached is a map that shows the proposed location of the site.

The City understands that the site of any new landfill is very difficult with many community and technical issues to be overcome. Therefore, we would like to receive any preliminary comments, concerns, or objections you may or may not have on the potential use of the indicated site. A written reply concerning this request would be greatly appreciated.

Thank you in advance for your response on this important issue. Should there be any questions, please contact Steven Serikaku, P.E., of the Refuse Division Planning Branch at 768-3428.

Sincerely,

A handwritten signature in black ink, appearing to read "Timothy Steinberger".

Timothy Steinberger, P.E.
Director

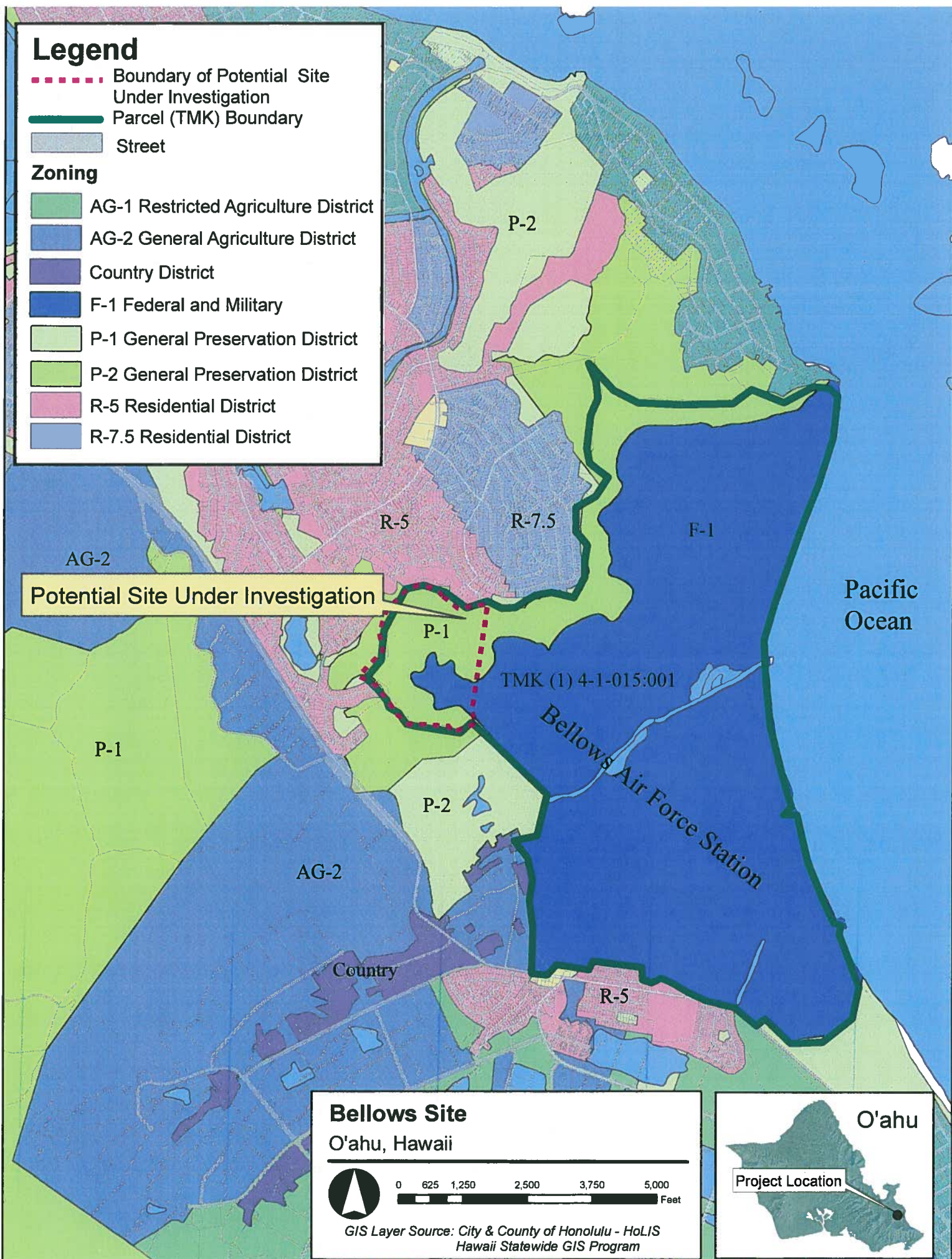
Attachment

Legend

- Boundary of Potential Site Under Investigation
- Parcel (TMK) Boundary
- Street

Zoning

- AG-1 Restricted Agriculture District
- AG-2 General Agriculture District
- Country District
- F-1 Federal and Military
- P-1 General Preservation District
- P-2 General Preservation District
- R-5 Residential District
- R-7.5 Residential District



Potential Site Under Investigation

TMK (1) 4-1-015:001

Bellows Air Force Station

Pacific Ocean

Bellows Site

O'ahu, Hawaii



GIS Layer Source: City & County of Honolulu - HoLIS
Hawaii Statewide GIS Program

