

**6-MONTH REPORT  
STATUS OF OPERATIONS  
WAIMANALO GULCH SANITARY LANDFILL  
AND  
ACTIONS TAKEN TO FURTHER REDUCE WASTE  
VOLUMES DISPOSED OF AT THE LANDFILL**

**Prepared For:**

**Land Use Commission  
State of Hawaii**

**Prepared By:**

**Department of Environmental Services  
City and County of Honolulu**

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- F Integrated Solid Waste Management Plan Executive Summary
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## PREFACE

This report was prepared in accordance with the State Land Use Commission's (LUC) Findings of Fact, Conclusions of Law, and Decision and Order Adopting With Modifications, the City And County of Honolulu Planning Commission's Recommendation to Approve Amendment to Special Use Permit, dated March 14, 2008. Pursuant to an additional condition imposed by the Decision and Order, the Applicant (City) is required to report to the LUC every six months on the actions taken to alleviate the further use of the Waimanalo Gulch Sanitary Landfill. The City and County of Honolulu (City) is therefore submitting this 6-month report.

It is noted that Condition 14 of the LUC's Decision and Order Approving Amendment to Special Use Permit, filed June 9, 2003, required that the City provide annual reports in connection with the status of the landfill and the City's progress on the 19 conditions imposed by the LUC. Given the March 14, 2008, order that requires the City to provide a similar report every six months, a separate annual report will not be submitted.

The report is structured to provide the reader with an understanding of the status of landfill operations, initiatives to offset landfill impacts, and actions to reduce waste volumes disposed at the landfill. A progress report that summarizes compliance with the 19 conditions imposed in the June 9, 2003, Decision and Order is also included. Updates to the contents of this report will be made commensurate with each 6-month reporting period.



## STATUS OF LANDFILL OPERATIONS

### 1. Introduction

The Waimanalo Gulch Sanitary Landfill (WGSL) is an active municipal solid waste (MSW) landfill, which began operations in 1989. The facility is owned by the City and operated by Waste Management of Hawaii, Inc. (WMH). The landfill property is located in the Ewa District near the community of Kapolei and encompasses an area of 198.6 acres (See Figure 1).

The WGSL consists of two disposal areas: an ash monofill area and an MSW area. The current special use permit area is 107.5 acres, of which approximately 58.9 acres are designated for MSW disposal and 20 acres for ash from H-POWER.

### 2. Tonnage

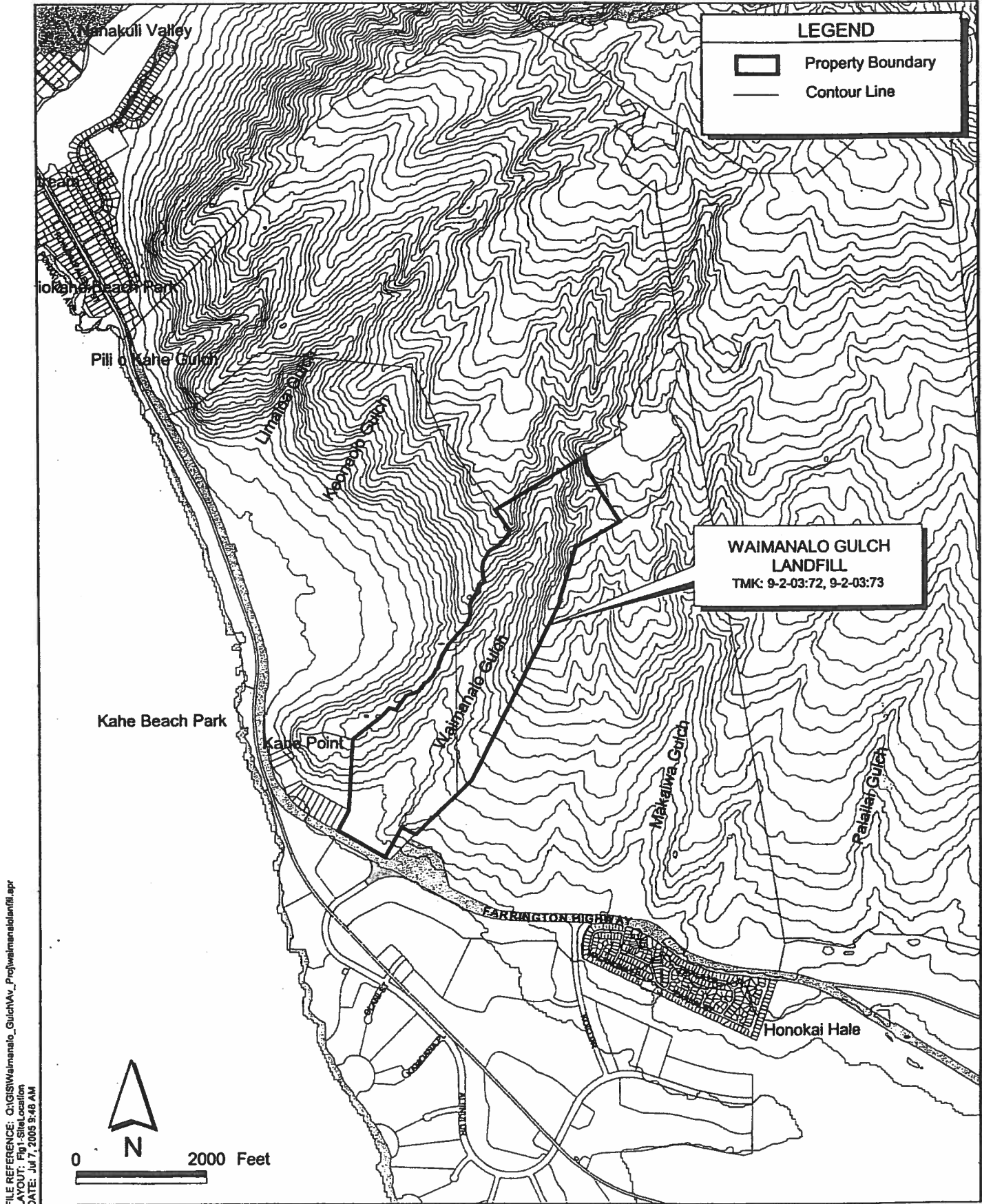
Over the six month period beginning February 1, 2008 through July 31, 2008, the landfill received the following amounts of material:

H-POWER Ash.....	45,535 tons
H-POWER Residue.....	55,444 tons
Municipal Solid Waste.....	161,385 tons

Tonnage reports for the February 2008-July 2008 period, as submitted to the State Department of Health (DOH), are included in Appendix A.

### 3. Landfill Operations

WMH is contracted by the City to operate and maintain the WGSL. Operations are planned and conducted to accommodate the expected volume of incoming waste while minimizing environmental impacts. The active or working face is sized to process enough trucks at a time to minimize waiting time.



**Figure 1**  
**Site Location Map**  
**Waimanalo Gulch Sanitary Landfill**  
**Kapolei, Hawaii**



**Working Face**

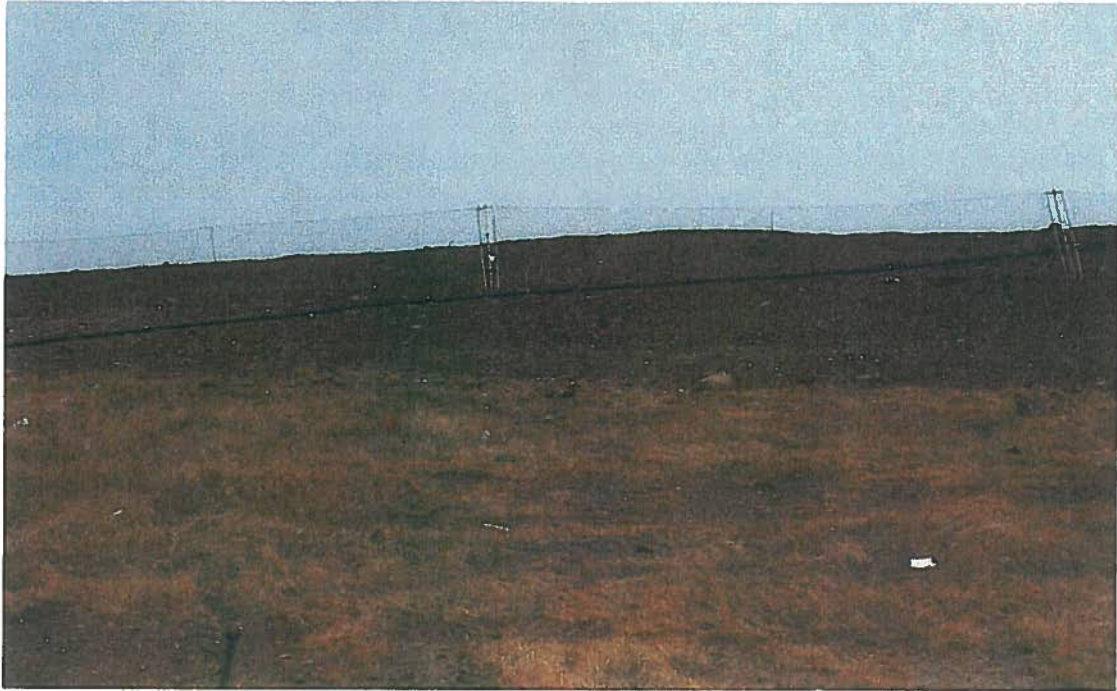
The entire working face is covered with a minimum of 6 inches of dirt by the end of each day to control vectors, odors and litter.



### **Daily Drop Area After Cover**

Areas that have been filled to grade or are to be continued to be filled beyond a period of 30 days are covered with an intermediate soil cover of 12 inches. Portable litter control fences are erected downwind of active landfilling areas to capture wind blown litter.





**Intermediate Soil Cover and Portable Litter Fencing**

Full time, and when necessary, temporary contract employees are assigned to clean litter fencing and surrounding slopes to keep the area free from wind blown litter. An onsite computerized weather station provides real time weather information that is used to plan daily operations in a manner that reduces windblown litter and odors.

4. Environmental Monitoring

a. Landfill Gas

A Gas Collection and Control System (GCCS) was installed at the landfill in 2005. The system currently consists of 43 gas collection wells and associated gas collection lines located throughout the facility, and an enclosed flare.

The operation of the GCCS is regulated by the Hawaii, Department of Health, Clean Air Branch (DOH, CAB). The GCCS functions to control air emissions, mitigate odors and prevent off-site landfill gas (LFG) migration. The installation of all LFG wells, collection lines, and flare control equipment was done in accordance with applicable regulations.



**Gas Recovery Well Installation**



**Gas Recovery Well**





**Gas Destruction Flare**

The GCCS is described in detail in a separate report that was prepared for the CAB and USEPA entitled, *Waimanalo Gulch Sanitary Landfill Gas Collection and Control System Design Plan* (See Appendix B).

Earth Tech (ET), an environmental subcontractor to WMH, operates and maintains the landfill GCCS. Duties performed by ET include, but are not limited to; adjusting, monitoring, reporting, and record keeping as defined by the operations manual, regulations, and WMH procedures. In addition they perform routine inspection of all site LFG systems, monthly visible emissions of the flare stack monitoring and monthly surface emissions monitoring. In addition ET completes quarterly carbon monoxide (CO) readings at each of the 43 gas wells. Records of these activities are kept at the facility and reviewed by Department of Health inspectors.

Required reports covered under the Covered Source Permit (Title V permit) issued by the DOH, CAB in 2005 include semiannual monitoring reports, annual compliance certifications and flare performance tests. These reports are prepared by Environmental Information Logistics, LLC.

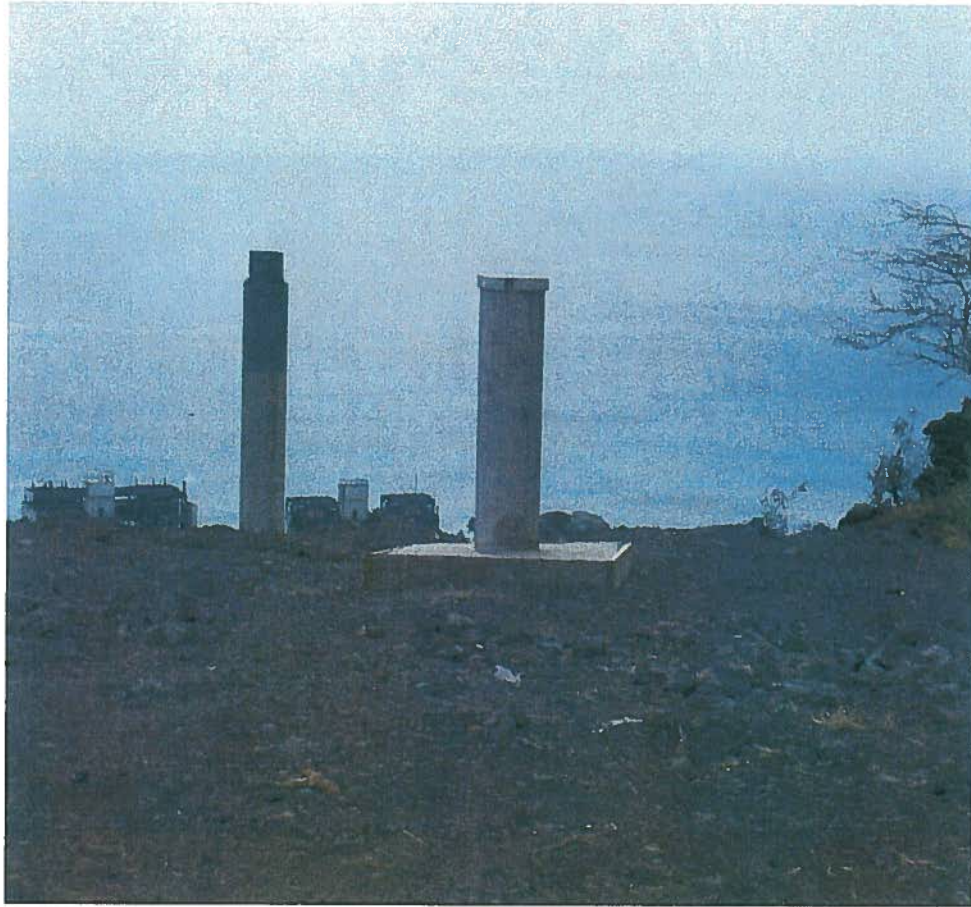
b. Perimeter Gas and Structure Monitoring

Pursuant to RCRA Subtitle D regulations 40 CFR §258.23, and HAR Title 11, Chapter 58.1-15(d), municipal solid waste (MSW) landfills must monitor methane gas in facility structures and around the landfill perimeter. Owners or operators of all MSW landfills must ensure that:

- §258.23 (a)(1) & §11-58.1-15(d)(1)(A) -- "The concentration of methane gas generated by the facility does not exceed 25 percent of the lower explosive limit (LEL) for methane in facility structures (excluding gas control or recovery system components)" and,
- §258.23 (a)(2) & §11-58.1-15(d)(1)(B) -- "The concentration of methane gas does not exceed the lower explosive limit for methane at the facility property boundary."
- §258.23 (b)(1) & §11-58.1-15 (d)(2)(A) -- "The type and frequency of monitoring must be determined based on the following factors:
  - (i) Soil conditions;
  - (ii) The hydrogeologic conditions surrounding the facility;
  - (iii) The hydraulic conditions surrounding the facility; and
  - (iv) The location of facility structures and property boundaries."

Currently, 9 monitoring probes comprise a sufficient monitoring network for detecting gas migration from the WGSL. The average spacing between the 8 probes along the compliance boundary established by this proposed network is approximately 978 linear feet (an average of one probe for every 978 linear feet of the WGSL property line).





**Gas Monitoring Probe**

The permanent probes were installed near the eastern, western and southern property lines of the WGSJ and will establish a new gas monitoring network and compliance boundary in accordance with applicable regulations.

- The permanent gas probes are monitored as required by RCRA Subtitle D regulations, HAR, the WGSJ Solid Waste Permit and the Settlement Agreement that resolved the NOV in Docket No. 05-SHW-SWS-004.
- On a monthly basis, a qualified gas technician monitors the probes using a portable gas-monitoring instrument, calibrated to detect methane at a level of 5 percent volume or less and capable of detecting levels of oxygen and carbon dioxide, and a handheld hydrogen analyzer, designed to detect hydrogen concentrations between 0 and 10 percent by volume.

- Building structure monitoring at the WGS� includes monthly manual sweeps of the administration office, scale house, and temporary structures. A portable gas-monitoring instrument, calibrated to detect methane at a level of 1.25 percent volume or less, is used to monitor for methane. These results, and oxygen, carbon dioxide, ambient temperature and barometric pressure readings, are recorded electronically directly into the memory of the portable gas-monitoring instrument or transcribed on to a Perimeter Gas Monitoring Field Report Form, which is retained on-site in the WGS� Operating Files.
- In addition, building structures also are continuously monitored using combustible gas monitors. The Sierra Model 2001 Combustible Gas Monitor is calibrated to sound an alarm when combustible gas concentrations reach or exceed 1.25 percent methane by volume. The monitors are installed where combustible gas is most likely to accumulate within a structure (e.g., corners, baseboards, crawlspaces, or any location where air movement is restricted and in areas of potential leaks).
- Results of perimeter gas and structure monitoring are submitted to the DOH, Solid Waste Section.

c. Groundwater and Leachate

The groundwater monitoring network includes five monitoring wells around the base of the landfill (02M, 03M, 07, MW-10, and MW-11), and one well located approximately one half mile up canyon on the eastern margin of the landfill (MW-12). MW-12 is located hydraulically upgradient of site operations and is ideally located to monitor background water quality in the vicinity of the WGS�.



**Groundwater Monitoring Well**

Leachate monitoring has been performed on a routine basis in accordance with the landfill's operating permit and with previous site monitoring programs. Currently, monitoring is conducted pursuant to the Monitoring Plan, the *Groundwater, Surface Water, and Leachate Sampling Guide* (WMI 2004) and the DOH letter request (DOH 2005). Monitoring is conducted quarterly and reported along with groundwater monitoring results (A sample Quarterly Monitoring Report for January-March, 2008, is provided in Appendix C).

Leachate is currently collected at the following locations:

- Ash monofill sump in Cell 8 (ASHMH)
- MSW Leachate Sump #1, located in Cell E1 (MSW-LSE1)
- MSW Leachate Sump #2, located in Cell 4B (MSW-LS2)





**Leachate Sump**

Samples from groundwater monitoring wells and leachate sumps are collected by ET and analyzed by Test America laboratory on a quarterly basis as described in *Groundwater and Leachate Monitoring Plan*, Geosyntec, August 2007. Results of this monitoring effort are reported to the DOH in the form of Quarterly Groundwater Reports that are prepared by ET.

d. Stormwater

A Storm Water Pollution Control Plan (SWPCP) was prepared in accordance with the *National Pollutant Discharge Elimination System General Permit Authorizing Discharges of Storm Water Associated with Industrial Activities* (Hawaii Administrative Rules Title 11 Chapter 55, Appendix B). In addition, the *Guidance Manual for Developing the SWPCP for Industrial Facilities* (DOH 1994) also was used in preparing this SWPCP. The City and County of Honolulu was issued a Notice of General Permit Coverage under the National Pollutant Discharge Elimination System (NPDES), on March 2, 2005, which was assigned File No. HI R50A533 and is referred to as the General Permit. Under the General Permit, the WGSL is authorized to discharge only storm water run-off associated with industrial activity from its facility, to the receiving State water named the Pacific Ocean, a Class A, Marine Water at coordinates 21°00'04"N and 158°07'35"W.

The SWPCP addresses the following issues, as required by the General Permit:

- Storm water outfalls and monitoring points

- Pollutants potentially present in storm water
- Pollutant sources
- Pollution control procedures
- Monitoring procedures
- Spill prevention and response procedures

Storm water is managed by controlled grading on the surface of the landfill and by maintaining an engineered system of drainage swales, rock rip-rap lined channels, risers, pipes, and a detention basin. A concrete-lined drainage channel runs along the western property boundary and diverts surface waters to the detention basin located in the southwest corner of the site.

Monitoring and reporting are conducted in accordance with the Storm Water Monitoring and Reporting Program Plan.



**Concrete Swale**





### **Detention Basin**

The detention basin is the only discharge location associated with the WGS� and includes two actual outfalls of the detention pond (WGS�-DB01W and WGS�-DB01E, where W denotes the western outfall and E the eastern outfall). The outfall pipes are 42-inch diameter corrugated metal pipe (CMP) connected to two vertical, perforated inlet CMPs located in the basin.

Storm water samples are collected from the discharge point at least once per year when a qualifying storm and discharge from the pond occur at the WGS�. Annual reports are submitted to the DOH, Clean Water Branch.

In addition to the SWPCP, a Surface Water Management Plan (SWMP) is required per HAR 11-58.1-15(g), which provides requirements to ensure adequate control of storm water events at landfills.

The purpose of the SWMP is to describe and ensure the implementation of surface water management practices to prevent run-on and control run-off from a 25-year, 24-hour storm event. As part of the SWMP evaluation, an annual site inspection is conducted by ET to evaluate the condition of the drainage conveyance and erosion/sediment controls.

The solid waste permit for the site specifies the following requirements:

- Prevention of run-on and collection and control of run-off from a 25-year, 24-hour storm.
- Prevention of soil erosion and exposure of waste due to soil erosion.
- Prevention of a discharge of pollutants into waters of the U.S., or violation of any requirement of the Clean Water Act or state-wide water quality management plan.

The SWMP discusses specific measures that WMH proposes to manage storm water, specifically that it will be managed by controlled grading on the surface of the landfill and by maintaining an engineered system of drainage ditches, channels, risers, pipes, and basins. Drainage improvements will help to:

- Prevent run-on of surface water to the active disposal face or uncovered refuse.
- Minimize erosion in all areas of the site.
- Maintain roads and other ancillary facilities in useable condition under all weather conditions.

The SWMP is updated annually and is submitted to the DOH, Clean Water Branch by September 1 of each year.

e. Spill Prevention Control and Countermeasures Plan

A Spill Prevention, Control, and Countermeasures (SPCC) Plan was developed for the WGSL and is included in the Site Operations Manual that was previously submitted to DOH. The SPCC Plan complies with Title 40 Code of Federal Regulations Part 112 and addresses measures for prevention and control of fuel and oil related spills.

Inspection results are maintained onsite as part of the WGSL Operating record.

5. Landscaping

Thirty (30) monkey pod and Norfolk pines were planted during the fall of 2007 to further shield the view of landfill operations from Farrington Highway.



**Monkey Pod and Pine Trees**

The east, west and south slopes of the landfill were hydro-seeded with limited success due to persistent dry conditions. Re-vegetation activities along completed slopes is planned to continue over the next six (6) months.





**Revegetation Project**

WMH continues to evaluate other areas where landscaping may further conceal and blend operations with the surrounding terrain.

6. Complaints

All complaints are immediately investigated and responded to by WMH personnel. A complaint log is maintained at the facility detailing the nature of the complaint and actions taken in response. The facility received seven (7) complaints during 2006, four (4) during 2007, and one (1) to date in 2008. The most recent complaint dealt with odors and windblown debris. WMH immediately responded and reported to the location of the complaint but was unable to detect odors. Trash was found along the beach area of Ko Olina; however, the source of the litter was several overturned trash receptacles. The litter was cleared by WMH personnel.

7. Off Site Monitoring and Maintenance

WMH provides monitoring and maintenance along Farrington Highway on a regular basis to minimize the impact of litter, dust and mud. Kleen Sweep, Inc. is subcontracted by WMH to regularly sweep within the lower portion of the landfill property and along Farrington Highway approaching the landfill. Incoming trucks are monitored for compliance with the State Truck Cover Law to minimize littering.

Collectively, all efforts to monitor, detect and resolve impacts are being made to ensure that operations are not impacting the surrounding community.

## MAYOR'S COMMITTEES TO OFFSET THE IMPACT OF THE LANDFILL

### 1. Introduction

Notwithstanding ongoing actions to reduce the need for landfill disposal, two initiatives have been taken by the Mayor to offset the impact of the landfill on the surrounding communities. An Oversight Advisory Committee formed of concerned citizens, WMH representatives and members of the Department of Environmental Services, convenes quarterly to address complaints and operational concerns about the landfill. A Community Benefits Advisory Committee was also formed of local residents to allocate monies for various park projects and for programs and services to benefit neighboring communities.

### 2. Oversight Advisory Committee

The purpose of the Oversight Advisory Committee is to raise community concerns and to work with the Department of Environmental Services and WMH to resolve such concerns. Committee members act as the "eyes and ears" of the community and as a group, make recommendations to be followed-up by the City and/or WMH.

The Committee meets quarterly at 10:00 a.m. on the second Monday of the month. Copies of the meeting minutes are included in Appendix D, together with a listing of Committee members as of May 2008.

### 3. Community Benefits Advisory Committee

The Community Benefits Advisory Committee was appointed to solicit, review and select projects that seek funding for necessary community-based programs and services. Under the Leeward Coast Community Benefits Program, which was established to offset the impact of the landfill, \$2.0 million was allotted in fiscal year 2007 for the following communities: Kalaeloa, Kapolei, Honokai Hale/Nanakai Gardens, Makakilo, Ko Olina, Nanakuli, Maili, Waianae, Makaha and Keaau.

Of the \$2.0 million, \$1.0 million is administered by the Department of Parks and Recreation for parks improvements in the target communities. The remaining \$1.0 million is administered, through a formal Request for Proposal (RFP) process, by the Department of Community Services for grants to private and/or community-based non-profit organizations (CBOs) for programs and services that address problems or concerns in the following communities: Kalaeloa, Kapolei, Honokai Hale/Nanakai Gardens, Makakilo, Ko Olina, Nanakuli, Maili, Waianae, Makaha and Keaau.

With respect to funds administered through the Department of Community Services, a formal Request for Proposal (RFP) was issued for the selection of community-based projects. Twenty-one (21) projects were funded in FY 2006-2007 and another twenty-five (25) projects were funded in FY 2007-2008. To date, service providers have estimated that approximately 1,000 families and 3,000 individuals have been assisted through projects funded through the Leeward Coast Community Benefits program. These projects provide housing, food, mental health and other essential services to some of our most needy citizens on the Leeward Coast, which include children, single parents, families experiencing homelessness, victims of domestic violence, at-risk youth, recovering substance abusers, and displaced veterans among others.

The Leeward Coast Community Benefits program has allowed many grassroots organizations that do not have the level of administrative infrastructure to compete for larger public or private grant programs, an opportunity to advance their programs for their communities.

Lists of FY2007 Leeward Coast Community Benefits projects are included in Appendix E. Also included is a list of committee members.

## **ACTIONS TO REDUCE WASTE VOLUMES DISPOSED AT THE LANDFILL**

### **1. Introduction**

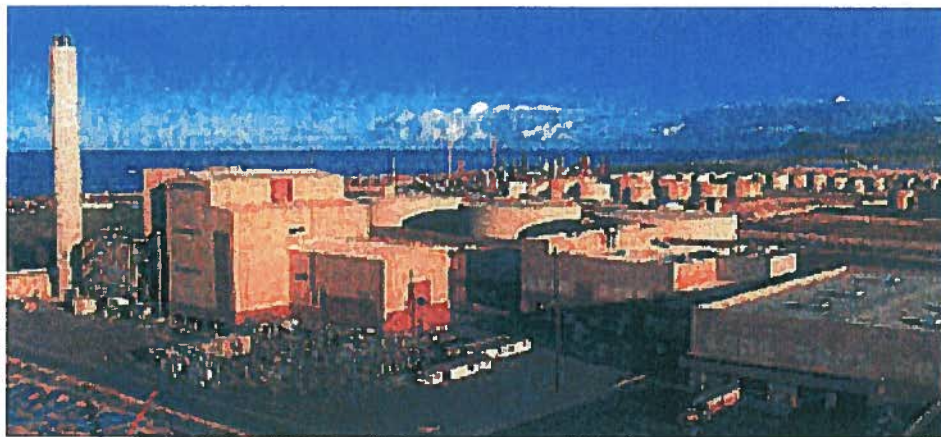
The City is continuing its effort to alleviate solid waste disposal at the landfill by implementing available waste disposal technologies, developing alternative disposal options (e.g., transshipment), and expanding recycling programs. Collectively, these actions have proven to effectively divert waste away from the landfill.

The City's Integrated Solid Waste Management Plan provides a 25-year implementation plan for improving the City's solid waste management system. The recently updated plan (currently under review) addresses all aspects of the present system, including landfill disposal (See Part 6 of this Section).

### **2. H-POWER**

#### **a. Existing Facility**

H-POWER began operations in 1990 and successfully diverts approximately 600,000 tons per year (TPY) of waste from Waimanalo Gulch Sanitary Landfill. The facility converts more than 2,000 tons of waste per day into electricity sufficient to power more than 60,000 homes. On an islandwide basis, H-POWER produces 7% of Oahu's electricity and significantly reduces the volume of refuse going to the landfill.



In addition to reducing the volume of waste entering the plant by through incineration, H-POWER is actively engaged in recycling. Virtually 100% of the ferrous and nonferrous metal is recovered for recycling, and a program for recycling the ash is currently being finalized.





The facility's pre-processing system uses magnets to pull metals from the waste stream and eddy current separators extract non-ferrous metals from the ash, diverting approximately 18,000 tons of ferrous metals (e.g., tin cans) and 2,500 tons of non-ferrous metals (e.g., aluminum cans) to recycling annually. Moreover, H-POWER reduces our dependence on imported oil. One ton of trash produces saleable energy equivalent to 60 gallons of oil.

b. Facility Expansion

Each of the last three years of waste receipts at H-POWER has indicated a need to increase waste-to-energy ("WTE") capacity, as approximately 100,000 to 150,000 TPY of combustible waste were landfill disposed due to WTE capacity limitations. Initially, the City sought to procure the development of a facility that would provide an alternative WTE technology to the Refuse Derived Fuel (RDF) technology used at H-POWER, on a site adjacent to H-POWER. In December 2006, the City issued a Request for Proposals (RFP) for the financing, design, construction and operation (for a 20-year period) of an Alternative Energy Facility using one of the following technologies:

- Combustion
- Gasification
- Vitrification

The proposed facility was to be located at the City's Alternative Technology Park, Campbell Industrial Park, Kapolei, Hawaii.

However, after considering the time and cost requirements of the qualified proposals received in response to the RFP, the City opted to increase H-POWER's capacity by purchasing a mass burn combustion system that is capable of processing at least 300,000 tons of waste annually. Negotiations with the H-POWER operator are currently underway, and the expected operational start date for this project is December 2011.

The additional 300,000 TPY of processing capacity at H-POWER and implementation of the residential curbside recycling program and other recycling programs will significantly reduce the quantity of MSW that requires landfill disposal.

3. Offsite Shipping of Waste

In January 2008, the City issued a Request for Bids (RFB) for the interim baling, shipping, off-loading, transporting and disposing (transshipment) of City-provided MSW to a mainland landfill for a term of at least 36 months. For this procurement, the City has the option to extend the agreement an additional 36 months. In addition to MSW, bidders may request to provide transshipment for other non-MSW material. The intention of the procurement is to provide a waste disposal alternative until increased WTE capacity comes on line.

Three bids were received and opened on June 16, 2008. Three procurement protests have been filed by the two highest bidders, and are currently pending. The City plans to award a contract to a service provider after the resolution of the bid protests, most likely in late 2008. Pursuant to the terms of the RFB, the process of annually transshipping 100,000 tons of MSW will begin in July 2009. However, transshipment could occur earlier if the City and the service provider mutually agree to an earlier date.

4. Materials Recycling

As of 2006, the City landfill diversion rate through material and energy recycling programs was 57%, compared to the national average of 44-46%. The material recycling programs account for a 35% landfill diversion rate, which means that approximately 600,000 tons per year is recycled out of the total waste stream of 1.79 million tons per year.

a. Bulky Item Pickup Program and Self Haul Disposal Sites.

The City's bulky item collection service is designed to provide residents with once-a-month pickup service of old appliances, furniture, etc. Recyclable items are segregated and delivered to the respective recycling facilities, thereby diverting as much items to recyclers as possible instead of to landfill disposal. Additional pickup service is provided in high-density areas such as Salt Lake, Makiki, etc.

Residents may also self haul their bulky items to City disposal sites, including three transfer stations (Kapaa, Kawaihoa and Keehi) and six convenience centers (Ewa, Laie, Wahiawa, Waianae, Waimanalo and Waipahu). Recyclable materials are segregated in separate bins or storage areas for delivery to recycling facilities. Material that cannot be recycled is hauled to the landfill.

1. Appliances

Freon containing appliances such as refrigerators, air-conditioning units and heat pumps are delivered to a refrigerant recycler. After the freon is removed, the metals are transferred to the metal recycler. Non-freon containing appliances such as stoves, washing machines, dish washers, etc. are delivered directly to the metal recycler.

2. Miscellaneous Items (Tires, Batteries, Propane Tanks)

Tires are stored in rolloff containers and hauled to the tire recycler. Used auto batteries and propane tanks are removed and recycled by contractors hired by the City.

3. Non-recyclable Material

Non-recyclable material from households such as mattresses, old furniture, TVs, computers, carpeting and home (owner/builder) renovation material are hauled to the landfill. However, electronic waste (e-waste), such as TVs and computers, from commercial sources, and commercial construction and demolition (C&D) material, are diverted from landfill disposal. See discussion below.

b. Current Efforts and On-Going Projects

The City's current recycling efforts have resulted in the following quantities of material having been diverted from the landfill in 2006:

Paper (81,000 tons)

Glass (24,000 tons)

Plastic (4,000 tons)

Green Waste (78,000 tons)

Tires (10,000 tons)

Auto Batteries (6,000 tons)

Metals (145,000 tons)

Electronic Scrap (500 tons)





**Wood Waste / Pallets  
(9,000 tons)**

**Construction and Demolition  
Debris (122,000 tons)**

**Food Waste (37,000 tons)**

**Sewage Sludge (6,000 tons)**



The amount of monies being dedicated by the City to promote recycling and thereby reduce landfill disposal is shown in the following table:

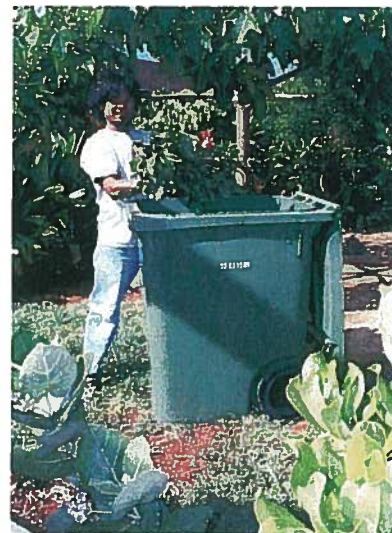
Program	FY 2007 (Spent)	(Dollars)FY 2008 (Budget)	FY 2009 (Proposed)
Curbside Recycling	No Program	2,780,000 (Pilot Program)	11,000,000 (Estimate)
Community Recycling Bin	2,100,000	3,000,000	3,500,000
Used Tires	148,000	150,000	170,000
Propane Tanks	27,000	30,000	30,000
Used Batteries	60,000	65,000	70,000
Green Waste	1,500,000	2,600,000	4,950,000
White Goods or large appliances	486,000	500,000	525,000

c. Green Waste Recycling (Greencycling) Program

**Objective:** Expand automated green waste collection as part of the new island-wide comprehensive curbside recycling program.

The City is planning to expand the automated curbside collection of green waste to all areas of the island to increase the amount of greencycling. In this program households will be issued green carts to store their green waste until their specified pickup dates. The City believes that the ease of use of the automated collection will encourage more participation.

Currently, green waste recycling is occurring through curbside pickup and drop-off operations. The City collects green waste at the curb from all households currently serviced with automated refuse collection system.



Some communities use bins for their green waste, while others are placing green waste at the curb in bags. The City uses automated collection to service the bins and a manual collection system to pick up the bags. Residents may also self-haul green waste to City convenience centers or directly to the composting facility. All of the green waste is delivered to a private vendor that is contracted by the City to produce mulch and other products from the waste. From a self-sustainability standpoint, green waste and sludge are the only recyclable materials that are grown or generated, processed and reused all here on this island. All other materials' recycling is processed off-island. These other recyclables are shipped either to the mainland or to Asia depending on market conditions.

d. Curbside Recycling for Residential Mixed Recyclables and Green Waste

**Objective:** Begin islandwide expansion of curbside recycling November 2008.

The City launched a pilot program for curbside recycling of mixed recyclables in November 2007. Each household was issued two bins--a green bin for green waste and a blue bin for mixed



recyclables, including paper, plastics, glass, and aluminum. The gray bin continued to be used for non-recyclable trash. A critical part of the pilot program was to determine the acceptance of once a week pickup of trash instead of the established twice a week schedule. The once a week pickup schedule should provide households with an incentive to sort and recycle their trash.

Following a City Charter Amendment vote in November 2006 in favor of adding curbside recycling to the responsibilities of the Department of Environmental Services (ENV). ENV developed a proposal for a new collection system. Mayor Mufi Hannemann held a series of community meetings around the island in April and May 2007 to gather resident input on the proposed curbside recycling system. A recap of the meetings is posted online at [www.opala.org](http://www.opala.org). Planning for the pilot program began immediately. Recycling bins were delivered to Mililani and Hawaii Kai households beginning mid-September 2007 and the new three-bin collection system began the week of October 29.



The data and input from the two pilot communities has been essential in determining the final structure of the proposed program expansion. Early, positive results from the pilot have enabled ENV to begin preparing for the islandwide expansion scheduled to take place this fall. Much of the necessary groundwork is already in place, including budget approvals; coordination for bin purchasing, processing contracts, collection routes, rollout schedules, and educational materials.

The City will expand the curbside recycling program islandwide in phases, beginning November 2008. Households will utilize a set of three color coded bins—gray for refuse, green for green waste and blue for mixed recyclables. Collection will continue twice-per-week with one day for refuse in the gray bin and the other day dedicated to recycling, alternating weekly between the blue and green bins.

<i>Nov 2007</i>	<i>HAWAII KAI &amp; MILILANI 18,500 HOMES</i>
<b>November 2008 (39,000)</b>	Kuliouou to Manoa, Kapahulu; Kailua, Lanikai; Mokuleia to Sunset <i>39,000 HOMES</i>
<b>May 2009 (40,300)</b>	Waipio Gentry to Halawa; Wahiawa, Whitmore, Waipio Estates, <i>40,300 HOMES</i> Laulani Valley; Kaneohe; Waimanalo
<b>November 2009 (22,400)</b>	Foster Village to Makiki; Kahuku to Kahaluu <i>22,400 HOMES</i>
<b>May 2010 (36,000)</b>	Makakilo to Waialeale, Waipahu; Ewa Beach to West Loch; Honokai Hale to Makua <i>36,000 HOMES</i>
	<i>TOTAL - 156,200</i>

For the November 2008 start,

- recycling bins will be delivered to households in September/October (instructional brochures attached).
- first recycling pickups will begin in November.
- a two-month transition period with continued twice weekly refuse pickup will give households time to get accustomed to sorting into the blue and green bins.
- full implementation of once-per-week refuse and once-per-week recycling will begin just past the New Year holiday.

The rollout schedule will incorporate about 40,000 homes into the new system every six months. Once the program is fully implemented, the City estimates it will divert approximately 28,000 tons of mixed recyclables and 46,000 tons of green waste, a net gain of 53,000 tons over existing recycling activity.

These projections may be conservative, not accounting for increases in participation and recovery as the program matures. Recovery and setout rates from the pilot program are presented below.

<b>Recovery and Setout Rates</b>			
<b>Recovery in tons Setout per 1000 home route</b>	<b>Hawaii Kai (7,300 homes)</b>	<b>Mililani (11,200 homes)</b>	<b>Total</b>
<b>November</b>			
Recovery			
Green Waste	192.43	188.5	380.93
Mixed Recyclables	128.36	142.78	271.14
Average Bin Setout			
Green Bin	490	313	
Blue Bin	578	298	
<b>December</b>			
Recovery			
Green Waste	224.49	208.6	433.09
Mixed Recyclables	122.03	201.2	323.23
Average Bin Setout			
Green Bin	610	298	
Blue Bin	613	325	
<b>January</b>			
Recovery			
Green Waste	250.72	232.98	483.7
Mixed Recyclables	128.57	124.04	252.61
Average Bin Setout			
Green Bin	658	390	
Blue Bin	631	414	



Recovery in tons Setout per 1000 home route	Hawaii Kai (7,300 homes)	Mililani (11,200 homes)	Total
<b>February</b>			
Recovery			
Green Waste	215.7	221.33	437.03
Mixed Recyclables	114.34	115.18	229.52
Average Bin Setout			
Green Bin	607	356	
Blue Bin	538	400	
<b>March</b>			
Recovery			
Green Waste	228.03	249.24	477.27
Mixed Recyclables	180.34	108.25	288.59
Average Bin Setout			
Green Bin	637	401	
Blue Bin	682	406	
<b>April</b>			
Recovery			
Green Waste	223.61	192.74	416.35
Mixed Recyclables	114.32	112.53	226.85
Average Bin Setout			
Green Bin	699	372	
Blue Bin	701	424	
Overall average green bin setout			
	617	355	
Overall average blue bin setout			
	624	378	
Overall average monthly green waste recovery			
	223	216	439
Overall average monthly mixed recyclables recovery			
	132	134	266

e. Community Recycling Bin Program

**Objective:** Provide an additional 40-multi-material recycling bin locations into the program by 2009 and to increase recycling by an additional 8,000 tons.

The Community Recycling Bin Program began in 1990 and grew from an initial 20 participating schools to more than 90 locations as of April 2008. The recycling bins are placed at schools around the island and collect plastics, paper, aluminum, and glass from the surrounding communities and are also used by the schools for campus generated recyclable materials from classrooms, administrative offices, cafeteria and vending machines. Revenue from the recyclables goes to the schools, which encourages their participation in the program as well as support from the surrounding community.

Under a new service contract which began in March 2008, the City is expanding the program to a total of 120 sites. Additional HI-5 only bins are provided to support collection events and campaigns. The new contract provides additional financial incentives to the schools to encourage more schools to join and increase participation from the community.



f. Recycling for Multi-Family Facilities (Condo Recycling Program)

**Objective:** Increase condominium recycling activity by providing start-up cost reimbursement.

Most multi-family dwellings contract with private hauling companies to collect their refuse and would likewise need to establish their own recycling programs. Multi-family recycling is voluntary. The City provides technical assistance in conducting waste audits, designing recycling systems and identifying private recycling services. The City also provides recycling containers and educational materials. In September 2007, the City launched a new program to provide reimbursement for recycling program start-up costs up to \$2000.

g. Commercial Recycling

**Objective:** Further expand commercial sector recycling activity by increasing compliance monitoring and program development assistance.

Commercial recycling is taking place at commercial businesses through private recyclers. City regulations and ordinances mandate recycling activity in the commercial sector.



The following table summarizes the City ordinances that support this recycling effort:

**Summary of City Ordinances**

- **Cardboard.** Commercial and government generators are partially banned from landfill disposal. Only 10% of a truckload can be composed of cardboard.
- **Green waste.** Commercial and government generators are partially banned from landfill disposal. Only 10% of a truckload can be composed of green waste.
- **Tires, auto batteries, white goods and scrap metals.** Banned from all disposal sites.
- **Glass containers.** Glass recycling is required for all bars and restaurants.
- **Paper Recycling.** All office buildings of a certain size must conduct recycling of paper goods.
- **Food Waste Recycling.** All hotels, restaurants, grocery stores, food courts, food manufacturer/ processors and hospitals meeting a certain size are required to recycle food waste.
- **City agencies.** Required to purchase recycled paper products. Also required to recycle newspaper, cardboard, office paper, aluminum, glass, and plastics.

h. **Electronic Waste Recycling**

**Objective:** Expand the City's recycling efforts to include electronics.

Electronics currently make up approximately 1% of the nation's municipal solid waste stream. The U.S. Environmental Protection Agency has stated that the e-waste stream is growing at three times the normal rate when compared to other municipal waste streams.

The City has recently changed contracts with vendors so the vendor is responsible for recycling the old monitors and computers.

The latest trend towards flat-panel televisions and computer monitors and the Federal mandate for digitally broadcast TV programming by February 2009 will inevitably increase the amount of televisions and computer monitors destined for the landfill. A goal for the City is the ability to recycle residential computer monitors and televisions by 2008 through our Bulky Item pickup program. The e-waste will be delivered to an authorized vendor who will ship to an e-waste recycler.

The City has been working with State legislators to enact producer responsibility-based legislation to help provide electronic product recycling through manufacturer-financed opportunities. Legislation introduced in the 2007 session failed to make the list of bills for consideration, but was reintroduced as part of the House and Senate Majority packet in the 2008 session. Currently, only commercial e-waste is banned from the Waimanalo Gulch Landfill. The ultimate long-term goal is to ban all e-waste from landfills with legislation requiring manufacturers to be responsible for the collection, transportation, recycling and disposal of their products.

i. Food/Green Waste Composting

**Objective:** Expand recycling efforts to compost green waste with food waste by October 2010.

The City is in the process of procuring an in-vessel bio-solids composting facility to provide for the processing of 100,000 tons or more of green waste, food waste and sewage sludge. A Request for Proposals is to be issued in June 2008 and the operational start date for this project is November 2011.

j. Public Education and Outreach

**Objective:** Continue to educate the community that material and energy recycling promotes sustainability.

Reducing the use of landfills is a critical part of the City's recovery and recycling strategy. Implementing successful waste management and recycling initiatives depends on public awareness. Public education and outreach is essential in instructing the community on how to properly dispose of waste and how to participate in recycling programs. ENV coordinates numerous events year-round to educate the public about waste management and recycling.

5. Current and On-Going Public Education and Outreach Programs

a. The City's Opala Website

The City's [www.opala.org](http://www.opala.org) (*opala* is the Hawaiian word for garbage) website is the cornerstone of ENV's public education program, which provides comprehensive and up-to-date information about refuse and recycling programs and services. The website provides information on recycling and disposing of all types of items, guidelines and resources for designing and setting up recycling programs, a directory of made-in-Hawaii recycled products, a directory of reuse organizations, waste composition and recycling data, educational resources, video shorts, photo gallery, graphics library and even a bit of music. There are links to local and national news stories organized by issue for those researching a topic.

b. Tour De Trash

The public has an opportunity to get an up-close look at waste processing and recycling operations and go behind the scenes at businesses that have instituted model recycling programs.

Tour de Trash is a collaborative event, coordinated by the City and supported by island businesses engaged in recycling at many levels.

This popular and award-winning program is in its 10th year. The City offers six scheduled full-day bus tours throughout the year, and arranges custom tours for school groups and organizations upon request.



c. Discover Recycling Fair

The Discover Recycling Fair is a three-day event held annually at the Neal Blaisdell Center Arena. Discover Recycling 2008 is scheduled for September and will be the fourth such event sponsored by the City. The fair provides teachers, administrators, and clubs with all the tools and resources needed to start recycling campaigns on school campuses, to coordinate recycling fundraisers, to teach recycling in the classroom, and to get involved with projects.

The Discover Recycling Fair also offers technical assistance to commercial and residential property managers and provides a fun educational event for the family.



d. Recycled Products Store

The Recycled Products Store is a booth that is set-up at the annual Made in Hawaii Festival. The City coordinates with local companies and artists to create a display of recycled products and recycled art.

e. Recycling Teaching Partner (RTP) Program

The RTP program was created in September 2006 to provide teachers with assistance in educating students and implementing recycling projects. RTP's are professional and non-profit artists, performers, and environmental educators that are available to assist schools with educating, motivating or coordinating recycling activities. This program is sponsored by the City with additional support from developer Castle & Cooke Hawaii. More than 50 schools have submitted proposals for recycling projects and engaged the assistance of a RTP. The City will continue to expand the list of qualified teaching partners and to offer this educational resource to Oahu schools.

f. Other Media

The City will continue to employ other collateral materials to educate and to instruct the public about various programs and services, including brochures, guides, television and radio spots, videos, printed advertisements, newsletters, and tabloid inserts.

6. Integrated Solid Waste Management Plan

In accordance with Part III, Section 342G of the Hawaii Revised Statutes and Chapter 9, Section 9.1-13 of the Revised Ordinances of Honolulu, the City is in the process of updating its integrated solid waste management plan. The draft Executive Summary for the updated plan is provided in Appendix F.

As part of the process, a Solid Waste Advisory Committee (SWAC) was appointed by the mayor. In accordance with Part III, Section 342G-22, ". . . the committee shall review the plan during its preparation, make suggestions, and propose any changes it believes are appropriate." The minutes of the SWAC meetings are included in Appendix G. Also included is a list of members of the SWAC.

On June 30, 2008, the draft was submitted for initial review by the State Department of Health (DOH). After DOH comments are incorporated, the plan will be made available for public review and comment. A public hearing will be held, followed by finalization and final acceptance by the City and the DOH. The process is estimated to be completed by Spring 2009.



The draft plan underlines the need for continued landfill disposal of noncombustible, non-recyclable solid waste. The plan references previous efforts to identify a new landfill site by a special advisory committee (Landfill Siting Committee). The siting process resulted in a short list of four sites, which included Nanakuli B, Maile, Makaiwa and Ameron. Waimanalo Gulch, however, was deemed the best location for continued landfill disposal.

The Draft Environmental Impact Statement (DEIS) for the lateral expansion of the landfill was published by the State Office of Environmental Control (OEQC) in the May 23, 2008, issue of the Environmental Notice. A copy of the DEIS can be downloaded from the OEQC website (<http://oeqc.doh.hawaii.gov>)

The 45-day public comment period ended on July 7, 2008. The City plans to publish the Final Environmental Impact Statement in September 2008.

## **CONCLUSION**

As noted in the Preface to this report, it is being submitted to satisfy certain reporting requirements set forth in the LUC's Decisions and Orders of March 14, 2008, and June 9, 2003. The information contained in this report, including progress on the 19 Conditions of the June 9, 2003 Decision and Order (See Appendix H), will be updated as necessary in each future 6-month report.

It is hoped that the report conveys with sufficient detail the City's efforts to properly operate the Waimanalo Gulch Sanitary Landfill, while reducing our island's dependency on landfilling by such efforts as pursuing the expansion of the H-POWER facility, transshipment of waste off-island, and recycling.

We look forward to continuing our efforts to ensure proper solid waste management for the people of Oahu, in close coordination with the Land Use Commission and others.

# **APPENDIX A**

**Waimanalo Gulch Tonnage \*\*\*New Rates Apply moving forward**

Date	# of Ash Loads	Ash totals		UAW	By-Pass Ferrous Landfill	Total Res., UAW & By Pass Ferr.	WGSL Scale Totals	Total MSW Tonnage both
		Separate	Residue					H Pwr / WGSL
7/1/08	10	147.69	466.07	19.62	0.00	485.69	264.16	749.85
7/2/08	16	249.16	376.98	6.58	0.00	383.56	1,776.32	2,159.88
7/3/08	15	219.10	457.18	4.47	0.00	461.65	403.71	865.36
7/4/08	10	166.21	410.09	19.77	0.00	429.86	1,064.63	1,494.49
7/5/08	18	290.56	309.65	7.66	0.00	317.31	308.68	625.99
7/6/08	15	256.77	56.20	0.00	0.00	56.20	370.11	426.31
7/7/08	17	264.76	152.05	24.34	0.00	176.39	304.44	480.83
7/8/08	18	282.47	339.17	6.24	0.00	345.41	377.38	722.79
7/9/08	18	280.76	356.19	30.56	0.00	386.75	363.36	750.11
7/10/08	18	287.57	365.27	21.66	0.00	386.93	1,584.27	1,971.20
7/11/08	16	244.38	415.33	3.87	0.00	419.20	446.55	865.75
7/12/08	9	150.59	369.15	13.23	0.00	382.38	454.77	837.15
7/13/08	9	145.74	78.64	6.06	0.00	84.70	390.07	474.77
7/14/08	13	199.96	277.10	22.39	0.00	299.49	511.45	810.94
7/15/08	18	291.38	323.15	9.58	0.00	332.73	1,877.54	2,210.27
7/16/08	16	262.71	368.67	15.36	0.00	384.03	366.20	750.23
7/17/08	17	263.81	350.34	30.41	0.00	380.75	1,398.29	1,779.04
7/18/08	18	298.48	332.29	13.97	0.00	346.26	393.42	739.68
7/19/08	14	241.26	235.52	33.28	0.00	268.80	371.53	640.33
7/20/08	16	263.14	68.80	0.00	0.00	68.80	387.81	456.61
7/21/08	16	258.55	223.16	9.03	0.00	232.19	337.69	569.88
7/22/08	18	279.85	436.34	27.70	0.00	464.04	413.25	877.29
7/23/08	17	275.09	415.60	20.84	0.00	436.44	403.30	839.74
7/24/08	18	287.91	378.04	7.78	0.00	385.82	463.84	849.66
7/25/08	18	310.30	412.73	32.18	0.00	444.91	1,760.20	2,205.11
7/26/08	18	285.25	238.68	23.45	0.00	262.13	391.90	654.03
7/27/08	15	254.76	103.03	0.00	0.00	103.03	318.56	421.59
7/28/08	16	251.90	242.98	13.01	0.00	255.99	472.32	728.31
7/29/08	16	259.83	356.41	20.95	0.00	377.36	492.48	869.84
7/30/08	18	278.02	404.41	32.35	0.00	436.76	421.66	858.42
7/31/08	15	244.32	470.41	15.66	0.00	486.07	1,531.64	2,017.71
<b>486</b>		<b>7,792.28</b>	<b>9,789.63</b>	<b>492.00</b>	<b>0.00</b>	<b>10,281.63</b>	<b>20,421.53</b>	<b>30,703.16</b>

17,581.91  
x \$ 13.90 = \$244,388.55

492.00  
x \$ 16.42 = \$8,078.64

**\$244,388.55**  
**\$252,467.19**

**18,073.91 H Power Final Total**  
**Note: New Rates Apply**



**Waimanalo Gulch Tonnage**

Date	# of Ash Loads	Ash totals Separate	Residue	UAW	By-Pass Ferrous Landfill	Total Res., UAW & By Pass Ferr.	WGSL Scale Totals	Total MSW Tonnage both H Pwr / WGSL
6/1/08	15	242.42	9.25	0.00	0.00	9.25	398.68	407.93
6/2/08	17	263.40	205.17	6.39	0.00	211.56	586.29	797.85
6/3/08	18	268.79	378.44	14.86	0.00	393.30	683.57	1,076.87
6/4/08	17	258.88	512.74	9.62	0.00	522.36	693.17	1,215.53
6/5/08	17	267.93	464.61	9.15	0.00	473.76	567.54	1,041.30
6/6/08	17	266.58	309.23	14.57	0.00	323.80	593.47	917.27
6/7/08	16	264.01	265.28	4.42	0.00	269.70	282.36	552.06
6/8/08	16	265.17	316.35	13.79	0.00	330.14	623.50	953.64
6/9/08	17	269.46	143.50	10.08	0.00	153.58	443.14	596.72
6/10/08	17	281.08	400.26	8.57	0.00	408.83	458.39	867.22
6/11/08	17	275.61	525.45	14.04	0.00	539.49	412.69	952.18
6/12/08	16	261.89	277.81	12.87	0.00	290.68	276.79	567.47
6/13/08	14	237.15	332.49	15.55	0.00	348.04	340.46	688.50
6/14/08	16	261.03	285.68	5.88	0.00	291.56	443.51	735.07
6/15/08	15	243.88	36.83	0.00	0.00	36.83	241.51	278.34
6/16/08	19	304.20	334.69	23.64	0.00	358.33	734.38	1,092.71
6/17/08	17	282.66	531.51	11.14	0.00	542.65	290.65	833.30
6/18/08	19	268.88	388.23	18.61	0.00	406.84	270.14	676.98
6/19/08	20	268.98	427.36	20.80	0.00	448.16	661.26	1,109.42
6/20/08	16	255.21	474.90	0.00	0.00	474.90	678.39	1,153.29
6/21/08	17	289.39	276.28	39.78	0.00	316.06	353.20	669.26
6/22/08	17	266.39	37.71	0.00	0.00	37.71	434.27	471.98
6/23/08	17	267.32	196.55	0.00	0.00	196.55	540.67	737.22
6/24/08	18	279.57	373.61	29.20	0.00	402.81	401.34	804.15
6/25/08	16	262.39	400.78	21.58	0.00	422.36	452.06	874.42
6/26/08	16	263.47	417.61	12.70	0.00	430.31	460.43	890.74
6/27/08	16	264.95	359.68	11.68	0.00	371.36	361.94	733.30
6/28/08	18	305.42	290.94	14.03	0.00	304.97	476.85	781.82
6/29/08	16	268.86	317.09	13.33	0.00	330.42	810.47	1,140.89
6/30/08	17	278.95	201.96	11.66	0.00	213.62	521.39	735.01
					0.00	0.00		0.00
	<b>504</b>	<b>8,053.92</b>	<b>9,491.99</b>	<b>367.94</b>	<b>0.00</b>	<b>9,859.93</b>	<b>14,492.51</b>	<b>24,352.44</b>

**Waimanalo Gulch Tonnage**

Date	# of Ash Loads	Ash totals Separate	Residue	UAW	By-Pass Ferrous Landfill	Total Res., UAW & By Pass Ferr.	WGSL Scale Totals	Total MSW Tonnage both H Pwr / WGSL
5/1/08	17	264.69	356.59	5.12	0.00	361.71	444.98	806.69
5/2/08	17	265.30	321.61	6.60	0.00	328.21	367.55	695.76
5/3/08	16	247.50	286.55	14.22	0.00	300.77	244.23	545.00
5/4/08	15	249.64	46.68	0.00	0.00	46.68	370.74	417.42
5/5/08	17	267.85	372.06	0.00	0.00	372.06	317.69	689.75
5/6/08	17	269.79	498.58	26.35	0.00	524.93	332.90	857.83
5/7/08	17	274.65	477.63	22.21	0.00	499.84	358.92	858.76
5/8/08	16	256.44	425.98	0.00	0.00	425.98	303.03	729.01
5/9/08	16	253.37	499.88	21.36	0.00	521.24	409.33	930.57
5/10/08	17	266.04	312.20	9.33	0.00	321.53	243.26	564.79
5/11/08	14	241.13	72.90	11.57	0.00	84.47	340.84	425.31
5/12/08	16	268.69	254.27	0.00	0.00	254.27	461.01	715.28
5/13/08	16	253.10	377.40	12.27	0.00	389.67	473.28	862.95
5/14/08	17	281.15	409.56	12.97	0.00	422.53	395.04	817.57
5/15/08	17	266.70	363.57	5.74	0.00	369.31	392.10	761.41
5/16/08	15	255.79	403.57	35.88	0.00	439.45	504.71	944.16
5/17/08	15	255.58	296.92	25.47	0.00	322.39	231.46	553.85
5/18/08	13	241.29	74.19	17.78	0.00	91.97	281.87	373.84
5/19/08	16	253.10	281.35	0.00	0.00	281.35	535.14	816.49
5/20/08	16	248.87	412.45	8.27	0.00	420.72	615.61	1,036.33
5/21/08	18	268.78	235.85	28.98	0.00	264.83	564.29	829.12
5/22/08	17	269.71	350.58	0.00	0.00	350.58	545.67	896.25
5/23/08	18	284.91	325.60	15.57	0.00	341.17	495.34	836.51
5/24/08	17	281.89	355.22	15.67	0.00	370.89	294.78	665.67
5/25/08	18	275.77	407.49	5.74	0.00	413.23	445.39	858.62
5/26/08	16	247.93	274.38	10.76	0.00	285.14	251.82	536.96
5/27/08	17	263.59	335.42	2.70	0.00	338.12	520.86	858.98
5/28/08	18	286.68	247.08	37.27	0.00	284.35	732.34	1,016.69
5/29/08	17	276.69	490.77	35.70	0.00	526.47	817.48	1,343.95
5/30/08	18	272.97	404.34	10.17	0.00	414.51	719.93	1,134.44
5/31/08	16	255.86	368.10	6.60	0.00	374.70	450.09	824.79
<b>510</b>	<b>8,165.45</b>	<b>10,338.77</b>	<b>404.30</b>	<b>0.00</b>	<b>10,743.07</b>	<b>13,461.68</b>	<b>24,204.75</b>	

**Waimanalo Gulch Tonnage**

Date	# of Ash Loads	Ash totals Separate	Residue	UAW	By-Pass Ferrous Landfill	Total Res., UAW & By Pass Ferr.	WGSL Scale Totals	Total MSW Tonnage both H Pwr / WGSL
4/1/08	16	265.23	340.58	14.02	0.00	354.60	415.20	769.80
4/2/08	17	270.36	333.54	24.40	0.00	357.94	524.50	882.44
4/3/08	17	277.06	566.61	3.40	0.00	570.01	413.40	983.41
4/4/08	19	296.85	266.94	0.00	0.00	266.94	689.10	956.04
4/5/08	14	232.43	296.53	32.59	0.00	329.12	360.56	689.68
4/6/08	14	249.26	70.45	13.35	0.00	83.80	429.01	512.81
4/7/08	17	273.69	169.78	0.00	0.00	169.78	369.19	538.97
4/8/08	11	180.33	368.90	53.42	0.00	422.32	489.35	911.67
4/9/08	9	144.60	397.38	18.79	0.00	416.17	1,162.07	1,578.24
4/10/08	15	250.35	340.99	0.00	0.00	340.99	1,138.55	1,479.54
4/11/08	18	290.94	283.93	4.41	0.00	288.34	432.41	720.75
4/12/08	16	273.29	263.48	12.41	0.00	275.89	1246.53	1,522.42
4/13/08	16	275.65	26.27	8.94	0.00	35.21	338.04	373.25
4/14/08	17	263.63	199.63	0.00	0.00	199.63	464.56	664.19
4/15/08	10	154.57	347.63	22.03	0.00	369.66	285.88	655.54
4/16/08	15	253.70	307.75	28.92	0.00	336.67	295.96	632.63
4/17/08	18	299.50	315.78	9.72	0.00	325.50	750.47	1,075.97
4/18/08	17	281.58	458.51	13.39	0.00	471.90	625.85	1,097.75
4/19/08	14	229.04	313.48	2.95	0.00	316.43	275.85	592.28
4/20/08	14	234.27	19.47	17.18	0.00	36.65	278.98	315.63
4/21/08	17	274.19	176.80	0.00	0.00	176.80	482.71	659.51
4/22/08	17	275.03	398.26	7.33	0.00	405.59	409.57	815.16
4/23/08	17	265.17	317.52	6.44	0.00	323.96	341.80	665.76
4/24/08	15	252.68	491.81	13.20	0.00	505.01	539.46	1,044.47
4/25/08	17	284.30	423.81	4.40	0.00	428.21	543.43	971.64
4/26/08	16	262.25	303.03	12.84	0.00	315.87	421.19	737.06
4/27/08	14	244.97	51.86	11.80	0.00	63.66	391.85	455.51
4/28/08	16	261.60	259.76	6.50	0.00	266.26	567.25	833.51
4/29/08	16	267.95	376.29	20.12	0.00	396.41	524.10	920.51
4/30/08	17	280.12	475.36	7.97	0.00	483.33	479.23	962.56
					0.00	0.00		0.00
	<b>466</b>	<b>7,664.59</b>	<b>8,962.13</b>	<b>370.52</b>	<b>0.00</b>	<b>9,332.65</b>	<b>15,686.05</b>	<b>25,018.70</b>

**Waimanalo Gulch Tonnage**

Date	# of Ash Loads	Ash totals Separate	Residue	UAW	By-Pass Ferrous Landfill	Total Res., UAW & By Pass Ferr.	WGSL Scale Totals	Total MSW Tonnage both
								H Pwr / WGSL
3/1/08	17	294.98	254.45	8.98	0.00	263.43	327.58	591.01
3/2/08	15	262.28	53.82	0.00	0.00	53.82	416.55	470.37
3/3/08	18	282.94	306.90	14.32	0.00	321.22	381.12	702.34
3/4/08	17	276.15	301.63	17.94	0.00	319.57	556.13	875.70
3/5/08	16	264.67	517.05	15.71	0.00	532.76	406.23	938.99
3/6/08	15	243.29	416.29	22.67	0.00	438.96	303.01	741.97
3/7/08	19	310.09	583.79	16.79	0.00	600.58	416.95	1,017.53
3/8/08	9	151.68	270.42	12.80	0.00	283.22	1,835.25	2,118.47
3/9/08	9	153.21	53.07	31.41	0.00	84.48	275.33	359.81
3/10/08	8	132.26	191.18	17.78	0.00	208.96	1,634.46	1,843.42
3/11/08	9	132.50	185.41	18.57	0.00	203.98	1,350.49	1,554.47
3/12/08	10	159.85	199.36	18.44	0.00	217.80	1167.68	1,385.48
3/13/08	10	152.61	242.27	6.02	0.00	248.29	1,033.80	1,282.09
3/14/08	11	167.70	150.00	3.35	0.00	153.35	1,311.06	1,464.41
3/15/08	11	180.72	204.57	5.62	0.00	210.19	1,038.69	1,248.88
3/16/08	10	158.09	37.38	0.00	0.00	37.38	333.88	371.26
3/17/08	11	169.82	0.00	0.00	0.00	0.00	2,900.37	2,900.37
3/18/08	9	138.72	0.00	0.00	0.00	0.00	2,629.22	2,629.22
3/19/08	9	151.10	19.33	0.00	0.00	19.33	2,632.32	2,651.65
3/20/08	9	149.89	352.05	0.00	0.00	352.05	427.91	779.96
3/21/08	9	139.75	291.17	4.13	0.00	295.30	419.95	715.25
3/22/08	13	210.70	283.42	6.62	0.00	290.04	245.66	535.70
3/23/08	12	195.79	34.86	11.04	0.00	45.90	440.46	486.36
3/24/08	15	235.50	189.67	7.12	0.00	196.79	318.81	515.60
3/25/08	17	263.23	377.75	22.71	0.00	400.46	288.32	688.78
3/26/08	16	258.18	268.25	10.03	0.00	278.28	290.50	568.78
3/27/08	17	267.10	389.91	7.18	0.00	397.09	353.42	750.51
3/28/08	16	275.22	431.06	0.00	0.00	431.06	404.21	835.27
3/29/08	15	265.73	245.43	20.75	0.00	266.18	392.47	658.65
3/30/08	15	252.71	272.20	7.41	0.00	279.61	429.72	709.33
3/31/08	15	258.46	309.87	0.00	0.00	309.87	427.08	736.95
<b>402</b>		<b>6,554.92</b>	<b>7,432.56</b>	<b>307.39</b>	0.00	<b>7,739.95</b>	<b>25,388.63</b>	<b>33,128.58</b>



**Waimanalo Gulch Tonnage**

Date	# of Ash Loads	Ash totals		UAW	By-Pass Ferrous Landfill	Total Res., UAW & By Pass Ferr.	WGSL Scale Totals	Total MSW Tonnage both
		Separate	Residue					H Pwr / WGSL
2/1/08	16	254.04	464.92	7.50	0.00	472.42	463.95	936.37
2/2/08	16	270.47	320.58	7.36	0.00	327.94	425.69	753.63
2/3/08	15	248.06	371.68	21.89	0.00	393.57	487.91	881.48
2/4/08	12	187.61	307.56	0.00	0.00	307.56	538.03	845.59
2/5/08	18	280.94	503.98	17.64	0.00	521.62	764.41	1,286.03
2/6/08	16	265.98	446.60	17.76	0.00	464.36	629.19	1,093.55
2/7/08	16	261.04	413.01	4.35	0.00	417.36	526.88	944.24
2/8/08	18	278.19	389.53	10.40	0.00	399.93	331.89	731.82
2/9/08	10	159.59	317.98	9.17	0.00	327.15	420.07	747.22
2/10/08	9	160.60	53.74	25.06	0.00	78.80	333.13	411.93
2/11/08	15	259.65	160.31	2.85	0.00	163.16	1,293.36	1,456.52
2/12/08	18	281.60	389.38	13.45	0.00	402.83	257.53	660.36
2/13/08	17	276.15	506.02	26.03	0.00	532.05	309.11	841.16
2/14/08	14	219.85	471.95	8.07	0.00	480.02	354.87	834.89
2/15/08	8	130.27	367.62	23.85	0.00	391.47	288.13	679.60
2/16/08	14	225.92	259.67	14.76	0.00	274.43	266.61	541.04
2/17/08	15	256.06	38.27	1.71	0.00	39.98	343.22	383.20
2/18/08	16	268.85	199.46	6.33	0.00	205.79	1,566.90	1,772.69
2/19/08	16	278.93	390.34	14.16	0.00	404.50	385.43	789.93
2/20/08	16	265.09	444.80	22.81	0.00	467.61	455.25	922.86
2/21/08	19	306.67	302.85	7.00	0.00	309.85	375.28	685.13
2/22/08	16	278.67	401.67	10.41	0.00	412.08	321.29	733.37
2/23/08	14	252.04	294.30	24.76	0.00	319.06	202.05	521.11
2/24/08	14	257.77	17.01	0.00	0.00	17.01	339.21	356.22
2/25/08	16	260.47	218.60	0.00	0.00	218.60	633.06	851.66
2/26/08	19	305.43	368.77	29.69	0.00	398.46	380.98	779.44
2/27/08	18	278.72	360.00	24.93	0.00	384.93	512.95	897.88
2/28/08	15	248.72	420.37	1.95	0.00	422.32	484.92	907.24
2/29/08	18	286.80	226.89	38.26	0.00	265.15	465.51	730.66
<b>444</b>		<b>7,304.18</b>	<b>9,427.86</b>	<b>392.15</b>	<b>0.00</b>	<b>9,820.01</b>	<b>14,156.81</b>	<b>23,976.82</b>

# **APPENDIX B**



**LANDFILL GAS COLLECTION AND  
CONTROL SYSTEM DESIGN PLAN**  
*Waimanalo Gulch Sanitary Landfill*  
*Kapolei, Hawaii*

*Amended and Restated*  
*March 21, 2006*

Prepared for

Waste Management of Hawaii, Inc.

Prepared by

  
**Shaw**™ Shaw Environmental, Inc.  
Shaw Environmental, Inc.  
2360 Bering Drive  
San Jose, CA 95131

Shaw Project 117354.02





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- Appendix B GCCS Piping Head Loss Analysis
- Appendix C GCCS Construction Record Plans
- Appendix D Wellfield Monitoring Forms and Surface Emissions Monitoring Plan
- Appendix E Proposed Compliance Alternatives and Timeline Requests

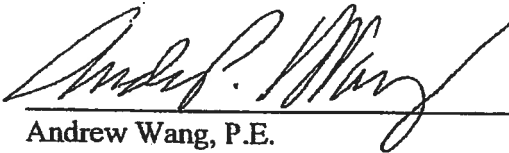
## Certification

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This Design Plan report for the landfill gas collection and control system for the Waimanalo Gulch Sanitary Landfill (WGSL) has been prepared by Shaw Environmental, Inc. (Shaw), as authorized by Waste Management of Hawaii, Inc. (WMH).

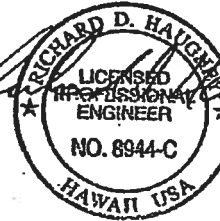
I certify the information in this document to be true, accurate, and complete in accordance with HAR §11-60.1-1 and §11-60.1-4. I also certify that the landfill gas collection and control system design for the Waimanalo Gulch Sanitary Landfill, as described in this plan, meets the design requirements of the New Source Performance Standards for Municipal Solid Waste Landfills (40 CFR §60.759) and the State of Hawaii, Department of Health (DOH) Regulations, with any alternatives proposed pursuant to 40 CFR §60.752(b)(2). I further certify that this report was prepared by me or under my direct supervision.

Shaw Environmental, Inc.



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Andrew Wang, P.E.  
Project Manager, Landfill Gas



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Richard D. Haughey, P.E.  
Senior Engineering Manager



## 1.0 Introduction

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This document is a Landfill Gas Collection and Control System (GCCS) Design Plan for the Waimanalo Gulch Sanitary Landfill (WGSL), pursuant to 40 Code of Federal Regulations (CFR) Part 60, Subpart WWW, *New Source Performance Standards (NSPS) for Municipal Solid Waste Landfills*. The NSPS is implemented and enforced in the State of Hawaii by the U.S. Environmental Protection Agency (USEPA) Region IX. Additional compliance requirements are included in the State of Hawaii, Department of Health (DOH), Hawaii Administrative Rules (HAR), Title 11, Chapter 60.1, *Air Pollution Controls*.

Waste Management of Hawaii, Inc. (WMH) operates the WGSL in Kapolei, Hawaii, under contract with the City and County of Honolulu. Based on discussions of July 28, 2005, between Cynthia Allen of USEPA Region IX Air Division and WMH, it was determined that submittals pursuant to the NSPS Subpart WWW should be made to the USEPA because it has not delegated this program to the State of Hawaii. This fact was self-disclosed by WMH under the USEPA Audit Policy in a letter to the USEPA dated August 10, 2005. Thus, Title V and the NSPS Subpart WWW are enforced by DOH and USEPA Region IX, respectively, under the Covered Source Permit (CSP) No. 0489-01-C, issued March 11, 2005. The DOH was subsequently delegated authority for NSPS Subpart WWW on January 30, 2006.

Required GCCS Design Plan documents were submitted previously to DOH pursuant to CSP Application No. 0489-01, and applicable regulations. The original GCCS Design Plan for the WGSL was submitted to the DOH in January 2002. Additional information was requested by the DOH in a review letter dated June 10, 2002. A letter responding to the DOH request was submitted on August 18, 2003. This response letter contained additional GCCS Design Plan information and proposed Title V permit revisions. Although the CSP was issued in March 2005, WMH has not received formal approval of the GCCS Design Plan (as amended), to date. The proposed GCCS was constructed in accordance with the Design Plan in the spring of 2005 and initiated full-time operations on August 1, 2005. In addition, due to unique conditions encountered during start-up operations, WMH submitted a separate letter request to DOH and USEPA Region IX (dated October 21, 2005) for review and approval of alternative wellhead temperature standards and compliance procedures for the WGSL. WMH has subsequently submitted a request for an alternative compliance timeline for meeting the wellhead temperature standards on December 7, 2005.

### 1.1 Purpose

The primary objectives of this GCCS Design Plan are:

- To complete NSPS submittal update requirements to USEPA Region IX and DOH;

- To update the original GCCS Design Plan to reflect the completed GCCS, current site conditions, and site-specific operations;
- To provide (or restate) additional information on monitoring instrumentation and procedures pursuant to NSPS and HAR Title 11, Chapter 60.1 requirements and CSP No. 0489-01-C; and
- To document formal approval for modified alternatives standards, procedures, and schedules for LFG collector operation and monitoring, previously submitted to USEPA and DOH.

This Design Plan demonstrates that the current and proposed GCCS designs comply with the NSPS, including HAR Title 11, Chapter 60.1. The Design Plan is a working document, to be used as a guideline for maintaining ongoing compliance with the NSPS.

## **1.2 Compliance Summary Table**

A summary of the applicable NSPS regulations and the WGSJ implementation of GCCS designs to comply with these regulations are presented in Table 1-1. Additionally, Table 1-1 provides location references for the regulations addressed by this Design Plan within Appendix E of the USEPA's *Enabling Document for the NSPS and EG for Municipal Solid Waste Landfills* (August 1995).

TABLE 1-1  
 WASTE MANAGEMENT OF HAWAII - WAIMANALO GULCH LANDFILL  
 SUMMARY OF LANDFILL GAS COLLECTION AND CONTROL SYSTEM DESIGN PLAN

Regulatory Citations	Report Reference	Appendix B Reference <sup>1</sup>	Regulatory Requirement	Implementation of Regulatory Requirements at the Waimanalo Gulch Landfill
§ 60.759 (b)(1)	Section 4.1	Page B-1, Section 2	Landfill gas collection and control system design plan must be certified, sealed, and signed by a professional engineer.	The landfill gas collection and control system design plan has been certified, sealed, and signed by a professional engineer.
	Section 4.3	Page B-1, Section 3	Design plans must address depth of refuse, refuse gas generation rates and flow characteristics, cover properties, gas system expandability, leachate and condensate management, accessibility, compatibility with filling operations, integration with closure and use, air intrusion control, corrosion resistance, fill settlement, resistance to the refuse decomposition heat.	The Landfill design plans address all of the requirements listed under Section 60.759(b)(1) of the NSPS.
§ 60.759 (b)(2)	Section 4.2	Page B-1, Section 4	Landfill gas collection devices shall be installed at a sufficient density to control surface emissions and subsurface migration of landfill gas.	The current landfill gas collection and control system has been designed to maintain emissions and migration control as set forth in the NSPS.
§ 60.759 (b)(3)(i)	Section 4.3.1	Page B-1, Section 5	Areas containing asbestos or other nondegradable material may be excluded from coverage by the landfill gas collection and control system.	Approximately 20 acres in the southwest portion of the landfill, consists of nondegradable ash fill (Ash Cells 1-4).
§ 60.759 (b)(3)(ii)	Section 4.3.2	Page B-1, Section 6	Areas considered to be non-productive (contributing less than 1 percent of the total non-volatile organic compounds from the landfill) may be excluded from coverage by the landfill gas collection and control system.	Approximately 20 acres in the southwest portion of the landfill, consists of nonproductive ash. This area will be excluded from coverage by the landfill GCS (Ash Cells 1-4).
§ 60.759 (b)(1)	Section 4.4.1	Page B-1, Section 7	Landfill gas collection and control system components shall be constructed of PVC, HDPE, or other nonporous corrosion resistant materials.	Landfill gas collection and control system components have been and are proposed to be constructed from CPVC, PVC, HDPE, or other nonporous corrosion resistant materials.
	Section 4.4.1	Page B-1, Section 8	Landfill gas collection and control system components shall have suitable dimensions to convey the maximum landfill gas flow rate and withstand future settlement, overburden, and traffic loads.	The landfill gas collection and control system components were designed to accommodate the maximum landfill gas flow rate anticipated at various site development stages, and installed to withstand installation, acids, settlement, overburden, filling operations and traffic loads.
	Section 4.4.1	Page B-1, Section 9	Expansion of the landfill gas collection and control system will occur as needed to meet landfill gas emission and migration standards.	The landfill gas collection and control system will be expanded as necessary to comply with EG requirements.
	Section 4.4.1	Page B-1, Section 10	Vertical well perforations will control head loss and air infiltration throughout the system.	The landfill gas collection elements are perforated to minimize head loss and excessive air infiltration into the system.
§ 60.759 (b)(2)	Section 4.4.2	Page B-1, Section 11	Vertical wells must not endanger the landfill base layer and must address the occurrence of water in the landfill.	The landfill gas vertical extraction wells are designed and installed to extend from the landfill surface to no more than 75% of the refuse depth. Groundwater is not anticipated at the site. In addition, liquids in the refuse are addressed by the leachate and condensate management systems.
	Section 4.4.2	Page B-1, Section 12	Suitable cross-section of the well bores and trenches is required for construction and completion of the collection elements.	The vertical bore holes and horizontal collection tranches (if installed) will be constructed with sufficient cross sections to allow for the proper operation of the collection elements.
	Section 4.4.2	Page B-1, Section 13	Landfill gas collection and control system components must be designed to control air intrusion, prevent landfill gas from escaping the collection system, and prohibit refuse from entering the collection system.	Control of air intrusion and the escape of landfill gas from the system will be accomplished through monitoring of the landfill gas collection and control system, operating the system under vacuum, and continued maintenance of the landfill cover. The refuse is kept from entering the collection elements by gravel backfill placed in the bore or trench separating the refuse from the landfill gas collection elements.
§ 60.759 (b)(3)	Section 4.4.2	Page B-1, Section 14	Gravel backfill in the extraction wells and trenches shall not obstruct pipe perforations.	Gravel has been specified of sufficient size to prevent entry or blockage of the collector perforations.
	Section 4.4.3	Page B-1, Section 15	Collection device connections may be above or below ground, must include a positive closing throttling valve, necessary seals, access couplings, and at least one monitoring port.	The collection devices are connected to the collection header pipe and include a positive closing throttling valve, necessary seals and couplings, access couplings, and tapping port.
§ 60.752 (b)(2)(iv)(A)(7)	Section 4.5	Page B-1, Section 16	The collection header pipes must be adequate to handle the maximum landfill gas flow rate.	The collection header pipes are sized to accommodate the maximum landfill gas flow rates through 2008, the current permitted size.
	Section 4.2.3	Page B-2, Section 2	Landfill gas collection shall occur in active cells with waste in place for 5 years, or more or in closed cells with waste at final grade for 2 years or more.	An active landfill gas collection and control system is currently installed in cells that have waste in-place for five years or more. Future cells that are active with waste in place for 5 years, or more, or closed cells with waste at final grade for 2 years or more will have a landfill gas collection and control system installed prior to exceeding the regulatory time frame.
§ 60.752 (b)(2)(iv)(A)(7)	Section 4.7.3	Page B-2, Section 3	Landfill gas extraction wells shall apply a negative gauge pressure to maintain a sufficient extraction rate of landfill gas without causing air infiltration.	A negative gauge pressure will be applied to the extraction elements via centrifugal blowers or compressors, except when conditions described in Section 4.7 and 4.8 of the Master Design Plan exist. Waste Management of Hawaii, Inc. (WMAH) will monitor the landfill gas collection and control system wetheads for static pressure and indications of air infiltration per EG requirements.
§ 60.752 (b)(2)(iv)(A)(4)	Section 4.7.3	Page B-2, Section 4	Subsurface migration of landfill gas will be controlled.	The landfill gas collection and control system is designed to control subsurface migration. Additionally, perimeter and surface monitoring will also be conducted to monitor subsurface migration.

1. Appendix B of the "Sampling Document for the New Source Performance Standard and Emission Guidelines for Municipal Solid Waste Landfill", Emission Standards Division, US EPA provides guidance for complying with the GCS design plan requirements of the NSPS.



## **2.0 Existing Site Conditions**

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### **2.1 Landfill Description**

The WGS� is located at 92-460 Farrington Highway in the City of Kapolei, Hawaii, and is owned by the City and County of Honolulu, Hawaii. It is operated by WMH, a wholly owned subsidiary of Waste Management, Inc. The WGS� is the primary disposal site for the City of Honolulu, Hawaii. The WGS� first began accepting waste in 1989 consisting of municipal solid waste (MSW), construction and demolition (C&D) debris and green waste from county collection routes and transfer stations, private collection companies, residential and commercial haulers, and MSW incinerator ash and residue from nearby HPower.

Approximately 78.9 acres of the 100.9 acre property are permitted for waste disposal, with approximately 58.9 acres designated for municipal solid waste (MSW) disposal. Approximately 53 acres currently contain MSW in-place. Approximately 20 acres at the southern end of the landfill are designated for power plant ash and residue monofill. All landfill cells were constructed with lined containment, in accordance with applicable regulations.

Significant areas of the western MSW cells of the WGS� have been found to contain high gas temperatures and hydrogen gas concentrations, indicating transitional states of non-methanogenic, anaerobic biological activity. Proposed interim alternatives to the NSPS wellhead temperature and operating vacuum standards are included herein (Appendix E ), to facilitate maximum extraction and control of LFG methane and non-methane organic compounds (NMOC), while minimizing the potential for high landfill temperatures, hydrogen generation, aerobic decomposition, and subsurface combustion in transitional anaerobic areas of the landfill. WMH has submitted a request for an alternative compliance timeline for meeting the wellhead temperature standards (dated December 7, 2005).

### **2.2 Landfill Gas Collection and Control System**

Currently, a GCCS is in place and operational in MSW Cells 1 through 11 of the WGS� (Appendix C, Drawing 2). Landfill gas (LFG) collectors, conveyance piping, and LFG control equipment were installed during March through June, 2005, in accordance with applicable local, state and federal requirements. The current GCCS construction record drawings are included in Appendix C.

## **2.2.1 LFG Collection System**

The LFG collection system includes all LFG conveyance components installed in the landfill, from the LFG extraction wells to the inlet of the condensate knock-out pot on the LFG blower skid. These components currently include the following:

- 23 vertical LFG extraction wells (LFG extraction well GW-3 was recently decommissioned after notifying DOH, due to severe damage from waste disposal operations);
- 23 wellhead monitoring and LFG flow control assemblies;
- approximately 1,100 feet of 12-inch LFG header piping, 5,000 feet of 8-inch LFG header piping, and 1,500 feet of 6-inch LFG lateral piping connecting extraction wells to the headers;
- 3 LFG header control valves; and
- 1 condensate sump.

A vacuum applied to the extraction well field causes LFG to move from the refuse into the vertical wells, through the wellhead monitoring assemblies and 6-inch diameter lateral piping, into 8-inch diameter header pipes. At the southeastern corner of MSW Cell 1, the header pipes combine into a larger 12-inch diameter header pipe, which conveys the LFG to the inlet of a condensate knock-out pot on the blower skid at the flare station.

The existing vertical extraction wells were connected with above grade piping to allow pipe relocation to accommodate waste disposal activities. The extraction wells in the waste disposal areas will be maintained and operated for as long as possible, by extending casings and re-routing conveyance piping. Damaged and nonproductive wells and piping will be decommissioned, and replaced with new wells and piping, as necessary to maintain compliance.

## **2.2.2 Landfill Flare Station**

The landfill flare station is located in the southeastern corner of the landfill, southeast of the landfill's main entrance road. The major components of the flare station are:

- LFG Specialties prefabricated flare skid, including:
  - Condensate knock-out pot (KOP);
  - Two American Fan blowers (Model 7N-06F-31.5N), with 20 horsepower motors, each with flow capacity of 700 standard cubic feet per minute (scfm; 820 actual inlet cubic feet per minute [acfm]);



- Two 6-inch Enardo Model DFA 1206 Detonator Arrestors, specifically designed for elevated levels of hydrogen;
- Enclosed flare, LFG Specialties Model EF735I6, with capacity of 1,000 scfm LFG at 50 percent methane (30 million British thermal units per hour [MMBtu/hr]);
- Flare and blower control and monitoring instrumentation.
- Compressed air supply, including:
  - Air compressor.

The enclosed flare is permitted for maintaining LFG control and regulatory compliance through thermal destruction of the LFG. The enclosed flare is designed to collect and treat the LFG flow rates anticipated within the design life of the flare station equipment. The LFG blowers were sized to accommodate turn-down to the current low level of LFG flows (350 to 400 scfm). When the blower capacity is exceeded, an additional blower can be readily added in parallel to increase the system design flow to the required capacity.

Actual achievable LFG flow rates appear to be substantially lower than theoretical LFG generation model estimates due to site-specific conditions. The currently achievable equilibrium upper limit of LFG extraction appears to be approximately 400 scfm, compared to the model-estimated recovery rate of 477 scfm.

### **2.2.3 Condensate Collection System**

The condensate collection system for the GCCS includes the following components:

- A condensate sump located at the inlet to the flare station;
- Two 1,000 gallon condensate storage tanks with spill containment; and
- A condensate KOP on the blower skid that gravity drains to the condensate sump.

The purpose of the condensate collection system is to minimize LFG flow obstructions by capturing and removing free liquid from the LFG flow stream for disposal. WMH also anticipates installation and operation of a condensate treatment system using flare injection, in March 2006.

### **2.2.4 Unique LFG Collection Characteristics**

The LFG extracted from some areas of the WGS� has demonstrated unique characteristics not typical of the equilibrium anaerobic methanogenesis which occurs at most MSW landfills. Typical LFG characteristics at most MSW landfills include:

- Similar concentrations of methane and carbon dioxide (methane to carbon dioxide ratios from 0.8 to 1.2)
- Mesothermophilic (medium temperature range) bacterial environment (100 to 120°F)
- Low hydrogen gas concentrations (less than 0.2 percent by volume)

The atypical gas characteristics that have been detected at many of the WGSL extraction wells include:

- Very low methane to carbon dioxide ratios (less than 0.2)
- Hyperthermophilic (very high temperature range) bacterial environment (greater than 160°F)
- High hydrogen gas concentrations (up to 45 percent by volume)

A detailed summary of recent daily wellhead monitoring data for all the LFG extraction wells at WGSL is provided in Table 1, Appendix E. Based on the unique site LFG characteristics as supported by the monitoring data, WMH has previously requested DOH and USEPA to review and approve alternate operational standards discussed herein and in Appendix E.

## **3.0 Future site development**

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### **3.1 Landfill Development Plan**

MSW Cells 1 through 11 have been partially filled and temporarily covered as part of the phased landfill development plan. Current waste filling operations are occurring in Cell E1 along the eastern edge of the landfill and will be progressing northwards into MSW Cells E2, E3, and E4. Filling is anticipated to continue in this eastern perimeter area until waste elevations are achieved such that additional vertical filling over all the existing MSW cells can be resumed.

#### **3.1.1 Landfill Closure**

WMH projections of the waste disposal rates indicate that the existing permitted landfill might reach capacity in approximately 2008. None of the landfill cells have been closed to date. Intermediate cover soil has been placed over inactive portions of the fill, as required by HAR Title 11, Chapter 58.1, *Solid Waste Management Control* and Federal Resource Conservation and Recovery Act (RCRA) Subtitle D regulations.

Final cover design and construction will be in accordance with HAR Title 11, Chapter 58.1 and RCRA Subtitle D. Integration of the GCCS with specific cover components (including provisions for low permeability soil or geosynthetic membranes) will be addressed in the approved Final Closure Plan. The current Solid Waste Permit for WGS� expires in 2008. If the City and County of Honolulu decide to permit an expansion of the landfill, the GCCS Design Plan will be amended at that time.

### **3.2 GCCS Expansion Capabilities**

Following is a summary of the proposed concepts for GCCS expansions over the remaining life of the WGS�. Detailed discussions of proposed GCCS compliance with NSPS requirements are provided in Section 4.0.

#### **3.2.1 General Concepts**

The existing GCCS construction consists of vertical extraction wells connected with above-grade piping to allow pipe relocation to accommodate waste disposal activities. The GCCS future expansion concept will continue to use vertical wells and above grade conveyance piping to collect LFG as the landfill is expanded. The extraction wells in the waste disposal areas will be maintained and operated for as long as possible, by extending casings and re-routing conveyance piping. Damaged and nonproductive wells and piping will be decommissioned, and replaced with new wells and piping, as necessary.

As the WGSW MSW cells continue filling laterally and vertically, expansion of the GCCS will be completed in accordance with NSPS requirements. Provisions for future expansion include:

- Installation of LFG collectors within 2 years in landfill areas that are closed or at final grade.
- Installation of LFG collectors within 5 years in active landfill areas;
- Piping sized for anticipated future flow rates;
- Equipment sized to handle the maximum expected LFG flow rates;
- Space provided for required additional equipment;
- Location of flow control valves within the header piping at the landfill perimeter, to maintain system balance during large system changes; and
- Installation of connection points for future collector wells and conveyance piping.

### **3.2.2 LFG Collectors**

Vertical extraction wells and conveyance piping that have already been installed in the MSW cells will be extended to final grade and connected to a perimeter main header as needed. Vertical LFG extraction wells will be added in existing GCCS areas as required to control emissions and minimize subsurface LFG accumulation and pressure build-up. Vertical extraction wells will typically be in operation before installation of the landfill final cover. In the future, up to nine additional LFG extraction wells may be installed in the lateral waste expansion areas (MSW Cells E1 through E4), as required to augment collection efficiency and to meet regulatory standards. These wells will be installed within 5 years of initial waste placement in each cell, in accordance with NSPS requirements. An additional main header may also be added along the eastern perimeter road to convey LFG from the expansion area cells to the flare station.

### **3.2.3 LFG Control Equipment**

The current control devices were designed to collect the maximum LFG flow rates anticipated within the expected design life of the equipment. The current flare design capacity is 1,000 scfm of LFG, assuming a 50 percent methane concentration (30 MMBtu/hr gross heat capacity). The peak LFG generation estimated using USEPA AP-42 model parameters is approximately 1,808 scfm of LFG. Actual achievable flow rates appear to be substantially lower due to site-specific conditions. If the future LFG flow increases beyond the existing control device capacity, the flare station will be expanded to accommodate the additional flow, by installing another flare or an alternate LFG beneficial use control device.

The LFG blowers were sized to accommodate turn-down to the current low level of LFG flow, approximately 350 to 400 scfm. When the individual design blower capacity of 700 scfm is

exceeded, the blowers may be operated in parallel to increase the system design capacity to the required level. An additional blower will then be added for back-up.

### **3.2.4 GCCS Vacuum**

The GCCS wellfield design vacuum was specified to be compatible with the blowers at the flare station. The blowers are able to produce approximately 55 inches of water column (in. w.c.) vacuum at an 800 inlet acfm flow rate. The GCCS header sizes and vacuum capacity should be sufficient to accommodate the LFG extraction flow rates through the year 2014, without additional pipeline construction. GCCS modifications to allow higher capacity operation may be incorporated into future construction.

### **3.2.5 LFG Conveyance Piping**

The LFG collectors will be connected to the LFG flare via main headers and laterals. The nominal pipe diameter sizes for future main headers will range from 8-inch to 12-inch. Lateral pipe diameters connecting the LFG collectors to the headers will range from 4-inch to 6-inch. The primary design strategy for the future GCCS conveyance piping is to provide a perimeter header loop that is able to convey sufficient vacuum to all LFG collectors under anticipated operating conditions.





## **4.0 Compliance Review and Evaluation**

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### **4.1 Compliance with §60.759(a)(1)**

**§60.759(a)(1)** The collection devices within the interior and along the perimeter areas shall be certified to achieve comprehensive control of surface gas emissions by a professional engineer. The following issues shall be addressed in the design: depths of refuse, refuse gas generation rates and flow characteristics, cover properties, gas system expandability, leachate and condensate management, accessibility, compatibility with filling operations, integration with closure end use, air intrusion control, corrosion resistance, fill settlement, and resistance to the refuse decomposition heat.

This GCCS design is certified, sealed, and signed by a professional engineer. Issues related to compliance with §60.759(a)(1) are discussed in the following sections.

Applicable information used in the design of the GCCS is included in Appendix A (Gas Generation Rate Modeling, Radius of Influence and Well Spacing Calculations, and Condensate Generation Estimates), Appendix B (Head Loss Analysis), and Appendix C (GCCS Construction Record Plans).

#### **4.1.1 Control of Surface Emissions**

The GCCS was designed to reduce both subsurface lateral migration and surface emissions of LFG from the WGS�. The GCCS design is certified by a professional engineer as able to achieve comprehensive control of surface LFG emissions. The facility operator or appointed representative will monitor the surface of the WGS� for LFG emissions in accordance with NSPS and HAR Chapter 11-60.1 requirements. A Surface Emissions Monitoring (SEM) Plan is provided in Appendix D, designed in accordance with HAR Chapter 11-60.1 and NSPS requirements. If the GCCS at WGS� does not meet the measures of performance for surface emissions as required by the NSPS, the GCCS will be adjusted or modified in accordance with NSPS requirements. Issues related to design compliance with §60.759(a)(1) are discussed in the following sections. The WGS� surface emission monitoring plan is provided in Appendix D.

#### **4.1.2 Depths of Refuse**

The existing LFG extraction wells were designed with an average spacing from approximately 150 feet to 300 feet on center. Existing well boring depths are from 45 feet to a maximum of 80 feet below ground surface (bgs) (see Appendix C for well construction record data). The wells were constructed to maximize deep gas extraction with depths to approximately 75 percent of the total refuse depths at the well locations with borings at a minimum of 24-inches in diameter.

Refuse elevations at final closure are estimated to be from 100 to 510 feet above mean sea level in most areas of the WGS�. Future LFG vertical extraction wells in areas with no existing

operational gas collectors will be designed to extend from the surface of WGS� to approximately 75 percent of the refuse depth to a maximum depth of 80 feet bgs. The depths of refuse at the LFG well locations will be determined based on the difference between the surface elevation of WGS� during GCCS design and the elevation of the landfill base. The current landfill surface elevations will be determined from the most recent aerial survey or other appropriate survey methods. Landfill base elevations will be derived from earlier topographic surveys and the landfill development and excavation plans.

#### **4.1.3 Landfill Gas Generation Rates and Flow Characteristics**

40 CFR Section 60.759(c) requires that the gas mover equipment shall be sized to handle the maximum gas generation flow rate expected over the intended use period of the gas moving equipment. For an existing GCCS the actual flow data shall be used to project the maximum flow rate. The existing GCCS is currently in operation and is successfully collecting and combusting the site LFG to maintain emissions compliance. The 10-day running average LFG flow rate measured at the inlet to the flare has ranged from approximately 220 to 530 scfm between September 2005 and February 2006, normalized to a 50 percent methane concentration (graph of flow data provided in Appendix A).

The LFG generation flow rates over time were projected from the apparent maximum sustainable running-average LFG flow rate. This maximum rate is estimated to be approximately 490 scfm at 50 percent methane concentration. The future LFG generation flow rates were projected using USEPA's Landfill Gas Emissions Model (*LandGEM Version 3.02*, included in Appendix A). Given the atypical biodegradation occurring in portions of the WGS�, and the modeling parameter assumptions, the resultant LFG generation projections overestimate the current LFG extraction rate, but are likely to be more representative of long-term rates once equilibrium methanogenic conditions are established.

The LandGEM generation and recovery model estimates for 2005 are approximately 822 scfm and 617 scfm, respectively, as shown in Table 4-1. The maximum LFG extraction rates obtained from the site (during early November 2005) averaged approximately 490 scfm. The peak LFG generation rate estimate is approximately 1,069 scfm, for the year 209. The USEPA equations are provided in §60.755 and Appendix A, and the LFG generation results for WGS� using these equations are also provided in Appendix A.

**Table 4-1  
LFG Generation and Extraction Estimates**

Year	LandGEM LFG Generation Estimate (scfm)	Extractable Flow at 75% of LandGEM LFG Generation Estimate (scfm)
2005 (actual for November)	-	490 (maximum sustainable 10-day average flow)
2005	822	617
2009 (peak)	1,069	802
2020	907	680
2035	724	543

Model Basis: LandGEM Version 3.02, using  $k=0.015/\text{yr}$  and  $L_0=100 \text{ m}^3/\text{Mg}$ .  
All LFG flows normalized to 50 percent methane concentration.

The annual generation estimates for WGS� are based on use of the USEPA's LandGEM model. The LandGEM model is based on normal methanogenic decomposition processes occurring in the landfill. There are non-methanogenic decomposition processes occurring in the WGS� that are not easily predicted using the LandGEM model. Therefore, the reported LFG generation rates may not reflect actual emissions or generation rates at WGS�. A study of the decomposition processes that are occurring at WGS� is being conducted to understand the gas generation at WGS�.

The LFG Specialties enclosed flare is designed to combust LFG flow with a total heat content of up to 30 MMBtu/hr (HHV). This design maximum is equivalent to approximately 1,000 cfm of LFG at 50 percent methane by volume. The flare will combust LFG at an operating temperature in excess of 1,400 degrees Fahrenheit ( $^{\circ}\text{F}$ ) to meet DOH and EPA air quality regulations for emissions. The flare design capacity is sufficient to accommodate the estimated peak LFG extraction of 802 scfm, and will likely be sufficient to accommodate the actual peak LFG generation for the permitted landfill.

#### **4.1.4 Landfill Cover Properties**

Due to the limited soil types available to the site, on-site soils used for daily and intermediate cover soils consist of native rocky soils. Intermediate cover is placed over all areas not actively receiving waste. Surface emissions monitoring is conducted quarterly to confirm that the cover is controlling surface emissions in accordance with the NSPS. In areas of concern, additional soils or flexible membrane liners are also placed to supplement the cover soils.

The final cover at WGS� will be designed and installed in accordance with applicable regulatory requirements. Final cover placement will proceed in phases as fill elevations reach final grades. Cover design will be in accordance with HAR requirements and the Federal Resource Conservation and Recovery Act (RCRA) Subtitle D regulations.

If required at closure, LFG wells will be provided with surface seals to minimize surface emissions and reduce the potential for air intrusion. If the installation of any GCCS component occurs after placement of the landfill final cover, necessary repairs will be made to restore the cover to its design specification. Final cover construction will be performed in accordance with a construction quality assurance program, under the supervision of a certifying engineer.

#### **4.1.5 Landfill Gas Control System Expandability**

Future expansion is planned for the WGS� GCCS into MSW Cells E1 through E4. The expandability of the GCCS was achieved by installing tees with blind flanges along the transmission piping. These flanges will provide access for extension of the LFG transmission piping in the future. Future expansion includes installing vertical extraction wells in MSW Cells E1 through E4 within 5 years of initial waste placement if the area is not at final grade or within 2 years if the area is at final grade, in accordance with NSPS requirements. Future expansions will also provide new main header pipes installed along the limits of the refuse footprint. The size of the header pipes will be sufficient to convey the maximum estimated LFG extraction rates from the entire site.

Based upon estimated peak LFG flow rates, it is not anticipated that the flare station will require additional area, power supply, or piping connections to accommodate estimated future LFG flow rates. However, if LFG flow rates are anticipated to exceed the flare capacity of the GCCS flare facility components, modifications and additions will be made in accordance with NSPS requirements.

#### **4.1.6 Leachate and Condensate Management**

The existing GCCS was constructed to minimize condensate accumulations in the extraction well and piping system. LFG well laterals are sloped to drain to the perimeter headers to minimize condensate recirculation to the waste near the wells. The perimeter headers drain by gravity to a single low spot sump at the flare station. A leachate collection and recovery system (LCRS) is incorporated into the WGS� base containment design. The LCRS is designed to allow removal of condensate or leachate reaching the landfill base liner. Collected leachate and condensate are currently transferred to the local public treatment works for disposal.

Table 4-2 presents the theoretical estimates of GCCS condensate generation quantities (Appendix A), based on the extracted LFG quantity estimates and site specific temperature

conditions. The unit condensate generation rate (condensate volume per LFG throughput flow rate) at the WGSL is approximately 6 to 8 times higher than at most other MSW landfills, due to the higher LFG temperatures and consequent higher saturation moisture content.

**Table 4-2  
LFG Condensate Generation Estimates**

Year	Estimated LFG Extraction (scfm)	Max. Condensate Generation (gpd*)
2005 (actuals for November)	490 (maximum sustainable 10-day average flow)	1,100 (mean pump out volume)
2005	617	1,530
2009 (peak)	802	1,989
2020	680	1,686
2035	543	1,347

\*gpd = gallons per day, based on worst case winter temperatures (248 gpd per 100 scfm LFG).

Condensate management is accomplished by collecting condensate at the sump and KOP located at the flare station inlet. The condensate sump is at the topographic low point of the entire GCCS, and thus handles virtually all the LFG condensate generated at the site. The KOP includes a 10 micron filter / demister pad which removes particulates and condensate droplets from the LFG flow stream prior to entering the flare station equipment. The KOP drains to the condensate sump by gravity. The sump pump conveys the collected condensate to a pair of 1,000 gallon dual-contained storage tanks in the LFG flare facility. Stored condensate is currently transferred from the tanks daily, for offsite treatment and disposal. WMH has procured a flare condensate injection system that is scheduled to be completed by March 2006, after which condensate will be injected into the LFG flare for treatment / destruction.

#### **4.1.7 Accessibility**

Accessibility to the GCCS components is achieved by installing components (such as wellheads and monitoring ports) on relatively flat surfaces of the landfill or near the landfill's road network. This will facilitate vehicle and technician access in most areas. Wellheads, piping risers, valves and monitoring ports are installed above grade, or within vaults, to maintain accessibility.

#### **4.1.8 Compatibility with Refuse Filling Operations**

In the proposed design, critical LFG system components have been isolated from the impacts of refuse filling operations where possible. LFG header and lateral pipes are installed along the edge of WGSL, the edge of the roadway, and away from daily fill and cover operations. As refuse

filling operations proceed, the expanding GCCS will be initiated via LFG extraction at the perimeter extraction points, thereby extracting LFG from the inner portions of the landfill after waste decomposition begins, when possible. When portions of the site reach final or near-final grades, additional GCCS components (wells) may be installed, if necessary. Should waste disposal still be occurring in a landfill cell within 5 years of initial waste placement, installation of temporary wells or horizontal LFG trenches will occur to maintain compliance with NSPS.

This method of installation allows GCCS components to be constructed in accordance with §60.752(b)(2)(ii)(A)(2)(i) and (ii), while minimizing interference of the GCCS with ongoing filling operations.

#### **4.1.9 Integration with Closure End Use**

Currently, the closure end use for the site is unspecified, but will likely be undeveloped open space. Changes to the closure end use will be reviewed to evaluate compatibility with the GCCS. Any items of concern related to maintaining and operating the GCCS will be mitigated by either altering the proposed post-closure end-use or by adjusting or modifying the GCCS in accordance with local, state and NSPS requirements.

#### **4.1.10 Air Intrusion Control**

Air intrusion is controlled through maintenance of the landfill cover and periodic monitoring and adjustment of the GCCS, in accordance with NSPS requirements. Air intrusion control measures will include the following:

- Timely construction of interim and final covers in applicable landfill areas;
- Early detection and sealing of potential air intrusion pathways into the landfill waste mass;
- Deeper extraction zones and effective well seal designs for vertical extraction wells; and
- Sufficient routine collector monitoring and balancing operations to consistently meet compliance requirements.

The low permeability final cover will be used as a means of minimizing air intrusion due to LFG extraction. The final cover may include a barrier layer of low permeability clay, a geomembrane liner, or a geosynthetic clay liner (GCL), which impedes the escape of LFG and the intrusion of air. The WGSF final cover may include flexible membrane liner boots around the LFG wells within the geomembrane lined portions of the landfill. Surface well seals consisting of hydrated bentonite will also be provided around the LFG well casings.



To minimize the potential for air intrusion, the LFG is monitored for increases in oxygen, which is an indicator of air intrusion. In addition, the LFG collector flows will be monitored for high gas temperatures, which also may indicate air intrusion. Air intrusion will also be minimized through maintenance of the landfill cover, surface emissions monitoring, and adjustment of the GCCS, in accordance with NSPS requirements. A Monthly Wellhead Monitoring Plan and Surface Emission Monitoring Plan are included in Appendix D. If recorded levels fail to meet the NSPS regulations or approved alternative standards, the GCCS will be adjusted or modified in accordance with the NSPS and procedures approved within this Design Plan.

#### **4.1.11 Corrosion Resistance**

Corrosion resistance of the GCCS will be achieved through the use of corrosion resistant materials, or materials that have a corrosion resistant coating. All GCCS and condensate piping will be constructed of high-density polyethylene (HDPE), polyvinyl chloride (PVC), or chlorinated polyvinyl chloride (CPVC). These thermoplastics are inherently resistant to corrosion from chemicals commonly found in LFG and LFG condensate. Polyethylene pipe pigments (carbon black) also are inherently resistant to ultraviolet (UV) degradation. Metal components (steel or iron flanges, etc.) will be galvanized or epoxy-coated. Coated components will be inspected during routine GCCS monitoring for abrasion, chipping, or cracking of the coating.

#### **4.1.12 Fill Settlement**

Refuse settlement will be minimized at the site through the use of standard compaction practices in the fill areas. However, some settlement will still occur due to decomposition of the refuse. The GCCS components are designed and installed with several features to account for this settlement including:

- The construction of the vertical wellheads above the landfill final cover will minimize stress to the wellhead and the final cover barrier layer, due to settlement of the waste around the well casing.
- Flexible membrane boots will be installed around the LFG extraction wells in areas where an FML is utilized, and, if applicable, a surface sealing membrane installed around LFG extraction wells in areas where an FML is not used in the landfill final cover design. The boot and the surface sealing membrane provide a flexible connection and seal of the landfill cover membrane around the LFG extraction well casing. This connection can be adjusted as the area settles around the LFG extraction well casing settles.
- LFG extraction wellheads will be connected to the LFG transmission piping via a flexible hose connection. This allows the LFG piping to accommodate changes in the orientations of both the LFG transmission piping and the LFG extraction well.

- Main header piping will be installed with sufficient grade to allow for proper drainage of the header piping if settlement occurs.
- Gas collectors and piping are constructed with HDPE piping of sufficient strength and bedding support to resist deformation failures due to normal settlement loads.

#### **4.1.13 Resistance to Decomposition Heat**

Resistance of the GCCS to the heat generated as a result of refuse decomposition will be achieved through the use of materials tested and proven to withstand temperatures encountered in the WGSL. The initial GCCS consisted of primarily HDPE and PVC components with thermal distortion temperatures of approximately 175 degrees Fahrenheit (°F, at 66 pound per square inch [psi] pressure). In areas in which abnormally high waste and LFG temperatures have been encountered (between 150 and 190°F), PVC GCCS components have been replaced with high-temperature resistant materials, specifically CPVC pipe, valves, and fittings. CPVC has a thermal distortion temperature of approximately 240°F, at the same test loads.

The wellhead gas temperatures will be recorded during routine monitoring and exposed GCCS components will be inspected regularly for heat damage. If heat damage of the GCCS components or abnormally high gas temperatures are observed, the cause of the damage or high temperatures will be investigated and the GCCS will be repaired, adjusted, or modified in accordance with NSPS requirements and standard industry practices.

Perforations in gas collector pipe will be of sufficient size and appropriate configuration to minimize performance reductions due to combined long-term temperature and pressure deformations.

#### **4.2 Compliance with § 60.759(a)(2)**

§60.759(a)(2) The sufficient density of gas collection devices determined in paragraph (a)(1) of this section shall address landfill gas migration issues and augmentation of the collection system through the use of active or passive systems at the landfill perimeter or exterior.

Per the definition stated in §60.751, “sufficient density” means “any number, spacing, and combination of collection system components necessary to maintain emission and migration control as determined by measures of performance set forth in this part.” A theoretical calculation provided in Appendix A indicates that radii of influence ranging from approximately 200 to 300 feet should be effective for efficient LFG extraction at the WGSL. The well spacing provided by the installed GCCS is well within this range.

The WGSL operator will conduct LFG migration compliance monitoring in accordance with NSPS and other applicable requirements. If in the future, the GCCS does not meet the measures of performance set forth in the NSPS, the GCCS will be adjusted or modified in accordance with

the NSPS requirements. These adjustments or modifications may include the installation of additional LFG collection elements, cap repairs or other actions defined by field conditions at the time of monitoring.

#### **4.3 Compliance with § 60.759(a)(3)**

**§60.759(a)(3)** The placement of gas collection devices determined in paragraph (a)(1) of this section shall control all gas producing areas, except as provided by paragraphs (a)(3)(i) and (a)(3)(ii) of this section.

Based on the surface emissions monitoring to date, the existing gas collection components appear to be installed in "sufficient density" to achieve the LFG surface emission control goals in all LFG producing areas, as discussed in regards to §60.759(a)(2) above.

Issues related to compliance with §60.759(a)(3) are discussed in the following sections.

##### **4.3.1 Asbestos and Nondegradable Materials**

**§60.759(a)(3)(i)** Any segregated area of asbestos or nondegradable material may be excluded from collection if documented as provided under §60.758(d). The documentation shall provide the nature, date of deposition, location and amount of asbestos or nondegradable material deposited in the area, and shall be provided to the Administrator upon request.

The southern area of the WGS� (approximately 20 acres documented as Ash Cells 1 through 8 in Appendix C, Drawing 2) is segregated for disposal of nondegradable materials. This area of WGS� is documented as containing power plant ash and residue, which is considered organically inert. The ash source was primarily the nearby HPower refuse derived fuel (RDF) power plant. If requested by the Administrator, the WGS� operator will provide additional documentation of the amount and age of the nondegradable ash materials in this segregated area.

##### **4.3.2 Nonproductive Areas**

**§60.759(a)(3)(ii)** Any nonproductive area of the landfill may be excluded from control, provided that the total of all excluded areas can be shown to contribute less than 1 percent of the total amount of NMOC emissions from the landfill. The amount, location, and age of the material shall be documented and provided to the Administrator upon request. A separate NMOC emission estimate shall be made for each section proposed for exclusion, and the sum of all such sections shall be compared to the NMOC emissions estimate for the entire landfill.

The southern area of the WGS� (Ash Cells 1 through 8) was and is segregated for disposal of non-degradable material, as discussed above. This area of WGS� contains primarily power plant ash and residues, which are by definition organically inert, and thus assumed to be non-productive of both LFG and NMOC. Since ash by definition is a refractory inorganic material (non-decomposable and non-volatile) it is assumed that NMOC's are not present in measurable concentrations in this segregated area, and thus constitute a negligible fraction of the total

amount of NMOC emissions from the landfill. If requested by the Administrator, the WGSL operator will provide documentation of the amount and age of the ash materials in this segregated non-productive area.

#### **4.4 Compliance with § 60.759(b)(1), (2), &(3)**

§60.759(b) Each owner or operator seeking to comply with §60.752(b)(2)(i)(A) shall construct the gas collection devices using the following equipment or procedures:

##### **4.4.1 Landfill Gas Extraction Component Construction**

§60.759(b)(1) The landfill gas extraction components shall be constructed of polyvinyl chloride (PVC), high density polyethylene (HDPE) pipe, fiberglass, stainless steel, or other nonporous corrosion resistant material of suitable dimensions to: convey projected amounts of gases; withstand installation, static, and settlement forces; and withstand planned overburden or traffic loads. The collection system shall extend as necessary to comply with emission and migration standards. Collection devices such as wells and horizontal collectors shall be perforated to allow gas entry without head loss sufficient to impair performance across the intended extent of control. Perforations shall be situated with regard to the need to prevent excessive air infiltration.

Issues related to compliance with §60.759(b)(1) are discussed in the following sections.

##### **4.4.1.1 Materials**

The existing GCCS components are, and future expansions will be, constructed of HDPE, CPVC, and PVC pipe, fiberglass, stainless steel, and other nonporous, corrosion resistant materials.

##### **4.4.1.2 Component Sizing**

The GCCS components installed, as well as future expansions of the GCCS, are sized for the maximum estimated LFG recovery flow rates as described in Section 4.1.4 of this Design Plan.

##### **4.4.1.3 Component Loading**

Below grade GCCS components will consist primarily of LFG header piping located beneath the landfill roads. Below grade LFG pipe components in the perimeter areas will be designed and installed to withstand the estimated installation, static, settlement, overburden, and traffic loads, per pipe manufacturers' recommended guidance. Corrugated metal casing or concrete backfill will be provided for vulnerable pipe crossings of equipment roads subject to severe vehicle loads.

The loads and settlement forces applied to the GCCS components within the WGSL waste units cannot be accurately predicted due to the non-homogeneous nature of the refuse within WGSL. However, below grade components within the WGSL have been designed to be consistent with industry accepted GCCS design and construction practices.

The flare and other equipment (blowers) foundations have been designed and constructed to meet the Uniform Building Code (UBC) requirements for maximum expected static, dynamic, and thermal loads.

#### **4.4.1.4 System Expansion**

The GCCS will be expanded in conjunction with the increasing in-place area and volume of the landfill and as necessary to maintain compliance with emission and migration standards, NSPS requirements, and this Design Plan. The GCCS operator will conduct periodic monitoring and document compliance of the GCCS in accordance with NSPS requirements and this Design Plan. If the GCCS at WGSL does not meet the measures of performance set forth in the NSPS, the GCCS will be adjusted, expanded or modified in accordance with NSPS requirements.

#### **4.4.1.5 Component Perforation**

Vertical wells are, and will be, perforated to allow LFG entry without inducing head losses sufficient to impair performance.

#### **4.4.1.6 Air Infiltration**

Air intrusion control is provided in the WGSL GCCS by measures as discussed in detail in Section 4.1.10, above.

#### **4.4.2 Landfill Gas Extraction Component Installation**

§60.759(b)(2) Vertical wells shall be placed so as not to endanger underlying liners and shall address the occurrence of water within the landfill. Holes and trenches constructed for piped wells and horizontal collectors shall be of sufficient cross-section so as to allow for their proper construction and completion including, for example, centering of pipes and placement of gravel backfill. Collection devices shall be designed so as not to allow indirect short circuiting of air into the cover or refuse into the collection system or gas into the air. Any gravel used around pipe perforations should be of a dimension so as not to penetrate or block perforations.

#### **4.4.2.1 Component Placement**

Vertical wells at WGSL are located and designed to avoid endangerment to underlying base liners. Depths of refuse at LFG well locations are determined based on the difference between the current surface elevation of WGSL prior to the GCCS construction and the base elevation of the landfill waste. The landfill surface elevations are determined from a current aerial survey or other appropriate survey methods. Bottom elevations are derived from the landfill development and excavation plans. LFG extraction wells are, and will be, designed to extend from the landfill surface to no more than 75 percent of the refuse depth or a maximum of 80 feet.

#### **4.4.2.2 Water**

Occurrences of water within the WGS� and the GCCS are addressed by the leachate and condensate management systems as discussed in Section 4.1.6 of this Design Plan. Due to its semi-arid location, the site experiences a net positive annual rate of evapo-transpiration, and current leachate generation rates are relatively low. In addition, no significant moisture was noted in well borings and excavations during the construction of the GCCS, and water accumulations are not evident in the completed LFG extraction wells.

#### **4.4.2.3 Bore Holes**

Vertical bore holes or horizontal trenches, if applicable, constructed for LFG collection elements are, and will be, of sufficient cross-section to allow for the proper construction and completion of gas collector piping. This includes centering of pipes and careful placement of gravel backfill.

#### **4.4.2.4 Component Short Circuiting**

LFG collection elements have been designed to control air infiltration through the cover, refuse contamination of the collection elements, and direct venting of LFG to the atmosphere. Air intrusion control is verified by monitoring the GCCS gas flows for oxygen in accordance with NSPS requirements and approved alternate standards and procedures. Contamination of the collection elements by the refuse is limited by placing gravel backfill of adequate size (1 to 3-inch) in the hole or trench, acting as a filter pack between the refuse and the LFG collection elements. Direct venting of the LFG to the atmosphere is controlled by operating the GCCS under vacuum; therefore, leaks will result in air entering the GCCS, as opposed to LFG being released into the atmosphere.

#### **4.4.2.5 Gravel Backfill**

Gravel of sufficient size was, and will be, used to minimize penetration or blockages of the LFG collection wells' pipe perforations. The typical perforation diameter is 5/8-inch. Well gravel backfill is specified to be 1 to 3-inch nominal diameter. Future expansions of the current GCCS will maintain compliance with the NSPS requirements. In the future, alternative porous backfill materials, such as recycled tire chips or crushed concrete, may be substituted for gravel, based on availability and design engineer approvals.

#### **4.4.3 Landfill Gas Extraction Component Connections to LFG Transmission Piping**

§60.759(b)(3) Collection devices may be connected to the collection header pipes below or above the landfill surface. The connector assembly shall include a positive closing throttle valve, any necessary seals and couplings, access couplings and at least one sampling port. The collection devices shall be constructed of PVC, HDPE, fiberglass, stainless steel, or other nonporous material of suitable thickness.

In general, the collection devices are, and will be, connected to the collection header pipes via lateral piping. The LFG collector casings are connected to the lateral piping via wellhead



assemblies. The lateral piping connects the wellhead assemblies to the main LFG headers. The wellhead assemblies include positive closing throttle valves, necessary seals and couplings, access couplings, and a sampling port. The collection devices are constructed of CPVC, PVC, HDPE, fiberglass, stainless steel, and other nonporous material of suitable thickness. The GCCS components have been designed and installed to withstand installation, static and settlement forces; and to withstand planned overburden or traffic loads.

#### **4.5 Compliance with §60.759(c)(1) or (2)**

§60.759(c) Each owner or operator seeking to comply with §60.752(b)(2)(i)(A) shall convey the landfill gas to a control system in compliance with §60.752(b)(2)(iii) through the collection header pipe(s). The gas mover equipment shall be sized to handle the maximum gas generation flow rate expected over the intended use period of the gas moving equipment using the following procedures:

##### **4.5.1 Existing Landfill Gas Flow Rate Data**

The existing GCCS gas mover equipment includes two American Fan<sup>®</sup> blower for the LFG flare. Each LFG flare blower should provide sufficient vacuum to handle the expected LFG flow rate to the flare. If additional LFG capacity is required, new blowers or other gas movers will be installed to meet the maximum expected LFG extraction flow rate. New equipment sizing will be consistent with NSPS requirements.

##### **4.5.2 Future Landfill Gas Flow Rate Estimates**

§60.759(c)(2) For new collection systems, the maximum flow rate shall be in accordance with §60.755(a)(1).

The future landfill GCCS design is based on USEPA LandGEM results using parameters for a semi-arid region. The LFG flow estimates of this modeling are summarized in Table 4-1. The complete model outputs are included in Appendix A. In the future, the gas generation model parameters may be re-adjusted based on revised actual flow rate data from the site or to account for landfill expansion.

#### **4.6 Alternatives and Compliance with §60.752(b)(2)**

§60.752(b)(2) If the calculated NMOC emission rate is equal to or greater than 50 megagrams per year, the owner or operator shall:

Based on the NSPS Tier 1 and Tier 2 methods for estimating the potential maximum non-methane organic compound (NMOC) emission rate from blower inlet samples, WGSL exceeds the 50 megagrams per year (Mg/yr.) threshold. Therefore, the site is required to comply with §60.752(b)(2) of the NSPS.

It has been noted by Shaw and others in the landfill industry that the concentration of NMOC decreases in landfills with the age of in-place waste and the duration of GCCS operation. If the calculated emission rate falls below the 50 Mg/yr. threshold based on future sampling and analysis, the site operator may petition for modifications to operations, in accordance with NSPS requirements. WMH will conduct a Tier 2 analysis on the combined blower LFG inlet flow, to support such a petition.

#### **4.6.1 *Submit a Design Plan***

§60.752(b)(2)(i) Submit a collection and control system design plan prepared by a professional engineer to the Administrator within 1 year:

The initial Design Plan for the WGS� GCCS was prepared by a professional engineer, submitted to the DOH in June 2002, assigned DOH File No. 0489-01, and subsequently amended with additional information in August 2003, and January 2004. WMH is submitting this amended and restated Design Plan to the USEPA and DOH for approval, to reflect current and future site conditions consistent with NSPS requirements.

#### **4.6.2 *Alternatives to the NSPS***

§60.752(b)(2)(i)(B) The collection and control system design plan shall include any alternatives to the operational standards, test methods, procedures, compliance measures, monitoring, record keeping or reporting provisions of §60.753 through §60.758 proposed by the owner or operator.

Alternatives to the operational standards, test methods, procedures, compliance measures, monitoring and record keeping provisions have been proposed to the USEPA Region IX and the DOH, in a WMH letter dated October 21, 2005. The primary objective of these alternatives is to implement safe and effective modifications to the prescriptive requirements that are suitable to the unique LFG conditions of the WGS�, while supporting continuing NMOC and methane extraction operations. WMH has submitted a request for an alternative compliance timeline for meeting the wellhead temperature standards (dated December 7, 2005).

Issues related to alternatives and exemptions to §60.753 are discussed in Section 4.7.

#### **4.6.3 *Specifications for Active Collection Systems***

As stated in Sections 4.1 through 4.5 of this Design Plan, the GCCS installed at WGS� will comply with the specifications for an active GCCS as stipulated in §60.759 of the NSPS. Future expansions of the GCCS will also be designed to comply with these NSPS requirements or approved alternatives.

#### **4.6.4 Install a Landfill Gas Collection and Control System**

§60.752(b)(2)(ii) Install a collection and control system within 18 months of the submittal of the design plan under paragraph (b)(2)(i) of this section that effectively captures the gas generated within the landfill.

§60.752(b)(2)(ii)(A)(2) Collect gas from each area, cell, or group of cells in the landfill in which the initial solid waste has been placed for a period of:

§60.752(b)(2)(ii)(A)(2)(i) 5 years or more if active; or

A GCCS has been installed in all portions of WGS� that have had waste-in-place in excess of five years in accordance with NSPS requirements.

§60.752(b)(2)(ii)(A)(2)(ii) 2 years or more if closed or at final grade;

In accordance with this requirement, a GCCS will be installed and operated within 2 years of initial waste placement, in any area of WGS� that reaches final grade.

§60.752(b)(2)(ii)(A)(3) Collect gas at a sufficient extraction rate;

§60.752(b)(2)(ii)(A)(4) Be designed to minimize off-site migration of gas.

In compliance with §60.752(b)(2)(ii)(A)(3) and (4), the current GCCS and future expansions are designed to extract LFG at a sufficient rate so as to minimize the subsurface lateral migration and surface emissions of LFG. This is achieved by sizing and installing sufficient collection elements, transmission piping, blowers, and control devices for the estimated maximum rate of LFG to be generated within the refuse. The GCCS will be operated to collect LFG at a sufficient rate, (per the definition in §60.751) by maintaining an available negative pressure to all wellheads without causing air infiltration, except when conditions described in Section 4.7 exist.

Application of a negative gauge pressure and minimization of air infiltration will be verified by monitoring the LFG temperature, static pressure, and oxygen concentrations at the wellhead. The WGS� operator will continue to monitor the GCCS wells in accordance with NSPS requirements, or approved alternatives, as described in Section 4.7. The WGS� operator also will continue to monitor perimeter LFG migration probes. If off-site LFG migration is detected, the WGS� operator will take the necessary actions in accordance with NSPS and other applicable regulatory requirements.

#### **4.6.5 Control Systems**

§60.752(b)(2)(iii) Route all the collected gas to a control system that complies with the requirements in either paragraph (b)(2)(iii)(A), (B) or (C) of this section.

Since the WGS� utilizes an enclosed LFG flare as a control system, the required operational performance of the control devices is stipulated by §60.752(b)(2)(iii)(B) which states:

§60.752(b)(2)(iii)(B) A control system designed and operated to reduce NMOC by 98 weight-percent, or, when an enclosed combustion device is used for control, to either reduce NMOC by 98 weight percent or reduce the outlet NMOC concentration to less than 20 parts per million by volume, dry basis as hexane at 3 percent oxygen. The reduction efficiency or parts per million by volume shall be established by an initial performance test, required under §60.8 using the test methods specified in §60.754(d).

The enclosed LFG flare at WGS� is designed to reduce the concentration of NMOCs present in the LFG delivered to the flare by at least 98 percent (by weight) or reduce outlet NMOC concentrations to less than 20 parts per million by volume (ppmv). The establishment of the destruction efficiencies per the requirements of §60.8 [using the test methods specified in §60.754(d)] will be completed in accordance with NSPS requirements.

Per §60.752(b)(2)(iii)(B)(2), the enclosed LFG flare will be operated within the performance ranges established during the initial source performance test and will be operated in such manner as to meet the emission requirements of the NSPS.

In accordance with §60.756 of the NSPS, the flare exhaust temperatures is monitored continuously. Continuous flame presence is also monitored using an ultraviolet (UV) flame sensor. The flare exhaust temperature is monitored continuously using thermocouples installed at three stack elevations. In the event that a flame or sufficient temperature is not detected (indicating that the combustion process has been disrupted), the flare control system will automatically:

- Interrupt power to the LFG blower(s), and;
- Initiate the closure of a pneumatically-activated fail-close valve at the inlet to the blower(s).

Stopping the blower(s) will cause the LFG extraction process to cease. Closing the inlet valve to the blower(s) will eliminate the potential for direct venting of untreated LFG through the control device. This process will be initiated automatically, in the event of flame failure, without the need for operator intervention. There is no LFG flow bypass around the control device.

#### **4.7 Alternatives and Compliance with §60.753**

The WGS� has been found to contain significant areas of exceptionally high gas temperatures (hyperthermophillic zones), indicating transitional states of anaerobic biological activity. Alternative standards, monitoring procedures, and compliance schedules for LFG extraction wells in these areas were proposed and technically supported in a letter from WMH to USEPA

Region IX and the DOH, dated October 21, 2005 (included in Appendix E). WMH has submitted a request for an alternative compliance timeline for meeting the wellhead temperature standards (dated December 7, 2005 and included in Appendix E). The primary objective of the proposed interim alternatives to the wellhead temperature and operating vacuum standards is to maximize LFG and NMOC extraction from wells in transitional anaerobic areas of the landfill, while minimizing the potential for subsurface combustion.

During the initial period of GCCS operation, 13 of the original 24 vertical LFG extraction wells have shown substantial evidence of transitional anaerobic decomposition, including production of substantial hydrogen gas and low methane-to-carbon dioxide ratios. A transitional hydrogen-forming bacterial environment can predominate in anaerobic landfill zones where suitable conditions may not have evolved for methanogenic bacteria. In order to encourage the natural progression to methanogenic decomposition, the interim GCCS operating approach under these unique conditions must be to minimize activities that might increase the temperature and extent of the hyperthermophillic landfill zones. The specific approach that is currently being implemented by WMH is to induce only very low rates of gas flow out of the hyperthermophillic zones until temperatures drop to below 160°F, to reduce hydrogen production and allow increased methane production.

The following specific GCCS operating procedures have already been implemented by WMH to minimize hydrogen formation, and reduce the temperature and the spread of hyperthermophillic zones:

- Carefully draw gas from elevated temperature areas to attempt to reduce temperatures and induce methogenic activity;
- Reduce total LFG flow rate from LFG extraction wells in or near hyperthermophillic zones, to reduce the potential spread of higher temperatures;
- Monitor GCCS and LFG extraction wells weekly and analyze data to enable early detection and rapid response to small changes in landfill conditions;
- Locate and seal air entry points into the landfill, to reduce the potential for overall landfill heat gain;
- Upgrade selected GCCS materials, to provide ongoing effective components for higher temperature operations.

These focused operating procedures are being implemented at the WGSL, and appear to be improving both temperature conditions and methanogenesis. As such, we have concluded that to maintain a trend of decreasing landfill temperatures and hydrogen formation, LFG extraction wells in or near the hyperthermophillic zones may require interim periodic shut-down and / or

operation under positive pressure conditions. These interim operations deviate from the operational standards, and thus require alternative operational standards.

#### **4.7.1 Operational Standards for Gas Collection Systems**

**§60.753(c)** Operate the collection system with negative pressure at each wellhead except under the following conditions...

As required by NSPS Subpart WWW, 40 CFR 60.753(b)(1), and CSP No. 0489-01-C, §D.2.b., the collection system shall operate with negative pressure at each wellhead except under the conditions of a fire or increased well temperature. Based on the prevailing high wellhead temperatures noted above, WMH has requested an interim alternative standard of allowable positive operating pressure, up to and including periodic valve closures, for the 23 existing vertical LFG extraction wells in all MSW cells, as needed to minimize potential fire or higher temperatures. Due to the apparent continuity of the hyperthermophilic landfill zones, it appears that additional extraction wells will not provide any significant increase in LFG methane or NMOC extraction capacity or collection efficiency. Approximately 13 of the vertical LFG extraction wells are currently under positive pressure to minimize temperature increases.

In accordance with NSPS Subpart WWW, 40 CFR §60.753(b)(1), and CSP No. 0489-01-C, §D.2.b., the Owner/Operator will record instances when positive pressure occurs in efforts to reduce well temperature and / or avoid a fire. Records will be submitted as part of the semi-annual reporting required by 40 CFR 60.757(f). These records shall be submitted with the annual compliance reports.

#### **4.7.2 Wellhead Requirements (§60.753(c); CSP Section D.2.c)**

**§60.753(c)** Operate each interior wellhead in the collection system with a landfill gas temperature less than 55°C and with either a nitrogen level less than 20 percent or an oxygen level less than 5 percent. The owner or operator may establish a higher operating temperature, nitrogen, or oxygen value at a particular well. A higher operating value demonstration shall show supporting data that the elevated parameter does not cause fires or significantly inhibit anaerobic decomposition by killing methanogens.

During initial and current wellhead monitoring events, WMH has found that wellhead temperatures for the majority of the wells at WGSL are in the 130-160°F range with one extraction well over 180°F, thus exceeding the limit set forth in 40 CFR §60.753(c) and the CSP. Pursuant to 40 CFR §60.753(c) and CSP §D.2.c, WMH has requested establishment of a two-tier limit for higher operating temperature standards, specifically:

- 165°F for each wellhead not producing hydrogen gas above 3 percent by volume, and producing methane at a concentration greater than or equal to 35 percent by volume, and

- 195°F for each wellhead producing hydrogen gas above 3 percent by volume and methane at a concentration less than 35 percent by volume.

WMH requests that LFG collectors with documented data exceeding any one of the following conditions shall also be approved for temporary shut-down or positive pressure operation, to allow restoration of equilibrium anaerobic methanogenesis:

- Wellhead hydrogen concentrations exceeding 3 percent by volume
- Wellhead oxygen concentrations exceeding 2 percent by volume
- Wellhead methane concentrations below 35 percent by volume or methane-to-carbon dioxide ratio of less than 0.8
- Wellhead carbon monoxide concentrations above 300 ppmv

LFG wellheads at the WGSF will be monitored for oxygen, pressure, and temperature using a Landtec GEM 500, GEM 2000, or similar instrument meeting the requirements of USEPA Method 3A.

#### **4.7.3 Surface Methane Standards and Operations (§60.753(d); CSP Section D.2.d)**

§60.753(d) Operate the collection system so that the methane concentration is less than 500 parts per million above background at the surface of the landfill. ...A surface monitoring design plan shall be developed that includes a topographical map with the monitoring route. ...Areas with steep slopes or other dangerous areas may be excluded from surface testing.

Specific dangerous areas will be excluded from the plan coverage requirement for Surface Emissions Monitoring. These areas include the public access roads, waste disposal or processing areas with ongoing filling or processing activities, truck and heavy equipment traffic and work areas, and slopes steeper than or equal to 4:1 horizontal to vertical. The non-productive Ash Cells 1 through 8 will also be excluded from surface emissions monitoring, as segregated areas of non-degradable material. A complete Surface Emissions Monitoring Plan is included in Appendix D.

### **4.8 Alternatives and Compliance with §60.755**

#### **4.8.1 Identification of Excess Air Infiltration (§60.755; CSP Section E.1.e)**

§60.755 The permittee shall monitor each well monthly for temperature and concentration of nitrogen or oxygen as provided in Special Condition D.2.c. If a well exceeds one of these operating parameters... correct the exceedance within 120 days of the initial exceedance



Because of the systemic issue of transitional anaerobic degradation at WGSL, the WGSL operator will perform interim alternative corrective action for wellhead excesses as follows:

- If a well exceedance (above the requested alternate standards) cannot be corrected within 15 days of the date that the excess was first discovered, the well will be designated for non-continuous operation as described in Section 4.7.
- Each LFG collector so designated will continue to be monitored monthly and a status report for all such wells provided at 120-day intervals after the initial exceedance, until the LFG collector has demonstrated normal equilibrium anaerobic operations, at which time it will be restored to continuous operation.

**4.8.2 Compliance Provisions for Surface Methane (Section 60.755(c)(3); CSP Section E.3.c)**

§60.755(c)(3) Surface emission monitoring shall be performed in accordance with Section 4.3.1 of Method 21 of Appendix A of this part, except that the probe shall be placed within 5 to 10 centimeters of the ground. Monitoring shall be performed during typical meteorological conditions.

The SEM instrument probe inlet will be held as close as possible to 10 centimeters (4 inches) from the ground surface, or at the top of the established cover vegetation, where present and interfering with the sampling probe. With a flame ionization detector (FID), small debris, such as grass or dirt, could plug the probe tip causing the detector flame to go out. Once the flame is out the entire start-up and calibration procedure must be repeated, prior to resuming sampling. This typically requires up to 30 minutes to re-establish a consistent operating mode. By allowing flexibility in the probe placement between the logged reading locations (at 30 meter intervals), time consuming "flame out" procedures can be avoided.

## ***Limitations***

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The requirements of this Design Plan, or any permit issued consequent to this Design Plan, shall not be interpreted or enforced so as to be any more restrictive than currently applicable federal, state, or local regulations.

The services described in this report were performed consistent with generally accepted professional consulting principles and practices. No other warranty, express or implied, is made. These services were performed by Shaw consistent with our agreement with our client. This report is solely for the use and information of our client unless otherwise noted. Any reliance on this report by a third party is at such party's sole risk.

Opinions and recommendations contained in this report apply to conditions existing when services were performed and are intended only for the client, purposes, locations, time frames, and project parameters indicated. We are not responsible for the impacts of any changes in environmental standards, practices, or regulations subsequent to performance of services. We do not warrant the accuracy of information supplied by others, nor the use of segregated portions of this report.

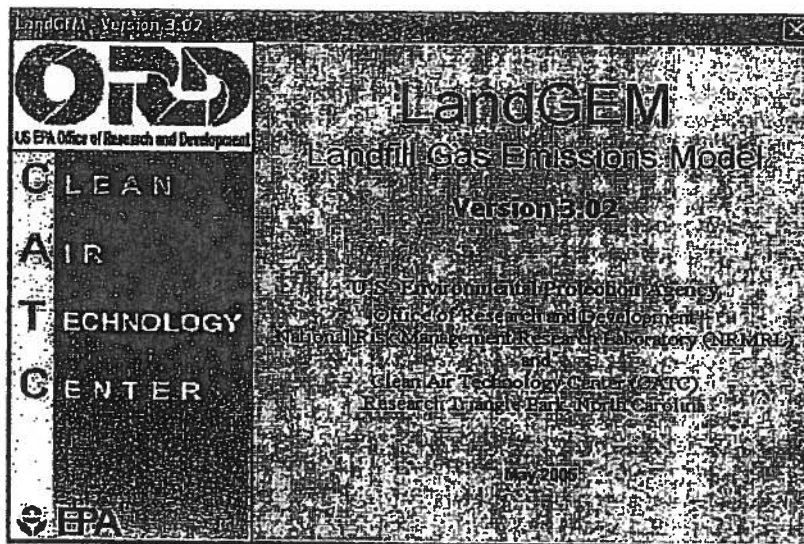


*Appendix A*

***Gas Generation Rate Modeling, Radius of Influence and Well Spacing Calculation, and Condensate Generation Estimate***

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## Summary Report

**Landfill Name or Identifier:** Waimanalo Gulch Sanitary Landfill

**Date:** Friday, March 03, 2006

### Description/Comments:

Model run based on WMH waste inflow records through 2008, with site specific  $K=0.015$  and NMOC concentration obtained during 12-6-05 flare emission testing.

### About LandGEM:

First-Order Decomposition Rate Equation:

$$Q_{CH_4} = \sum_{i=1}^n \sum_{j=0.1}^1 k L_o \left( \frac{M_i}{10} \right) e^{-kt_{ij}}$$

Where,

$Q_{CH_4}$  = annual methane generation in the year of the calculation ( $m^3/year$ )

$i$  = 1-year time increment

$n$  = (year of the calculation) - (initial year of waste acceptance)

$j$  = 0.1-year time increment

$k$  = methane generation rate ( $year^{-1}$ )

$L_o$  = potential methane generation capacity ( $m^3/Mg$ )

$M_i$  = mass of waste accepted in the  $i^{th}$  year ( $Mg$ )

$t_{ij}$  = age of the  $j^{th}$  section of waste mass  $M_i$  accepted in the  $i^{th}$  year (decimal years, e.g., 3.2 years)

LandGEM is based on a first-order decomposition rate equation for quantifying emissions from the decomposition of landfilled waste in municipal solid waste (MSW) landfills. The software provides a relatively simple approach to estimating landfill gas emissions. Model defaults are based on empirical data from U.S. landfills. Field test data can also be used in place of model defaults when available. Further guidance on EPA test methods, Clean Air Act (CAA) regulations, and other guidance regarding landfill gas emissions and control technology requirements can be found at <http://www.epa.gov/ttnatw01/landfill/landfilpg.html>.

LandGEM is considered a screening tool — the better the input data, the better the estimates. Often, there are limitations with the available data regarding waste quantity and composition, variation in design and operating practices over time, and changes occurring over time that impact the emissions potential. Changes to landfill operation, such as operating under wet conditions through leachate recirculation or other liquid additions, will result in generating more gas at a faster rate. Defaults for estimating emissions for this type of operation are being developed to include in LandGEM along with defaults for conventional landfills (no leachate or liquid additions) for developing emission inventories and determining CAA applicability. Refer to the Web site identified above for future updates.

**Input Review**

**LANDFILL CHARACTERISTICS**

Landfill Open Year	1989	
Landfill Closure Year (with 80-year limit)	2008	
Actual Closure Year (without limit)	2008	
Have Model Calculate Closure Year?	No	
Waste Design Capacity	6,668,800	short tons

**MODEL PARAMETERS**

Methane Generation Rate, k	0.015	year <sup>-1</sup>
Potential Methane Generation Capacity, L <sub>0</sub>	100	m <sup>3</sup> /Mg
NMOC Concentration	4,056	ppmv as hexane
Methane Content	50	% by volume

**GASES / POLLUTANTS SELECTED**

Gas / Pollutant #1:	Total landfill gas
Gas / Pollutant #2:	Methane
Gas / Pollutant #3:	Carbon dioxide
Gas / Pollutant #4:	NMOC

**WASTE ACCEPTANCE RATES**

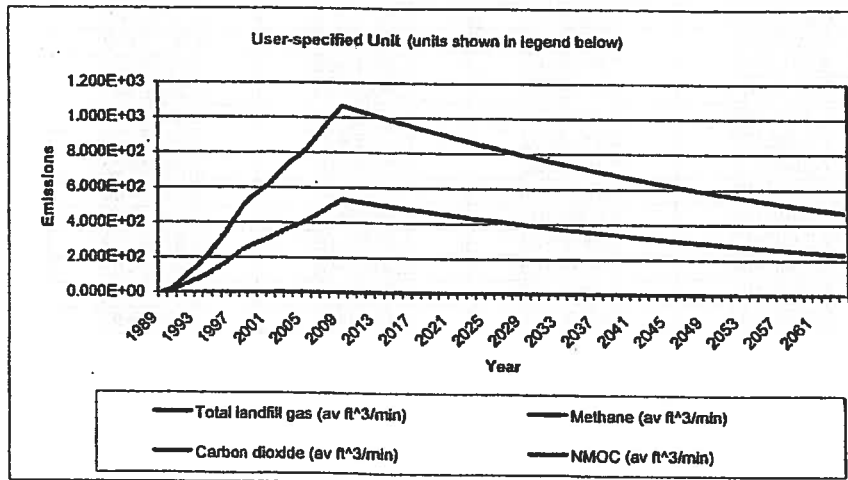
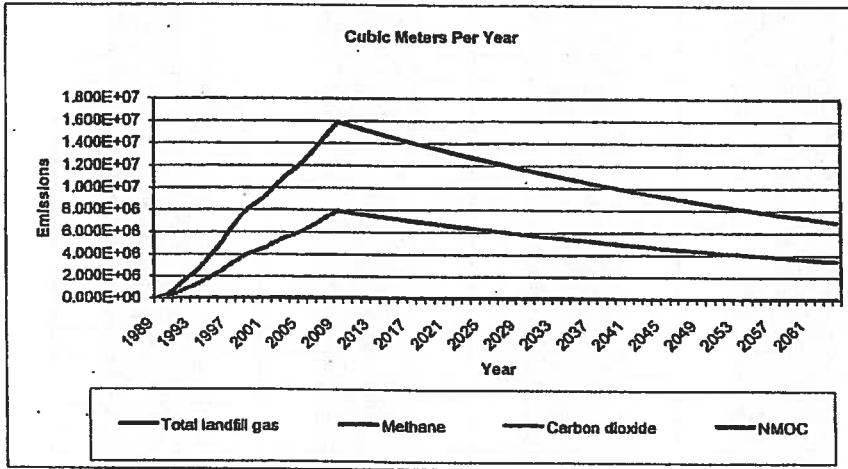
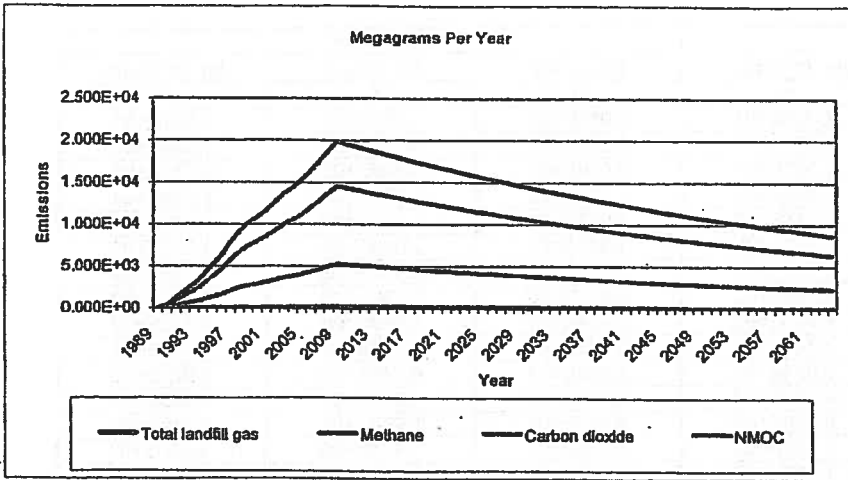
Year	Waste Accepted		Waste-In-Place	
	(Mg/year)	(short tons/year)	(Mg)	(short tons)
1989	99,980	109,978	0	0
1990	237,129	260,842	99,980	109,978
1991	240,449	264,494	337,109	370,820
1992	218,572	240,429	577,558	635,314
1993	271,237	298,361	796,130	875,743
1994	349,715	384,686	1,067,367	1,174,104
1995	346,355	380,991	1,417,082	1,558,790
1996	424,988	467,487	1,763,437	1,939,781
1997	379,637	417,601	2,188,425	2,407,268
1998	307,814	338,595	2,568,063	2,824,869
1999	239,357	263,293	2,875,876	3,163,464
2000	258,873	284,760	3,115,234	3,426,757
2001	320,452	352,497	3,374,106	3,711,517
2002	314,358	345,794	3,694,558	4,064,014
2003	253,519	278,871	4,008,916	4,409,808
2004	293,317	322,649	4,262,435	4,668,679
2005	347,702	382,473	4,555,753	5,011,328
2006	386,364	425,000	4,903,455	5,393,801
2007	386,364	425,000	5,289,819	5,818,801
2008	386,364	425,000	5,676,182	6,243,801
2009	0	0	6,062,546	6,668,801
2010	0	0	6,062,546	6,668,801
2011	0	0	6,062,546	6,668,801
2012	0	0	6,062,546	6,668,801
2013	0	0	6,062,546	6,668,801
2014	0	0	6,062,546	6,668,801
2015	0	0	6,062,546	6,668,801
2016	0	0	6,062,546	6,668,801
2017	0	0	6,062,546	6,668,801
2018	0	0	6,062,546	6,668,801
2019	0	0	6,062,546	6,668,801
2020	0	0	6,062,546	6,668,801
2021	0	0	6,062,546	6,668,801
2022	0	0	6,062,546	6,668,801
2023	0	0	6,062,546	6,668,801
2024	0	0	6,062,546	6,668,801
2025	0	0	6,062,546	6,668,801
2026	0	0	6,062,546	6,668,801
2027	0	0	6,062,546	6,668,801
2028	0	0	6,062,546	6,668,801



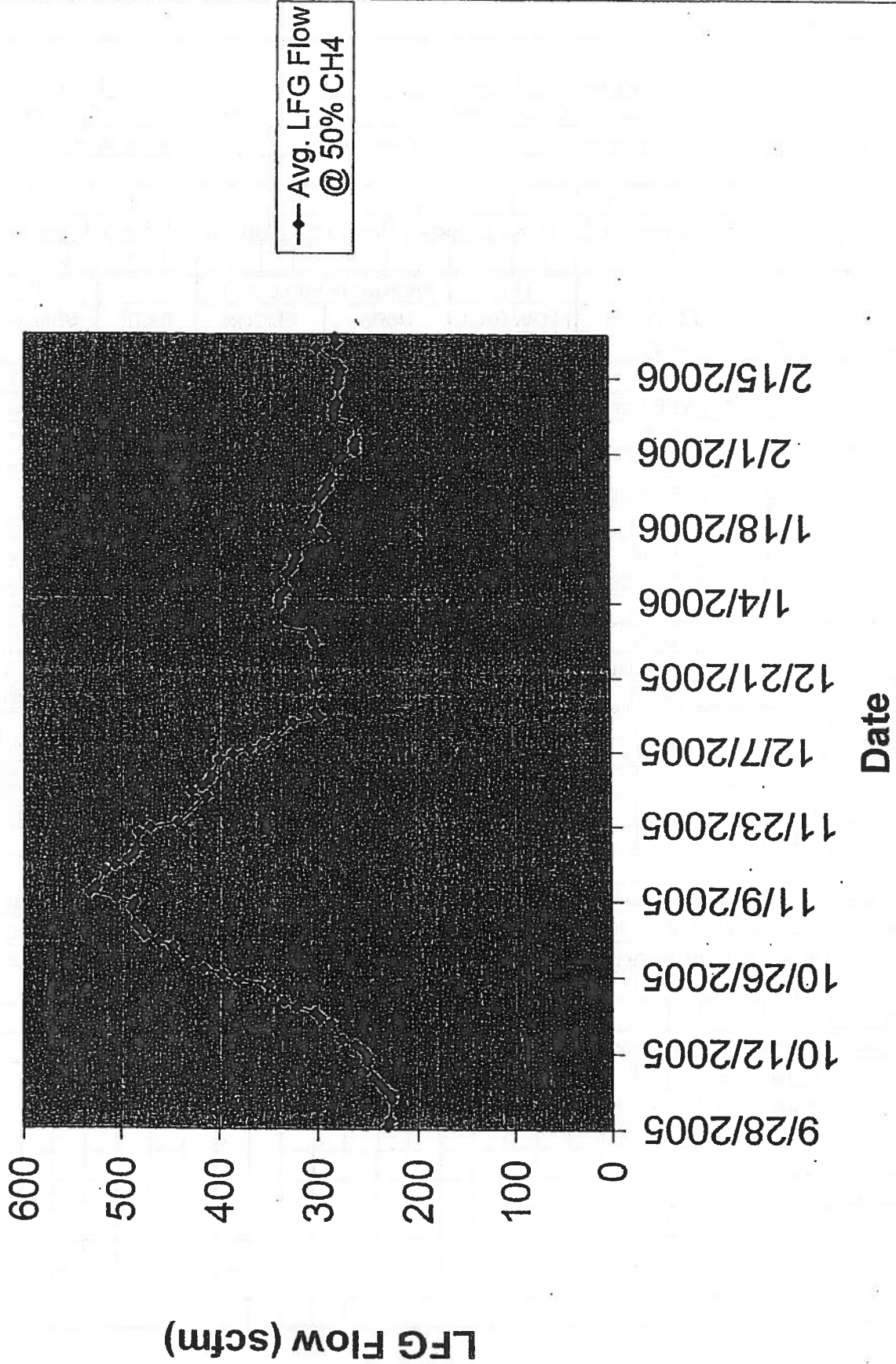
## Results

Year	Total landfill gas			Methane		
	(Mg/year)	(m <sup>3</sup> /year)	(av ft <sup>3</sup> /min)	(Mg/year)	(m <sup>3</sup> /year)	(av ft <sup>3</sup> /min)
1989	0	0	0	0	0	0
1990	3.721E+02	2.979E+05	2.002E+01	9.938E+01	1.490E+05	1.001E+01
1991	1.249E+03	1.000E+06	6.720E+01	3.336E+02	5.000E+05	3.360E+01
1992	2.125E+03	1.702E+06	1.143E+02	5.676E+02	8.509E+05	5.717E+01
1993	2.907E+03	2.328E+06	1.564E+02	7.765E+02	1.164E+06	7.820E+01
1994	3.873E+03	3.101E+06	2.084E+02	1.035E+03	1.551E+06	1.042E+02
1995	5.117E+03	4.097E+06	2.753E+02	1.367E+03	2.049E+06	1.376E+02
1996	6.329E+03	5.068E+06	3.405E+02	1.691E+03	2.534E+06	1.703E+02
1997	7.817E+03	6.259E+06	4.206E+02	2.088E+03	3.130E+06	2.103E+02
1998	9.113E+03	7.297E+06	4.903E+02	2.434E+03	3.649E+06	2.452E+02
1999	1.012E+04	8.106E+06	5.446E+02	2.704E+03	4.053E+06	2.723E+02
2000	1.086E+04	8.698E+06	5.844E+02	2.902E+03	4.349E+06	2.922E+02
2001	1.166E+04	9.340E+06	6.276E+02	3.116E+03	4.670E+06	3.138E+02
2002	1.268E+04	1.016E+07	6.824E+02	3.388E+03	5.078E+06	3.412E+02
2003	1.366E+04	1.094E+07	7.352E+02	3.650E+03	5.471E+06	3.676E+02
2004	1.440E+04	1.153E+07	7.750E+02	3.848E+03	5.767E+06	3.875E+02
2005	1.528E+04	1.224E+07	8.222E+02	4.082E+03	6.118E+06	4.111E+02
2006	1.635E+04	1.309E+07	8.796E+02	4.367E+03	6.545E+06	4.398E+02
2007	1.754E+04	1.405E+07	9.438E+02	4.686E+03	7.023E+06	4.719E+02
2008	1.872E+04	1.499E+07	1.007E+03	5.000E+03	7.495E+06	5.036E+02
2009	1.988E+04	1.592E+07	1.069E+03	5.310E+03	7.959E+06	5.347E+02
2010	1.958E+04	1.568E+07	1.054E+03	5.231E+03	7.840E+06	5.268E+02
2011	1.929E+04	1.545E+07	1.038E+03	5.153E+03	7.723E+06	5.189E+02
2012	1.900E+04	1.522E+07	1.022E+03	5.076E+03	7.608E+06	5.112E+02
2013	1.872E+04	1.499E+07	1.007E+03	5.000E+03	7.495E+06	5.036E+02
2014	1.844E+04	1.477E+07	9.922E+02	4.926E+03	7.384E+06	4.961E+02
2015	1.817E+04	1.455E+07	9.774E+02	4.853E+03	7.274E+06	4.887E+02
2016	1.790E+04	1.433E+07	9.629E+02	4.780E+03	7.165E+06	4.814E+02
2017	1.763E+04	1.412E+07	9.485E+02	4.709E+03	7.059E+06	4.743E+02
2018	1.737E+04	1.391E+07	9.344E+02	4.639E+03	6.954E+06	4.672E+02
2019	1.711E+04	1.370E+07	9.205E+02	4.570E+03	6.850E+06	4.603E+02
2020	1.685E+04	1.350E+07	9.068E+02	4.502E+03	6.748E+06	4.534E+02
2021	1.660E+04	1.330E+07	8.933E+02	4.435E+03	6.648E+06	4.467E+02
2022	1.636E+04	1.310E+07	8.800E+02	4.369E+03	6.549E+06	4.400E+02
2023	1.611E+04	1.290E+07	8.669E+02	4.304E+03	6.451E+06	4.335E+02
2024	1.587E+04	1.271E+07	8.540E+02	4.240E+03	6.355E+06	4.270E+02
2025	1.564E+04	1.252E+07	8.413E+02	4.177E+03	6.260E+06	4.206E+02
2026	1.540E+04	1.233E+07	8.288E+02	4.114E+03	6.167E+06	4.144E+02
2027	1.517E+04	1.215E+07	8.164E+02	4.053E+03	6.075E+06	4.082E+02
2028	1.495E+04	1.197E+07	8.043E+02	3.993E+03	5.985E+06	4.021E+02
2029	1.473E+04	1.179E+07	7.923E+02	3.933E+03	5.896E+06	3.961E+02
2030	1.451E+04	1.162E+07	7.805E+02	3.875E+03	5.808E+06	3.902E+02
2031	1.429E+04	1.144E+07	7.689E+02	3.817E+03	5.722E+06	3.844E+02
2032	1.408E+04	1.127E+07	7.574E+02	3.760E+03	5.636E+06	3.787E+02
2033	1.387E+04	1.111E+07	7.461E+02	3.704E+03	5.553E+06	3.731E+02
2034	1.366E+04	1.094E+07	7.350E+02	3.649E+03	5.470E+06	3.675E+02
2035	1.346E+04	1.078E+07	7.241E+02	3.595E+03	5.388E+06	3.620E+02
2036	1.326E+04	1.062E+07	7.133E+02	3.541E+03	5.308E+06	3.567E+02
2037	1.306E+04	1.046E+07	7.027E+02	3.489E+03	5.229E+06	3.513E+02
2038	1.287E+04	1.030E+07	6.922E+02	3.437E+03	5.151E+06	3.461E+02

**Graphs**



# 10-day Average Normalized LFG Flare Flow



# SHAW ENVIRONMENTAL, INC.

Client: Waste Management of Hawaii, Inc. Date: March 8, 2006  
 Project: Waimanalo Gulch Landfill Proj. #: 843671/31000000  
 Prepared by: Steve Nguyen Checked by: Andy Wang

## Landfill Gas Extraction Well Radii of Influence Based on Volume of Affected Refuse

WELL	WELL	WELL DEPTH (ft)	WELL	LFG	RADIUS OF INFLUENCE		WELL SPACING (ft)	
	DEPTH		LFG FLOW CONDITION	FLOW RATE (scfm)	NSPS (FT) <sup>(a)(b)(c)</sup>	EMCON (FT) <sup>(a)(b)(c)</sup>		RATE FACTOR
			LOW	15.8	202.0	175.0	0.05	303.10
A	40.0	AVERAGE	21.0	234.0	202.0	0.05	349.86	
		HIGH	26.3	261.0	226.0	0.05	391.43	
		LOW	31.5	234.0	202.0	0.05	349.86	
B	60.0	AVERAGE	42.0	270.0	234.0	0.05	405.29	
		HIGH	52.5	302.0	261.0	0.05	452.05	
		LOW	47.3	248.0	215.0	0.05	372.38	
C	80.0	AVERAGE	63.0	286.0	248.0	0.05	429.54	
		HIGH	78.8	320.0	277.0	0.05	479.76	
		LOW	63.0	256.0	222.0	0.05	384.50	
D	100.0	AVERAGE	84.0	296.0	256.0	0.05	443.39	
		HIGH	105.0	330.0	286.0	0.05	495.35	

MSW Design Tonnage:	6,668,801	LFG Generation Rate (scfm):	1,069
MSW Design Capacity (cu.yd.):	9,700,974	NSPS Collection Efficiency (%):	75.00
Refuse Density (pcf):	696.375	Rate Factor (%):	0.0500

Average ROI of Shallow Wells < 45 Feet in Depth (ft)	202	Well Spacing =>	350 feet
Average ROI of Medium Depth Wells: 45 to 80 Feet in Depth (ft)	256	Well Spacing =>	443 feet
Average ROI of Deep Wells > 80 feet in Depth (ft)	256	Well Spacing =>	443 feet

**Notes:**

- a) Radius of influence based on the estimated capacity of the facility
- b) Anticipated LFG generation rate.
- c) Calculations assume 20 feet of solid well casing from ground surface to start of perforations.

# SHAW ENVIRONMENTAL, INC.

Client: Waste Management of Hawaii, Inc. Date: March 8, 2006  
 Project: Waimanalo Gulch Landfill with Transitional Decomposition Proj. #: 843671/3100000  
 Prepared by: Steve Nguyen Checked by: Andy Wang

## Landfill Gas Extraction Well Radii of Influence Based on Volume of Affected Refuse

WELL	WELL DEPTH (ft)	WELL LFG FLOW CONDITION	LFG FLOW RATE (scfm)	RADIUS OF INFLUENCE			WELL SPACING (ft)
				NSPS (FT) <sup>(a)(b)(c)</sup>	EMCON (FT) <sup>(a)(b)(c)</sup>	RATE FACTOR	
A	40.0	LOW	15.8	262.0	227.0	0.03	393.16
		AVERAGE	21.0	303.0	262.0	0.03	453.78
		HIGH	26.3	338.0	293.0	0.03	507.48
B	60.0	LOW	31.5	303.0	262.0	0.03	453.78
		AVERAGE	42.0	349.0	303.0	0.03	524.80
		HIGH	52.5	391.0	338.0	0.03	585.42
C	80.0	LOW	47.3	321.0	278.0	0.03	481.50
		AVERAGE	63.0	371.0	321.0	0.03	555.97
		HIGH	78.8	414.0	359.0	0.03	621.79
D	100.0	LOW	63.0	332.0	287.0	0.03	497.08
		AVERAGE	84.0	383.0	332.0	0.03	575.02
		HIGH	105.0	428.0	371.0	0.03	642.57

MSW Design Tonnage:	6,668,801	LFG Generation Rate (scfm):	637
MSW Design Capacity (cu.yd.):	2,309,074	NSPS Collection Efficiency (%):	75.01
Refuse Density (pcf):	1.95	Rate Factor (%):	0.0500

Average ROI of Shallow Wells < 45 Feet in Depth (ft)	262	Well Spacing =>	454 feet
Average ROI of Medium Depth Wells: 45 to 80 Feet in Depth (ft)	331	Well Spacing =>	573 feet
Average ROI of Deep Wells >80 feet in Depth (ft)	332	Well Spacing =>	575 feet

**Notes:**

- a) Radius of influence based on the estimated capacity of the facility
- b) Anticipated LFG generation rate.
- c) Calculations assume 20 feet of solid well casing from ground surface to start of perforations.



Project Name: Waimanalo Gulch Landfill  
 Project No.: 117354-02000000

Date: 11/30/2005  
 By: aw

LFG CONDENSATE ESTIMATE  
 LFG CONTROL SYSTEM  
 DAILY GENERATION - SUMMARY TABLE

PERIOD:	WINTER		SPRING		SUMMER		FALL	
	HRS.	@ TEMP (F)	HRS.	@ TEMP (F)	HRS.	@ TEMP (F)	HRS.	@ TEMP (F)
AVG. HIGH	10	81.0	12	83.0	14	88.0	12	87.0
AVG. LOW	14	66.0	12	68.0	10	74.0	12	71.0
DAILY TOTAL		208		207		202		203
				FLOW (gpd)		FLOW (gpd)		FLOW (gpd)
		84		101		115		98
		124		106		87		105
		208		207		202		203

PERIOD:	3 DAY WORST CASE		3 DAY BEST CASE	
	HRS.	@ TEMP (F)	HRS.	@ TEMP (F)
AVG. HIGH	10	68	13	95
AVG. LOW	14	63	11	80
DAILY TOTAL		216		192
		FLOW (gpd)		FLOW (gpd)
		88		100
		128		92
		216		192

LFG FLOW DATA	
MAX. SYSTEM VACUUM	-40 in. w.c.
MAX. SYSTEM PRESSURE	10 in. w.c.
AVG. LFG WELL TEMP.	150 °F
MAX. LFG FLOW	100 scfm

Note: [shaded box] denotes user input value

Project Name: **Wilmington Gulch Landfill**  
 Project No.: **17354-02000000**

Date: **1/30/2005**  
 By: **aw**

**LFG CONDENSATE GEN.: WORST 3 DAY CASE**

**INPUT**  
 Flow Volume (SCFM)= 100

**Inlet**  
 Gage Pressure (in W.C. (g))= -40.0  
 Temperature (F)= 150  
**Outlet**  
 Gage Pressure (in W.C. (g))= 10.0  
 High Avg. Temperature (F)= 68  
 Low Avg. Temperature (F)= 53  
 Hours @ Tmax= 10  
 Hours @ Tmin= 14

**RESULTS**  
 T<sub>max</sub> Condensate (GPM)= 88  
 T<sub>min</sub> Condensate (GPM)= 128  
 Avg. daily condensate (GPM)= 216

Source for Saturation Vapor Pressures:  
*Handbook of Air Conditioning, Heating, and Ventilating (1979)*  
 Page 7-81, Table 1. Selected Thermal Properties of Water and Steam.

**VAPOR PRESSURE TABLE**

Temp (F)	VP (psia)	P (abs) vP (psia)	Y (moles)
35	0.100	13.26	3.718
40	0.122	15.06	0.310
45	0.147	15.06	0.178
50	0.178		
55	0.217		
60	0.256		
65	0.310		
70	0.363		
75	0.435		
80	0.507		
85	0.603		
90	0.699		
95	0.825		
100	0.950		
105	1.115		
110	1.280		
115	1.485		
120	1.690		
125	1.957		
130	2.223		
135	2.556		
140	2.889		
145	3.304		
150	3.718		
155	4.230		
160	4.741		
165	5.367		
170	5.992		
175	6.751		
180	7.510		





***Appendix B***

***GCCS Piping Head Loss Analysis***

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Waimanalo Gulch Landfill - 40" WC @ 700cfm (Updated Diameters)

\*\*\* GAS2000 Version 1.1 \*\*\*  
 GAS DISTRIBUTION NETWORK ANALYSIS  
 COPYRIGHT 2000 - DON J. WOOD, JAMES E. FUNK  
 LEXINGTON, KY  
 Updated April 2000

INPUT DATA FILE NAME FOR THIS SIMULATION=N:\Projects\WASTEM-1\WAIMAN-1\KYGAS-1\Waimanal.DAT  
 OUTPUT DATA FILE NAME FOR THIS SIMULATION=N:\Projects\WASTEM-1\WAIMAN-1\KYGAS-1\Waimanal.OT2

DATE FOR THIS COMPUTER RUN : 6-03-2003  
 START TIME FOR THIS COMPUTER RUN : 16:32:32:70

SUMMARY OF DISTRIBUTION SYSTEM CHARACTERISTICS:

NUMBER OF PIPES = 25  
 NUMBER OF JUNCTION NODES = 24

UNITS SPECIFIED = ENGLISH

A CONSTANT DENSITY FLUID IS SPECIFIED - DENSITY = .08POUNDS / CUBIC FOOT  
 ABSOLUTE VISCOSITY = .28E-06 POUND SECONDS/SQUARE FOOT

USER SPECIFIED FLOW UNITS (USFU) = SCF / MIN.  
 USER SPECIFIED PRESSURE UNITS (USPU) = INCHES OF WATER (GAUGE)

----- SUMMARY OF PIPE NETWORK GEOMETRIC AND OPERATING DATA -----

PIPE NAME	NODE #1	NODE #2	LENGTH (FT.)	DIAM. (IN.)	ROUGHNESS (MILLIFEET)	SUM-M FACT.	PUMP ID	ELEVATION CHANGE
P-1	J-123	J-115	264.0	7.6	.100	1.8	0	.0
P-10	J-4	J-5	307.0	7.6	.100	1.8	0	.0
P-11	J-1	J-87	317.0	7.6	.100	1.8	0	.0
P-12	J-3	J-4	310.0	7.6	.100	1.8	0	.0
P-13	J-123	J-3	341.0	7.6	.100	1.8	0	.0
P-14	J-5	J-1	286.0	7.6	.100	1.8	0	.0
P-15	J-6	J-115	303.0	7.6	.100	1.8	0	.0
P-16	J-122	J-120	324.0	7.6	.100	1.8	0	.0
P-17	J-6	J-110	322.0	7.6	.100	1.8	0	.0
P-18	J-7	J-87	252.0	7.6	.100	1.8	0	.0
P-19	J-110	J-112	300.0	7.6	.100	1.8	0	.0
P-2	J-86	J-7	309.0	7.6	.100	1.8	0	.0
P-20	J-8	J-118	193.0	5.8	.100	1.8	0	.0
P-21	J-89	J-86	318.0	7.6	.100	1.8	0	.0
P-22	J-112	J-89	330.0	7.6	.100	1.8	0	.0
P-24	J-86	J-117	307.0	7.6	.100	1.8	0	.0
P-25	J-117	J-120	290.0	7.6	.100	1.8	0	.0
P-3	J-89	J-90	267.0	5.8	.100	1.8	0	.0
P-4	R-1	J-123	778.0	11.2	.100	1.8	0	.0
P-5	J-110	J-111	353.0	5.8	.100	1.8	0	.0
P-6	J-112	J-113	313.0	5.8	.100	1.8	0	.0
P-7	J-115	J-116	108.0	5.8	.100	1.8	0	.0

P-8	J-117	J-8	262.0	5.8	.100	1.8	0	.0
P-9	J-120	J-121	339.0	5.8	.100	1.8	0	.0

JUNCTION NAME	NODE TITLE	DEMAND (USFU)	FPN PRESSURE
J-1	GW-5	.00	
J-110	GW-8	-25.00	
J-111	GW-9	-40.00	
J-112	GW-10	-25.00	
J-113	GW-11	-40.00	
J-115		.00	
J-116	GW-6	-40.00	
J-117	GW-17	-25.00	
J-118	GW-19	-25.00	
J-120	GW-20	-35.00	
J-121	GW-21	-40.00	
J-122	GW-22	-25.00	
J-123	GW-1	-40.00	
J-3	GW-2	-40.00	
J-4	GW-3	-25.00	
J-5	GW-4	-40.00	
J-6	GW-7	-25.00	
J-7	GW-15	-40.00	
J-8	GW-18	-40.00	
J-86	GW-14	-25.00	
J-87	GW-16	-40.00	
J-89	GW-12	-25.00	
J-90	GW-13	-40.00	
R-1	FLARE STATION	.00	-40.00

=====

===== RESULTS FOR THIS SIMULATION FOLLOW =====

=====

PIPE NO.	NODE #1	NODE #2	FLOW (USFU)	LOSS (USPU)	VELOCITY (FT/S)	DENSITY (#/CF)	FRICTION FACTOR	AREA RATIO
P-1	J-123	J-115	-349.653	.76	18.38	.078	.0188	
P-10	J-4	J-5	-245.347	.45	12.89	.078	.0200	
P-11	J-1	J-87	-205.347	.33	10.79	.078	.0207	
P-12	J-3	J-4	-270.347	.54	14.21	.078	.0197	
P-13	J-123	J-3	-310.347	.76	16.31	.078	.0192	
P-14	J-5	J-1	-205.347	.30	10.79	.078	.0207	
P-15	J-6	J-115	309.653	.68	16.27	.078	.0192	
P-16	J-122	J-120	25.000	.01	1.31	.078	.0343	
P-17	J-6	J-110	-284.653	.61	14.96	.078	.0195	
P-18	J-7	J-87	165.347	.18	8.69	.078	.0216	
P-19	J-110	J-112	-219.653	.36	11.54	.078	.0205	
P-2	J-86	J-7	125.347	.13	6.59	.078	.0229	
P-20	J-8	J-118	-25.000	.02	2.23	.078	.0320	
P-21	J-89	J-86	-89.653	.07	4.71	.078	.0248	
P-22	J-112	J-89	-154.653	.21	8.13	.078	.0211	
P-24	J-86	J-117	-190.000	.28	9.99	.078	.0211	
P-25	J-117	J-120	-100.000	.08	5.26	.078	.0241	
P-3	J-89	J-90	-40.000	.05	3.56	.078	.0283	

P-4	R-1	J-123	-700.000	1.09	16.84	.078	.0175
P-5	J-110	J-111	-40.000	.07	3.56	.078	.0283
P-6	J-112	J-113	-40.000	.06	3.56	.078	.0283
P-7	J-115	J-116	-40.000	.02	3.56	.078	.0283
P-8	J-117	J-8	-65.000	.12	5.79	.078	.0252
P-9	J-120	J-121	-40.000	.06	3.56	.078	.0283
R-1	R-1	R-1	-700.000	.00	.00	.078	.0426

JUNCTION	NODE	DEMAND	PRESSURE	PRESSURE	PRESSURE	DENSITY
NAME	TITLE	(USFU)	(USPU)	(PSIA)	(PSIG)	#/CF
J-1	GW-5	.00	-36.86	13.37	-1.33	.078
J-110	GW-8	-25.00	-36.85	13.37	-1.33	.078
J-111	GW-9	-40.00	-36.78	13.37	-1.33	.078
J-112	GW-10	-25.00	-36.49	13.38	-1.32	.078
J-113	GW-11	-40.00	-36.43	13.38	-1.31	.078
J-115		.00	-38.15	13.32	-1.38	.078
J-116	GW-6	-40.00	-38.12	13.32	-1.38	.078
J-117	GW-17	-25.00	-35.93	13.40	-1.30	.078
J-118	GW-19	-25.00	-35.79	13.40	-1.29	.078
J-120	GW-20	-35.00	-35.85	13.40	-1.29	.078
J-121	GW-21	-40.00	-35.78	13.41	-1.29	.078
J-122	GW-22	-25.00	-35.84	13.40	-1.29	.078
J-123	GW-1	-40.00	-38.91	13.29	-1.40	.078
J-3	GW-2	-40.00	-38.15	13.32	-1.38	.078
J-4	GW-3	-25.00	-37.61	13.34	-1.36	.078
J-5	GW-4	-40.00	-37.17	13.36	-1.34	.078
J-6	GW-7	-25.00	-37.47	13.34	-1.35	.078
J-7	GW-15	-40.00	-36.34	13.38	-1.31	.078
J-8	GW-18	-40.00	-35.81	13.40	-1.29	.078
J-86	GW-14	-25.00	-36.21	13.39	-1.31	.078
J-87	GW-16	-40.00	-36.53	13.38	-1.32	.078
J-89	GW-12	-25.00	-36.29	13.39	-1.31	.078
J-90	GW-13	-40.00	-36.23	13.39	-1.31	.078
R-1	FLARE STATION	.00	-40.00	13.25	-1.44	.078

THE NET SYSTEM DEMAND (USFU) = -700.000

SUMMARY OF INFLOWS(+) AND OUTFLOWS(-) :

NAME	FLOW (USFU)	FPN TITLE
R-1	-700.0	R-1

SUMMARY OF MINIMUM AND MAXIMUM VELOCITIES (FT/S)

	MINIMUM		MAXIMUM
R-1	.00	P-1	18.38
P-16	1.31	P-4	16.84
P-20	2.23	P-13	16.31
P-3	3.56	P-15	16.27
P-21	4.71	P-17	14.96

SUMMARY OF MINIMUM AND MAXIMUM LOSS/1000. (PSI )

	MINIMUM		MAXIMUM
R-1	.00	P-1	.08
P-16	.00	P-13	.07
P-20	.00	P-15	.07
P-7	.01	P-17	.06
P-3	.01	P-12	.05

SUMMARY OF MINIMUM AND MAXIMUM PRESSURES (USPU)

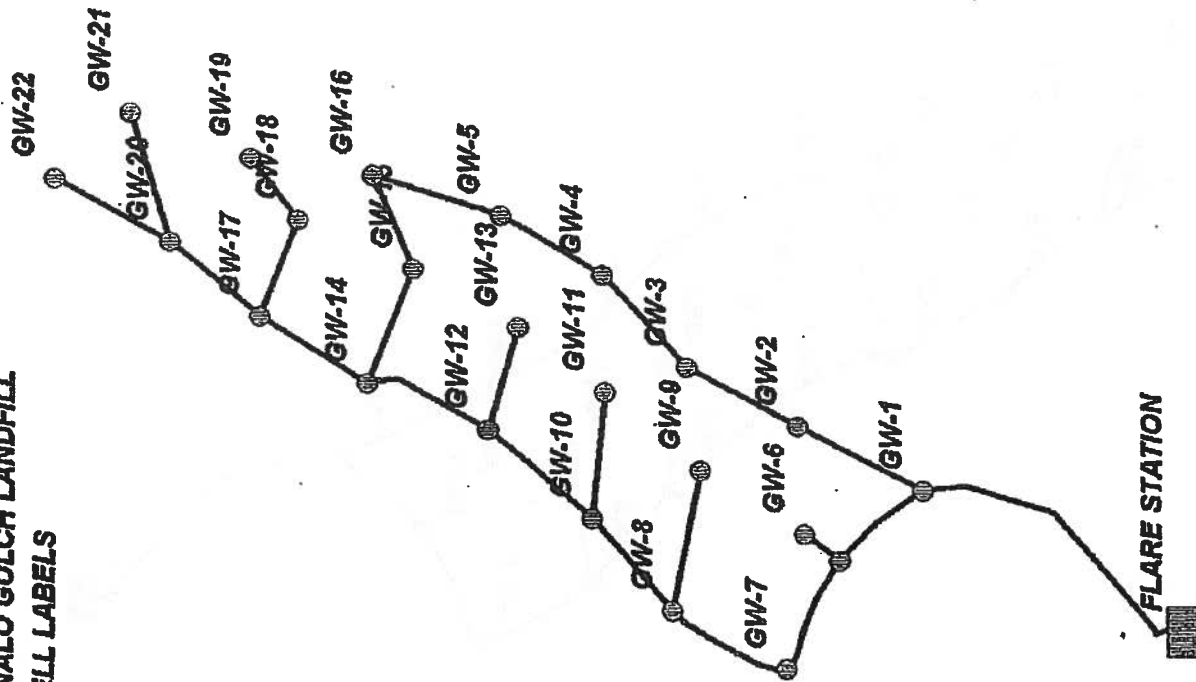
	MINIMUM		MAXIMUM
R-1	-40.00	J-121	-35.78
J-123	-38.91	J-118	-35.79
J-3	-38.15	J-8	-35.81
J-115	-38.15	J-122	-35.84
J-116	-38.12	J-120	-35.85

\*\*\*\*\* END OF KYGAS SIMULATION \*\*\*\*\*

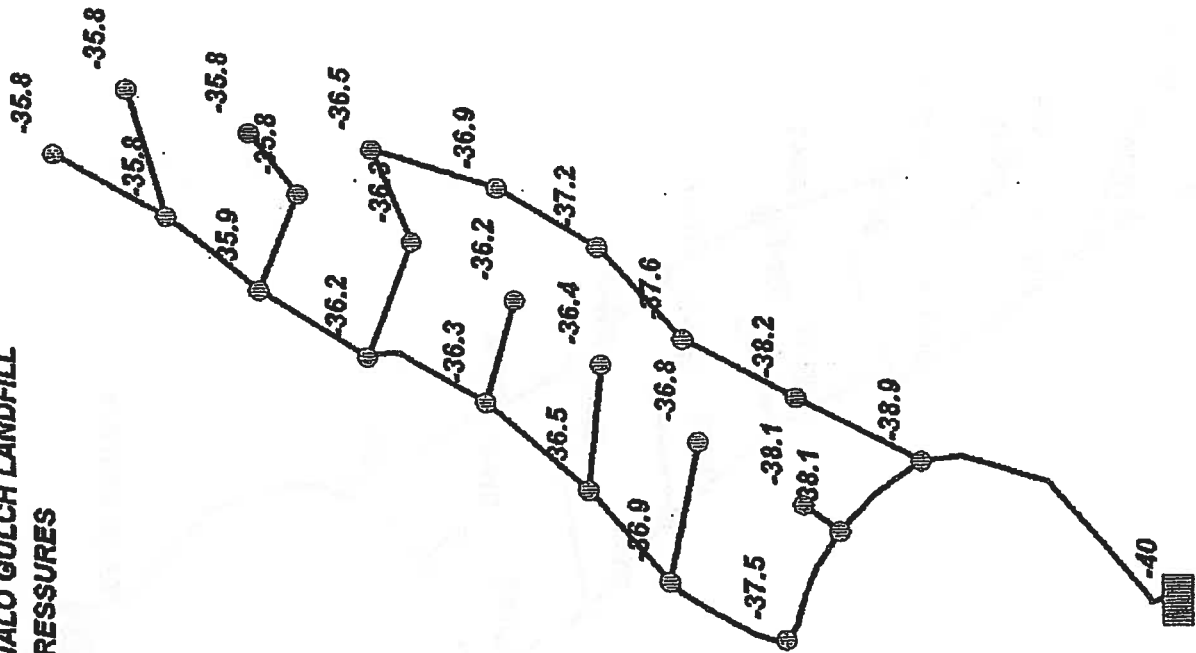
DATE FOR THIS COMPUTER RUN : 6-03-2003  
START TIME FOR THIS COMPUTER RUN : 16:32:32:79



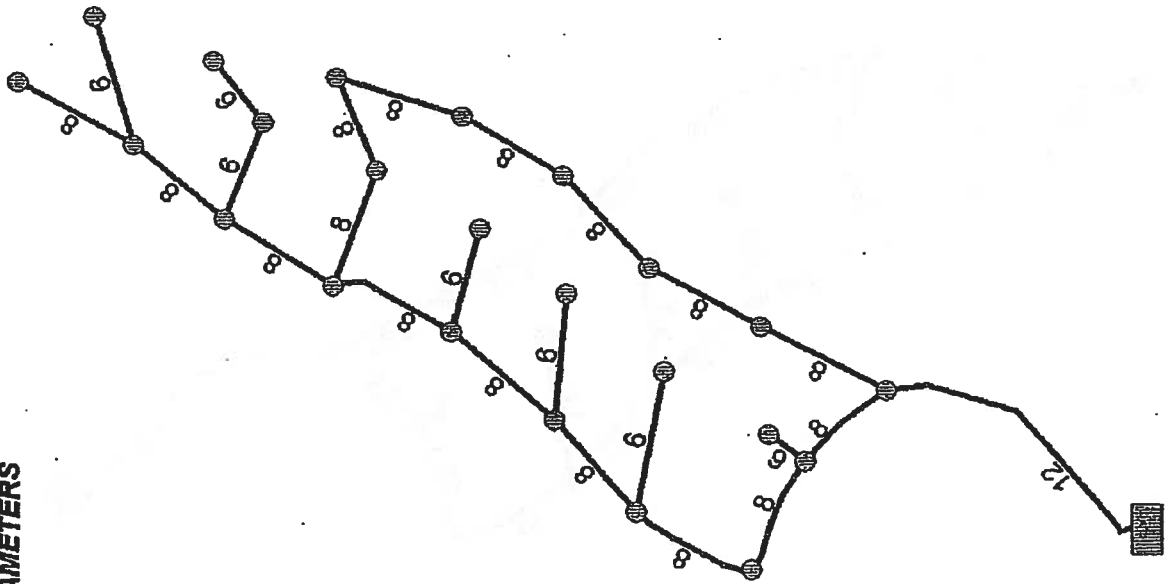
**WAIMANALO GULCH LANDFILL  
GAS WELL LABELS**



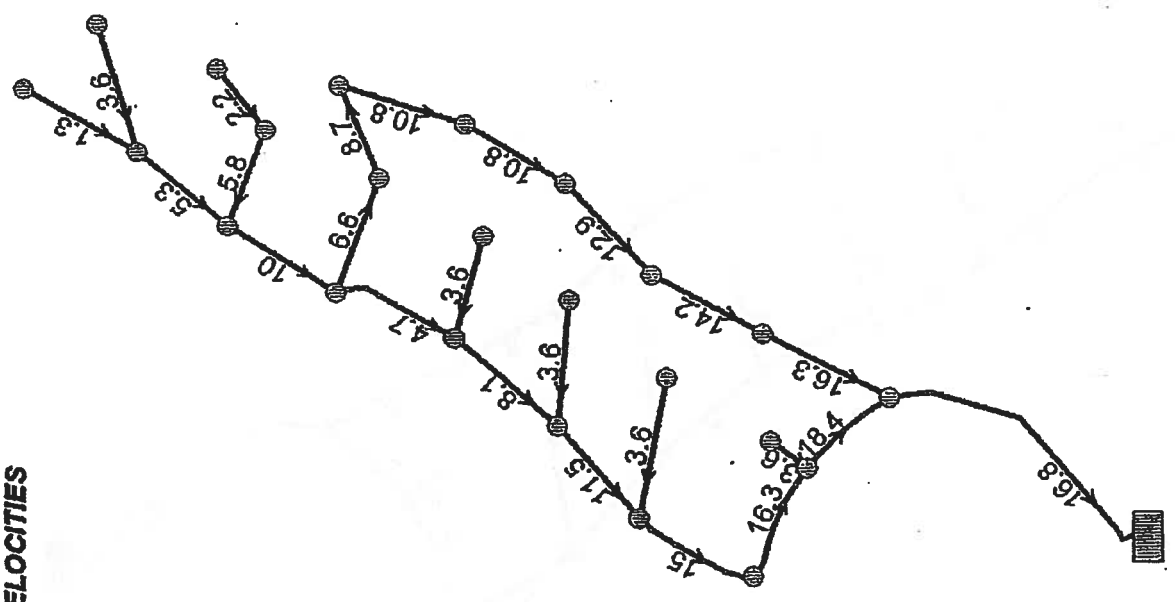
**WAIMANALO GULCH LANDFILL  
NODE PRESSURES**



**WAIMANALO GULCH LANDFILL  
PIPE DIAMETERS**



**WAIMANALO GULCH LANDFILL  
PIPE VELOCITIES**



## ***Appendix C***

### ***GCCS Construction Record Plans***

#### **Index of Drawings**

—	Title Sheet
1	Site Plan
2	As-Built GCCS Plan
3	As-Built Flare Plan
4	Landfill Gas Details
5	Landfill Gas Details
6	As-Built Facility Plan

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# **APPENDIX C**

# AS-BUILT DRAWINGS

## WAIMANALO GULCH SANITARY LANDFILL

### LANDFILL GAS COLLECTION AND CONTROL SYSTEM 2005

#### OAHU, HAWAII

SEPTEMBER 2005

PREPARED FOR  
**WASTE MANAGEMENT OF HAWAII, INC.**

PREPARED BY  
**EMCON/OWT, INC.**

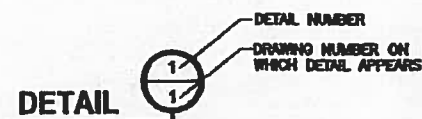
10300 SW NIMBUS AVE. SUITE B  
PORTLAND, OR 97223-4345  
PHONE 503-603-1000  
FAX 503-603-1001

#### ABBREVIATIONS

Ø/DIA	DIAMETER
DWG	DRAWING
ELEV	ELEVATION
E	EASTING
FT	FEET
GCSS	GAS COLLECTION CONTROL SYSTEM
HDPE	HIGH DENSITY POLYETHYLENE
LCRS	LEACHATE COLLECTION AND REMOVAL SYSTEM
LFG	LANDFILL GAS
MIN	MINIMUM
N	NORTHING
(NIC)	NOT IN CONTRACT
NIS	NOT TO SCALE
%	PERCENT
PERF	PERFORATED
PVC	POLYVINYL CHLORIDE
S	SLOPE
SDR	STANDARD DIMENSION RATIO
TYP	TYPICAL
W/	WITH

#### DETAIL INDICATOR:

DRAWING ON WHICH DETAIL APPEARS:

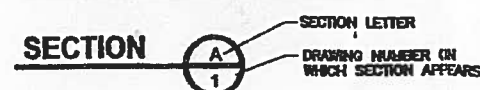


#### SECTION INDICATORS:

DRAWING ON WHICH SECTION IS CUT:



DRAWING ON WHICH SECTION APPEARS:

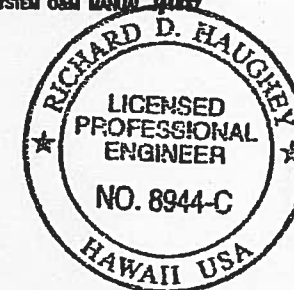


#### DRAWING INDEX

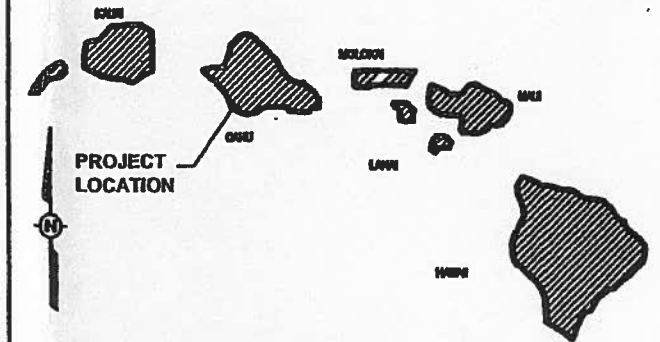
DRAWING NUMBER	TITLE AND DESCRIPTION	LATEST REVISION NUMBER	LATEST REVISION DATE
0	COVER SHEET	0	-
1	EXISTING SITE PLAN	0	-
2	AS-BUILT GCSS PLAN	0	-
3	AS-BUILT FLARE PLAN	0	-
4	AS-BUILT DETAILS	0	-
5	AS-BUILT DETAILS	0	-
6	AS-BUILT FACILITY PLAN	0	-

#### LFG SPECIALTIES - FLARE DRAWINGS

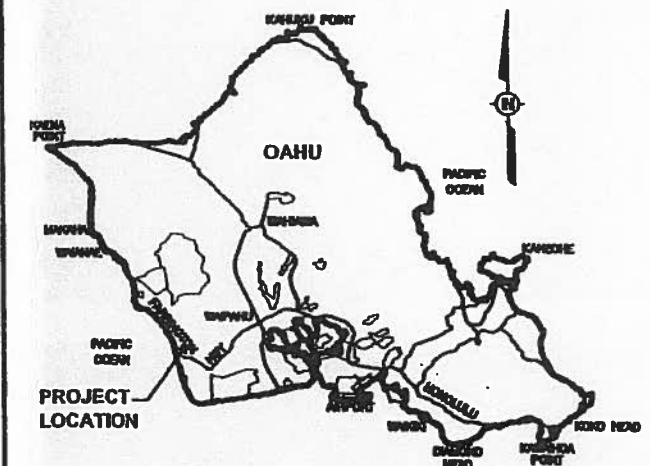
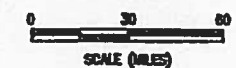
LFG SPECIALTIES AS-BUILT FLARE DRAWINGS UNDER SEPARATE COVER INCLUDED IN THE ENCLOSED FUG SYSTEM O&M MANUAL.



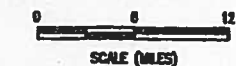
#### HAWAIIAN ISLANDS



#### SITE VICINITY



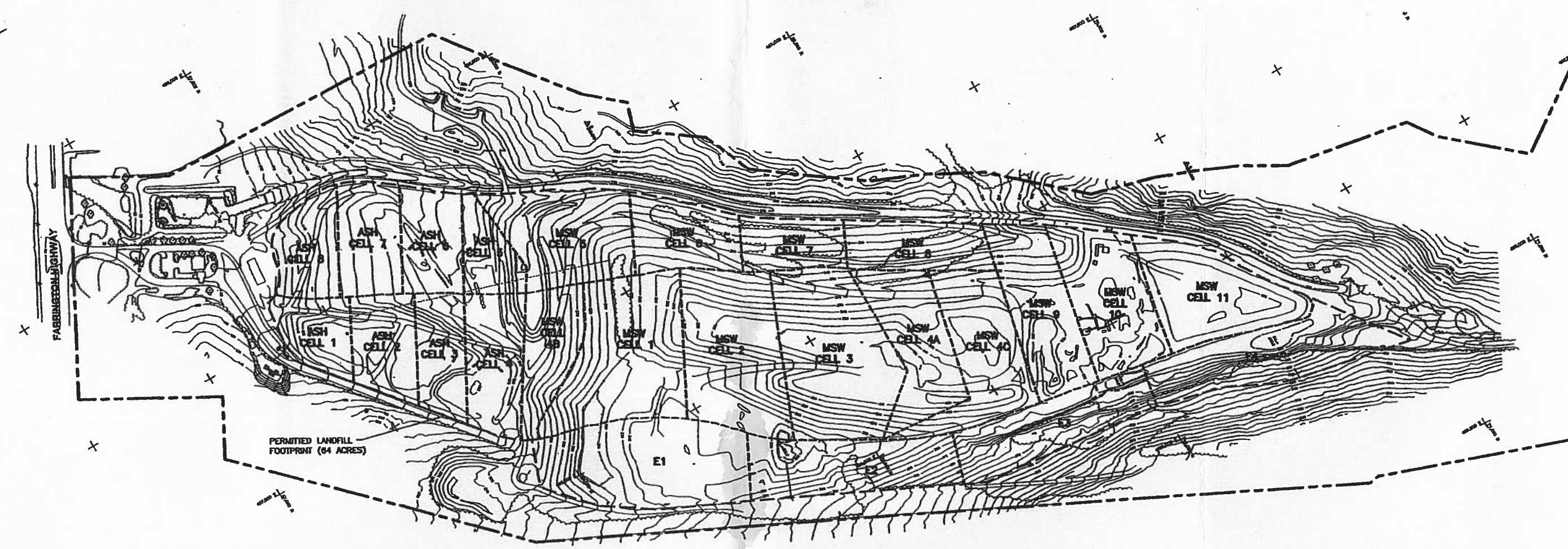
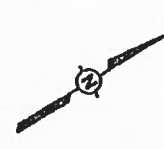
#### PROJECT LOCATION



APPROVED:

*Andrew P. Many for* 3/3/06  
SENIOR PROJECT MANAGER - PAUL J. STOUT DATE  
*Richard D. Haughey* 3/3/06  
REGION VICE PRESIDENT - RICHARD D. HAUGHEY, P.E. DATE





PERMITTED LANDFILL FOOTPRINT (84 ACRES)

**NOTES:**

1. TOPOGRAPHY INFORMATION PROVIDED BY WASTE MANAGEMENT, INC. BASED ON AERIAL PHOTOGRAMMETRY DATED 12-29-2001 AND UPDATED JANUARY 2006.
2. ELEVATIONS ARE IN FEET ABOVE MEAN SEA LEVEL. COORDINATE SYSTEM BASED ON STATE GRID AND STATE DATUM (HND 83).
3. FLARE FACILITY LOCATION BASED ON SURVEY DATED 9-13-2006.

**LEGEND**

- EXISTING CONTOURS
- - - PROPERTY LINE
- - - APPROXIMATE CELL DIVISION
- - - PERMITTED LANDFILL FOOTPRINT
- △ CONTROL POINT



*Richard D. Haughey*  
 RICHARD D. HAUGHEY  
 LICENSED  
 PROFESSIONAL  
 ENGINEER  
 NO. 8944-C  
 HAWAII USA



REV	DATE	DESCRIPTION	DES BY	CHK BY	APP BY

DATE OF ISSUE:      DES BY: *J. Jettan*      CHK BY: *P. Stout*

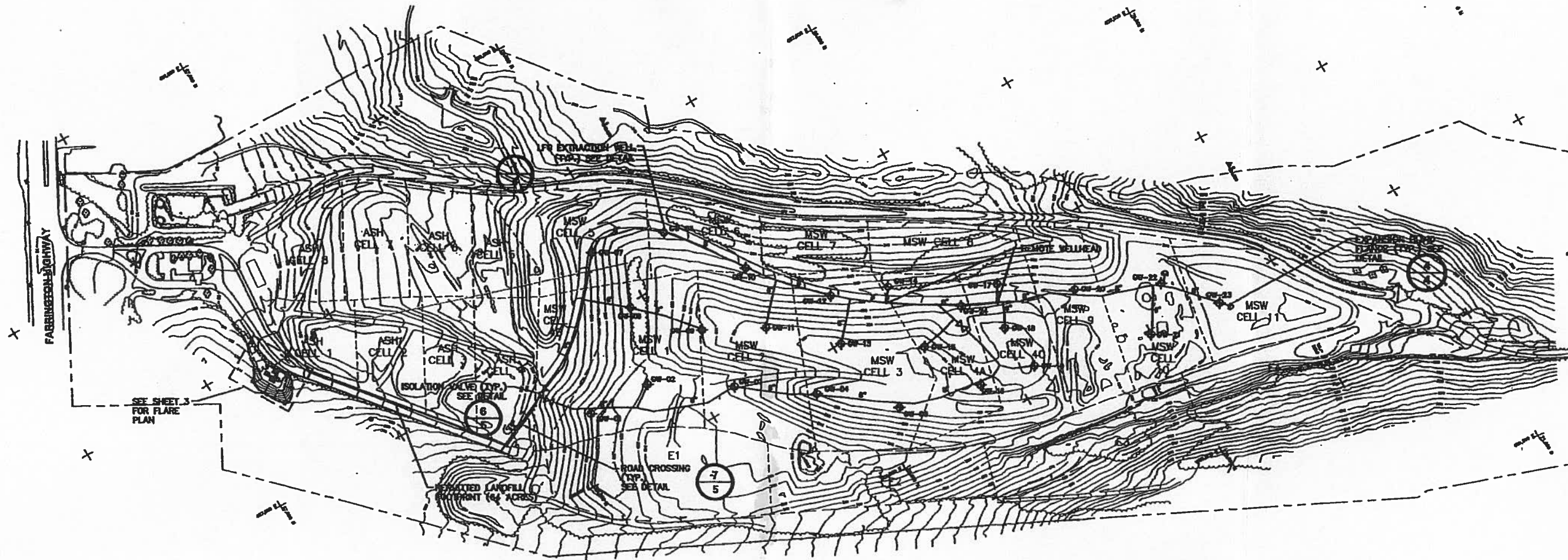
**EMCON/OWT, Inc.**

The drawings are the intellectual property of EMCON/OWT, Inc. Any reproduction or use of these drawings without the written consent of EMCON/OWT, Inc. is strictly prohibited. EMCON/OWT, Inc. will not be held liable for any errors or omissions in these drawings.

WASTE MANAGEMENT OF HAWAII, INC.  
 WAIMANALO GULCH SANITARY LANDFILL  
 OAHU, HAWAII

**EXISTING SITE PLAN**

DRAWING NO.  
**1**  
 PROJECT NO.



SEE SHEET 3 FOR FLARE PLAN

**NOTES:**

1. TOPOGRAPHY INFORMATION PROVIDED BY WASTE MANAGEMENT, INC. BASED ON AERIAL PHOTOGRAMMETRY DATED 12-29-2001 AND UPDATED JANUARY 2003.
2. ELEVATIONS ARE IN FEET ABOVE MEAN SEA LEVEL. COORDINATE SYSTEM BASED ON STATE GRID AND STATE DATUM (MSD 83).
3. LANDFILL GAS COLLECTION AND CONTROL PIPING AND EXTRACTION WELL SURVEY INFORMATION PROVIDED BY MOUNTAIN EDGE ENVIRONMENTAL, INC. JULY 2005.
4. FLARE FACILITY LOCATION BASED ON SURVEY DATED 6-13-2005.

**LEGEND**

- HEADER/LATERAL
- EXISTING CONTOURS
- PROPERTY LINE
- - - - - APPROXIMATE CELL DIVISION
- - - - - PERMITTED LANDFILL FOOTPRINT
- △ CONTROL POINT
- ◇ OW-10 LANDFILL GAS EXTRACTION WELL
- ⊗ ISOLATION VALVE
- ROAD CROSSING
- ⊕ EXPANSION BLIND FLANGE

*Richard D. Hauger*  
 RICHARD D. HAUGER  
 LICENSED PROFESSIONAL ENGINEER  
 NO. 8944-C  
 HAWAII USA  
 3/3/06

0 200 400  
 SCALE (FEET)

REV	DATE	DESCRIPTION	DES BY	CHK BY	APP BY

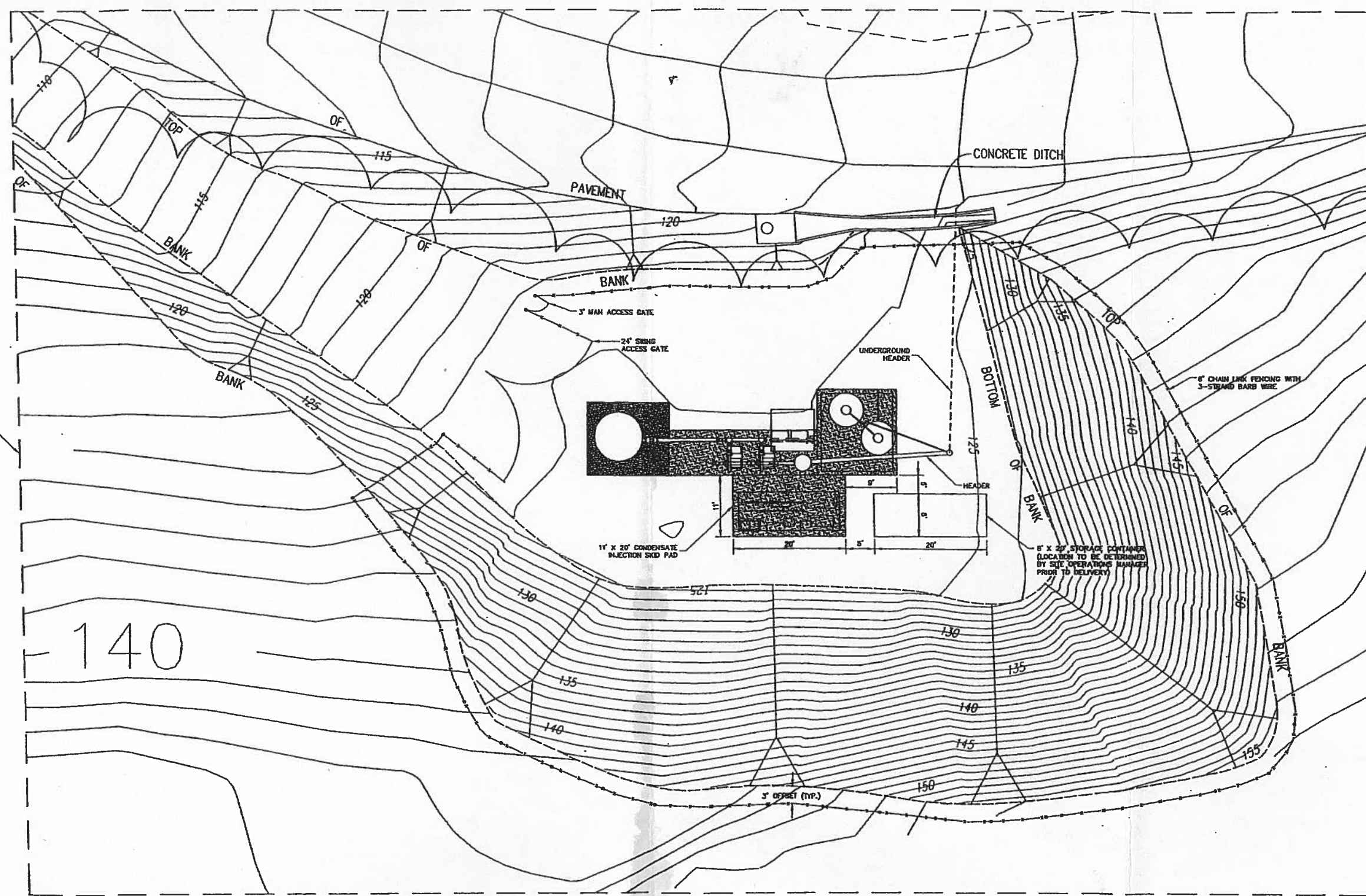
**EMCON/OWT, Inc.**  
We hereby represent and warrant that the information contained herein is true and correct to the best of our knowledge and belief. We shall be liable for any damages caused by the use of this information.

WASTE MANAGEMENT OF HAWAII, INC.  
 WAIMANALO GULCH SANITARY LANDFILL  
 OAHU, HAWAII  
 AS-BUILT GCCS PLAN

DRAWING NO. **2**  
 PROJECT NO. **WMA/05**

1/2" = 1'





FROM SHEET 2

140

**NOTES:**

1. TOPOGRAPHY INFORMATION PROVIDED BY WASTE MANAGEMENT, INC. BASED ON AERIAL PHOTOGRAMMETRY DATED 12-29-2001 AND UPDATED JANUARY 2003.
2. ELEVATIONS ARE IN FEET ABOVE MEAN SEA LEVEL. COORDINATE SYSTEM BASED ON STATE GRID AND STATE DATUM (MAD 83).
3. FLARE FACILITY LOCATION BASED ON SURVEY DATED 9-13-2005.

RICHARD D. HAUGHEY  
 LICENSED PROFESSIONAL ENGINEER  
 NO. 8344-C  
 HAWAII

SCALE (FEET)

**LEGEND**

- PROPOSED HEADER
- EXISTING CONTOURS
- PERMITTED LANDFILL FOOTPRINT BOLLARD

REV	DATE	DESCRIPTION	OWN BY	DES BY	CHK BY	APP BY

DATE OF ISSUE:      OWN BY: J. Tolton      CHK BY: P. Stoud

**Shaw EMCON/OWT, Inc.**

WASTE MANAGEMENT OF HAWAII, INC.  
 WAIMANALO GULCH SANITARY LANDFILL  
 OAHU, HAWAII

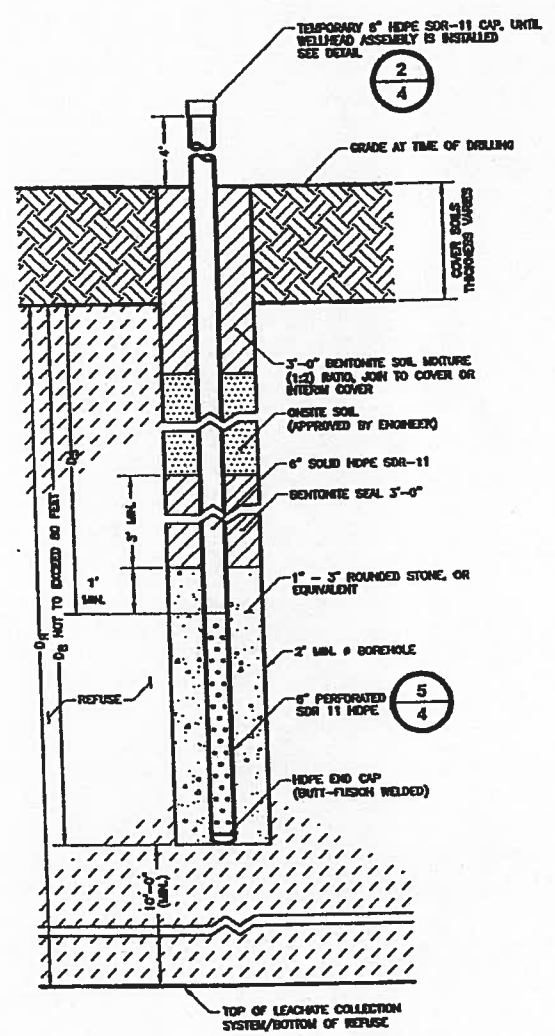
DRAWING NO.  
**3**  
 PROJECT NO.

1/2" = 0'      1" = 0'      2" = 0'      3" = 0'      4" = 0'      5" = 0'      6" = 0'      7" = 0'      8" = 0'      9" = 0'      10" = 0'      11" = 0'      12" = 0'      13" = 0'      14" = 0'      15" = 0'      16" = 0'      17" = 0'      18" = 0'      19" = 0'      20" = 0'

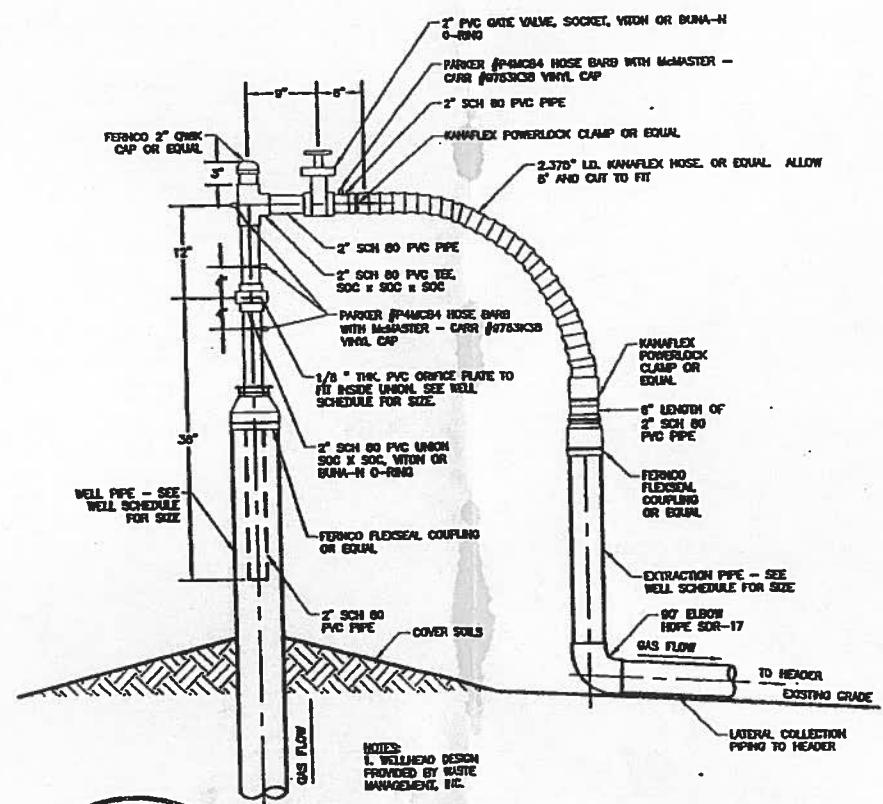
WELL SCHEDULE

GAS WELL	COORDINATES		GROUND ELEV.	LINER ELEV.					
	NORTH	EAST			Dr	Ds	Dp	Dc	
GW-01	66127.76	467766.63	366.93	-	-	60	19	30	66
GW-02	66356.56	467782.13	324.80	-	-	74	19	64	47
GW-03	66618.48	467941.20	322.72	-	-	77	19	67	41
GW-04	66684.76	468113.17	408.58	-	-	85	19	48	42
GW-05	66904.43	468301.21	418.02	-	-	86	19	36	NP
GW-06	66441.35	467844.54	321.25	-	-	80	19	80	NP
GW-07	66422.50	467278.50	276.70	-	-	80	19	60	NM
GW-08	66681.67	467347.84	306.68	-	-	77	19	67	NM
GW-09	66634.00	467710.88	377.85	-	-	80	20	80	NP
GW-10	66670.25	467666.74	321.71	-	-	80	19	80	NM
GW-11	66228.82	467817.70	404.41	-	-	80	19	80	43
GW-12	66064.64	467835.97	348.30	-	-	80	19	80	NM
GW-13	66030.70	468001.45	413.01	-	-	80	19	80	NP
GW-14	66277.31	467810.40	358.60	-	-	80	19	80	NM
GW-15	66279.43	468105.30	418.70	-	-	80	19	80	NP
GW-16	66379.67	468371.80	413.38	-	-	74	19	64	66
GW-17	66611.47	468000.58	378.82	-	-	80	19	80	NM
GW-18	66608.22	468240.06	404.10	-	-	80	19	80	NP
GW-19	66800.66	468407.84	408.76	-	-	85	19	38	NP
GW-20	66843.92	468244.10	387.89	-	-	80	19	48	NM
GW-21	66977.40	468514.65	390.81	-	-	88	19	38	NM
GW-22	70120.43	468378.74	394.40	-	-	64	19	34	NP
GW-23	70290.06	468338.83	416.83	-	-	80	19	80	60
GW-24	66482.80	468068.36	377.29	-	-	40	19	20	NM

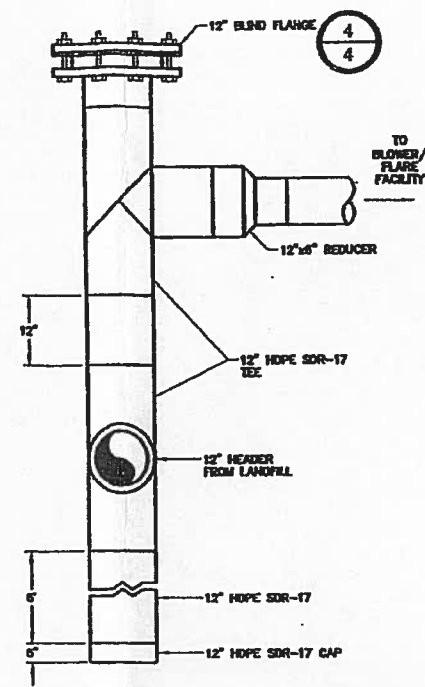
(ALL DEPTHS NOTED FROM GROUND ELEVATION)  
 Dr = DEPTH OF REFUSE  
 Ds = DEPTH OF BORING TO TOP OF Dp  
 Dp = DEPTH OF SOLID PIPE  
 Dc = DEPTH OF PERFORATED PIPE  
 NM = NOT MEASURED  
 NP = NO PINCHED SECTION ENCOUNTERED



LFG EXTRACTION WELL  
 DETAIL 1  
 SCALE: NOT TO SCALE

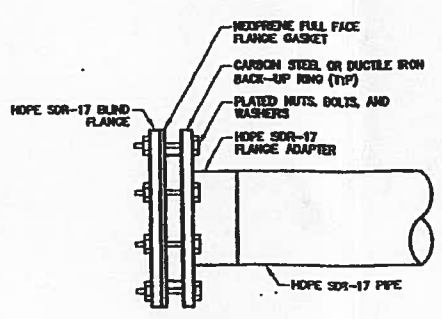


WELL HEAD  
 DETAIL 2  
 SCALE: NOT TO SCALE

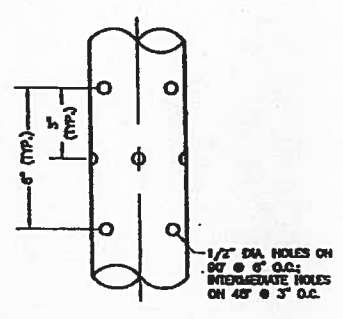


CONDENSATE SUMP  
 DETAIL 3  
 SCALE: NOT TO SCALE

- NOTE:
- CONDENSATE REMOVED FROM SUMP BY GED ENVIRONMENTAL SYSTEMS, INC. HAMMER-HEAD PROPUMP TO CONDENSATE STORAGE TANK.
  - PUMP POWERED PNEUMATICALLY BY RIDGID MODEL 0450135, 8 GALLON, 3/4" COMPRESSOR.



BLIND FLANGE  
 DETAIL 4  
 SCALE: NOT TO SCALE



PERFORATED PIPE  
 DETAIL 5  
 SCALE: NOT TO SCALE

RICHARD D. HAGBERG  
 LICENSED PROFESSIONAL ENGINEER  
 NO. 8944-C  
 HAWAII USA  
 5/6/06

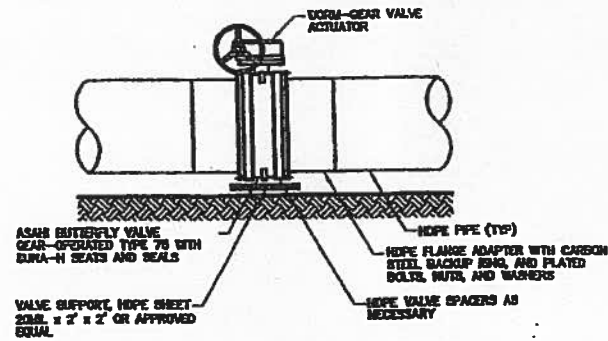
REV	DATE	DESCRIPTION	DESIGNED BY	CHECKED BY	DATE
1	8/12/05	ADDITIONAL WELL INFORMATION	JOT	ECK	PJS

DATE OF ISSUE: 05/05  
 DESIGNED BY: J. Toffen  
 CHECKED BY: E. Korenko  
 DRAWN BY: P. Stout  
 APPROVED BY: R. Houghway

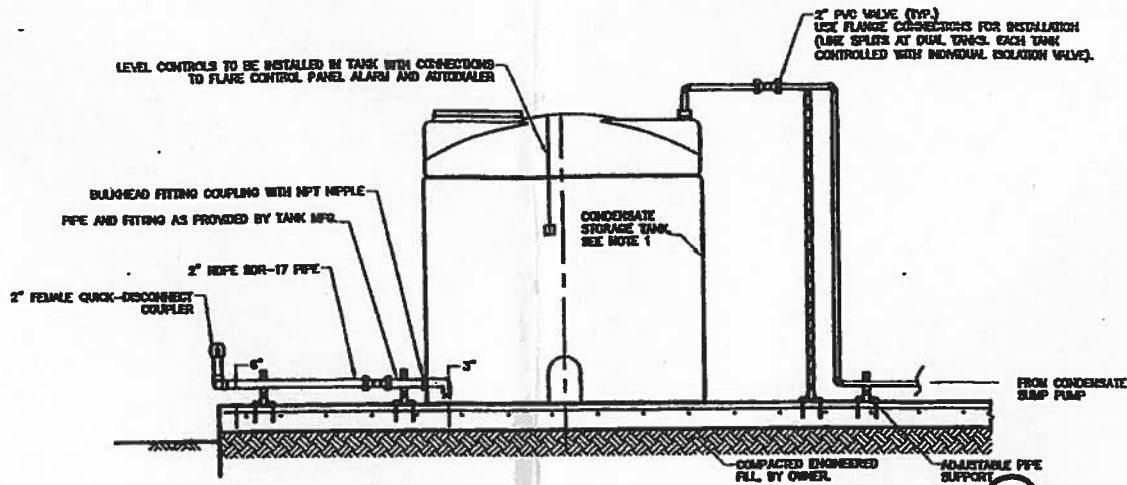
EMCON/OWT, Inc.

WASTE MANAGEMENT OF HAWAII, INC.  
 WAIMANALO GULCH SANITARY LANDFILL  
 OAHU, HAWAII  
 AS-BUILT DETAILS

DRAWING NO. 4  
 PROJECT NO. 843688



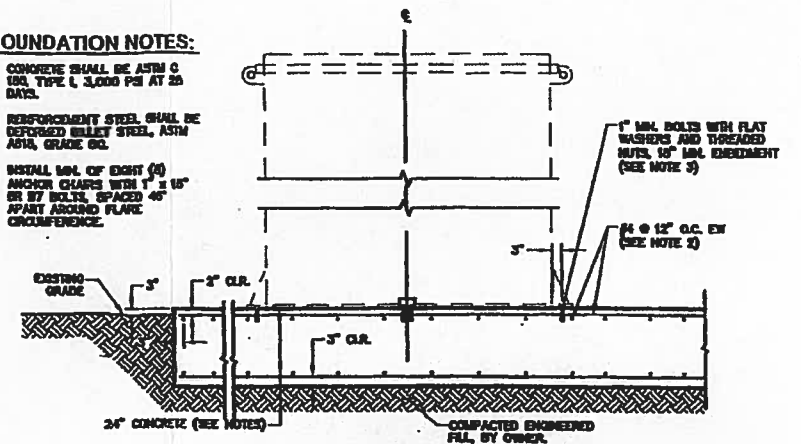
ISOLATION VALVE  
**DETAIL** 6  
 SCALE: NOT TO SCALE 2



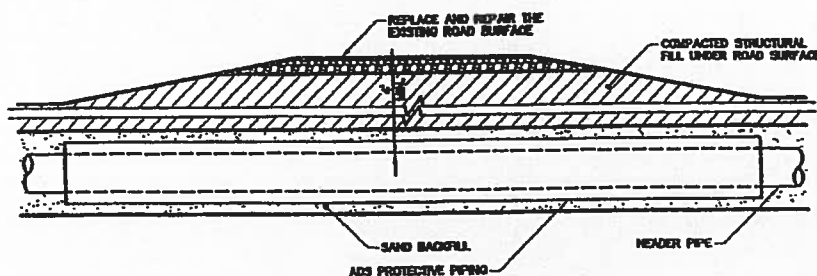
**NOTES:**  
 1. SINGLE CONDENSATE STORAGE TANK SHOWN FOR GENERAL PLUMBING PURPOSES. ACTUAL CONDENSATE STORAGE TANK CONSISTS OF TWO (2) DOUBLE WALLED 1,000 GALLON TANKS, MODEL 12001000 SAFE TANKS FROM CORE-BOSCH PRODUCTS.

CONDENSATE STORAGE TANK  
**ELEVATION** 9  
 SCALE: NOT TO SCALE 5

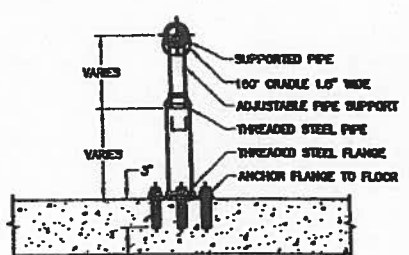
**FOUNDATION NOTES:**  
 1. CONCRETE SHALL BE ASTM C 150, TYPE I, 3,000 PSI AT 28 DAYS.  
 2. REINFORCEMENT STEEL SHALL BE DEFORMED BULLET STEEL, ASTM A618, GRADE 60.  
 3. INSTALL MIN. OF EIGHT (8) ANCHOR BOLTS WITH 1" x 18" OR 17" BOLTS, SPACED 45° APART AROUND FLARE CIRCUMFERENCE.



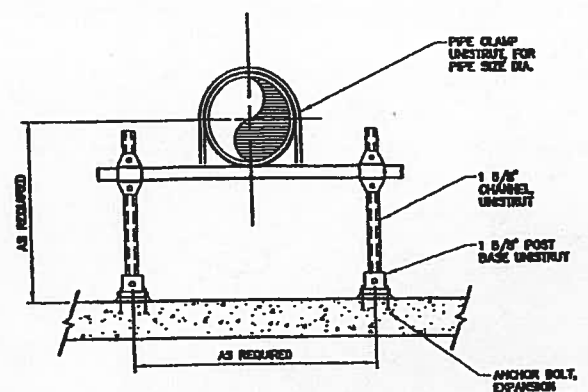
FLARE FOUNDATION  
**ELEVATION** 11  
 SCALE: NOT TO SCALE 5



TRENCHED ROAD CROSSING  
**DETAIL** 7  
 SCALE: NOT TO SCALE 2



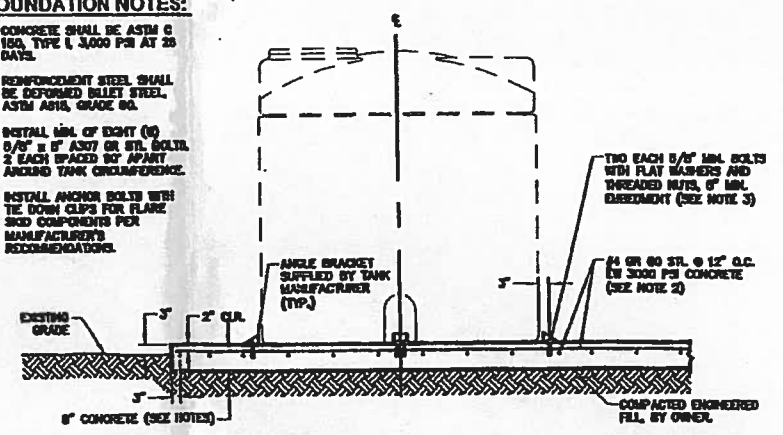
ADJUSTABLE PIPE SUPPORT (OPTION A)  
**DETAIL** 8A  
 SCALE: NOT TO SCALE 5



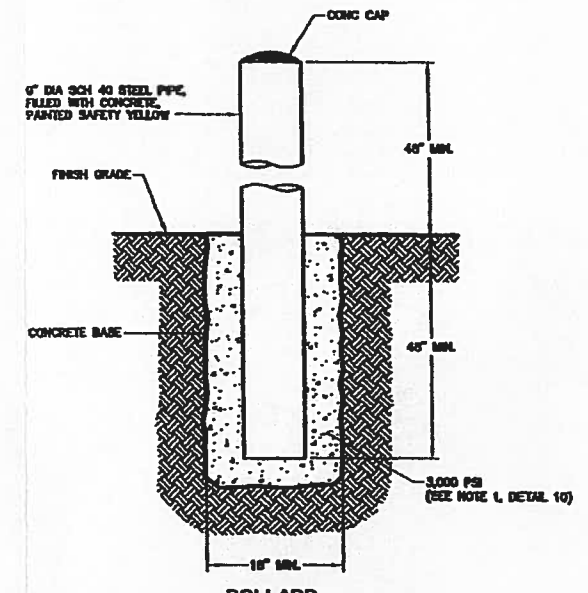
ADJUSTABLE PIPE SUPPORT (OPTION B)  
**DETAIL** 8B  
 SCALE: NOT TO SCALE 5

**NOTES:**  
 1. CONTRACTOR TO USE DETAIL 8A FOR PIPING AT CONDENSATE STORAGE TANK.  
 2. CONTRACTOR TO USE DETAIL 8B FOR ABOVEGROUND PIPING AT FLARE STATION.

**FOUNDATION NOTES:**  
 1. CONCRETE SHALL BE ASTM C 150, TYPE I, 3,000 PSI AT 28 DAYS.  
 2. REINFORCEMENT STEEL SHALL BE DEFORMED BULLET STEEL, ASTM A618, GRADE 60.  
 3. INSTALL MIN. OF EIGHT (8) 5/8" x 8" A307 OR STL. BOLTS, 2 EACH SPACED 90° APART AROUND TANK CIRCUMFERENCE.  
 4. INSTALL ANCHOR BOLTS WITH THE DOWN CLIPS FOR FLARE SKID COMPONENTS PER MANUFACTURER'S RECOMMENDATIONS.



CONDENSATE STORAGE TANK AND BLOWER SKID FOUNDATION  
**ELEVATION** 10  
 SCALE: NOT TO SCALE 5



BOLLARD  
**DETAIL** 12  
 SCALE: NOT TO SCALE 5

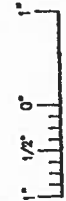
*Richard D. Haughey*  
 RICHARD D. HAUGHEY  
 LICENSED PROFESSIONAL ENGINEER  
 NO. 8944-C  
 HAWAII USA

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01	08/05		J. Tollen	P. Stout	R. Haughey
02			F. Ferreira		

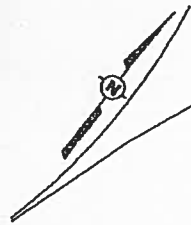
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WASTE MANAGEMENT OF HAWAII, INC.  
 WAIMANALO GULCH SANITARY LANDFILL  
 OAHU, HAWAII  
**AS-BUILT DETAILS**

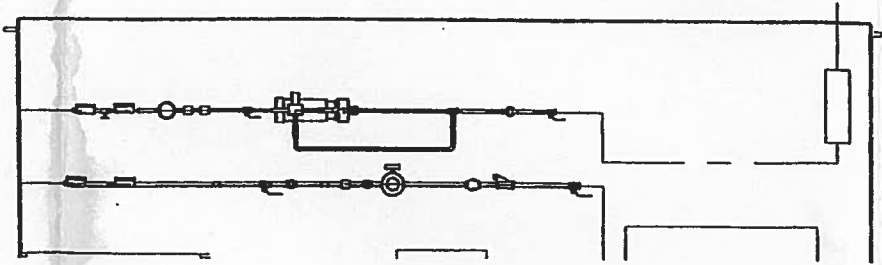
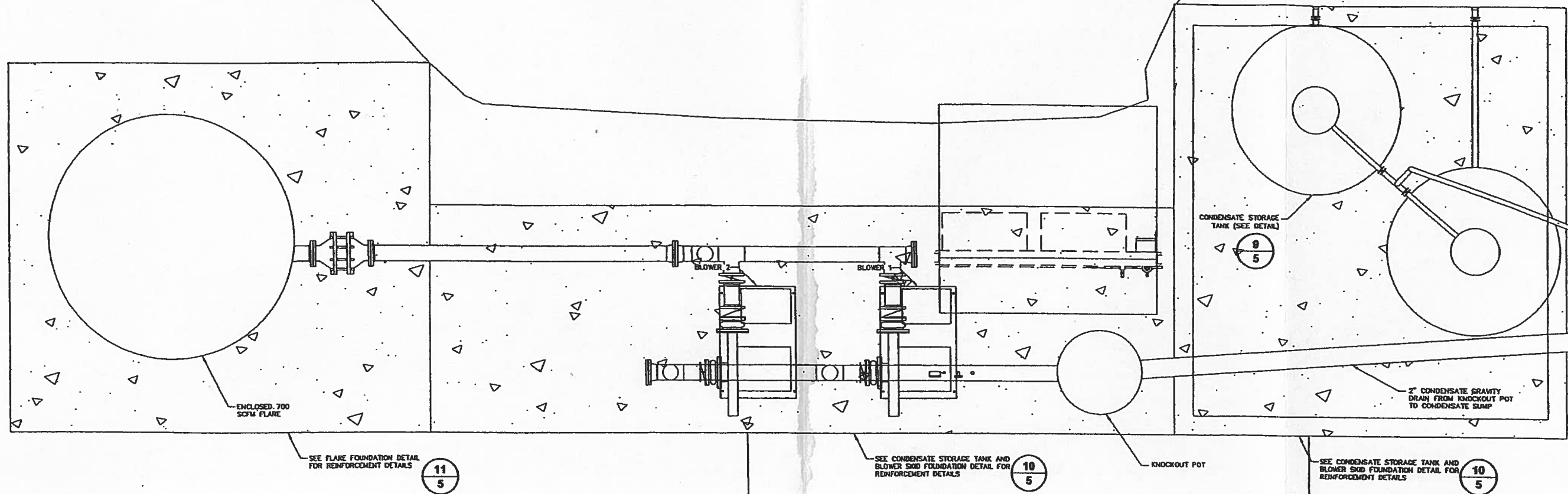
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 PROJECT NO. 843988







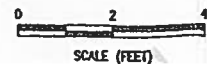
ACCESS ROADWAY (EXPANSION)



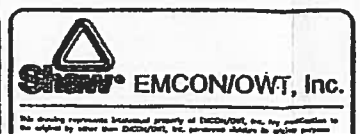
NOTES:

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2. ELEVATIONS ARE IN FEET ABOVE MEAN SEA LEVEL. COORDINATE SYSTEM BASED ON STATE GRID AND STATE DATUM (HAD 83).
3. REFER TO LFG SPECIALTIES DRAWINGS FOR DIMENSIONS OF FLARE FACILITY COMPONENTS.
4. FLARE FACILITY LOCATION BASED ON SURVEY DATED 9-13-2005.

*Richard D. Haughey*  
 RICHARD D. HAUGHEY  
 LICENSED PROFESSIONAL ENGINEER  
 NO. 8944-C  
 HAWAII USA



REV	DATE	DESCRIPTION	DRN BY	DES BY	CHK BY	APP BY



WASTE MANAGEMENT OF HAWAII, INC.  
 WAIMANALO GULCH SANITARY LANDFILL  
 OAHU, HAWAII

DRAWING NO.  
**6**  
 PROJECT NO.

1/2" = 0'

***Appendix D***

***Wellfield Monitoring Forms and Surface Emissions  
Monitoring Plan***

---

**SURFACE EMISSIONS MONITORING PLAN**  
**WAIMANALO GULCH SANITARY LANDFILL**  
**KAPOLEI, HAWAII**

Prepared for  
Waste Management of Hawaii, Inc.  
March 2006

Prepared by  
Shaw Environmental, Inc.  
2360 Bering Drive  
San Jose, CA 95131-1121

Project 117354



## LANDFILL SURFACE EMISSIONS MONITORING PLAN

---

This surface emissions monitoring plan (SEMP) is submitted in compliance with the requirements of the Code of Federal Regulations, Title 40 (40 CFR) Part 60, Subpart WWW.

The landfill to be monitored is the Waimanalo Gulch Sanitary Landfill (Landfill), an active municipal solid waste landfill located in Kapolei, Hawaii and operated by Waste Management of Hawaii, Inc. (WMH), a wholly owned subsidiary of Waste Management, Inc. (WMI). A LFG collection and control system (GCCS) was installed at the Landfill in 2005 and is in continuous operation. Surface emissions will be monitored quarterly, as required by the regulations, the Hawaii Department of Health (DOH), and as described in this monitoring plan.

The total permitted landfill disposal area is 58.9 acres. Of this area, an approximate 53-acre footprint has been filled to date. None of the landfill area has been formally closed to date. Final cover placement will proceed in phases as fill elevations reach final grades.

### SAMPLING METHODS AND PROCEDURES

The purpose of surface emissions monitoring is to ensure that the operation of the GCCS results in total organic compound emissions less than 500 parts per million by volume (ppmv, measured as methane concentrations above background) at the landfill surface. Landfill areas with steep side slopes (25 percent or greater) or other dangerous areas (roads, active area, truck traffic areas, asbestos areas) are excluded from surface monitoring. The following proposed methods and procedures for surface emissions monitoring satisfy 40 CFR Part 60.

- An organic vapor analyzer, flame ionization detector, or other portable monitor capable of detecting 500 ppmv of methane in air [meeting the requirements of 40 CFR 60.755(d) and applicable requirements of USEPA Reference Method 21 (40 CFR 60, Appendix A)] will be used to determine the total organic compound concentration at each sampling point. The instrument will be calibrated according to the manufacturer's recommendations, using a zero gas standard and a methane standard with a nominal concentration of 100 to 500 ppmv in air. The instrument will be calibrated before and after each monitoring period.
- Sampling will be performed during typical meteorological conditions.
- The background concentration will be determined by taking both upwind and downwind ambient air readings at approximately 6 feet above ground surface. These reading shall be taken outside the boundary of the Landfill at a distance of at least 98 feet (30 meters) from the waste limit. The background concentration will be the average of the two ambient air readings.

- The actual monitoring of the surface emissions must be performed in accordance with Section 2.3.1 of Method 21 of Appendix A of the NSPS. The detector probe inlet should be positioned 2 inches (5 centimeters) from the ground surface.
- A pattern of parallel lines space approximately 98 feet (30 meters) apart will be established over the majority of the surface area of the Landfill that contains buried refuse. The zone of waste interface with undisturbed native soil will also be monitored. According to 40 CFR Part 60, Section 60.53 (c)(d), areas with steep slopes or dangerous areas will not be monitored. The anticipated pattern for collecting the surface emission data is presented in the attached Drawing.
- The technician will walk the designated path, recording analyzer results at approximately 98 foot (30 meters) intervals. If the meter shows an increase in the reading above the ambient background concentration, the location of the landfill where the leakage is indicated must be slowly surveyed until the location with the maximum meter reading is obtained. The probe inlet must remain at the location of this maximum reading for approximately two times the instrument response time. Only exceedances of 500 ppmv or more (above background) and over 5 seconds in duration, or remonitoring of prior exceedances, will be recorded during the surface monitoring.
- Any cracks, holes, breaches noted in the surface along the designated path or at the interface with undisturbed native soil will be monitored.
- Any reading of 500 ppmv or more above background will be recorded as an exceedance. The location of the exceedance will be marked and recorded. Cover maintenance or adjustments to the GCCS will be made and the location will be re-monitored within 10 calendar days of the initial exceedance. Corrective action and remonitoring will be repeated, if required. If the re-monitoring of the location shows a third exceedance, additional control measures will be taken within 120 days of DOH approval. A proposed corrective action plan and corresponding timeline will be submitted to the DOH for approval for any location where the monitored concentration of total organic compounds equals or exceeds 500 ppmv above background three times within a quarterly period.
- For exceedance locations that maintain total organic compound concentrations below the 500 ppmv standard during the second or third remonitoring events, remonitor the location within one month of the initial exceedance. If the results are below the 500 ppmv standard, return to the routine monitoring schedule. If an exceedance is detected, re-initiate corrective actions and remonitoring as outlined above.

## FREQUENCY

Surface Emissions Monitoring will be performed quarterly, for the entire landfill.

## RECORDKEEPING

Record keeping requirements for MSW landfills subject to the NSPS are contained in 40 CFR 60.758 "Recordkeeping Requirements." Records must be stored on-site and be readily accessible in either a paper or electronic format. Per 40 CFR 60.758(e), readily accessible records of each surface monitoring exceedance shall be kept for at least five years. These records shall include the location and reading of the exceedance, as well as the results of the follow-up readings in the subsequent months (whether or not these follow-up readings were exceedances), the action taken to the repair of the excess, and the date of repair. Sample recordkeeping forms are attached.

## ALTERNATE METHODS

In accordance with the NSPS, the operator proposes the following alternatives:

- excluding dangerous areas from surface emissions monitoring, including public-travel access roads, waste disposal or processing areas with ongoing filling or processing activities, truck and heavy equipment traffic and work areas, and slopes steeper than or equal to 4:1 (25 percent)
- between the analyzer readings at 30 meter intervals, the SEM instrument probe inlet will be held as close as possible to 5 to 10 centimeters (2 to 4 inches) from the ground surface, or at the top of the established cover vegetation, to minimize detector failure and monitoring interruptions. With a flame ionization detector (FID), debris such as grass or dirt can plug the probe tip causing the detector flame to go out. Once the flame is out the entire start-up and calibration procedure must be repeated, typically requiring up to 30 minutes to re-establish consistent monitoring operation.

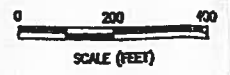


**NOTES:**

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2. ELEVATIONS ARE IN FEET ABOVE MEAN SEA LEVEL. COORDINATE SYSTEM BASED ON STATE GRID AND STATE DATUM (WAD 63), ZONE 1.
3. DUE TO FILLING ACTIVITIES SURFACE EMISSIONS MONITORING PATHS MAY BE ALTERED TO AVOID AREAS PRESENTING HEALTH AND SAFETY ISSUES.
4. A DETAILED DRAWING SHALL BE PROVIDED TO THE OWNER IF THERE ARE SIGNIFICANT DEVIATIONS FROM THE PROPOSED PLAN.
5. AREAS PRESENTING HEALTH AND SAFETY CONCERNS, SUCH AS STEEP SLOPES, OPEN FACES, ETC., MAY NOT BE MONITORED IN ACCORDANCE WITH 40 CFR 60.763(d).
6. ALL SURFACE EMISSIONS MONITORING SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 4.3.1 OF METHOD 21 OF APPENDIX A OF 40 CFR SECTION 60.763.
7. LOCATIONS OF ANY AND ALL EXCEEDANCES SHALL BE RECORDED BOTH IN THE FIELD AS WELL AS IN THE MONITORING EVENT DOCUMENTATION.

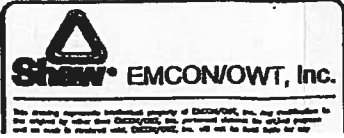
**LEGEND**

- EXISTING CONTOURS
- - - PROPERTY LINE
- - - APPROXIMATE CELL DIVISION
- - - PERMITTED LANDFILL FOOTPRINT
- PERMETER SEM PATH
- INTERIOR SEM PATH
- △ CONTROL POINT
- GAS EXTRACTION WELL



REV	DATE	DESCRIPTION	OWN BY	DES BY	CHK BY	APP BY

DATE OF ISSUE:      OWN BY: J. Joffe      CHK BY: E. Koroma



WASTE MANAGEMENT, INC.  
 WAIMANALO GULCH LANDFILL  
 OAHU, HAWAII

**SURFACE EMISSIONS MONITORING PLAN**

DRAWING NO.      "      "

PROJECT NO.

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***Appendix D***

***Wellfield Monitoring Forms and Surface Emissions  
Monitoring Plan***

---

**SURFACE EMISSIONS MONITORING PLAN**  
**WAIMANALO GULCH SANITARY LANDFILL**  
**KAPOLEI, HAWAII**

Prepared for  
Waste Management of Hawaii, Inc.  
March 2006

Prepared by  
Shaw Environmental, Inc.  
2360 Bering Drive  
San Jose, CA 95131-1121

Project 117354

## **LANDFILL SURFACE EMISSIONS MONITORING PLAN**

---

This surface emissions monitoring plan (SEMP) is submitted in compliance with the requirements of the Code of Federal Regulations, Title 40 (40 CFR) Part 60, Subpart WWW.

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Record keeping requirements for MSW landfills subject to the NSPS are contained in 40 CFR 60.758 "Recordkeeping Requirements." Records must be stored on-site and be readily accessible in either a paper or electronic format. Per 40 CFR 60.758(e), readily accessible records of each surface monitoring exceedance shall be kept for at least five years. These records shall include the location and reading of the exceedance, as well as the results of the follow-up readings in the subsequent months (whether or not these follow-up readings were exceedances), the action taken to the repair of the excess, and the date of repair. Sample recordkeeping forms are attached.

## **ALTERNATE METHODS**

In accordance with the NSPS, the operator proposes the following alternatives:

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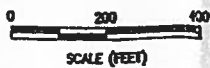


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7. LOCATIONS OF ANY AND ALL EXCEEDANCES SHALL BE RECORDED BOTH IN THE FIELD AS WELL AS IN THE MONITORING EVENT DOCUMENTATION.

**LEGEND**

- EXISTING CONTOURS
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- - - APPROXIMATE CELL DIVISION
- - - PERMITTED LANDFILL FOOTPRINT
- PERMETER SEM PATH
- - - INTERIOR SEM PATH
- ▲ CONTROL POINT
- GAS EXTRACTION WELL



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**WASTE MANAGEMENT, INC.**  
**WAIMANALO GULCH LANDFILL**  
**OAHU, HAWAII**

**SURFACE EMISSIONS MONITORING PLAN**

DRAWING NO.      PROJECT NO.

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**QUARTERLY MONITORING REPORT  
FOR  
JANUARY – MARCH, 2008  
WAIMANALO GULCH SANITARY LANDFILL  
KAPOLEI, OAHU, HAWAII**

Prepared for:

**Waste Management of Hawaii**  
92-460 Farrington Highway  
Kapolei, Hawaii 96707

Prepared by:

**Earth Tech, Inc.**  
841 Bishop St., Suite 500  
Honolulu, Hawaii 96813

June 12, 2008

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## ACRONYMS AND ABBREVIATIONS

°C	degree Celsius
µg/L	micrograms per liter
µmhos/cm	micromhos per centimeter
CaCO <sub>3</sub>	calcium carbonate
CFR	Code of Federal Regulations
COC	chain of custody
COD	chemical oxygen demand
CUSUM	cumulative sum
DOH	Department of Health, State of Hawaii
EC	electrical conductivity
ft.	feet
ID	identification
meq/L	millequivalent per liter
mg/L	milligrams per liter
MS	matrix spike
MSD	matrix spike duplicate
msl	mean sea level
MSW	municipal solid waste
N	Nitrogen
ng/L	nanograms per liter
PCB	polychlorinated biphenyl
pH	hydrogen ion concentration
PQL	practical quantitation limit
PVC	polyvinyl chloride
QA/QC	quality assurance/quality control
RPD	relative percent difference
RL	reporting limit
SVOC	semi-volatile organic compound
Test America-Denver	Test America, Inc. Analytical Laboratory, Denver, Colorado
TDS	total dissolved solids
TOC	total organic carbon
USGS	United States Geological Survey
VOA	volatile organic analysis
VOC	volatile organic compound
WGSL	Waimanalo Gulch Sanitary Landfill
WMH	Waste Management of Hawaii

## 1.0 INTRODUCTION

This report presents quarterly groundwater and leachate monitoring results for the Waimanalo Gulch Sanitary Landfill (WGSL). Groundwater and leachate samples representing the January 1, 2008 – March 31, 2008 quarter were collected from six monitoring wells and three leachate sumps on March 17 and 18, 2008. Earth Tech has prepared this report for Waste Management of Hawaii (WMH) for submittal to the State of Hawaii Department of Health (DOH).

### 1.1 BACKGROUND AND PURPOSE

The WGSL is an active municipal solid waste (MSW) landfill, which began operations in 1989. The facility is owned by the City and County of Honolulu and operated by WMH. Groundwater monitoring for the WGSL was conducted semi-annually from October 9, 1996 until June 30, 2005, in accordance with facility permit requirements and the *Groundwater and Leachate Monitoring Plan* (the Monitoring Plan) dated October 7, 1995, and revised in June 1997 (RUST 1997).

In a letter dated July 27, 2005 (DOH 2005), the DOH requested quarterly groundwater and leachate monitoring, and analysis of an expanded list of constituents (described in Appendix II of Subtitle D, 40 Code of Federal Regulations [CFR] 258), in addition to the detection monitoring parameters listed in the Monitoring Plan. In accordance with Hawaii Administrative Rules 11.58.1 (DOH 1994), the Monitoring Plan, and the July 27, 2005 DOH letter, quarterly groundwater monitoring at the WGSL began with the period of July 1 – September 30, 2005. Field and laboratory results for each monitoring period are submitted to the DOH in quarterly monitoring reports. A Revised Groundwater and Leachate Monitoring Plan (Geosyntec 2007) was prepared by Geosyntec Consultants, Inc. and submitted to the DOH on August 17, 2007. In a letter dated February 20, 2008, the DOH granted approval of the Modification of Solid Waste Management Permit No. LF 0054-02. Section I paragraph 10 of the permit modification states "the permittee shall implement the Groundwater and Leachate Monitoring Plan dated August 2007." The first quarter 2008 sampling event was conducted in accordance with the Revised Monitoring Plan (Geosyntec 2007), Solid Waste Management Permit No. LF 0054-02, and the December 7, 2007 settlement agreement between the DOH and WMH (DOH 2007).

### 1.2 ORGANIZATION AND SCOPE OF THE REPORT

The remainder of this report is organized into four sections, as follows:

- Section 2.0, Site Information, provides background information pertinent to site conditions at the WGSL;
- Section 3.0, Summary of Monitoring Activities, describes the field and laboratory activities performed during the quarterly monitoring period;
- Section 4.0, Summary of Monitoring Results, summarizes the results of the field measurements and laboratory analyses conducted for the quarterly monitoring event;
- Section 5.0, Summary and Conclusions, presents a summary of findings and conclusions for the quarterly monitoring event.

## 2.0 SITE INFORMATION

This section presents site information pertinent to the groundwater monitoring program at the WGS. This section is organized into four parts, as follows:

- Site Location, Layout, and Operational History
- Geologic Setting
- Hydrogeologic Setting
- Groundwater Geochemistry

### 2.1 SITE LOCATION, LAYOUT, AND OPERATIONAL HISTORY

The WGS is located on the southwest side of the Island of Oahu, Hawaii. The facility occupies a portion of a rugged, southwest-sloping coastal canyon (Waimanalo Gulch) and extends approximately three-quarters of a mile up-canyon (northeast) from Farrington Highway. At its nearest point, the WGS facility boundary is approximately 800 feet from the Pacific Ocean. The site location and topography are shown on Figure 1.

The WGS property covers a total of 198.6 acres. The site is long and narrow, approximately 7,000 feet in length with a width ranging from 820 feet on the Farrington Highway frontage to about 1,900 feet at the widest point. The entry road at Farrington Highway is approximately 60 feet above mean sea level (msl), and the extreme northeast corner of the property is at an elevation of 990 feet above msl. Natural terrain on the site slopes upward at about 8 percent at the lower end, increasing to about 18 percent toward the upper end of the property.

The landfill office and scale house are located at the southern end of the facility, north of Farrington Highway. Currently, 78.9 acres of the property are permitted for landfill activities, of which approximately 58.9 acres are designated for non-hazardous MSW disposal, and 20 acres receive incinerator ash (combustion residue) from the Honolulu Program of Waste to Energy Recovery (H-Power) plant. The ash monofill occupies the southern portion of the WGS; the MSW unit occupies the topographically higher (northern) portion of the facility (Figure 2).

Older portions of both disposal units are composite lined; including 3 feet of clay overlain by a high-density polyethylene geomembrane. Newer portions of both disposal units are equipped with liner systems that meet Subtitle D regulatory requirements. Both liner types include overlying drainage layers that facilitate the migration of leachate to collection sumps.

### 2.2 GEOLOGIC SETTING

The volcanic rocks encountered in borings and exposed on slopes at the WGS are part of the lower member of the Wai'anae Volcanic Series (TNWRE 1993). The lava flows include both 'a'a and pahoehoe flows ranging from aphanitic to porphyritic in texture. Coloring of the rock varies from grey to reddish grey to red, and the texture varies widely from highly vesicular to dense and fine-grained. South of the WGS, the volcanic rocks are overlain by a coastal wedge of younger carbonate marine rocks commonly referred to as the "caprock."

Based on observations made during drilling and down-hole video logs of borings drilled in October 2006 for monitoring wells MW-10 and MW-11, lava flows range in thickness from 3 to 20 feet thick, and loose clinker zones between flows comprise approximately 20 percent of the volcanic sequence (Geosyntec 2007).

The Monitoring Plan (RUST 1997) reports that United States Geological Survey (USGS) personnel identified a near vertical dike striking between about 15 and 20 degrees west of north, located at the approximate midpoint of the WGS property. Additional dikes have been identified by visual observation during excavation activities. Two dikes were identified during the construction of Cell E1

(A-Mehr Inc. 2003). In addition, recent geologic reconnaissance has confirmed the presence of dikes to the north of the site (Mink & Yuen and Knight Enterprises 2006). The dikes trend predominantly north/northwest, and when projected to the southeast, intersect portions of the northern and northeastern cells of the existing landfill.

Additional hydrogeologic investigations have evaluated the potential influence of the dikes on groundwater flow in the upper portions of Waimanalo Gulch, beyond the footprint of the landfill. These geologic features have been determined to have no influence on groundwater flow at the facility (Golder 2007).

### 2.3 HYDROGEOLOGIC SETTING

Groundwater under the WGSL is present within the lower and middle members of the Waianae Volcanic Series, which dip gently towards the coast (southwest) (Geosyntec 2007). In the vicinity of the lower portion of the WGSL, the water table elevation is approximately 4 feet above msl and is very flat. The five monitoring wells around the margin of the toe of the landfill are screened across first groundwater. As a consequence of the topographic relief, depths to groundwater observed in the monitoring wells range from 57 to 471 feet. Table 1 provides elevation, depth, and screen interval information for the monitoring wells.

**Table 1: Well Construction Details and Groundwater Elevation Data**

Well ID	Well Casing		Length of Screen Interval (ft)	Total Well Depth (ft-bus)	Elevation of Top of Well Head <sup>a</sup> (ft-msl)	Depth to Groundwater Surface <sup>b</sup> (ft bgs)	Elevation of Groundwater Surface (ft-msl)
	Type	Diameter (Inches)					
MW-02M	PVC	2	15	82.6	73.85	70.00	3.85
MW-03M	PVC	2	18	84.6	77.18	73.41	3.77
MW-07	PVC	2	30	217.0	202.42	198.69	3.73
MW-10	PVC	2	20	134.0	123.48	119.59	3.89
MW-11	PVC	2	20	67.0	61.13	57.23	3.90
MW-12	PVC	2	20	488.0	475.48	470.56	4.92

Note: Well construction details for MW-02M, MW-03M, and MW-07 are from the WGSL Monitoring Plan (RUST 1997). Well construction details for MW-10 and MW-11 are from a Waste Management letter to the DOH dated November 3, 2006. Well construction details for MW-12 are from a letter from Golder Associates dated August 2007.

bgs below ground surface

ft feet

ID identification

PVC polyvinyl chloride

<sup>a</sup> Top of well head elevations are from the October 2006 survey and represent the top of Well Wizard PVC cap for MW-02M, MW-03M, and MW-07. The elevations for MW-10, MW-11, and MW-12 represent the top of PVC casing. MW-10 and MW-11 were surveyed in October 2006. MW-12 was surveyed on September 11, 2007.

<sup>b</sup> The depth to groundwater measurements were taken on March 17, 2008.

The marine sediments of the Ewa Plain to the south and east form a low permeability caprock which inhibits groundwater discharge to the ocean south and east of the WGSL. However, the caprock is reportedly absent along the coast to the west and northwest of Waimanalo Gulch, in the area of Kahe State Park (Geosyntec 2007). The confining caprock appears to control the westward flow of groundwater, resulting in discharge to the Pacific Ocean along the shoreline west to northwest of the WGSL. Salinity measurements of ocean water along this stretch of coastline performed by the USGS and Tom Nance Water Resource Engineering in 1991 are consistent with major discharge of fresh groundwater in this area (RUST 1993, 1997; Earth Tech 2006).

Water levels in monitoring wells at the WGSL are tidally influenced. A tidal influence study was conducted at the WGSL from November 8 to 14, 2005. Synchronized groundwater level measurements were recorded with transducers and data loggers at monitoring wells MW-02M, MW-03M, and MW-07. The purpose of the study was to investigate the effects of surface water



and/or tidal fluctuation on the hydraulic gradient beneath the toe of the WGSL. All three of the monitoring wells showed clear tidal signatures and it was concluded that that no significant barrier to groundwater flow exists between the toe-area of the WGSL and the Kahe Park area of the Waianae coast. Hydrographs of monitoring wells MW-03M, MW-02M, and MW-07 showed that water levels in wells MW-02M and MW-03M were higher than at MW-07 during all phases of the tidal cycle, which indicated localized generally northward groundwater flow (Earth Tech 2005).

Groundwater level data for monitoring wells MW-02M, MW-03M and MW-07 compiled from June 2005 to April 2006 indicated apparent groundwater flow directions ranging from south to northeast. The apparent changes in flow directions indicated by the MW-02M, MW-03M and MW-07 water level data may have been attributable to seasonal variations in rainfall and/or local recharge or the limited spatial variability of the monitoring well network, which, at the time, included only wells MW-02M, MW-03M, and MW-07 (GeoSyntec 2007). As the hydraulic gradient data seemed anomalous from a regional perspective, another tidal study incorporating the two new monitoring wells (MW-10 and MW-11) was conducted in November 2006.

On November 17, 2006, all five existing monitoring wells (MW-02M, MW-03M, MW-07, MW-10, and MW-11) were instrumented with transducers and data loggers programmed to record water levels each minute. In addition, a transducer was installed temporarily at the margin of an ocean lagoon at the end of Olani Street at Ko `Olina. Three days later, on November 20, 2006, the data loggers were downloaded and reprogrammed to record water levels every hour for on-going long-term monitoring.

The water level data recorded during the three day period were processed using a standard filtering method for tidal data (Serfes 1991; Zawadzki et al. 2002). First, 71 hours of regularly recorded data were averaged using a 25-hour sliding window. Then, this set of 48 averages was averaged using a 24-hour sliding window, which yielded 25 means. Then the mean of the second set of averages provided a single value that represented the average water level for hour 36 of the 71-hour period.

Tidal response was very similar at all five monitoring wells. The amplitude of tidal response recorded at the monitoring wells varied from 0.34 to 0.41 feet. The tidal amplitude recorded in the sea at Ko `Olina was 3.36 feet. The tidal efficiency of the aquifer (ratio of tidal amplitude in the wells to that of the sea) ranged from 10.5 to 12.6 percent. The lag between tidal response recorded in the wells and tides in the sea at Ko `Olina ranged from 2.5 to 3.0 hours. These results indicate that manual water level measurements recorded at the monitoring wells over a period of 1-2 hours should provide data that can be used to calculate representative hydraulic gradients. Rigorous averaging of tidal influence is not necessary to evaluate groundwater flow direction.

During a study of the site hydrology by Geosyntec, the lowest water level was recorded in monitoring well MW-07, which suggests local northwestward groundwater flow. However, the hydraulic gradient indicated by water level data from monitoring wells MW-10, MW-02M, and MW-03M (without data from well MW-07), suggested that groundwater flow was westerly, which is consistent with the regional data and the general conceptual hydrogeologic model. As noted previously (Earth Tech 2006), groundwater elevations at monitoring wells MW-02M and MW-03M, which are near the surface water detention pond, may be elevated due to local recharge. Groundwater levels near MW-11 may also be locally elevated due to irrigation and leakage from WGSL landscaping irrigation plumbing near Farrington Hwy. Groundwater flow in the vicinity of monitoring MW-07 is also likely directed generally toward the west.

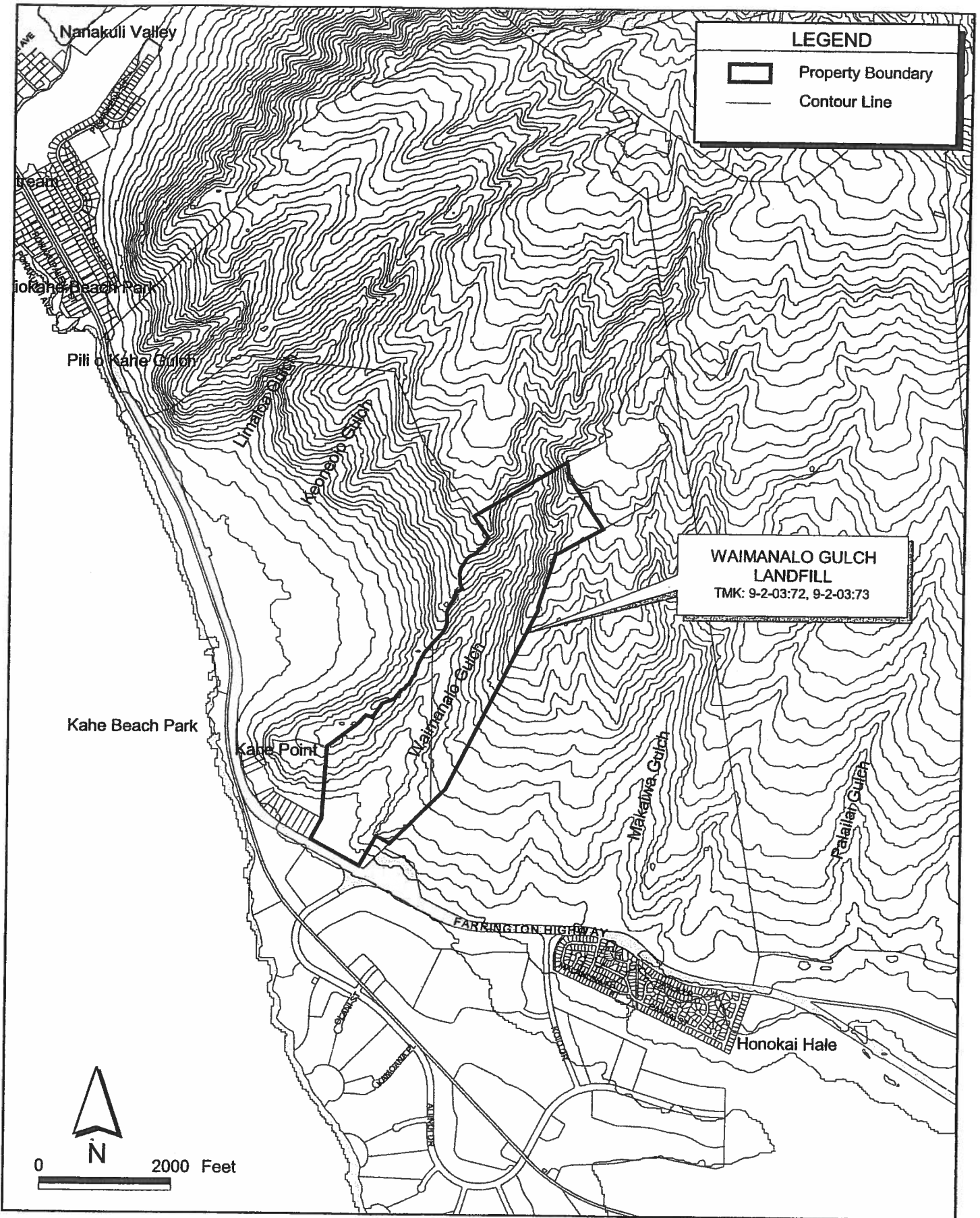
A sixth monitoring well (MW-12), located on the east side of MSW Cell E3, was completed at the end of July 2007. The March 17, 2008 water level measurements representing all six wells (MW-02M, MW-03M, MW-07, MW-10, MW-11, and MW-12) indicate that the groundwater flow direction is generally toward the west, as shown on Figure 2. This general flow direction is consistent with the findings of previous monitoring events completed after MW-10 and MW-11 were added to the monitoring network. As shown on Figure 2, in the upper reaches of the canyon, groundwater flows toward the southwest, i.e., roughly parallel to the thalweg of the canyon. However, as noted above,

the volcanic rocks directly south of the WGSL are overlain by a coastal wedge of sedimentary deposits consisting of relatively low permeability carbonate rocks (caprock). The low permeability caprock retards the southwestward migration of groundwater in this area and tends to deflect the flow of groundwater in the lower reaches of the canyon toward the west.

All six of the WGSL monitoring wells have been equipped with transducers and data loggers to provide the water level data needed to evaluate the predominant groundwater flow direction, and assess the influence of the tides and seasonal variations in groundwater recharge rates on flow direction and velocity.

## 2.4 GROUNDWATER GEOCHEMISTRY

The inorganic geochemistry of groundwater beneath the WGSL is fairly complex, reflecting both the facility's coastal location and proximity to the coastal caprock. Monitoring wells at the WGSL are screened within a transitional groundwater zone in which mixing of freshwater and seawater occurs. The groundwater is a sodium-magnesium-calcium-chloride (Na-Mg-Ca-Cl) type, which generally reflects this mixing of freshwater and seawater. Total dissolved solid (TDS) concentrations in monitoring wells MW-03M and MW-07 are consistently lower than in monitoring well MW-02M, a condition that is also consistent with the facility's position within the coastal transition zone. The relative percentage of dissolved calcium in groundwater from monitoring well MW-02M historically has also been slightly higher than that in groundwater from monitoring wells MW-03M and MW-07. Monitoring well MW-02M is closer to the caprock formation (which consists primarily of calcium carbonate) than monitoring wells MW-03M and MW-07; therefore, the higher dissolved calcium concentrations are likely attributable to calcium released from the caprock. The geochemical data representing MW-12 are consistent with the distance from the well to the ocean shoreline and the caprock formation (e.g., relatively low calcium, sodium, magnesium, and chloride concentrations).



REFERENCE: C:\GIS\Waimanalo\_Gulch\Av\_Proj\waimanalo\lanfill.apr  
 JUT; Fig 1 Site Location  
 DATE: Jul 7, 2005 9:48 AM

**Figure 1**  
**Site Location Map**  
**Waimanalo Gulch Sanitary Landfill**  
**Kapolei, Hawaii**

WELL SURVEY DATA (OCTOBER 2006)

WELL	MW-02M	MW-03M	MW-07	MW-10	MW-11	MW-12
NORTHING	66,879.36	67,383.32	68,092.30	67,186.53	66,570.31	69,295.97
EASTING	456,496.80	456,311.18	456,723.91	457,050.04	456,821.29	458,807.12
TOP PVC CASING	-	-	-	123.48	61.13	475.48
TOP PVC HEAD	73.85	77.18	202.42	-	-	-

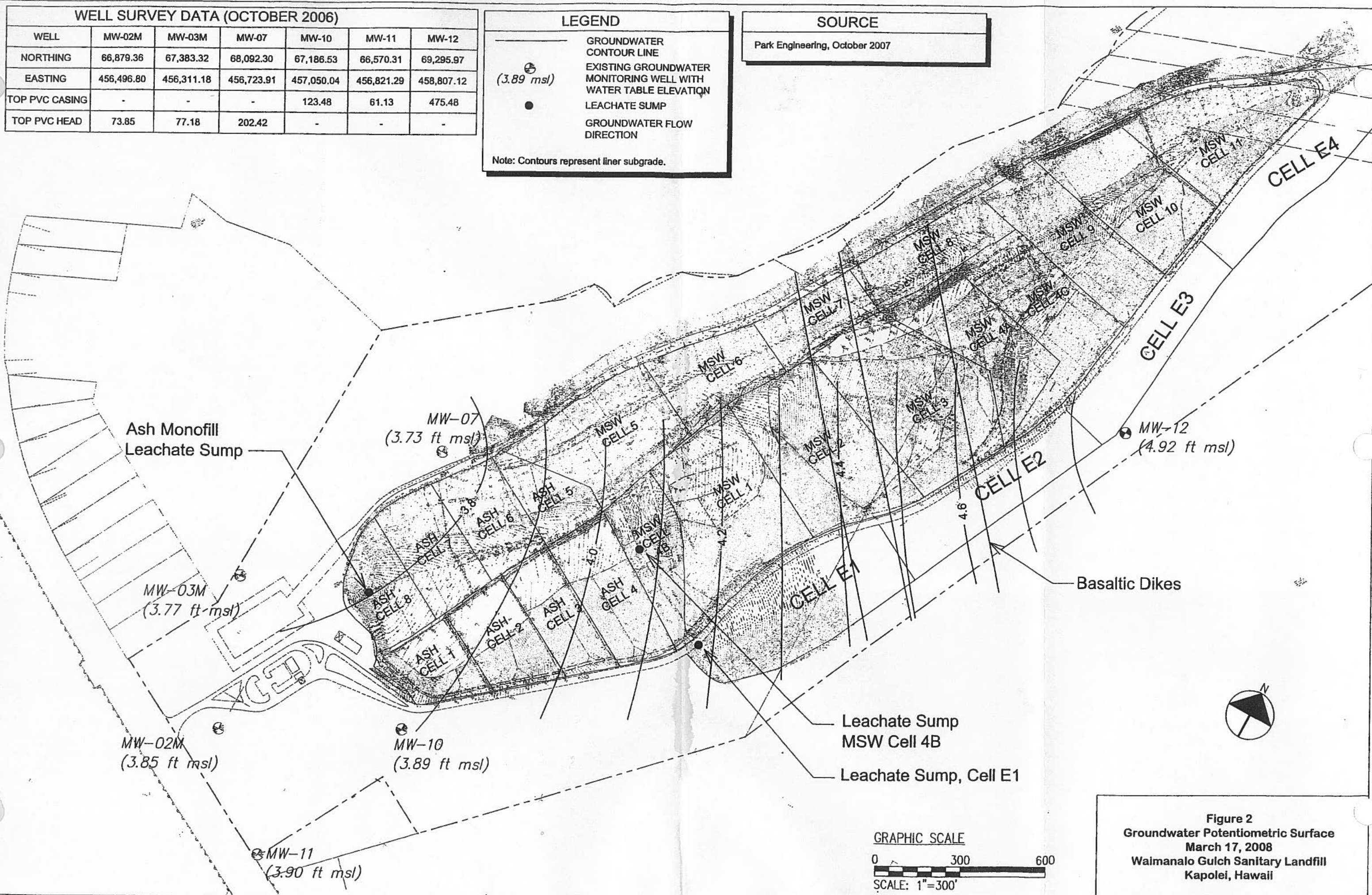
LEGEND

- GROUNDWATER CONTOUR LINE
- EXISTING GROUNDWATER MONITORING WELL WITH WATER TABLE ELEVATION
- LEACHATE SUMP
- GROUNDWATER FLOW DIRECTION

Note: Contours represent liner subgrade.

SOURCE

Park Engineering, October 2007



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Figure 2  
Groundwater Potentiometric Surface  
March 17, 2008  
Waimanalo Gulch Sanitary Landfill  
Kapolei, Hawaii



### 3.0 SUMMARY OF MONITORING ACTIVITIES

This section describes the WGS� quarterly groundwater monitoring field activities and laboratory analytical results. This section is organized into 2 parts, as follows:

- Field Monitoring Activities
- Summary of Laboratory Analyses

#### 3.1 FIELD MONITORING ACTIVITIES

The first quarter groundwater and leachate sampling activities were performed by Earth Tech personnel on March 17 and 18, 2008. The quarterly sampling activities included:

- Measurement of depth to groundwater in wells MW-02M, MW-03M, MW-07, MW-10, MW-11, and MW-12 (see Figure 2);
- Purging and sampling groundwater from wells MW-02M, MW-03M, MW-07, MW-10, MW-11, and MW-12;
- Sampling the leachate sumps at the ash monofill Cell 8, MSW Cell E1, and MSW Cell 4B;
- Collection of one duplicate groundwater sample (from MW-11), one field blank sample, and one trip blank sample for purposes of data quality assessment and validation;
- Preservation, packaging, and shipping of samples to the analytical laboratory.

The field monitoring activities were conducted in accordance with the *WMI Groundwater, Surface Water, and Leachate Sampling Guide* (WMI 2004), and the Revised Monitoring Plan. Table 1 presents the well construction details and groundwater elevation measurements.

##### 3.1.1 Depth to Groundwater Measurements

Depths to groundwater were measured prior to the start of well purging activities for monitoring wells MW-02M, MW-03M, MW-07, MW-10, MW-11, and MW-12. The water level measurements are presented in Table 1. All depth to groundwater measurements were made from a surveyed point at the top of the well head casing using a water level indicator with an electronic sounder. The reference elevations utilized in this report are based on surveys completed in October 2006 and September 2007 (MW-12). The survey information is provided in Appendix A.

##### 3.1.2 Collection of Groundwater Samples

On March 17, 2008, monitoring wells MW-02M, MW-03M, MW-07, MW-10, and MW-11 were purged and sampled using dedicated bladder pumps. According to the Revised Monitoring Plan (Geosyntec 2007), purging should be performed by either removing (typically) 3 to 5 well volumes of groundwater from the well or until field parameters including hydrogen ion concentration (pH), temperature, turbidity, and specific conductivity have stabilized (i.e., three consecutive measurements are within 10 percent of each other). Micro-purge techniques (a pumping rate of less than 1.0 liter/minute [DOH 2002]) were utilized. The pumping rates were approximately 0.5 liter/minute for all wells and therefore met the micro-purge requirements. Well inspection documentation, purging times, purged volumes, and field water quality measurements for each monitoring well are presented on the well inspection and field information forms in Appendix B. The groundwater samples for dissolved metals analysis were filtered in the field using in-line disposable 0.45 micron filters, transferred directly to "pre-preserved" sample containers, and submitted to Test America, Inc. Analytical Laboratory, Denver, Colorado (Test America-Denver) for laboratory analysis.

On March 18, 2008, the upgradient monitoring well MW-12 was sampled using a dedicated bladder pump employing the micro-purge techniques described above. Because of the depth to water in this

well (471 feet), a compressed nitrogen cylinder was needed to provide enough pressure to pump the sample water up to the top of the well.

### 3.1.3 Collection of Leachate Samples

There are three leachate sumps at the WGSL: the ash monofill leachate sump in Cell 8 (Ash Sump), the MSW Cell E-1 sump, and the MSW Cell 4B sump. Leachate levels in the Ash Sump and MSW Cell E-1 sump are currently monitored and recorded by WMH personnel.

Leachate samples were collected from the Ash Sump, MSW Cell E-1 Sump, and MSW Cell 4B Sump on March 18, 2008 for laboratory analyses, in accordance with to the Revised Monitoring Plan (Geosyntec 2007), the WMI *Groundwater, Surface Water, and Leachate Sampling Guide* (WMI 2004), and the DOH letter request (DOH 2005). Field parameters including pH, conductivity, and temperature were measured and are presented on the field information forms in Appendix B.

### 3.1.4 Quality Assurance/Quality Control (QA/QC) Samples

The QA/QC samples for the March 17 and 18, 2008 sampling events included one field duplicate sample, one field blank sample, and one trip blank sample. The field duplicate sample was collected from MW-11. The field blank sample was collected by filling the laboratory-supplied bottles with laboratory reagent-quality water near MW-10. The trip blank sample was supplied "pre-filled" by Test America-Denver and remained in the sample cooler during transport to and from the WGSL.

### 3.1.5 Sample Transport and Chain of Custody

The groundwater samples collected on March 17, 2008 were transported on ice to Earth Tech's warehouse and stored and secured in a refrigerator overnight. The samples were re-iced and shipped to Test America-Denver on March 18, 2008 via FedEx. Test America-Denver received the samples on March 20, 2008.

The MW-12 samples collected on March 18, 2008 were transported on ice to Earth Tech's warehouse and stored and secured in a refrigerator overnight. The samples were re-iced and shipped to Test America-Denver on March 19, 2008 via FedEx. Test America-Denver received the samples on March 21, 2008.

The leachate samples collected on March 18, 2008 were transported on ice to Earth Tech's warehouse and stored and secured in a refrigerator overnight. The samples were re-iced and shipped to Test America-Denver on March 19, 2008 via FedEx. Test America-Denver received the samples on March 21, 2008.

Chain of custody (COC) records accompanied the samples to the laboratory (Earth Tech's practice is to have one COC per shipping container). Copies of the COC records are included in Test America-Denver's analytical reports (see Appendix C).

## 3.2 SUMMARY OF LABORATORY ANALYSES

This section describes the laboratory analyses performed as part of the first quarter 2008 monitoring event.

### 3.2.1 Groundwater Sample Analyses

The groundwater samples collected from monitoring wells MW-02M, MW-03M, MW-07, MW-10, MW-11, and MW-12 were analyzed by Test America-Denver for the following parameters:

- Volatile organic compounds (VOCs) including all analytes listed in 40 CFR part 258 Appendix I.
- Dissolved metals

- Site-specific indicator parameters (dissolved sodium, TDS, and chemical oxygen demand [COD]) and supplemental parameters (total alkalinity, bromide, calcium, chloride, magnesium, potassium, silicon, and sulfate)
- Other indicator parameters (ammonia as N, total organic carbon [TOC], nitrate+nitrite as nitrogen (N), bicarbonate as CaCO<sub>3</sub>, and carbonate as CaCO<sub>3</sub>)
- Recently installed well MW-12 was also analyzed for total metals to obtain an unfiltered metals background sample.

Table 2 summarizes the results of the groundwater analyses and indicates the laboratory methods used by Test America-Denver.

**Table 2: Summary of Groundwater Analytical Results**

GW Parameters	Analyte	Method	Unit	MW-02M	MW-03M	MW-07	MW-10	MW-11	MW-11 DUP	MW-12
VOCs	Acetone	SW846 8260B	µg/L	7.5 J	< 34	< 34	< 34	< 34	< 34	< 34
	Tetrachloroethene	SW846 8260B	µg/L	< 5	< 5	0.2 J	0.21 J	< 5	< 5	< 5
	Other Appendix I VOCs	SW846 8260B	µg/L	ND	ND	ND	ND	ND	ND	ND
Total Metals	Antimony	SW846 6010B	µg/L	—	—	—	—	—	—	< 60
	Arsenic	SW846 6020	µg/L	—	—	—	—	—	—	3.2 B
	Barium	SW846 6010B	µg/L	—	—	—	—	—	—	20 B J
	Beryllium	SW846 6010B	µg/L	—	—	—	—	—	—	< 5
	Cadmium	SW846 6010B	µg/L	—	—	—	—	—	—	0.61 B
	Calcium	SW846 6010B	µg/L	—	—	—	—	—	—	65,000 J
	Chromium	SW846 6010B	µg/L	—	—	—	—	—	—	160
	Cobalt	SW846 6010B	µg/L	—	—	—	—	—	—	4.2 B
	Copper	SW846 6010B	µg/L	—	—	—	—	—	—	7.5 B
	Iron	SW846 6010B	µg/L	—	—	—	—	—	—	1,300
	Lead	SW846 6010B	µg/L	—	—	—	—	—	—	< 5
	Magnesium	SW846 6010B	µg/L	—	—	—	—	—	—	86,000
	Manganese	SW846 6010B	µg/L	—	—	—	—	—	—	58
	Mercury	SW846 7470A	µg/L	—	—	—	—	—	—	< 0.2
	Nickel	SW846 6010B	µg/L	—	—	—	—	—	—	450
	Potassium	SW846 6010B	µg/L	—	—	—	—	—	—	,000
	Selenium	SW846 6020	µg/L	—	—	—	—	—	—	2 B
	Silicon	SW846 6010B	µg/L	—	—	—	—	—	—	35,000
	Silver	SW846 6010B	µg/L	—	—	—	—	—	—	< 25
	Sodium	SW846 6010B	µg/L	—	—	—	—	—	—	160,000 J
Thallium	SW846 6010B	µg/L	—	—	—	—	—	—	< 10	
Tin	SW846 6010B	µg/L	—	—	—	—	—	—	< 200	
Vanadium	SW846 6010B	µg/L	—	—	—	—	—	—	13 B	
Zinc	SW846 6010B	µg/L	—	—	—	—	—	—	11 B	
Dissolved Metals	Antimony	SW846 6010B	µg/L	< 60	< 60	< 60	< 60	< 60	< 60	< 60
	Arsenic	SW846 6020	µg/L	6.6 B	4 B	3.3 B	3.7 B	3.8 B	3.6 B	1.7 B
	Barium	SW846 6010B	µg/L	23 B	4.5 B	3.6 B	2.9 B	4 B	3.6 B	19 B
	Beryllium	SW846 6010B	µg/L	< 5	< 5	< 5	< 5	< 5	< 5	< 5
	Cadmium	SW846 6010B	µg/L	0.86 B	0.84 B	0.84 B	0.75 B	0.59 B	0.84 B	0.55 B
	Chromium	SW846 6010B	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10

GW Parameters	Analyte	Method	Unit	MW-02M	MW-03M	MW-07	MW-10	MW-11	MW-11 DUP	MW-12
Dissolved Metals (cont'd)	Cobalt	SW846 6010B	µg/L	< 50	< 50	< 50	< 50	< 50	< 50	3.9 B
	Copper	SW846 6010B	µg/L	< 25	< 25	< 25	< 25	< 25	< 25	< 25
	Iron	SW846 6010B	µg/L	< 100	< 100	< 100	< 100	< 100	< 100	53 B
	Lead	SW846 6010B	µg/L	< 5	< 5	< 5	< 5	< 5	< 5	< 5
	Manganese	SW846 6010B	µg/L	< 10	< 10	4 B	< 10	12	10	60
	Mercury	SW846 7470A	µg/L	—	—	—	—	—	—	< 0.2
	Nickel	SW846 6010B	µg/L	< 40	< 40	22 B	< 40	< 40	< 40	460
	Selenium	SW846 6020	µg/L	6	3.7 B	3.5 B	3.8 B	3.4 B	3.1 B	1.6 B
	Silver	SW846 6010B	µg/L	< 25	< 25	< 25	< 25	< 25	< 25	< 25
	Thallium	SW846 6010B	µg/L	4.9 B	< 10	5.6 B	< 10	< 10	< 10	5.1 B
	Tin	SW846 6010B	µg/L	—	—	—	—	—	—	< 200
	Vanadium	SW846 6010B	µg/L	17 B	16 B	13 B	16 B	16 B	16 B	9.8 B
	Zinc	SW846 6010B	µg/L	4.6 B	5.4 B	< 20	< 20	< 20	< 20	9.7 B
Site-specific Indicator parameters	Sodium	SW846 6010B	µg/L	900,000	470,000	360,000	390,000	350,000	360,000	170,000
	TDS	SM18 2540 C	mg/L	4,900 Q	2,300 Q	1,800 Q	1,900 Q	1,800 Q	1,800 Q	1100
	COD	MCAWW 410.4	mg/L	31 B G	13	8.3 B	4.8 B	7.9 B	6.2 B	10
Supplemental Indicator parameters	Total Alkalinity	SM18 2320 B	mg/L	230 J	180 J	160 J	170 J	170 J	170 J	180 J
	Bromide	MCAWW 300.0A	mg/L	8 G	4.9 G	2.9 G	3.1 G	2.8 G	2.9 G	1.7
	Calcium	SW846 6010B	µg/L	310,000	110,000	86,000	97,000	95,000	95,000	71,000
	Chloride	MCAWW 300.0A	mg/L	2,900 Q	1,300 Q	1,000 Q	1,100 Q	1,000 Q	1,000 Q	500 Q
	Magnesium	SW846 6010B	µg/L	350,000	150,000	120,000	120,000	110,000	110,000	83,000
	Potassium	SW846 6010B	µg/L	23,000	23,000	19,000	16,000	16,000	16,000	9,600
	Silicon	SW846 6010B	µg/L	28,000	32,000	33,000	33,000	31,000	31,000	33,000
	Sulfate	MCAWW 300.0A	mg/L	400 Q	190 Q	130 Q	150 Q	140 Q	140 Q	60 Q
Other Indicator Parameters	Ammonia as N	MCAWW 350.1	mg/L	0.051 B J	0.052 B J	0.056 B J	0.055 B J	0.057 B J	0.06 B J	0.046 B J
	TOC	SM18 5310B	mg/L	1.7	0.46 B	< 1	< 1	0.47 B	0.17 B	< 1
	Nitrate-Nitrite	MCAWW 353.2	mg/L	5.6	3.4	2.4	3	3.1	3.1	2.4
	Bicarbonate Alkalinity	SM18 2320 B	mg/L	230	180	160	170	170	170	180
	Carbonate Alkalinity	SM18 2320 B	mg/L	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Field Parameters	SC	Field	µmhos/cm	8.18	4.25	3.34	3.45	3.31	3.31	2.06
	pH	Field	pH unit	6.63	6.73	6.45	6.68	6.7	6.7	6.86
	Turbidity	Field	NTU	0	0	2	0	8	8	20
	Temperature	Field	°C	24.9	25.4	25.4	25.4	25.3	25.3	31

µg/L micrograms per liter

µmhos/cm microsiemens per centimeter

mg/L milligrams per liter

— Not analyzed.

&lt; Not detected above reporting limits (RLs).

B Estimated result. Result is less than practical quantitation limit (PQL).

G Elevated RL. The RL is elevated due to matrix interference.

Q Elevated RL. The RL is elevated due to high analyte levels.

J (Inorganic method) Method blank contamination. The method blank contains the target analyte at a reportable level.

J (Organic method) Estimated result. Result is less than the RL.

ND Not detected above RLs; RLs vary between analytes.

### 3.2.2 Leachate Sample Analyses

The leachate samples collected from the Ash Sump, MSW Cell E-1, and MSW Cell 4B Sump were analyzed by Test America-Denver for the following parameters:





- Appendix II of 40 CFR part 258 (VOCs, semivolatle organic compounds [SVOCs], pesticides, herbicides, dioxins, polychlorinated biphenyls [PCBs])
- Total metals
- Site-specific indicator parameters (dissolved sodium, TDS, and COD) and supplemental parameters (total alkalinity, bromide, calcium, chloride, magnesium, potassium, silicon, and sulfate)
- Other indicator parameters (ammonia as N, bicarbonate as CaCO<sub>3</sub>, carbonate as CaCO<sub>3</sub>, cyanide, nitrate+nitrite N, TOC, and total sulfide)

Table 3 summarizes the results of the leachate analyses, and indicates the laboratory methods used by Test America-Denver.

**Table 3: Summary of Leachate Analytical Results**

Leachate Parameters	Analyte	Method	Unit	4BSMP	ASHSMP	MSWE1
Appendix II VOCs	2-Butanone (MEK)	SW846 8260B	µg/L	15 J	210 J	9.3 J
	4-Methyl-2-pentanone	SW846 8260B	µg/L	4.4 J	< 100	4.1 J
	Acetone	SW846 8260B	µg/L	79	1,700	46 J
	Acetonitrile	SW846 8260B	µg/L	29 J	< 500	19 J
	Benzene	SW846 8260B	µg/L	6.2 J	< 50	2.6 J
	cis-1,2-Dichloroethene	SW846 8260B	µg/L	< 20	< 100	7.5 J
	Ethylbenzene	SW846 8260B	µg/L	11	< 50	5.4 J
	Methylene chloride	SW846 8260B	µg/L	< 10	< 50	< 10
	Toluene	SW846 8260B	µg/L	7.6 J	< 50	1.7 J
	Xylenes (total)	SW846 8260B	µg/L	23	< 100	7.6 J
	Other Appendix II VOCs	SW846 8260B	µg/L	ND	ND	ND
Appendix II SVOCs	2,4-Dimethylphenol	SW846 8270C	µg/L	42 J	< 300	< 200
	2-Methylnaphthalene	SW846 8270C	µg/L	19 J	< 300	< 200
	3-Methylphenol & 4-Methylphenol	SW846 8270C	µg/L	< 160	110 J	< 400
	Acenaphthene	SW846 8270C	µg/L	12 J	< 300	< 200
	Benzo(a)anthracene	SW846 8270C	µg/L	10 J	< 300	< 200
	Naphthalene	SW846 8270C	µg/L	110	< 300	< 200
	Phenol	SW846 8270C	µg/L	< 80	250 J	< 200
	Other appendix II SVOCs	SW846 8270C	µg/L	ND	ND	ND
Appendix II Pesticides	alpha-BHC	SW846 8081A	µg/L	0.0095 J COL	< 0.1	< 0.1
	Heptachlor epoxide	SW846 8081A	µg/L	< 0.5	0.13 J COL	< 0.5
	Other Appendix II Pesticides	SW846 8081A	µg/L	ND	ND	ND
Appendix II Herbicides	Appendix II Herbicides	SW846 8151A	µg/L	ND	ND	ND
Appendix II Dioxins	Appendix II Dioxins	SW846 8280A	ng/L	ND	ND	ND
Appendix II PCBs	Appendix II PCBs	SW846 8082A	µg/L	ND	ND	ND
Total Metals	Antimony	SW846 6010B	µg/L	7 B	16 B	4 B
	Arsenic	SW846 6010B	µg/L	110	25 B	37
	Barium	SW846 6010B	µg/L	1,600 J	2,600 J	1,000 J
	Beryllium	SW846 6010B	µg/L	< 5	< 25	< 5
	Cadmium	SW846 6010B	µg/L	0.58 B	< 25	1.1 B
	Chromium	SW846 6010B	µg/L	280	< 50	92
	Cobalt	SW846 6010B	µg/L	17 B	< 250	18 B
	Copper	SW846 6010B	µg/L	120	49 B	10 B
	Iron	SW846 6010B	µg/L	12,000	< 500	8,000

Leachate Parameters	Analyte	Method	Unit	4BSMP	ASHSMP	MSWE1
Total Metals (cont'd)	Lead	SW846 6010B	µg/L	12	36	< 5
	Manganese	SW846 6010B	µg/L	470	82	820
	Mercury	SW846 7470A	µg/L	< 0.2	0.97	< 0.2
	Nickel	SW846 6010B	µg/L	440	< 200	370
	Selenium	SW846 6010B	µg/L	< 5	< 25	< 5
	Silver	SW846 6010B	µg/L	< 25	< 120	< 25
	Thallium	SW846 6010B	µg/L	< 10	< 50	< 10
	Tin	SW846 6010B	µg/L	< 200	< 1000	< 200
	Vanadium	SW846 6010B	µg/L	210	< 250	83
	Zinc	SW846 6010B	µg/L	4300	< 100	26
Site-specific Indicator parameters	Sodium	SW846 6010B	µg/L	3,600,000 J	20,000,000 J	1,600,000 J
	TDS	SM18 2540 C	mg/L	15,000 Q	94,000 Q	7,000 Q
	COD	MCAWW 410.4	mg/L	5,600 Q	3,800 Q	2,200 Q
Supplemental Indicator Parameters	Total Alkalinity	SM18 2320 B	mg/L	2,500 J	600 J	2,200 J
	Bromide	MCAWW 300.0A	mg/L	38 Q	710 Q	26 Q
	Calcium	SW846 6010B	µg/L	74,000 J	10,000,000 J	94,000 J
	Chloride	MCAWW 300.0A	mg/L	6,600 Q	54,000 Q	2,600 Q
	Magnesium	SW846 6010B	µg/L	670,000	32,000	290,000
	Potassium	SW846 6010B	µg/L	260,000	5,800,000	170,000
	Silicon	SW846 6010B	µg/L	54,000	14,000 B	49,000
	Sulfate	MCAWW 300.0A	mg/L	2.9 B G	760 Q	2.6 B G
Other Indicator Parameters	Ammonia as N	MCAWW 350.1	mg/L	360 J Q	130 J Q	290 J Q
	Bicarbonate Alkalinity	SM18 2320 B	mg/L	2500	600	2200
	Carbonate Alkalinity	SM18 2320 B	mg/L	< 20	< 20	< 20
	Cyanide, Total	SW846 9012A	mg/L	0.0025 B	< 0.02	0.013 B
	Nitrate-Nitrite	MCAWW 353.2	mg/L	0.27 B G	0.2 B	0.29 B G
	TOC	SM18 5310B	mg/L	2,000 Q	1,100 Q	780 Q
	Total Sulfide	SM18 4500-S2 D	mg/L	< 0.5 G	< 0.5 G	< 0.5 G

< Not detected above reporting limits.

B Estimated result. Result is less than PQL.

COL More than 40% relative percent difference (RPD) between primary and confirmation column results. The lower of the two results is reported.

G Elevated RL. The RL is elevated due to matrix interference.

J (Inorganic method) Method blank contamination. The method blank contains the target analyte at a reportable level.

J (Organic method) Estimated result. Result is less than the RL.

ND Not detected above RLs; RLs vary between analytes.

ng/L nanogram per liter

PCB polychlorinated biphenyl

Q Elevated RL. The RL is elevated due to high analyte levels.

### 3.2.3 Field QA/QC Sample Analyses

The field duplicate was analyzed for the Appendix I VOCs, dissolved metals, and indicator parameters (see Section 3.2.1). The field blank and trip blank samples were analyzed for the 40 CFR 258 Appendix I VOCs only. Table 4 provides a comparison of analytical results for the original sample (MW-11) and duplicate sample (MW-11 DUP) in terms of relative percent differences (RPDs).

**Table 4: Comparison of Analytical Results for Original and Duplicate Groundwater Samples**

GW Parameters	Analyte	Method	Unit	MW-11	MW-11 DUP	RPD
Dissolved Metals	Arsenic	SW846 6020	µg/L	3.8 B	3.6 B	5
	Barium	SW846 6010B	µg/L	4 B	3.6 B	11
	Cadmium	SW846 6010B	µg/L	0.59 B	0.84 B	35
	Manganese	SW846 6010B	µg/L	12	10	18
	Potassium	SW846 6010B	µg/L	16,000	16,000	0
	Selenium	SW846 6020	µg/L	3.4 B	3.1 B	9
	Vanadium	SW846 6010B	µg/L	16 B	16 B	0
Site-specific Indicator Parameters	COD	MCAWW 410.4	mg/L	7.9 B	6.2 B	24
	Sodium	SW846 6010B	µg/L	350,000	360,000	3
	TDS	SM18 2540 C	mg/L	1,800 Q	1,800 Q	0
Supplemental Indicator Parameters	Calcium	SW846 6010B	µg/L	95,000	95,000	0
	Magnesium	SW846 6010B	µg/L	110,000	110,000	0
	Silicon	SW846 6010B	µg/L	31,000	31,000	0
Other Indicator Parameters	Ammonia as N	MCAWW 350.1	mg/L	0.057 B J	0.06 B J	5
	Bicarbonate Alkalinity	SM18 2320 B	mg/L	170	170	0
	Bromide	MCAWW 300.0A	mg/L	2.8 G	2.9 G	4
	Chloride	MCAWW 300.0A	mg/L	1,000 Q	1,000 Q	0
	Nitrate-Nitrite	MCAWW 353.2	mg/L	3.1	3.1	0
	Sulfate	MCAWW 300.0A	mg/L	140 Q	140 Q	0
	Total Alkalinity	SM18 2320 B	mg/L	170 J	170 J	0
	TOC	SM18 5310B	mg/L	0.47 B	0.17 B	94

B Estimated result. Result is less than PQL.

J (organic methods) Estimated result. Result is less than the RL.

J (inorganic method) Method blank contamination. The method blank contains the target analyte at a reportable level.

Q Elevated RL. The RL is elevated due to high analyte levels.

G Elevated RL. The RL is elevated due to matrix interference.

Table 5 summarizes the results of the laboratory analyses conducted for the field blank, trip blank, and method blank samples. Table 6 presents a summary of general data quality checks performed as part of the quarterly monitoring event.

**Table 5: Summary of Analytical Results for Field, Trip, and Method Blank Samples**

Analyte	Method	Unit	Sample Concentration		Field Blank	Method Blank	Trip Blank
			Max	Min			
<b>Leachate Indicator Parameters</b>							
Methylene chloride	SW846 8260B	µg/L	< 50	< 10	—	ND	0.35 J
Barium (Total)	SW846 6010B	mg/L	2.6 J	1 J	—	0.0026	—
Calcium (Total)	SW846 6010B	mg/L	10,000 J	74 J	—	0.0011	—
Sodium (Total)	SW846 6010B	mg/L	20,000 J	1,600 J	—	0.0011	—
Ammonia as N	MCAWW 350.1	mg/L	360 J	ND	—	0.032	—
Total Alkalinity	SM18 2320 B	mg/L	2,500 J	600 J	—	2	—
<b>Groundwater Indicator Parameters</b>							
Acetone	SW846 8260B	µg/L	5.6 J	5.6 J	5.6 J	ND	—
Barium (Total)	SW846 6010B	mg/L	0.020 J	0.020 J	—	0.0026	—
Calcium (Total)	SW846 6010B	mg/L	65 J	65 J	—	0.0011	—
Sodium (Total)	SW846 6010B	mg/L	160 J	160 J	—	0.0011	—
Ammonia as N	MCAWW 350.1	mg/L	0.046 J	0.046 J	—	0.032	—

Analyte	Method	Unit	Sample Concentration		Field Blank	Method Blank	Trip Blank
			Max	Min			
Total Alkalinity	SM18 2320 B	mg/L	180 J	180 J	—	1.9	—

— Not analyzed.  
 J (Organic method) Estimated result. Result is less than the RL.  
 J (Inorganic method) Method blank contamination. The method blank contains the target analyte at a reportable level.  
 ND not detected

**Table 6: Summary of General Data Quality Checks for Select Inorganic Monitoring Parameters**

Data Check	Analyte	Unit	4BSMP	ASHSMP	MSWE1	MW-02M	MW-03M	MW-07	MW-10	MW-11	MW-11 DUP	MW-12
Lab TDS vs Calculated TDS	Lab TDS <sup>a</sup>	mg/L	15,000	94,000	7,000	4,900	2,300	1,800	1,900	1,800	1,800	1,100
	Calculated TDS <sup>b</sup>	mg/L	13,898	86,116	7,151.6	5,126	2,436.9	1,891.9	2,063.1	1,898.8	1,908.9	1,098.7
	RPD <sup>c</sup>	%	8	9	2	5	6	5	8	5	6	0
Lab TDS/Field EC vs Calculated TDS/Field EC	Field EC	µmhos/cm	21.9	113.5	11.68	8.18	4.25	3.34	3.45	3.31	3.31	2.06
	Lab TDS/Field EC <sup>d</sup>	unitless	0.68	0.83	0.60	0.60	0.54	0.54	0.55	0.54	0.54	0.53
	Calc. TDS/Field EC <sup>d</sup>	unitless	0.63	0.76	0.61	0.63	0.57	0.57	0.60	0.57	0.58	0.53
Cation/Anion Balance	Total Anions <sup>e</sup>	meq/L	226.6	1,544.1	109.2	93.6	43.5	33.4	36.8	33.8	33.8	18.3
	Total Cations <sup>f</sup>	meq/L	215.4	1,371.6	98.2	83.4	38.3	29.8	31.7	29.0	29.5	17.767
	Balance <sup>g</sup>	%	2.5	5.9	5.3	5.8	6.3	5.7	7.5	7.6	6.9	1.4

% percent  
 EC electrical conductivity  
 meq/L millequivalent per liter  
 mg/L milligrams per liter  
<sup>a</sup> Value reported by Test America-Denver  
<sup>b</sup> Sum of major cations and anions mg/L  
<sup>c</sup> RPD = (absolute value(a-b))/((a+b)/2)\*10  
<sup>d</sup> Values for natural groundwater's typically range from 0.55 to 0.76  
<sup>e</sup> Ratio of mg/L vs. µmhos/cm  
<sup>f</sup> Sum of the reported chloride, sulfate, and total alkalinity concentration in meq/L  
<sup>g</sup> Sum of the reported calcium, magnesium, potassium, and sodium concentration in meq/L

**3.2.4 Laboratory QA/QC Sample Analyses**

The laboratory performed several analyses as part of its internal QA/QC program, including analysis of method blanks, laboratory control samples, matrix spike (MS) and matrix spike duplicate (MSD) samples. The results of these analyses are included in Test America-Denver's laboratory reports (Appendix C). The method blank results are summarized in Table 4.

## 4.0 SUMMARY OF MONITORING RESULTS

This section presents a summary of the groundwater and leachate monitoring results for the first quarter 2008 (January 1, 2008 – March 31, 2008). This section is organized into four parts, as follows:

- Groundwater Flow Direction and Velocity
- Evaluation of Overall Data Quality
- Results of Groundwater Analyses
- Results of Leachate Analysis

### 4.1 GROUNDWATER FLOW DIRECTION AND VELOCITY

Table 1 (Section 3.1) lists the depth-to-groundwater measurements taken at the WGSL on March 17, 2008. The table also lists the surveyed top of wellhead elevations and calculated groundwater elevations (relative to msl) for each monitoring well. As shown in Table 1, water table elevations in the monitoring wells ranged from approximately 3.73 to 4.92 feet msl.

Figure 2 shows the groundwater potentiometric surface based on the depth-to-groundwater measurements. In the upper reaches of the canyon, the direction of groundwater flow beneath the WGSL was generally toward the southwest (roughly parallel to the thalweg of the canyon). As noted in Section 2.3, the volcanic rocks directly south of the WGSL are overlain by a coastal wedge of sedimentary deposits consisting of relatively low permeability carbonate rocks (caprock). The low permeability caprock retards the southwestward migration of groundwater in this area and deflects the flow of groundwater in the lower reaches of the canyon toward the west.

The overall hydraulic gradient was approximately 0.0004 feet/foot, with an estimated flow velocity of approximately 3.0 feet per day<sup>1</sup>. The groundwater flow direction indicated by the March 17, 2008 measurements is consistent with the direction measured during the previous quarterly monitoring event (October 2007) (Earth Tech 2008).

### 4.2 EVALUATION OF OVERALL DATA QUALITY

This section summarizes the results of several analyses performed by the laboratory as part of its internal QA/QC program. These analyses include method blanks, laboratory control samples, MS, and MSD samples. The results of these analyses indicate that the data are accurate and usable.

#### 4.2.1 Sample Receiving and Holding Times

The groundwater samples collected during the March 17, 2008 sampling event were received by Test America-Denver appropriately chilled (between 2.3 and 3.1 degrees Celsius [°C]) on March 20, 2008. All samples arrived in good condition. All holding times for the groundwater samples were met.

The MW-12 samples collected during the March 18, 2008 sampling event were received by Test America-Denver appropriately chilled (4.3°C) on March 21, 2008. All samples arrived in good condition. All holding times for the MW-12 samples were met.

The leachate samples collected during the March 18, 2008 sampling event were received by Test America-Denver appropriately chilled (between 0.4 and 4.8°C) on March 21, 2008. The preserved volatile organic analysis (VOA) vials arrived with approximately 7 millimeters of headspace due to a reaction between the leachate and hydrochloric acid preservative that occurred during sample

<sup>1</sup> Groundwater flow velocity is calculated as  $v = (K \cdot i) / n_e$ , where K is site hydraulic conductivity (1,500 ft/day) (Geosyntec 2007), i is the hydraulic gradient (0.0004 feet per foot) (10/09/2007 water level data), and  $n_e$  is the effective porosity for permeable basalt (0.2) (Geosyntec 2007).

collection. The VOC concentrations reported for the leachate samples may be low-biased due to the headspace. Additionally, the nitric acid-preserved bottles associated with the MSWE1 and 4BSMP leachate samples arrived at neutral pH due to a suspected buffering effect caused by the leachate. The samples were further preserved prior to analysis. The sulfuric acid-preserved bottle for sample 4BSMP was broken in transit. Upon arrival at the laboratory, one of the extra bottles of unpreserved 4BSMP leachate was preserved with sulfuric acid for the associated analysis. Due to a laboratory oversight, the dioxins extraction for samples MSWE1 and ASHSMP was performed outside the 30-day holding time. According to the analytical laboratory, the 30-day holding time for time dioxins is a recommendation, acceptable holding times may be as high as a year. All other leachate samples arrived in good condition and all other holding times for the leachate samples were met.

#### 4.2.2 Results of the Field Duplicate Analyses

A field duplicate sample was collected from MW-11 during the March 17, 2008 groundwater sampling event and submitted to Test America-Denver for laboratory analyses. Table 4 presents the analytical results for the initial and duplicate samples. RPDs are listed in Table 4 for the analytes that were detected at reportable concentrations (above the laboratory reporting limit) in both samples. RPDs below 50 percent are generally considered acceptable. As shown in Table 4, with the exception of the RPD for TOC (94 percent) the RPDs ranged from 0 to 35 percent and are considered acceptable. TOC was detected at trace estimated concentrations (below the laboratory practical quantitation limit [PQLs]); therefore, the TOC data are not considered statistically significant.

#### 4.2.3 Results of Field Blank and Trip Blank Sample Analyses

Field blank samples and trip blank samples were submitted to Test America-Denver for analysis. The results of the QA/QC sample analyses are summarized in Table 4 and discussed below.

Acetone was detected in the field blank and methylene chloride was detected in the trip blank, both at concentrations below PQLs. Acetone and methylene chloride are common laboratory contaminants; therefore, these detections do not impact data quality.

#### 4.2.4 Results of Laboratory QA/QC Analyses

The results of the laboratory QA/QC analyses are included in Test America-Denver's laboratory reports (Appendix C). Although several issues were noted, no significant impacts on data quality were observed.

#### 4.2.5 Results of Other General Data Quality Checks

As part of the overall data evaluation process, general data quality checks were conducted for each of the groundwater samples by comparing TDS/electrical conductivity (EC) ratios to typical values reported in the literature. The results of the general data quality checks are summarized in Table 6. The TDS/EC ratios from all wells are generally within the typical range for natural groundwater.

### 4.3 RESULTS OF GROUNDWATER ANALYSES

This section discusses the results of the groundwater analyses conducted for the first quarter 2008 monitoring event. Complete analytical results for the groundwater samples are presented in Appendix C.

#### 4.3.1 VOCs

The groundwater samples were analyzed for VOCs including all analytes listed in 40 CFR 258 Appendix I. Table 2 summarizes the results of the VOC analyses for groundwater samples. Acetone, a common laboratory contaminant was detected in the MW-02M sample at an estimated concentration of 7.5 micrograms per liter ( $\mu\text{g/L}$ ). The estimated concentration is below the PQL (34  $\mu\text{g/L}$ ), and is therefore not considered statistically significant. Tetrachloroethene was detected in

the MW-07 and MW-10 samples at estimated concentrations of 0.20 µg/L and 0.21 µg/L respectively. These estimated concentrations are below the PQL (5.0 µg/L), and are therefore not considered statistically significant. The analytical laboratory has reported similar below-PQL tetrachloroethene concentrations for groundwater samples collected from some of the WGSL monitoring wells during previous monitoring events.

#### 4.3.2 Dissolved Metals

The MW-02M, MW-03M, MW-07, MW-10, MW-11, and MW-12 groundwater samples were analyzed for Appendix II dissolved metals.

- Dissolved arsenic, barium, cadmium, iron, manganese, nickel, selenium, thallium, vanadium, and zinc were detected at trace levels below the PQLs in many of the groundwater samples.
- Dissolved manganese was detected in the MW-11 and MW-12 samples at concentrations of 12 µg/L and 60 µg/L respectively. The State of Hawaii has not established a maximum contaminant level for manganese.
- Dissolved nickel was detected in the MW-12 sample at a concentration of 460 µg/L. MW-12 is located upgradient of the landfill; therefore, the nickel concentrations are most likely not attributable to the landfill. The State of Hawaii has not established a maximum contaminant level for nickel.
- Dissolved selenium was detected in the MW-12 sample at a concentration of 6 µg/L. The State of Hawaii maximum contaminant level for selenium is 50 µg/L.

#### 4.3.3 Total Metals

The MW-12 groundwater sample was analyzed for Appendix II total metals to obtain data representing an unfiltered background sample as required by the State of Hawaii Landfill Groundwater Guidance Document (DOH 2002) for all newly installed wells.

- Total arsenic, barium, cadmium, cobalt, copper, selenium, thallium, vanadium, and zinc were detected at trace levels below the PQLs in the MW-12 sample.
- Total chromium was detected in the MW-12 sample at 160 µg/L, slightly above the State of Hawaii maximum contaminant limit of 100 µg/L. Dissolved chromium for MW-12 was detected at trace concentrations below the laboratory reporting limit. The elevated total chromium concentrations reported for the MW-12 sample are most likely attributable to suspended solids containing naturally occurring chromium from the aquifer matrix. Furthermore, MW-12 is located upgradient of the landfill; therefore, the elevated chromium levels are not likely due to landfill operations.
- Total nickel was detected in the MW-12 sample at a concentration of 450 µg/L. MW-12 is located upgradient of the landfill; therefore, the nickel concentrations are not likely attributable to the landfill. The State of Hawaii has not established a maximum contaminant level for nickel.
- Total calcium (65,000 µg/L), iron (1,300 µg/L), magnesium (86,000 µg/L), potassium (9,000 µg/L), silicon (35,000 µg/L), and sodium (160,000 µg/L) were detected in the MW-12 sample at concentrations consistent with expected ranges for unfiltered groundwater representing basaltic aquifers. The State of Hawaii has not established maximum contaminant levels for calcium, iron, magnesium, potassium, or sodium.

#### 4.3.4 Site-Specific Indicator Parameters

The MW-03M and MW-07 groundwater samples were analyzed for site-specific indicator parameters (COD, dissolved sodium, and TDS). The results of these analyses were evaluated for evidence of potential landfill impact to groundwater using intra-well statistical methods in accordance with the Revised Monitoring Plan (Geosyntec 2007). The background levels for the site-specific indicator

parameters were updated to reflect data collected through the December 2006 sampling event. This evaluation included comparison of the new monitoring results from each well to historical data from that same well using Shewart-cumulative sum (CUSUM) Control Charts. The Shewart-CUSUM control charts are presented in Appendix D. Results of the statistical evaluation are summarized in Table 7.

**Table 7: Summary of Results of Statistical Analyses**

Monitoring Well ID	Analyte	Detected Concentration (mg/L)	Cumulative Sum Value (mg/L)	Normal Control Limit (mg/L)
MW-03M	COD	13	19.22	49.7
	Sodium, Dissolved	470	564.9	552.2
	TDS	2,300	2,398	3,050
MW-07	COD	8.3 B	16.48	45.6
	Sodium, Dissolved	360	381.6	454.3
	TDS	1,800	1,845	2,500

As shown in Table 7 and Appendix E, none of the detected concentrations exceeded the established normal control limits. However, the cumulative sum value for dissolved sodium in well MW-03M slightly exceeded the normal control limit. As noted in the previous quarterly monitoring report, statistical analyses have frequently shown these types of exceedances for dissolved sodium in well MW-03M (June, September, and December 2005; March, June, and September 2006; March and October 2007). An alternate source demonstration evaluation (A-Mehr 2004) concluded "there is no significant evidence that the recent statistical exceedance noted for dissolved sodium at well MW-03M is landfill related."

#### 4.3.5 Supplemental Parameters and Other Indicator Parameters

The groundwater samples were analyzed for supplemental parameters (total alkalinity, bromide, calcium, chloride, magnesium, potassium, silica, and sulfate). The groundwater samples were also analyzed for ammonia as N, bicarbonate as CaCO<sub>3</sub>, carbonate as CaCO<sub>3</sub>, nitrate+nitrite as N, and TOC.

- Ammonia as Nitrogen was detected in the groundwater samples at trace concentrations (below the PQL) ranging from 0.046 mg/L to 0.060 mg/L. These levels are consistent with previous monitoring events.
- TOC was detected in the MW-02M sample at 1.7 mg/L and at trace concentrations (below the PQL) ranging from 0.17 mg/L to 0.47 mg/L in the other groundwater samples. These levels are consistent with previous monitoring events.
- Nitrate+nitrite, bromide, calcium, chloride, magnesium, potassium, silicon, sulfate, total alkalinity, and bicarbonate as CaCO<sub>3</sub> were detected in all of the groundwater samples at levels within the expected natural concentration ranges.

#### 4.4 RESULTS OF LEACHATE ANALYSES

The results of the leachate analyses are summarized in Table 3. Complete analytical results for the leachate samples collected from the Ash Sump, MSW Cell E-1 Sump, and MSW Cell 4B Sump are presented in Appendix C. Analytical laboratory results for the leachate samples are generally consistent with analytical results from past monitoring events and are summarized as follows:

- The highly mineralized ash monofill leachate had a TDS concentration of 94,000 milligrams per liter (mg/L) and was characterized by a relatively high bromide concentration of 710 mg/L. Major ions included chloride (54,000 mg/L), calcium (10,000 mg/L), potassium (5,800 mg/L), and sodium (20,000 mg/L). The MSW Cell E-1 leachate had a TDS concentration of



7,000 mg/L. Major ions included chloride (2,600 mg/L), calcium (94 mg/L), magnesium (290 mg/L), potassium (170 mg/L), and sodium (1,600 mg/L). The MSW Cell 4B leachate had a TDS concentration of 15,000 mg/L. Major ions included chloride (6,600 mg/L), calcium (74 mg/L), magnesium (670 mg/L), potassium (260 mg/L), and sodium (3,600 mg/L).

- A total of 10 VOC and 7 SVOC constituents were detected in the leachate samples. The VOC concentrations reported for the leachate samples may be low-biased due to headspace observed in the VOA vials upon arrival at the analytical laboratory.
- A total of 14 metals were detected in the leachate samples.
- Two pesticide compounds were detected at trace concentrations in the leachate samples. Alpha-BHC was detected in the MSW Cell 4B sample at a concentration of 0.0095 µg/L and Heptachlor epoxide was detected in the Ash Monofill leachate sample at a concentration of 0.13 µg/L. Both detections were estimated values below the PQLs.
- No herbicides, dioxins, or PCBs were detected in the leachate samples.

The leachate sampling results indicate that no significant changes in leachate characteristics have occurred.

## 5.0 SUMMARY AND CONCLUSIONS

The following results and conclusions are based on the data collected for the first quarter 2008 groundwater and leachate monitoring event:

- Based on the March 17 and 18, 2008 sampling data, there has been no significant impact to groundwater due to operations at the WGSL.
- Based on groundwater elevations calculated for the six monitoring wells, groundwater flow beneath the WGSL was generally toward the southwest in the upper reaches of the canyon. The low permeability caprock directly south of the WGSL retards the southwestward migration of groundwater and deflects the flow of groundwater in the lower reaches of the canyon toward the west. This direction is consistent with the previous monitoring event and conclusions presented in the Revised Monitoring Plan (Geosyntec 2007). The overall hydraulic gradient was approximately 0.0004 feet/foot, with an estimated flow velocity of approximately 3.0 feet per day.
- None of the site specific indicator parameters were detected at levels above the statistically established control limits.
- Acetone, a common laboratory contaminant was detected in the MW-02M sample at an estimated concentration of 7.5 µg/L. Tetrachloroethene was detected in the MW-07 and MW-10 samples at estimated concentrations of 0.20 µg/L and 0.21 µg/L, respectively. The estimated concentrations for acetone and tetrachloroethene are below the respective PQLs and are therefore not considered statistically significant. The tetrachloroethene concentrations are similar to concentrations detected during previous monitoring events.
- Total chromium was detected in the MW-12 sample at 160 µg/L, which is above the State of Hawaii maximum contaminant limit of 100 µg/L. Dissolved chromium for MW-12 was detected at trace concentrations below the laboratory reporting limit. The elevated total chromium concentrations reported for the MW-12 sample are most likely attributable to suspended solids containing naturally occurring chromium from the aquifer matrix. Furthermore, MW-12 is located upgradient of the landfill; therefore, the elevated chromium levels are not likely due to landfill operations.
- Dissolved nickel was detected in the MW-12 sample at a concentration of 460 µg/L. MW-12 is located upgradient of the landfill; therefore, this nickel concentration is most likely not attributable to the landfill. The State of Hawaii has not established a MCL for nickel.
- Dissolved selenium was detected in the MW-12 sample at a concentration of 6 µg/L. The reported selenium concentration in MW-12 is below the State of Hawaii MCL of 50 µg/L.
- TOC was detected in the MW-02M sample at 1.7 mg/L and at trace concentrations (below the PQL) ranging from 0.17 mg/L to 0.47 mg/L in the other groundwater samples. These levels are consistent with previous monitoring events.
- The results for the leachate samples collected from the ash monofill, MSW Cell E-1, and MWS Cell 4B sumps are generally consistent with past results.

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# APPENDIX D

**Minutes of Oversight Advisory Committee - Waimanalo Gulch**  
**Monday, December 4, 2007**  
**Kapolei Hale, Conference Room A**

**MEMBERS PRESENT:** Albert Silva, Polly Grace, George Paris, Lorraine Martinez, John DeSoto, Pearl Lewis, and William Mahoe.

**MEMBERS ABSENT:** Jackie Spencer, David Akina, and Allan Parker.

**GUESTS:** Jay Ishibashi (Mayor's representative), Ken Shimizu, (Deputy Director Department of Environmental Services), Wayne Hamada (Department of Environmental Services), Paul Herran (Corporation Council), Russell Nanod (General Manager, Waste Management), Michele Akahane (Department of Environmental Services), Dana Gusman (Recording Secretary).

**MEMBERS OF THE PUBLIC:** Ron Amemiya, George Dela Cerna, Kalani Hallums, Maile Hallums, Mel Kahele, Kapua Kaluhi, and Eugene Soquena.

**CALL TO ORDER:** Chair Silva called the meeting to order at 10:10 AM.

**ADOPTION OF MINUTES:** Minutes of the April 9, 2007 meeting were reviewed. Mr. Paris moved for adoption of the minutes. Mr. DeSoto seconded the motion and all members voted to approve.

Chair Silva introduced a new member of the Committee, William Mahoe, who was appointed by the Mayor to replace Alex Santiago.

**REPORT BY WASTE MANAGEMENT:**

Russell Nanod reported that new General Manager, David Jappert, could not attend this meeting due to rainy conditions at the landfill.

He announced that Joseph Whalen joined the Waste Management Hawaii (WM) staff as District Manager and comes from Pennsylvania. Mr. Whalen has 20 years of experience as a landfill on-site manager. Jesse Frye has also joined the Market area team. He was most recently with EarthTech and became familiar with WM during the course of his work at (WM's) Kekaha and West Hawaii sites.

Mr. Nanod was pleased to share that WM was nominated as a Pacific Business News "Best in Business" finalist.

Mr. Nanod reported on landfill tonnage figures. In November, Waimanalo Gulch Sanitary Landfill (WGSL) accepted 16 to 18 loads of ash (271 tons of ash

for the month) and (an average of) 432 tons of municipal solid waste per day, which is relatively low. 800 - 1200 tons per day is typical. H-Power was at maximum efficiency during this time.

Waimanalo Gulch received four complaints this year. On May 31, Mr. Nanod's office received a call regarding a windshield crack due from (flying debris from a City & County vehicle). The issue is being addressed.

On July 25, WM received a complaint regarding a truck blocking the left lane of Farrington Highway as well as speeding trucks. These complaints were referred to the City and WM sent a notice to all drivers (City and private) to use the far right lane (of the Highway).

Mr. Nanod reported that Kleen Sweeps continues to sweep the area fronting (on Farrington Highway) and within the landfill daily.

Regarding projects on site, the 4B sump (in the ash monofill area) is fully operational and pumping leachate.

The Environmental Impact Statement process (related to the expansion request) has been ongoing since July 2006. In January, Cultural Surveys conducted an archeological inspection and discovered upright stones (that may be of cultural significance). They are working with the State Historic Preservation Division on a determination. WM is facilitating visits from interested citizens (Four dates have been selected), though the uprights have not been determined to be significant as of this time.

A new scale has been installed and the landfill now has two operational scales. The new scale is above grade and easier to clean and maintain. The scale has been certified and calibrated.

WM has completed the lining of cell E4 which is 5.5 acres in size and the final cell lining under the existing permit. When cells are lined and sealed, ground water sources are protected. WM is awaiting Department of Health approval and a final report will be submitted to the Department this week.

Mr. Nanod updated the Committee on landscaping efforts. WM planted thirty monkey pod and Norfolk pine trees near the ash toe berm and is installing an irrigation system this month.

Work on the West berm started in February 2006 and will continue as will stormwater system improvements and repairs to the pavement.

No plumes in the ocean were reported and, as in past, stormwater repairs have captured large particles coming down from the valley (and prevented them from going into the ocean).

Mr. Nanod reported on WM's recent contributions to the community (including Kauai and the Big Island). The company published WM's Report to the Community which highlights the improvement at WGSL.

WM drilled twelve gas wells (there are now thirty-six on site) to extract methane gas from landfill. This effort reduces greenhouse gas emissions. At the conclusion of his report, Mr. Nanod asked if there were questions from the Committee.

Chair Silva announced that, in the interest of time and order, each member would be allowed to ask one question followed by two minutes of discussion.

Mr. Paris asked for clarification regarding Mr. Nanod's report of lighter than usual municipal solid waste numbers and how this could be in light of the holiday season (when household trash is increased). He asked if H-Power is working overtime. Mr. Nanod confirmed that H-Power has been operational and agreed that November is a traditionally high month in terms of waste production. He advised that his collection numbers went through the middle of November and suggested that low numbers are due to fewer H-Power diversions to the landfill.

Ms. Grace stated that she is against landfills and urged the City to look at other disposal avenues and recycling options, it is better to recycle than make mountains (of trash). Mr. Nanod stated that WM is happy to look at alternatives and will work with their partners at the City. Ms. Grace referenced recycling practices in Canada and Japan (which is burning 95% of its rubbish). Mr. Nanod asked whether Japan is using their waste as a source of fuel.

Mr. DeSoto thanked WM for meeting community concerns. He remarked that he can see the difference in the landfill. He expressed concerns about illegal landfills and problems with dumping on beaches and in residents' back yards. He thanked WM for working with Nani O Waianae.

Mr. Nanod stated that, since August 2005, WM has hosted three thousand visitors to the site. WGSL is an open site and the public is welcome.

Maile Hallums from Waianae took a tour of the landfill and noted that people are dumping recyclable items. Mr. Nanod replied that WM is proposing a drop-off recycling center at the site to encourage recycling. He explained, however, that



with large commercial loads it is difficult to extract recyclables and once a load hits the ground, WM is required to bury the waste (except metal).

Ms. Martinez thanked WM for partnering with the community. She asked about the possibility of tire disposal at the site. Mr. Nanod advised that WGSL is currently banned from accepting tires but is working with the City to become a repository for tires. Based on current Department of Health rules, tires must be physically removed from landfill.

Mr. Shimizu noted that the Waianae Convenience Center is open seven days a week from 7:00 AM to 6:00 PM (for tire disposal).

Mel Kahele asked whether any municipal solid waste is being sent to PVT. Not to Mr. Nanod's knowledge.

Chair Silva asked about what percentage of the landfill ash takes up (versus municipal solid waste). Mr. Hamada advised that ash represents a 75 - 80% reduction in volume from waste.

Kapua Kaluhi, a cultural specialist for Na Kupuna o Waianae stated that she ran the landfill in Kailua, worked at the Kapalama incinerator and at Keehi Lagoon.

George Dela Cerna asked how long the landfill will last. Mr. Hamada advised that existing permits expire in May 2008. Kailua landfill has five or more years left. The City is currently going through the expansion request process to allow for fifteen more years of life at WGSL.

**COMMUNITY CONCERNS:** None.

**NEW BUSINESS:**

Ken Shimizu announced that a contested case hearing is scheduled for Friday at 9:00 AM. Paul Herran explained the contested case hearing process - the City applied to seek an extension of special use permit which currently expires May 2008, an agreement based on previous City Administrations. The required environmental impact statement will not be completed in time, before May 2008, so the City applied to expand that condition for two years or until reaches permitted capacity. Ken Williams and Senator Colleen Hanabusa sought to intervene two and a half weeks ago. They were granted intervener status, it is a consolidated intervention.

Maile Hallums asked if testimony will be accepted from the public.

By 5:00 PM yesterday, witness lists had to have been submitted by interveners Colleen Hanabusa and Ken Williams and the City. The parties assessed who would be testifying. It is not a public hearing; the protocol is such that each party produces its own witnesses.

Mr. Paris stated that he was under the impression that Senator Hanabusa's representation was being contested. He asked whether she would be speaking on behalf of herself, Ko Olina, or the community. He believes that the community would like to know if they are being represented by Senator Hanabusa.

Mr. Herran noted that the City raised concerns to the Planning Commission about Hanabusa's representation and whether it would apply to herself as a resident, a State Senator, or a community member. The Chair of the Planning Commission granted her intervener status. Senator Hanabusa has represented that she represents the community and her witnesses will address that representation. The City will be present to object as appropriate.

Mr. Paris expressed concerns regarding the Senator's use of the Senate stamp. Mr. Herran replied that the City filed its opposition to her intervention and special status.

Ms. Martinez reported that Senator Hanabusa, Councilmember Todd Apo, and Representative Karen Awana had a big meeting at Nanaikapono Elementary. There, Senator Hanabusa said that she was representing entire Waianae coast.

Ron Amemiya on behalf of the Iron Workers Union and Mr. Paris asked whether Senator Hanabusa would be questioned by City. Mr. Herran noted that Senator Hanabusa is not identified as a witness and will not be subject to direct or cross examination. She will represent the case.

Mr. Amemiya believes that the Commission should have her testify and suggested that she is representing the case so that she does not have to answer questions herself.

Mel Kahele with the Iron Workers Union withdrew testimony at the last proceeding so he could testify at the contested case hearing. (Testifying) is not an automatic right. Mr. Kahele asserted his support of WGSL and has a stack of written testimonies from local unions that the Union would like on the record.

Mr. Herran would like to have that information.

**ANNOUNCEMENTS:** The next Oversight Advisory Committee Meeting is on Monday, April 14, 2008 at Kapolei Hale in Conference Room A at 10:00 AM.

**ADJOURNMENT:** Mr. Paris moved to adjourn the meeting. Mr. Mahoe seconded. All members agreed and Chair Silva adjourned the meeting at 11:00 AM.

**Minutes of Oversight Advisory Committee - Waimanalo Gulch**  
**Monday, April 9, 2007**  
**Kapolei Hale, Conference Room A**

**MEMBERS PRESENT:** Albert Silva, Polly Grace, Allan Parker, George Paris, Lorraine Martinez, John DeSoto, and Pearl Lewis.

**MEMBERS ABSENT:** Jackie Spencer, Alex Santiago, David Akina

**GUESTS:** Jay Ishibashi (Mayor's representative), Ken Shimizu, (Deputy Director Department of Environmental Services), Gary Takeuchi (Corporation Council), Paul Burns (General Manager, Waste Management), Michele Akahane (Department of Environmental Services), Dana Gusman (recording secretary).

**MEMBERS OF THE PUBLIC:** none

**CALL TO ORDER:** Chair Silva called the meeting to order at 10:19 AM.

**ADOPTION OF MINUTES:** Minutes of the March 12, 2007 meeting were reviewed. Mr. Paris moved for adoption of the minutes. Mr. Parker seconded the motion and all members voted to approve.

**REPORT BY WASTE MANAGEMENT:**

Paul Burns reported that the tonnage (of waste) accepted at the landfill for the last week of March was 561 tons per day and 260 tons per day of ash. He informed the Committee that the landfill received a diversion from H-Power on Saturday. He received a complaint about trucks not stopping. Mr. Burns takes all complaints seriously and is looking into the issue.

With respect to the notices of violation, WGSL is working with the Environmental Protection Agency (EPA) and the Department of Health (DOH). There has not been a lot of "back and forth" with the EPA - the agency requests information which Waste Management then provides. DOH has been busy with legislative issues and anticipates that staff will have more time (to address this issue) when the session adjourns (on May 3).

Mr. Burns reported that the landfill commenced a 60-day metal recovery pilot program to determine how much metal can be extracted (from the landfull). His staff is keeping good records and will compile a report. Waste Management will then meet with City to determine whether to continue with the program. Ultimately, the City and Waste Management must determine what the cost is to pull the metal and whether the program is cost effective.

Mr. Paris commented that the shut down at Campbell Industrial Park resulted in increased mud on road (fronting the landfill) and more traffic at the landfill. He stated that the trucks create a nuisance and more traffic at PVT. He questioned whether another burner would be added to H-Power, he had not heard any news. He wholeheartedly supports the activities at WGSJ and does not want the landfill moved "further in". Mr. Paris then detailed the landfill selection process which started with 31 potential sites and ended with all viable sites in his area.

Mr. Paris wants to negotiate with the City to put more emphasis and money in the surrounding area.

Chair Silva requested that Mr. Burns be allowed to complete his report.

Waste Management is working on the last cell under their currently permitted area. E4 is under construction and the lining will be placed in August. Construction on the west berm is on-going and Waste Management is planning landscaping which will blend in with the surrounding area. White piping on the ocean-side of the site is irrigation piping which will water the front face of the landfill so that most visible faces at the site (from Farrington Highway) will "disappear". There will be additional landscaping near the site office, more trees, etc. Mr. Burns expects that these efforts will result in dramatic changes.

Ms. Grace asked if the irrigation water is "new" water. She encouraged the use of use of recycled water. Mr. Burns stated that recycled water is not readily available so fresh water is used for irrigation.

Mr. DeSoto asked if (delivery) trucks are being "washed" at the site. Mr. Burns explained that a tire wash could be one piece of the puzzle (with respect to keeping dirt off the highway). The landfill trucks in daily cover which increases traffic on local roads. Waste Management is in discussion with DOH about the use of tarps versus dirt cover, which could alleviate area traffic.

Mr. DeSoto commented, "the City makes a lot of money from the landfill". He further stated that if the landfill were located "in Hawaii Kai or Kahala," mud would not be allowed (to track on area roads). He asked Mr. Burns for an e-mail update of how landfills around the world deal with dust and mud and suggested that, "if this was California, they (the community) would complain."

Mr. Paris suggested paving the roads at the landfill site.

Chair Silva stated that mud and debris on highway is not an everyday occurrence. The surrounding roadways are muddy when it rains and dusty when the weather is dry.

Mr. DeSoto questioned how often DOH tests the soil then commented that if the state does not test hourly or daily, contaminated soil could be tracked by trucks along the highway which may create an environmental hazard.

Mr. Paris understands that a barge is willing to ship opala, but that the city needs (certain types of waste) for H-Power. A barging company is offering the service for free and presented a proposal to local unions. He suggested assessing people from other communities \$5 per can.

Ms. Martinez asked what the term of the landfill operating contract is. Mr. Burns answered, as long as the site is open, probably another 15 years. The life of the site could be extended if recycling and H-Power capacity is increased.

Ms. Martinez asked what the City's liability is for early closure of the site. Mr. Burns explained that Waste Management has money invested in the facility, which would have to be reimbursed by City in the event of a premature closure. Ms. Martinez asked if Waste Management's mainland sites have partnerships with other technologies. Mr. Burns explained that Waste Management has various subsidiaries which include collection services, Wheelabrator (which operates eighteen waste-to-energy plants), and Recycle America. These are the company's key brands.

Ms. Martinez asked for a presentation by the companies. Mr. Burns cautioned that Waste Management needs to be careful in light of the City-issued request for proposals for waste to energy technologies. As such, Waste Management needs to stay at arm's length (to prevent the process from being tainted).

Ms. Martinez followed-up with a question regarding traffic counts on Farrington Highway. Mr. Burns advised that the numbers are not final and depend on various projections, should H-Power be expanded. Ms. Martinez emphasized the need to address the "mud crisis" on Farrington Highway. She suggested that the City purchase a sweeper for Waste Management. She also recalled discussions regarding rebuilding the entrance to the landfill as well as with the State Department of Transportation (DOT) about the quality of the highway fronting landfill.

Ms. Martinez asked if the Committee could talk to DOT regarding the possibility of expanding Farrington Highway (to three lanes in either direction). Mr. Burns stated that he believes that DOT is willing to address the Committee again. Ms. Martinez wants a commitment from the DOT (to improve the highway). Chair Silva suggested that this is not within the purview of the Oversight Committee. Mr. Takeuchi advised that the highway frontage of the landfill is a related issue.

Mr. DeSoto expressed the Leeward Coast community's frustration about being a "dumping ground" and later stated that the Governor is looking at (adding) seven more transitional housing centers in the area. Ms. Martinez commented that she has seen a significant improvement since Mr. Burns has been on the job - he has addressed many of the community's concerns in short period of time.

Ms. Grace stated that, in 1983, she was one of three who testified against the landfill. Koolina representatives and legislators knew about (the meeting) but didn't come out. She wished other members were there at that time.

Ms. Martinez commented that landfills are located in depressed areas on the mainland.

Mr. Paris suggested that the landfill was named Waimanalo Gulch to throw off the unfortunate people who do not have money for attorneys.

Ms. Lewis concurred with the suggestion that communities should be assessed (for sending their waste to the landfill).

Mr. Parker believes that serious thought should be given to an automated wash rack (versus landfill workers with hoses). He suggested passing on the cost of a wash rack to users of the landfill. Mr. Burns commented that an appropriately-sized wash rack could cost approximately \$500,000. He believes that the landfill needs a comprehensive plan for dealing with mud and dust.

Ms. Grace shared that a Waianae resident was denied the ability to deliver a second load (in one day) at the landfill. Mr. Shimizu clarified that the landfill (and convenience centers) will accept two loads (from private citizens), daily.

Chair Silva complimented the metal recycling pilot program.

Ms. Grace believes that materials such as paper and car batteries should also be recycled. She had a meeting with Senator Chun-Oakland to discuss an ash recycling plant. Ms. Grace recognizes that Waste Management gives money to community, but thinks that the funding should instead be invested in a recycling plant.

Ms. Martinez asked Mr. Paris whether he had spoken to the City about his assessment idea and suggested that revenues could benefit the Waianae Medical Center or area homeless. Mr. Paris indicated that he once mentioned the idea to the Mayor. He then suggested that a discussion item be added to the August 13 meeting agenda, to discuss the establishment of a fee for trash collection, based

on distance (from the landfill), to benefit the Leeward area. Ms. Martinez seconded the motion all members voted aye.

Mr. Paris excused himself at 11:22 AM.

**COMMUNITY CONCERNS:** None.

**NEW BUSINESS - Presentation by Deputy Director Ken Shimizu regarding Waimanalo Gulch Landfill Expansion:** Mr. Shimizu reported that waste-to-energy request for proposal responses are due in July and a contract will be awarded in January 2008. The City is looking at facility to accommodate 400,000 tons of waste annually. H-Power accommodates one million tons of combustible materials annually.

Ms. Martinez asked where the facility will be located. Mr. Shimizu replied that it will be adjacent to the H-Power facility. Ms. Martinez followed up with a comment regarding shipping waste to Washington or Arizona via Honolulu Harbor and that, at a recent Waianae Neighborhood Board meeting, Councilmember Todd Apo recommended a \$4 million benefits package (over the \$2 million which was previously recommended).

Ms. Grace believes that the community benefits package will not benefit everyone. She reiterated her suggestion that the money should go toward new landfill technologies which she believes will benefit everyone.

During the course of EIS-related surveying, rocks (which could be culturally significant) were discovered. He produced a photo of the gulch and pointed out the area in which the rocks are located.

The permit for the currently permitted area expires in May 2008. The City has notified the State Historic Preservation Office of the rocks, is awaiting their response, and is concerned the (EIS) timetable for the proposed landfill expansion will not be met if a delay (due to the archaeological finding) were to occur. One such rock was moved years ago.

There is still usable space in the currently permitted area and Mr. Shimizu mentioned that the City may go in for an extension of the current permit (to expire at the end of 2010) to allow the archaeological findings to be resolved. His office is also looking at extracting television and other monitors and mattresses (to extend the usable life of the currently permitted area).

The Mayor formed Solid Waste Advisory Board to advise the Department of Environmental Services as they develop an integrated solid waste management



plan. Committee meetings are open to public and the first meeting today at Honolulu Hale.

Finally, Mr. Shimizu discussed the Mayor's recycling community meetings and encouraged committee members to attend. He asked if a curbside recycling program is worth the cost. 71% of voters voted "yes" to a City Charter amendment to include this function within the Department. Mr. Shimizu asked if, based on this, the City should spend \$8 million to extract 40,000 tons from waste stream or send the waste to H-Power where it will create electricity.

**ANNOUNCEMENTS:** The next Oversight Advisory Committee Meeting is on Monday, August 13, 2007 at Kapolei Hale in Conference Room A at 10:00 AM.

**ADJOURNMENT:** Chair Silva adjourned the meeting at 11:47 AM.

**Minutes of Oversight Advisory Committee - Waimanalo Gulch  
Monday, March 12, 2007  
Kapolei Hale, Conference Room A**

**MEMBERS PRESENT:** Albert Silva, Polly Grace, Allen Parker, David Akina, Alex Santiago, Jackie Spencer, and Pearl Lewis.

**MEMBERS ABSENT:** George Paris, Lorraine Martinez, John DeSoto

**GUESTS:** Ken Shimizu, (Deputy Director Department of Environmental Services), Wayne Hamada (Disposal Operations Engineer - Refuse Division,) Gary Takeuchi and Paul Herran (Corporation Council), Paul Burns (General Manager, Waste Management), Russell Nanod (Community Affairs Manager, Waste Management), Michele Akahane (Department of Environmental Services), Dana Gusman (recording secretary).

**MEMBERS OF THE PUBLIC:** none

**CALL TO ORDER:** Chair Silva called the meeting to order at 9:12 AM.

**ADOPTION OF MINUTES:** Minutes of the November 13, 2006 meeting were reviewed. Mr. Parker moved for adoption of the minutes. Ms. Grace seconded the motion and all members voted to approve.

**REPORT BY WASTE MANAGEMENT:** Russell Nanod wished the Committee a happy new year. He reported on average tonnage of daily municipal solid waste accepted at Waimanalo Gulch Sanitary Landfill (WGSL) for the last four months: November 2006: 500 tons; December 2006: 867; January 2007: 1029 tons; February 2007: 900 tons.

Mr. Nanod informed the Committee that the landfill received several diversions from H-Power due to twelve full day closures and ten half-day closures since November 2006.

Since the November 2006 meeting, one complaint was received from a Kailani resident (on December 26, 2006) relating to odor. WGSL staff discovered that the odor was due to a sludge truck which was delivering to the landfill too early in the day. When the complaint call was received, staff verified that the truck came from Sand Island Waste Water Treatment Plant and proceeded to mitigate the odor. When it was verified that the truck was sprayed, the resident was contacted to ensure that the smell was gone.

As follow-up, WGSL staff e-mailed "Trash Man" and the Sand Island Waste Water Treatment Plant supervisor to remind both of authorized sludge delivery times. During (H-Power) diversion periods, WGSL has an operational protocol which decreases the amount of time that sludge trucks are queued to encourage faster burial of sludge and lessen any impact to the surrounding community.

With regard to litter on Farrington Highway, WGSL has contracted Clean Sweeps for litter removal and to keep road clean. Days with heavy rains present particular challenges due to mud. Clean Sweeps comes out twice a month to address litter on the highway and also cleans up within the landfill.

The new leachate system is operational and in compliance.

WGSL commenced operation of a new condensate injection system to reduce odor from the landfill (system became operational on January 23). The landfill's drainage control system has also been completed.

In addition, a sediment basin has been installed to maintain any runoff from rainwater. Mr. Burns urged the Committee to visit the landfill.

Mr. Burns reported on the installation of new guardrails and signage; landscaping and hydroseeding projects continue. New electrical power lines have been installed to provide power for the automated leachate control system (installation should be done by end of March).

Mr. Nanod reported on Waste Management Hawaii's charitable and community contributions and activities. Donations were made recently to the Waianae Coast Comprehensive Center and U.S. Vets Hawaii. WM donated a used electric cart to Honokai Hale for their community patrol. Mr. Nanod also listed community giving projects including sponsorships and scholarships to benefit Leeward Coast residents.

Mr. Burns detailed other site projects. He stated that construction projects are ongoing, the last cell, E-4, has been permitted and related excavation is in progress. Synthetic liners will be installed in August and the Committee was invited to see installation.

The ground-water well system has been completed and Mr. Burns offered a more detailed presentation on the system at a future meeting. He noted that the well is 450-500 feet deep and that testing will commence this week.

New topography mapping will be available soon to provide information regarding available air space levels and indicate how much "life" is left at landfill.

Regarding the ground water well system, Mr. Parker asked Mr. Burns, where (at a depth of 450 feet) that is in relation to a potable source of water. Mr. Burns replied that testing required drilling down into groundwater. From a grading standpoint, connection to the wells allows the facility to better monitor ground water systems.

Ms. Grace asked whether the water could be recycled. Mr. Burns replied that testing will commence this week to assess water quality, though it is not WM's intention to pump from the well since it exists for monitoring purposes only. She asked if the technology was new. He answered that it is standard technology, though the testing procedures are state-of-the-art.

Mr. Santiago followed-up with comments regarding Farrington Highway and WGS's monitoring of mud and rocks from the landfill. He stated that a community member noticed mud on the roadway on Saturday. He asked what WM's legal requirements/responsibilities were (with respect to cleaning the road). Mr. Burns replied that the mud on Farrington Highway, caused by heavy rains, was not acceptable and that his staff was disciplined as a result. He is working to retrain staff to prevent future messes. This training will focus on prevention. Saturday was an isolated incident and Mr. Burns is taking steps to ensure that it does not happen again.

Mr. Santiago asked whether HPD cites for such incidences. Mr. Burns responded that they do not as long as WM takes corrective action immediately.

Mr. Akina asked whether WM has considered purchasing an in-house sweeper. This has been a consideration, but operation of such equipment would require traffic control and permitting through the Department of Transportation as well as additional insurance and trucks with directional safety arrows. WM is investigating tire washes. Mr. Akina suggested that it might be worth the investment and that the community would appreciate WM's investment.

Mr. Parker commented that he lives at Ko Olina, a resort area, which "is like a Waikiki" and should not be subject to mud (from landfill traffic).

Chair Silva asked what the response time is if there is a (litter) condition on the highway. Mr. Burns stated that staff will clean the area immediately. In the instance of the previous Saturday, Clean Sweeps was called but could not come in (to clean the area) until the next day.

**COMMUNITY CONCERNS:** None.

**ANNOUNCEMENTS:** Mr. Parker suggested that, moving forward, the WGSL Oversight Advisory Committee meet quarterly, rather than monthly. He also suggested that meetings start at 10:00 AM rather than 9:00 AM. The Committee agreed to these changes. Mr. Parker moved that these changes be enacted and Mr. Santiago seconded. All members voted in favor.

Mr. Shimizu asked if the Committee might delay the start date for quarterly meetings, as the Department of Environmental Services hopes to present the Committee with information regarding ongoing research and information regarding the Environmental Impact Statement related to the landfill expansion. Members concurred. Mr. Parker revised his motion to reflect that meetings will commence on a quarterly basis after the April 9 meeting.

The next Oversight Advisory Committee Meeting is on Monday, April 9, 2007 at Kapolei Hale in Conference Room A at 10:00 AM.

**ADJOURNMENT:** Chair Silva adjourned the meeting at 9:47 AM.

**Minutes of Oversight Advisory Committee - Waimanalo Gulch**  
**Monday, November 13, 2006**  
**Kapolei Hale, Conference Room A**

**MEMBERS PRESENT:** Albert Silva, Polly Grace, Allen Parker, David Akina, John DeSoto, Lorraine Martinez, Alex Santiago,

**MEMBERS ABSENT:** George Paris, Pearl Lewis, and Jackie Spencer

**GUESTS:** Jay Ishibashi (Mayor's Representative), Ken Shimizu, (Deputy Director Department of Environmental Services), Wayne Hamada (Disposal Operations Engineer - Refuse Division,) Gary Takeuchi and Paul Herron (Corporation Council), Councilmember Todd Apo, Paul Burns (General Manager, Waste Management), Russell Nanod (Community Affairs Manager, Waste Management), Franklin Hayashida (for George Paris)

**MEMBERS OF THE PUBLIC:** none

**CALL TO ORDER:** Chair Silva called the meeting to order at XX:XX AM.

**ADOPTION OF MINUTES:** Minutes of the October 9, 2006 meeting were reviewed and adopted with all members voted in the affirmative

**REPORT BY WASTE MANAGEMENT:** Mr. Burns reported that Waste Management (WM) received no complaints in the last month. WM conducted detailed inspections of the landfill following the October 15 earthquakes and found no damage or movement. A report detailing post-earthquake inspection findings was sent to the Department of Health (DOH) and the City & County. WM is also working on improving the storm water system at Waimanalo Gulch Sanitary Landfill (WGSL) and has been for the last 60 days. Mr. Burns expects that this will be finished within the next week or so. Another round of hydroseeding will be completed shortly. Construction on cell E-3 is expected to be completed shortly as well - WM is installing the final leachate collection and protective soil layers on the bottom. Mr. Burns invited the Committee to view the installation of the protective measures.

Mr. Burns reported an average collection of 496 tons of municipal solid waste and 294 tons of ash per day in October. H-Power diverted only two days last month.

The ash sump and E-1 sump are both in compliance. WM is going through final approvals with DOH for the new municipal solid waste sump (4-B) and hopes they have written approval within the next month.

The environmental impact statement (EIS) process for the expansion is ongoing. Mr. Burns expects that a draft notice will be published by the end of the month. Mr. Burns asked if the Committee had any questions.

Mr. Hayashida (on behalf of George Paris) rose to remind WM to water the roadway area fronting WGS� and reported that he still sees uncovered trucks entering the landfill. Mr. Burns responded that WM has contracted with Clean Sweeps to sweep on-site once a week and on-site and off-site every other week. They will be sweeping the acceleration lane and the shoulders (of the road). WM continues to water constantly (to mitigate dust). The WM staff spends a lot of time reminding the haulers to cover their loads.

#### **UNFINISHED BUSINESS:**

At the October Advisory Committee meeting, Ms. Lewis stated that Senator Suzanne Chun Oakland has a friend who has a recycling facility near H-Power and invited the Committee to tour the facility. She had indicated that she would share more information at the following meeting and Mr. Takeuchi had suggested that Chair Silva include this issue on the meeting agenda. Chair Silva advised that recycling is not under the purview of the Advisory Committee.

Ms. Grace and Mr. DeSoto indicated that they were interested in a tour. Committee members were urged to contact City staff for more information on a facility tour.

Ms. Martinez commented that WM accepts ash from H-Power. It was clarified that the facility is not associated with H-Power.

Councilmember Apo apologized for missing the last Committee meeting due to travel. He distributed a brief summary of selected provisions from the WM contract. The information provided to the Committee was from amendment number five dated May 1, 1999, which was for the 15-year extension.

Councilmember Apo read from Section 2A. This fifteen-year amendment was made prior to the City or WM obtaining the permits to expand Waimanalo Gulch and was contingent on obtaining permits. Both the Planning Commission and Land Use Commission orders specifically state that WGS� will close in 2008. Councilmember Apo believes it that is a state regulatory requirement (to close WGS�). He understands that there is an ongoing effort to change the permit and believes that there will be a lot of opposition. Councilmember Apo read from Section 2B and commented that the City is taking the lead on obtaining necessary permits. Regarding WM's obligation to provide post-closure maintenance for thirty years, Councilmember Apo cited Section 3A. He commented that there was talk about an early closure and damages that could be due to WM, Section

3C "termination for convenience" is only triggered if the landfill is closed for convenience of the City, not if it is closed due to State or Federal regulatory requirements. He does not believe that such damage claims would arise. He listed the four items that the City pays WM for: 1) per ton cost for municipal solid waste disposal (he referenced Section 2E), 2) per ton cost for H-Power ash, 3) the per square yard cost for liner installed into the landfill for new cells, and 4) per cubic yard cost for excavating material. He mentioned that Senator Colleen Hanabusa raised an issue about the City paying WM for digging out the hillside for waste.

Mr. Parker asked if the fifteen year amendment is from the last increase in the landfill area. Councilmember Apo advised that the only increase was in the 2003 expansion and guessed that the fifteen year period would have been triggered by the approval (in 2003). Councilmember Apo stated that there was a question regarding when all permits for the initial operation of the additional landfill area were obtained. He pointed to the new fee provisions in amendment 5 and questioned whether they could be implemented prior to 2003.

Mr. Parker asked Mr. Takeuchi if this was cause for concern – if, fifteen years, down the road, the landfill is ready to close and five acres was not included in the initial permitting and therefore not included in WM's post-closure commitment. Mr. Takeuchi stated that he is not familiar enough with the contract to address those terms. Mr. Burns stated that he hasn't been at the landfill long enough to know all the details of the contract. He understands that the 2001 application which was approved in 2003 included a much larger area (the whole area up the canyon). The actual permit that was granted was for a 14.9 acre landfill expansion.

Ms. Grace asked Mr. Burns if the 14.9 acres has been exceeded. He replied that it has not. Councilmember Apo differentiated between the operating agreement and the operating area, the contract does not reference specific areas (specific areas are based on permit approvals).

Chair Silva asked whether WM was operating within the legal boundaries. Councilmember Apo stated that, assuming that all the work is within the approved expansion area, they are. Ms. Grace asked whether there is a height restriction. Councilmember Apo replied that there are height ceilings and stated that one of the issues that raised in the DOH notice of violation related to the height requirement of the ash monofill. He understands that the issue is still being worked out.

Ms. Grace raised concerns about wind patterns and the height of the landfill.



Councilmember Apo stated that the people who bought homes in Honokai Hale and Ko Olina were promised that WGSL would be closed in 2001, then 2008. Regarding Ms. Grace's comment about wind, he said that Hawaiian Electric Company (HECO) wanted to install a wind farm in the area due to the strong winds. He has witnessed waste blowing off the ocean and shares her concerns. He stated that WM is doing what it can, installing screens and covering waste – it is better than it was in the past. However, given the topography, windblown waste is unavoidable. Councilmember Apo continued that landfill height restrictions are determined by engineering (weight of the waste) versus waste blowing off the top.

Mr. Burns added that the height restriction must also consider the final cap that will be added when the landfill is closed. Geometry, drainage, and existing powerlines over the landfill are also considered. Setbacks and visual impacts are considered as well.

Ms. Martinez raised an issue regarding Makaiwa Hills and Kona winds.

Mr. DeSoto added that the biggest concern is the timeframe (for the landfill to close) and spoke about the selection of Waimanalo Gulch for the landfill site. The current City administration has their hands tied by promises made by the previous administration.

Mr. Parker asked if WM would report on the status of the height restriction violation at the next meeting. Mr. Burns offered to respond immediately. There are some areas of the landfill – the ash monofill and the front section of municipal solid waste monofill – that are above the permitted elevations. On February 2, 2006, WM submitted an application to the DOH for a height increase to address the overfill situation. This addresses the permit violation and provides additional ash capacity for the H-Power facility through the 2008 permit period. WM has been working with the DOH and is revising its storm water plan and post-closure plan to complete the application. Mr. Burns believes that processing of the application could take six to nine months. He assured the Committee that the site is stable and will be stable up to the grade that WM is requesting. The requested grades are about forty feet higher than the ash portion of the landfill is today, but less than original permit that was granted in 1989 and later modifications. The landfill is completely stable.

Chair Silva asked why WGSL was in violation (of the height restriction). Mr. Burns replied that the grades were lowered in the ash monofill portion in 2003. WM is seeking to raise the limits to higher than they were in 2003, but lower than original.

Ms. Grace asked if someone from the City is "bird-dogging" the process. Mr. Burns replied that WM routinely deals with Wayne Hamada, Wilma Namumnart, and Frank Doyle. Ms. Grace asked Mr. Hamada if he visits the landfill to determine if WM is operating within guidelines. Mr. Hamada explained that WM conducts periodic surveys to verify the grade is at the permitted level.

Mr. Hayashida (on behalf of Mr. Paris) asked what the original grading (height in feet) was. Mr. Burns will get back to the Committee.

Mr. Santiago asked how many lawsuits were pending. Councilmember Apo believes that there is only one, brought by the Ko Olina Community Association and Senator Colleen Hanabusa, challenging the sufficiency of the 2001 EIS.

Councilmember Apo stated that permits are available for five years. The Planning Commission and Land Use Commission orders state that WGSL will close in 2008.

Mr. Santiago asked Mr. Takeuchi to comment on potential damages to the City for changing the agreement. Mr. Takeuchi replied that he was in attendance to advise the Committee as opposed to testify before the Committee. He stated that, in general, the City administration has to be aware of all possible claims that might be raised. Mr. Santiago asked if the Oversight Advisory Committee members should be concerned about potential suits that could be filed against the City. Mr. Takeuchi reiterated that members of the Advisory Committee are serving in an advisory capacity, acting as a forum for community concerns. As long as members are not involved in the management of the landfill or dictating operating policy, they would be likely to avoid being named in potential suits against the City.

Mr. Santiago expressed his continued concern. Mr. Takeuchi stated that the Committee's participation could be revisited in the event that law suits are filed.

Ms. Martinez inquired about the City's position on the existing lawsuit to Councilmember Apo. He responded that, in his personal opinion, if the 2001 EIS were found to be insufficient, the City and WM may be required to redo the 2001 EIS (for the expansion), and there would likely be a follow-up injunctive request that the landfill stop operating in the expansion area. The Councilmember believes that the fight is going to occur when WM goes to the Land Use Commission and the Planning Commission.

Ms. Martinez stated that it takes even years to site a new landfill and that 2008 is around the corner. Councilmember Apo confirmed with Mr. Burns that 400,000

to 500,000 tons go into the landfill per year and explained that curbside recycling could reduce this by 150,000 tons per year. He further calculated that alternative technologies could redirect another 200,000 tons from the waste stream. If a third burner is added to the H-Power plant, an additional 120,000 to 150,000 tons could be eliminated. He stated that Federal approval has been granted to ship waste off island. One group that he knows of is working with a Federal agency and could be operational next year. He believes that the City can get to a point of not needing a daily landfill. Councilmember Apo believes that the construction and demolition landfill in Nanakuli could be permitted to be a municipal solid waste landfill and serve as emergency landfill (should WGSL close). He stated that the City makes a lot of money off of landfill waste and that shipping waste is more expensive than disposing of it at the landfill.

At 10:08 AM, Mr. DeSoto excused himself.

Councilmember Apo expressed concerns about WM's self-reporting. He raised additional concerns about the sufficiency about the gas collection mechanism at the landfill (as raised by the Environmental Protection Agency). Mr. Burns responded that WM does not work in a vacuum - the management team's doors and books are open. WGSL is being scrutinized by DOH and the City makes routine visits. An independent consulting firm, hired by the City, was brought in to audit the landfill and is drafting a report for the City's review. Mr. Burns repeated that there are a lot of people watching WM's management of WGSL.

Ms. Grace asked Mr. Hamada if he could report back to the Committee on the City's findings at subsequent meetings. He stated he would.

Mr. Burns addressed Councilmember Apo's concerns regarding the EPA Clean Air Act notice of violation. WM has been working with the EPA on the gas system that was installed in 2005. It was installed 18 months late. The other concern is related to the temperature of the landfill. The majority of the landfill is operating at 150 degrees. The problem is that the average operating temperature of most landfills is 130 degrees. Since WGSL is operating above that temperature, it is technically in violation. WM is working with the University of North Carolina, the EPA technical staff, the University of Hawaii, and WM's consultants to determine why the landfill is operating at 150 degrees rather than 130 degrees.

Ms. Martinez asked if Mr. Burns had considered the depletion on the oxygenation. Mr. Burns replied that WM does daily monitoring of all twenty-four wells.

Ms. Grace asked Mr. Burns how many gallons of water WM uses monthly. Mr. Burns answered that about two million gallons per month is used primarily for dust control. She asked if WM has discussed using Hawaiian Electric Company's excess water. Mr. Burns has been in communication with HECO, however, he questions the chemical analysis of HECO's used water.

Councilmember Apo stated that the Council would be taking up a Resolution that week requesting that H-Power use non-potable water.

**COMMUNITY CONCERNS:** Mr. Hayashida (for George Paris) asked the Committee to keep in mind that all seven proposed landfill sites were in Waianae.

**ANNOUNCEMENTS:** The next Oversight Advisory Committee Meeting is on Monday, February 12, 2007 at Kapolei Hale in Conference Room A at 9:00 AM.

**ADJOURNMENT:** Mr. Parker moved that the Committee adjourn. Mr. Akina seconded the motion and the meeting adjourned at 10:20 AM.

**Minutes of Oversight Advisory Committee - Waimanalo Gulch**  
**Monday, October 9, 2006**  
**Kapolei Hale, Conference Room A**

**MEMBERS PRESENT:** Albert Silva, Polly Grace, John DeSoto, Allen Parker, Pearl Lewis, and Lorraine Martinez

**MEMBERS ABSENT:** David Akina, George Paris, Alex Santiago, and Jackie Spencer

**GUESTS:** Ken Shimizu, (Deputy Director Department of Environmental Services), Wayne Hamada (Disposal Operations Engineer - Refuse Division,) Gary Takeuchi and Paul Herran (Corporation Council), Paul Burns (General Manager, Waste Management), Russell Nanod (Community Affairs Manager, Waste Management), George Abcede (Maintenance Engineer, Department of Transportation - Highways Division, Oahu District), and Lieutenant Frank Pugliese, (Honolulu Police Department).

**MEMBERS OF THE PUBLIC:** None registered.

**CALL TO ORDER:** The meeting was called to order at 10:22 AM by Chair Albert Silva. The Chair reiterated that the Committee's purpose was to provide a forum for community representatives to share community concerns with the operator of the Waimanalo Gulch landfill, with the goal of promoting cooperation between the community, the operator and the City, to make sure that the landfill operations are sensitive to community concerns.

**ADOPTION OF MINUTES:** Ms. Martinez clarified a comment that she made during the 7/24/06 tour of WGS� (page 1, paragraph 4) about charcoal briquettes, explaining that her concern is about the possible toxicity of the H-Power ash being landfilled at Waimanalo Gulch, and asked that this be reflected in the minutes of that meeting. A motion to approve the minutes of the 8/14/06 meeting and make the correction noted by Ms. Martinez in the minutes of July 24, 2006, was made by Mr. Parker and seconded by Mr. DeSoto. All members voted in the affirmative.

**REPORT BY WASTE MANAGEMENT:** Russell Nanod reported that Waimanalo Gulch Sanitary Landfill (WGS�) has not received any complaints since the last meeting of the Advisory Committee (8/14/06). He also confirmed that Waste Management Hawaii's (WM) contract with the City included a 30-year closure management plan with the signing of a 15-year extension. The closure management provision requires that WM provide and maintain the

leachate removal and treatment system, groundwater well monitoring, recompacting and covering of any waste, and the planting of new vegetation.

Mr. Nanod also informed the Committee that WM hired Clean Sweeps on October 3 to sweep the area fronting WGSL. They are negotiating with the company for twice-weekly clean-ups on-site and weekly clean-ups of Farrington Highway, fronting the landfill.

Mr. Nanod reported that the construction of cell E3 is ongoing and the liner is scheduled to be laid on October 16. At that time, the leachate system will also be installed. The average tonnage for October, since October 6, is 503 tons per day of municipal solid waste and 264 tons per day of ash (from H-Power). The EIS for the proposed expansion continues. Also, 1,726 individuals have toured WGSL since August 2005,

Mr. Nanod also indicated that with regard to questions about what the H-Power ash is composed of, he will follow-up with H-Power. He mentioned that leachate testing is conducted four times per year, and that the leachate is sent to the Waianae Wastewater Treatment Plant, where it is mixed with the wastewater and treated. He also noted that water trucks are used to reduce dust from landfill operations. Mr. Burns indicated that WM can sometimes use up to 200,000 gallons per month.

Mr. DeSoto raised the issue of debris along Farrington Highway. Mr. Burns reported that Waste Management is rebuilding the main access road to the landfill. The road has been re-graded and resurfaced. This is expected to improve drainage and discourage the tracking of silt (on truck tires). Mr. DeSoto asked whether the landfill has a wash rack (for trucks). WGSL has a rumble strip for use on rainy day, but does not have a tire wash area.

**UNFINISHED BUSINESS:** Mr. Abcede from the State DOT indicated that DOT has noticed more rubbish on Farrington Highway near WGSL; that DOT could do more to address the problem if it had additional resources, and he will bring this to the attention of his department; that DOT, however, considers the problems related to dirt or debris near the ingress and egress from the landfill to be WM's problem; and that DOT has been working with WM on the issue, and has agreed to the regular sweeping of the area and the regrading efforts that WM has instituted. Mr. Burns also mentioned that the EIS for the proposed landfill expansion will include a traffic study and that DOT will have a chance to review that study.

Chair Silva asked if any member of the public would like to testify on the matters discussed with Mr. Abcede. There were none.

Lt. Pugliese from the Honolulu Police Department (Kapolei) reported on HPD's efforts to enforce littering laws. HPD issued a littering citation within the last two weeks to a truck driver. He asked the Committee to consider that, on most days, he only has seven officers from Kapolei to Kaena Point. Hazardous moving violations take priority over littering. He encouraged those who witness littering to make a 911 call to file a miscellaneous public report, which HPD will follow up on. The trucking company's name and description of the driver is helpful. To issue a citation, police officers have to observe the items flying out of the vehicle and have the time to pull over the truck to issue the citation.

Mr. DeSoto suggested getting this information out in Leeward newspapers. Ms. Martinez asked how the community can support the Police Department. Lt. Pugliese asked the community to make reports (when they witness infractions). Mr. Burns advised that Waste Management will create a handout to remind truck drivers about covering up their loads. He will also look in to possibly creating some public service announcements.

Ms. Grace asked how the number of officers assigned to a certain district is determined. Lt. Pugliese responded that two officers are assigned to Nanakuli and five for the area between Hakimo Road to Kaena Point. Ms. Martinez asked about speeding enforcement near the landfill. Lt. Pugliese stated that speeding citations are up.

Chair Silva asked if any member of the public would like to testify on the matters discussed with Lt. Pugliese. There were none.

At this time, the Chair asked for a summary of the Waste Management contract pursuant to discussion at the August 14 WGS� Oversight Advisory Committee meeting. Mr. Takeuchi explained that Councilmember Apo had indicated at the last meeting that he would try to provide a summary of the contract provisions that might be of interest to the Committee. However, Councilmember Apo had been out of town and was unable to attend this meeting, so the summary he referred to had not yet been obtained.

With respect to responsibilities and liabilities of Committee members, Mr. Takeuchi reiterated what Ms. Donna Woo explained at the first Committee meeting. That is, the Committee is an advisory body, and does not have authority to direct operations at the landfill. So long as the Committee members continue to be only advisory, they should not be exposed to any liability for their actions in that regard. He reminded members that it would not be advisable to

become involved with any litigation against the landfill and that such action could expose members to liability.

Ms. Martinez asked for the profit margin that the City makes by having the landfill on their property.

**COMMUNITY CONCERNS:** Ms. Grace asked if Waste Management is looking at diversions (to deal with waste). Mr. Hamada explained that the City would be issuing a request for proposal for alternate technologies that may encompass diversion, recycling, and disposal technologies. Ms. Grace said she had attended a presentation at Kapolei High School on diversion technologies. The presenting vendor claimed to be willing to build a facility for free and only needed land. At this time, Chair Silva reminded the Committee members of the Advisory Committee's scope of responsibility. Mr. DeSoto supported the Chair's statement.

Chair Silva asked if any member of the public would like to testify on any of the matters discussed by the Committee. There were none.

**ANNOUNCEMENTS:** The next Oversight Advisory Committee Meeting is on Monday, 11/13/06 at Kapolei Hale in Conference Room A at 9:00 AM.

Chair Silva asked for final comments. Ms. Pearl Lewis stated that Senator Suzanne Chun Oakland has a friend who has a recycling landfill and invited the Committee to tour the facility. She will share more information at the next meeting. Mr. Takeuchi suggested that Chair Silva include this issue on the next meeting agenda so the Committee could formally consider the invitation.

**ADJOIURNMENT:** Mr. DeSoto moved that the Committee adjourn. Mr. Parker seconded the motion and the meeting adjourned at 11:14 AM.



**Minutes of Oversight Advisory Committee - Waimanalo Gulch**  
**Monday, August 14, 2006**  
**Kapolei Hale, Conference Room A**

**MEMBERS PRESENT:** Albert Silva, Allen Parker, Lorraine Martinez, Pearl Lewis, Alex Santiago, Polly Grace, George Paris, David Akina, John DeSoto, and Jackie Spencer

**GUESTS:** Ken Shimizu, (Deputy Director, Department of Environmental Services (ENV)), Wayne Hamada (Disposal Operations Engineer - Refuse Division, ENV) Gary Takeuchi and Paul Herran (Corporation Counsel), Todd Apo (Honolulu City Councilman), Dana Gusman (Watanabe Ing & Komeiji) and Russell Nanod (Community Affairs Manager, Waste Management Hawaii (WM.

**MEMBERS OF THE PUBLIC:** Bob Stratton, Lee Munsen.

**CALL TO ORDER:** Meeting was called to order at 9:05 AM by Chair Albert Silva.

**ADOPTION OF MINUTES:** A motion to approve the minutes of the July 10, 2006 meeting and the July 24, 2006 Site Visit was made by George Paris and seconded by Polly Grace. Chair Silva called for changes or corrections to the minutes. Lorraine Martinez clarified a comment that she made during the July 24 landfill tour (page three, second paragraph) regarding high carcinogens in barbequed food, explaining that because burnt food could be carcinogenic, she wondered if there might be similar concerns about H-Power ash. With that clarification noted, all members voted in the affirmative to adopt the minutes.

**CLARIFYING GUIDELINES & OBJECTIVES:** Gary Takeuchi stated that the Mayor had hoped to participate in this discussion. He suggested that the Committee come back to this item upon the Mayor's arrival. Chair Silva asked for a motion to move forward to the next agenda item, and return later to this item when the Mayor arrives, which was made by Allen Parker, and seconded by George Paris. All members voted in the affirmative.

**REVIEW OF COMMITTEE RULES BY CORPORATION COUNSEL:** Mr. Takeuchi introduced himself and Mr. Paul Herran from Corporation Counsel. They have been assigned to assist the Committee. They have reviewed the rules and found some non-substantive errors as well as an inadvertent and unnecessary reference to the Community Benefits Committee. Corporation Counsel has reissued the corrected rules. There were no questions from the Members.

**REPORT BY WASTE MANAGEMENT HAWAII:** An operations report was given by Russell Nanod, Community Affairs Manager, WM. Waimanalo Gulch Sanitary Landfill (WGSL) recorded about 2400 tons per day and H-Power is expected to continue diversion until the end of the week. WM is commencing a cultural survey related to the proposed expansion of the landfill. The survey will be completed within the next two weeks and seeks archeological findings (cells E3 and E4). R.M. Towill has been contracted to commence a wind study to determine if the wind direction would be affected by landfilling those particular areas. In previous meetings there were questions related to the durability of geomembranes (liners). Mr. Nanod distributed documents which show that the material can last hundreds of years. One particular laboratory test found that this particular material could last for 449 years. Ms. Grace asked if a liner has actually lasted 449 years. Mr. Nanod explained that laboratory tests have concluded that when the liner reaches 449 years, the material will still have 50% of its original integrity, and is not expected to fail. The liner should remain as an effective barrier beyond that time.

Mr. Paris questioned WM's 15-year contract with the City and asked if the next negotiation would occur in 2017. Mr. Nanod stated that that was his understanding. He will report when the contract will expire/next negotiations will occur. Mr. Paris asked if the 30-year post-closure agreement was part of the 15-year contract.

Having reviewed the contract, Councilmember Todd Apo stated that the 15-year contract was signed in 1999 but it is contingent on the City getting approval for the proposed expansion of WGSL. If the City does not get all the expansion, then not providing operations for the 15-year duration is not a breach of the contract. With regard to WM's closure obligations, language was included in the original contract as well as the extension and Councilmember Apo believes that additional provisions exist in the extension. If the City does not receive the entire 15-year extension, there is a clause in the contract to address that situation.

Mr. Paris asked for details of the contract.

Mr. Santiago asked what the ramifications of not receiving the extension could be. Councilmember Apo replied that that would result in an earlier termination date of the contract, but would not wipe away the post-closure obligations.

Ms. Martinez asked Councilmember Apo if an EIS would always cover only five year increments. He replied that an EIS could cover a longer period but the permits received from the State Land Use Commission and the Department of Health are only for 5-year periods. Ms. Martinez asked if the expansion EIS would cover the (remaining) 15-year period. Councilmember Apo believes that

the EIS conducted in 2001 covered the area needed for the 15-year expansion. As long as the waste fits in the area covered in the EIS, the City can continue to receive permits.

Mr. Santiago asked if he could raise a community concern regarding efforts to address the (condition of the) trucks leaving WGS. Chair Silva stated that this was not the appropriate point in the agenda to raise a community concern, as the Committee was still discussing WM's report. Bob Stratton, a member of the community, questioned why this issue (trash flying off trucks that have left WGS, littering the highway) is not an area of oversight. Chair Silva emphasized that the Committee's area of concern is the landfill, not Farrington Highway. Mr. Stratton feels the State of Hawaii has abandoned the section of highway fronting the landfill. Ms. Martinez asked the guest to introduce himself. Mr. Stratton introduced himself as a Leeward Coast resident and reiterated that the State Department of Transportation (DOT) does not maintain or inspect the highway or remove the loose gravel, stones or rocks that come from the landfill. Councilmember Apo stated that he believes that trucks pick up dirt and other material from the landfill (on their tires), are not cleaned well before they leave the landfill, and kick off this material on the highway. He suggested that the entrance/exit area (of WGS) be cleaned to ensure that material is not tracked onto the highway.

Mr. Stratton also believes that WM should not be responsible for cleaning the highway. He asked Corporation Counsel for an opinion. Mr. Takeuchi suggested that the issue be raised at a later, more appropriate point in the agenda.

Mr. DeSoto made a motion that "Community Concerns" be added to all future agendas. The motion was seconded by Mr. Paris and unanimously approved by the Committee.

Ms. Martinez echoed concerns regarding litter in the area surrounding the landfill. Mr. Takeuchi made a point of order that discussion items should fit into what is on agenda and reminded the Committee that they were still on the "Waste Management Report". He suggested that future agendas reflect desired discussion items. Ms. Martinez requested a motion that the Committee invite the State DOT to the next meeting to discuss litter and other debris on Farrington Highway. Mr. Paris seconded the motion. All members voted aye and the motion carried unanimously.

Mr. Lee Munsen, a resident of Ko Olina, commented on the amount of filth generated by the landfill. He does not believe that the condition is improving. He characterized a road within the landfill as a "raceway" and complained that

he must wipe off his furniture daily due to dust. Ms. Polly Grace asked Mr. Munsen where he was in the 1980's and commented that he knew that the landfill was next door when he bought his property, She asked why he proceeded to buy his home.

Ms. Grace spoke of diversion technologies used in Japan and Germany and suggested that the community and committee look into such technologies.

The Mayor, having arrived, suggested that the Committee focus on their purpose - to ensure that Waste Management, in current and future operations, is responsive to community concerns. Alternate technologies will be addressed in ENV's request for proposals that will be issued October 1, 2006. He further suggested that a presentation on the RFP be made to the Committee at the appropriate time.

Ms. Martinez suggested that Mr. Munsen's concerns be incorporated into the Committee's follow-up activities. Mr. Santiago understands that it is not within the Committee's purview to discuss alternative technologies.

Mr. Paris asked whether people in the community are receiving notices about the Oversight Advisory Committee meetings. The Mayor asked how notice is made. Councilmember Apo suggested that meeting notices be posted on the City's website, Opala.org.

Mr. David Akina commented that when Ko Olina owners bought their properties, they knew the landfill was across the street. He asked if the City's contract includes a provision that addresses dust and debris that might be attributed to the site. He also asked if it was WM's responsibility to clean the highway. He believes that WM should be responsible for cleaning the highway and dust control. With respect to the Ko Olina homeowners, he suggested that they go back to the seller to take action, control the dust.

In response, Councilmember Apo said that Ko Olina and Kailani home buyers believed that the landfill would be closed in 2008, and that they saw the "end of the tunnel" with respect to the landfill. With regard to the dust, he believes that WM is responsible "to not create a nuisance". Mr. Paris asked whether construction-type dust screens could be used to control dust and debris.

**IDENTIFICATION OF MATTERS OF CONCERN FOR FUTURE MEETINGS:**

Ms. Martinez commented about trucks that do not cover their loads and create debris.

Mr. Munsen asked whether it would be appropriate for him to suggest future agenda items. He suggested that someone from the City & County attend the next meeting to address flying litter. Mr. Munsen said he had witnessed garbage flying off trucks and landing on police cars (the police do not cite the drivers for littering). He would like the Honolulu Police Department to explain why they do not enforce littering laws and wants them to come to the next meeting prepared to answer his questions.

Mr. DeSoto suggested that all agencies involved attend meetings to address community questions that may arise.

Mr. Paris suggested that concerned citizens take their comments to their respective neighborhood boards rather than bring their issues to the Oversight Advisory Committee to prevent meetings from going long.

The Mayor suggested that the Committee focus on developing a concise agenda to keep meetings productive and to prevent Committee members from becoming overburdened. This will also ensure that the proper City or State agencies are present to address questions and concerns.

With respect to future meetings, Mr. Santiago asked that the Committee prioritize their agendas. Should they decide to address things such as the Waste Management contract, alternative technologies, etc., the Committee may be overwhelmed.

Ms. Martinez summarized Mr. Santiago's comments. A motion to include Mr. Stratton's concerns on the next meeting agenda was made by Mr. Paris and was seconded by Mr. Santiago. Mr. Takeuchi reminded the group that moving forward, "Community Concerns" will be on all future agendas based on a motion made earlier in the meeting.

Chair Silva suggested that the next meeting be held on October 9. All committee members voted aye to approve the motion made by Mr. Paris. Mr. Takeuchi advised that an agenda item titled "Old Business", without more, would not sufficiently comply with the Sunshine Law. Discussion items must be specific for proper public notification. He suggested that the Committee focus on developing the next agenda.

Ms. Grace requested a copy of the contract between WM and the City. Councilmember Apo stated that he will provide a summary his office has prepared of the specific provisions discussed.

Mr. Santiago summarized that the next meeting's agenda will include: a discussion of the contract (between the City & WM), a report by DOT to address concerns regarding maintenance of Farrington Highway, issues regarding cleaning of the truck tires and covering of trash, and a report from HPD to address why they are not citing littering violators.

Mr. DeSoto expressed that he feels a little lost in terms of what the Oversight Advisory Committee's purpose is. Chair Silva requested that Corp. Counsel explain the Committee's function and intent. It was suggested that that issue be the first agenda item.

Mr. Paris asked what his fiduciary responsibility is and whether there is any liability involved in his participation with the Oversight Advisory Committee. It was suggested that the issue be discussed at the next meeting. Mr. Paris made a motion that Committee members' responsibilities and liabilities be on the next meeting agenda, and Mr. DeSoto seconded.

Mr. Takeuchi suggested that for consistency, all future agenda items be determined by motion. Mr. Santiago restated the agenda as a motion: the agenda will include the WM contract, a DOT representative to discuss Farrington Highway, the ingress and egress to the landfill at Farrington Highway (debris and keeping trucks clean), a representative of HPD to discuss littering, and the Committee members' responsibilities and liabilities. Mr. Paris seconded, all Committee members voted aye and the motion carried.

**NEXT MEETING DATE AND LOCATION.** Ms. Martinez is not comfortable delaying the next meeting until October. Chair Silva explained that the September 11 meeting will be canceled due to the unavailability of the meeting space. Mr. Akina suggested that the Committee double-up on the next meeting. Mr. Paris suggested that the next meeting last the entire day to compensate for the missed September meeting. Meeting will be on October 9, 2006 and start at 9:00 AM. It should be anticipated that the meeting might last upwards of five hours.

Ms. Martinez asked Waste Management or the City to print business cards for her and other members. No other members commented.

Chair Silva asked for final comments. There were none.

**ADJOURNMENT.** Ms. Grace moved that the Committee adjourn. Mr. Santiago seconded the motion, the motion carried unanimously, and the meeting adjourned at 10:44 AM.

**Oversight Advisory Committee - Waimanalo Gulch  
Tour Summary  
Monday, July 24, 2006**

**MEMBERS PRESENT:** David Akina, Polly Grace, Pearl Lewis, Lorraine Martinez, George Paris, and Allen Parker.

**MEMBERS ABSENT:** John DeSoto, Alex Santiago, Albert H. Silva.

**GUESTS:** Wayne Hamada (Disposal Operations Engineer - Refuse Division), Michelle Akahane (Department of Environmental Services - Deputy Director's Office), Paul Burns (General Manager, Waste Management), Russell Nanod (Community Affairs Manager, Waste Management), Pat Chardon (Honokai Citizen's Patrol), Maile Hallums (Waianae resident).

**TOUR BY WASTE MANAGEMENT:** Landfill tour participants met at Kapolei Hale at 9:00 AM for transportation to Waimanalo Gulch Sanitary Landfill (WGSL) by motor coach. The group arrived at WGSL at 9:16 AM and Paul Burns gave a brief overview of landfill operations. He listed the types of waste accepted at the landfill [ash residue from H-Power, unburnable, special waste, municipal solid waste, and contaminated soil (for example, material from an oil spill)] and explained the role of the landfill's full-time compliance associate.

Mr. Burns pointed out the scale house and explained that (waste) tonnage information is provided to Waste Management and the State. Waste Management is paid \$14.00 per ton by the City & County of Honolulu.

Mr. Burns stated that current operating permits expire in May 2008. With no expansions, the landfill has capacity until 2009.

George Paris inquired about the landfill liner and asked whether contamination is impossible (with such a system). Mr. Burns distributed samples of the liner material and described its use and benefits.

Polly Grace commented that if such a liner system were in place forty years ago, perhaps "this" could have been prevented. She asked about the possibility of contacting a group that studied the effectiveness of the liner material.

Mr. Burns explained that WGSL is single-lined landfill. There are various types of landfill construction designs - he will distribute information to the Advisory Committee.

Lorraine Martinez asked about the degradation of the landfill liner and how its performance compares to pvc material. Mr. Burns explained that this particular material is impervious to UV degradation. In his opinion, it is the best product for landfill liner.

Ms. Grace asked whether studies of contaminants and combustibles are conducted. Mr. Burns replied that leachate is monitored quarterly. With regard to combustibles, he stated that some of the wells at the landfill are hot - 150-degrees. One well is 175-degrees. Well temperatures at mainland landfills average 130-degrees. WGS� is participating in a study to determine why well temperatures at WGS� are high.

Ms. Martinez asked about natural contaminants outside of the landfill (and their impact on the environment). Mr. Burns replied that future drilling should address this question. Russell Nanod added that WGS� only accepts waste as allowed by the Environmental Protection Agency (EPA). George Paris questioned the frequency of EPA testing. Mr. Burns responded that the State Department of Health (DOH) conducts tests (at the landfill) monthly. When Mr. Burns started with the landfill a little over a year ago, DOH was in the practice of conducting tests weekly. Third-party landfill consulting engineers take samples then report to DOH (to ensure safety and compliance).

At this point, Mr. Burns identified a water truck and flare (which effectively burns out methane gas produced by the landfill). It is a clean burning flare. He stated that WGS� is working on an agreement with Hawaiian Electric Company's alternate energy division to work toward generating electricity for up to 1,000 homes.

Ms. Grace identified medicinal plants growing near the flare. Mr. Paris inquired whether the stack's height was limited. Mr. Burns confirmed that it is. Mr. Paris commented that the stack appeared "short". Mr. Burns then explained enclosed flares versus candlestick flares.

Ms. Grace asked if, on a breezy day, the gas (emitted from the flare) would waft down to the swimmers in the ocean and surrounding homes. Ms. Martinez commented that the flare burn is cleaner than the bus (that the Committee toured the landfill in). She speculates that cars on the highway have higher emissions than what is released from the landfill.

Mr. Burns pointed out an area that was hydro-seeded in March and the ash monofill. He explained that WGS� accepts 250 to 300 tons of ash from H-Power per day. H-Power operates 24 hours per day; WGS� accepts ash 24 hours per day.



Maile Hallums asked about covering and compacting practices at WGSL. She asked whether the ash is toxic and whether Mr. Burns was aware that WGSL "covered reports of five infants getting sick".

Ms. Martinez commented on the high carcinogens from barbecued food items.

Mr. Burns stated that ash is delivered daily and covered weekly. Trash is covered at the end of each day with soil and interim covers and steps are taken to prevent air intrusion. He then pointed out an 85-foot deep gas well and the western stability berm.

Ms. Martinez asked which states use same technology as WGSL. Mr. Burns replied that states such as California, New Mexico, Nevada, and Maine (which experiences 40-inches of precipitation annually and has groundwater 10 feet below the landfill) use similar technologies.

Mr. Burns identified gas well #20 and rumble strips on the road designed to remove mud from trucks before leaving the landfill in rainy weather. He also noted excavation work for a new cell.

Ms. Hallums commented that recycling should be done "here". Mr. Burns agreed and stated that it is much easier if recycling is done in-home. Due to concerns for landfill workers' health and safety, it is not feasible for workers to pick recyclables out of the landfill. Ms. Hallums characterized the response as "stupid" and argued that Waste Management should build a machine to extract recyclables from the waste stream.

Mr. Burns described the role of the 80,000 lb. compactor. He explained that it happened to be a partial diversion day and that H-Power was at half-speed (due to annual maintenance). Mr. Burns then called attention to the litter fences and the employees who pick trash off the fences (to prevent litter from flying out of the landfill).

Mr. Burns detailed the daily process of covering ash with soil. A final 3-foot thick cap is also laid (when the cell is full).

Mr. Burns briefly explained WGSL's request for an expansion permit and the community scoping meetings that are being held to solicit the community's input on the associated environmental impact statement. He invited the group to attend meetings on July 27 in Honolulu and August 10 in Kapolei (two previous meetings were held on July 10 in Nanakuli and July 11 in Kaneohe).

Mr. Paris commented that the landfill should be left in its current location, not moved further toward Nanakuli.

Ms. Martinez inquired about City & County's efforts with respect to recycling and whether it might decrease the amount of waste accepted at the landfill. Mr. Burns stated that WGS� takes roughly 400,000 tons of waste annually and that recycling efforts could decrease that tonnage.

The bus returned to Kapolei Hale and at 10:31 AM, Mr. Burns thanked the group for attending the tour and offered to host others who might be interested in visiting the landfill.

**Minutes of Oversight Advisory Committee - Waimanalo Gulch**  
**Monday, July 10, 2006**  
**Kapolei Hale, Conference Room A**

**CALL TO ORDER:** Meeting was called to order at 11:09 AM by Jeff Coelho in his capacity as pro tempore chairman.

**MEMBERS PRESENT:** John DeSoto, Alex Santiago, Jackie Spencer, Albert Silva, Polly Grace, Lorraine Martinez, George Paris and Allen Parker

**MEMBERS ABSENT:** Pearl Lewis and David Akina

**GUESTS:** Mayor Mufi Hannemann, Managing Director Wayne Hashiro, Jeff Coelho (Director, Customer Services Department), Donna Woo (First Deputy, Corporation Council) Eric Takamura (Director, Department of Environmental Services) and Ken Shimizu, (Deputy Director Department of Environmental Services), Wayne Hamada (Disposal Operations Engineer - Refuse Division), Paul Burns (General Manager, Waste Management), and Russell Nanod (Community Affairs Manager, Waste Management)

**PRESENTATION BY WASTE MANAGEMENT:** Jeff Coelho asked the committee's indulgence in taking the agenda out of order to allow for a presentation by Paul Burns, the General Manager of Waimanalo Gulch Sanitary Landfill (WGSL).

Mr. Burns referenced an aerial photo of the landfill that was taken May 9, 2006 and briefly described landfill operations and the types of waste accepted at WGSL such as ash, unburnable, and residue from H-Power in addition to special waste and municipal solid waste. WGSL is a modern landfill, well-designed and planned. Waste Management works with outside consultants, the Department of Health, and the Environmental Protection Agency on landfill operations. He explained the function of the landfill liner and liquid collection process. Mr. Burns then invited the Committee to tour WGSL at their convenience.

Member Grace asked whether the waste product goes into the ground. Mr. Burns explained where, specifically, certain types of waste go in the landfill and the process of compacting and covering the trash. Ms. Grace asked how toxic the waste is and whether it safe to neighboring homes. Mr. Burns replied that it is a safe place and the way Waste Management operates is as safe as can be due to ongoing air monitoring and third-party quarterly groundwater level testing. Data is analyzed then submitted to the Department of Health and the City.

Ms. Grace asked Mr. Burns if he was aware of the ocean across the street (from the landfill). She asked if an "environmental person" was present. Director Takamura addressed Ms. Grace's comments and explained that landfill operations are based on Environmental Protection Agency (EPA) regulations. He detailed the liner function in depth (water that percolates through the landfill is collected and migrates to a sump). Groundwater and ocean water are monitored by respective City and State agencies. Any environmental breaches will be detected.

Ms. Grace asked how often the liner is changed and how the liner is checked. Mr. Burns went through the steps taken by Waste Management to insure proper installation of the liner. The liner material is designed to last for decades.

In the interest of time and keeping with the meeting agenda, Jeff Coelho asked Ms. Grace to make a list of questions. Ms. Grace stated that she wants everyone to hear what she has to say and did not want to make a list of questions. Mr. Coelho reminded her that the first course of action is to get the Committee organized.

Ms. Grace asked when watermelon could be planted at the landfill site. Mr. Burns described post-closure procedures. She asked Mr. Burns if he was familiar with the Grace Pacific dumping area that has been rendered unusable. He was not.

Lorraine Martinez followed up with a question regarding post-closure capping and the timeframe for use as a park. She cited Kaka'ako Waterfront Park as an example and its current use by the community. Mr. Burns explained that Waste Management has a thirty-year post-closure monitoring commitment though future uses are not yet well-defined and provides a discussion opportunity.

Mr. Coelho introduced Mayor Hannemann at 11:28 AM. The Mayor welcomed the members, reiterated the purpose of the oversight committee, and characterized it as a community sounding board via the Department of Environmental Services.

The Oversight Advisory Committee will adhere to the Sunshine Law and all meetings and deliberations will be open to the public.

The Mayor mentioned that the Community Benefits Advisory Committee will convene the week of July 17, 2006.

#### **ELECTION OF OFFICERS OF THE COMMITTEE:**

The Mayor asked for nominations for Chair. John DeSoto nominated Albert Silva as Chair, Allen Parker seconded the nomination. There were no other nominations. The Mayor confirmed that there was unanimous consent.

George Paris nominated Ms. Grace as Vice-Chair. Mr. DeSoto seconded. There were no other nominations. The Mayor confirmed that there was unanimous consent.

Mr. Paris nominated Mr. Parker as Recording Secretary. Mr. DeSoto seconded. There were no other nominations. The Mayor confirmed that there was unanimous consent.

The Mayor asked Chair Silva to join him at the head of the table.

#### **ADOPTION OF COMMITTEE RULES:**

Corporation Council First Deputy Donna Woo provided copies of and reviewed the proposed rules of the Oversight Advisory Committee (see attached) and the Open Meetings Guide drafted by the Office of Information Practices. Ms. Woo explained that Waste Management would provide minutes of the meetings. She also recommended two-minute public testimony, outlined operating rules, discussed disclosure rules, and reiterated that the Sunshine Law that would apply to the committee's meetings. Deputy Director Ken Shimizu is the Mayor's representative to the Committee and will cast a tie-breaking vote in the situation of a split vote.

Alex Santiago asked how many members would constitute a quorum. Ms. Woo advised that, with a ten member committee, quorum would be established with six members. A successful motion would need six affirmative votes.

Chair Silva recommended that the two-minute public testimony policy be indicated on the agenda for the community's information.

Mr. Paris asked who drafted the rules document. Ms. Woo replied that she did.

Chair Silva asked that the committee's operating procedures also be provided to the public. Ms. Woo stated that the copies of the proposed rules would not be available to the public; however the Open Meetings Guide is available online through the Office of Information Practices.

Ms. Martinez recommended that Waste Management provide the Committee with condensed landfill related documents.

A motion to pass the committee rules was made by Mr. Parish and seconded by Mr. Parker. All members voted in the affirmative.

**COMMITTEE GUIDELINES AND OBJECTIVES:**

Mr. DeSoto commented that the committee should act as the "eyes and ears" of the community, expressing residents' concerns to the administration.

Chair Silva asked if the Committee would be kept abreast by Waste Management of situations and problems that may occur at the landfill. Mr. Burns replied that he and Community Relations Manager Russell Nanod have a good team at the landfill and an open door policy. Waste Management is fully committed to keeping the Committee and the community informed.

Jackie Spencer asked if the Committee was established only for WGSL. The Mayor replied that the Committee's purpose is specifically for WGSL.

Mr. Santiago asked what the timeframe is for the Committee's work (when the Committee's work would conclude). The Mayor suggested that that should be a discussion issue for the Committee.

Mr. Paris asked if a 15-year lease was signed (for WGSL). Director Takamura explained that a 15-year lease was signed in 2003 under the Harris Administration. The next negotiation will be in 2017 and the contract ends in 2018. Mr. Paris asked whether the Committee would serve until 2018. Ms. Woo replied that the Committee's appointment is contemporaneous with the Mayor's term.

Mr. DeSoto raised the issue of designating replacements for Committee members unable to serve until 2018.

Mr. Parker asked whether the 30-year post-closure is part of the 15-year contract. Ms. Grace followed up by asking how the Committee could be assured that Waste Management would monitor for the thirty-year period. Mr. Burns replied that, at the time of closure, Waste Management will post a surety bond to the Department of Health. Should the City find that post-closure services are not sufficient, the State Department of Health can call the bond.

Ms. Grace asked if Waste Management is looking at landfill diversion options. Mr. Burns responded that Waste Management is contracted by the City to manage the landfill and is willing to work with the City on landfill alternatives.

Mr. Paris asked to be kept apprised of on-going litigation with respect to WGSL and how the Committee will be involved in lawsuits. Mr. Burns informed Mr. Paris that any litigation between Waste Management and outside parties would not include the Committee. He followed up that it is his team's goal (with respect to this Committee) to educate the community so that they understand what it takes to run a landfill. Mr. Burns is particularly interested in the community's perception of landfill operations. Waste Management wants to operate in a way that has minimal impact on the community.

Mr. Paris continued to ask to specifically to be kept apprised of activities between Waste Management and Ko Olina. Waste Management will copy the Committee on responses to community letters of concern. At this time, there are no outstanding issues.

Mr. DeSoto asked for Ms. Woo's legal opinion on the Committee's participation with respect to any litigation.

Mr. Parker asked what Department the Committee reports to. Ms. Woo replied that the Committee serves in an advisory capacity to the Mayor through the Department of Environmental Services. She reiterated that the Committee members act as the "eyes and ears" of the community and advised against members becoming involved in related litigation due to personal liability issues. She reminded the group that their purpose is to raise the community's concerns and work to resolve such concerns. The Committee will not play a role in WGSL's day-to-day operations.

Ms. Martinez reiterated that the Committee is a communication vehicle.

Mr. Paris questioned whether the Committee had a fiduciary responsibility. Ms. Woo repeated that, as officers of the City, Committee members should not jeopardize the interests of the City. Mr. Paris asked if he could act as a third party to any lawsuits, to which Ms. Woo strongly advised against involvement in his capacity as a member of the Oversight Committee. Finally, she explained that the Committee's recommendations are only recommendations and that responsibility lies with decision-makers.

Mr. Paris asked if legal counsel will be present at all Committee meetings. Ms. Woo responded that efforts would be made to have counsel at the committee meetings. Mr. Paris asked if the committee could be informed of litigations involving WGSL. Ms. Woo's office will notify the Committee should litigation arise that might impact the Committee members, but such situations are not common.

Chair Silva requested that any reports submitted by the Committee would be reviewed by Corporation Counsel prior to submission to any environmental agencies. Ms. Woo is not aware of reports that the Committee will be responsible for, though minutes of the meetings will be shared with the Department of Environmental Services.

Anything that comes out of the Committee will go to the Mayor. Many issues may result in inter-agency communications through the City Administration (e.g. to the State Department of Transportation).

Ms. Martinez requested a synopsis of all Environmental Protection Agency (EPA) documents at the next meeting. Director Takamura responded that the regulations change frequently and that Waste Management continuously applies for various Department of Health and EPA permits. Ms. Martinez would like to receive the federal rules without interpretation to assist her in her capacity as a Committee member. She expressed her willingness to review all documents.

Ms. Grace made a comment on the 1946 arsenals along the Leeward coast and subsequent contamination due to the bombs. She stated that she has suffered from adverse health effects. Mr. DeSoto expressed that the Committee provides an opportunity to learn about the landfill's operations and inform the community. Director Takamura commented that many pollutants (automobile emissions, pesticides, etc.) in the common environment may create adverse health effects. The use of groundwater wells, liners, and other efforts at the landfill are based on EPA standards and science. Mr. Paris made a statement about contaminants in the waters of the Waianae coast.

Mr. Santiago asked who will provide information on alternative technologies to the Committee and what resources would be available to the Committee, such as consultant fees. The Mayor urged the committee to focus on WGSL and how Waste Management is conducting business. Alternative technologies are explored daily by the Department of Environmental Services - it is the Department's job. The Mayor mentioned votes taken by the current City Council in December 2004 and February 2006 with respect to the closure of WGSL. He stated this Committee will facilitate keeping Waste Management and the City Administration's "feet to the fire" on landfill-related issues.

The Mayor recommended that a regular meeting date be set and that all Oversight Committee meetings be held in Kapolei to encourage the landfill's neighboring community's attendance.



Mr. Coelho asked Mr. Burns whether similar ad hoc committees existed in other states where Waste Management operates. Mr. Burns replied that other Committees exist and cited his experience in Maine. He also noted Rochester, New Hampshire as an example and encouraged members to go to the Committee's website. He stated that, based on his experience, many of these Committees begin with mistrust but that it does Waste Management no good to give misinformation. He noted that WGSL will be doing liner construction within the month and invited the Committee to see the construction activities.

Mr. Paris asked about lava flowing under the landfill and gas emissions from the landfill. Mr. Burns stated there is no such geological activity and mentioned that Waste Management is working on generating electricity from gas.

**ARRANGEMENT OF WASTE MANAGEMENT FACILITY TOUR:**

Waste Management will provide transportation to WGSL for Committee members. A tour is scheduled for July 24, 2006 at 9:00 AM. The city will assist the recording secretary in posting a public notice with the City's Clerk's office. Committee members will meet at Kapolei Hale.

The Committee voted to meet at 9:00 AM on the second Monday of every month. Meeting dates and times are subject to conference room availability at Kapolei Hale.

The Mayor suggested that area Councilmember Todd Apo or his representative be included in subsequent Oversight Advisory Committee meetings.

Mr. Paris moved that the Committee adjourn. Mr. DeSoto seconded the motion and the meeting adjourned at approximately 12:45 PM.

## Updated List Oversight Advisory Committee Waimanalo Gulch Landfill

Name	Address	Email Address	Phone numbers Bus/Cellular/Home
Albert H. Silva*	P.O. Box 161 Waianae 96792		
Lorraine Martinez*	92-363 Laaloa Street Kapolei, HI 96707		
Jackie Kahaleoumi-Spencer*	84-1095 Kaulaili Rd. Waianae, HI 96792		
William Kalani Mahoe Operating Engineers Local 3, District 17	1432 Middle Street Honolulu, HI 96819		
John DeSoto*	84-1060 Maiola Waianae, HI 96792		
Allan Parker* Operating Engineers	92-1136 Olani Street Kapolei 96707		
George Paris*	94-497 Ukee Street Waipahu, HI 96797		
Pearl Lewis*	P.O. Box 2011 Nanakuli, HI 96792		
Polly Grace*	P.O. Box 299 Waianae 96792		
David Akina*	99-807 Iwaena Street Aiea, HI 96701		

# **APPENDIX E**

Community Benefits Advisory Committee  
Full Committee  
Conference Rm (A) Ground Floor  
Kapolei Hale  
Minutes  
May 29, 2008

Members present: John DeSoto, Patty Teruya, Roy Wickramamtatma, Ku'ulei Jolonino, Jo Jordan, Mark Suiso, Maeda Timson. Kimo Kelii

Members absent: Bernard Kaahanui, Neddie Waiamau-Nunuha

Vacancy- 1 member

Staff: Gail Haraguchi, Chris Garth ( Councilman Apo), Jimmy Lota, Ernie Martin, Jackie Spencer, Gordon Nelson, Sam \_\_\_\_ (Rep. Awana)

Guests :Lorraine Martinez, Pat Chardon,

**Call to Order-**

John DeSoto called meeting to order at 5:35 pm

**Introduction of new members-**

Maeda Timson and Kimo Kelii introduced themselves as new members to the committee.

There is still one vacancy and one more in July. Mark is the only one that elected not to renew.

**Subcommittee Reports-**

**Grants update-**

**2006-07:** no change. Projects near final closing. Awaiting supporting documents.

A questioned was asked, if there was any outstanding organizations that are not receiving their funds. It was clarified that (2) organizations was obtaining the immediate paper work for their request.

**2007-08:** most have received notice to proceed.

3 projects awaiting final agreement amendment

A more comprehensive list was requested in tracking the request process for the organizations.

Timson questioned how many in her district has received funds through this grant program. (Makakilo and Kapolei districts).

**Parks Improvement-**

2006-07- no change , Maili , Waianae and Nanakuli parking lots projects awaiting permits.

2007-08- under \$5000 items acquired

items over \$5000 require 3 valid bids and special oversight. Gail provided a list of these items totaling over \$800,000.

There are concern that some items will not have the required three bids before the June 30 deadline. One is the central air conditioning for Kamokila Park. A proposal was suggested to go with window units so they are under the \$5000 threshold.

It was mentioned by new members that it was very difficult to follow the presentation made for the CIP projects, when no packet or documents or verbal briefing was not provided to them prior to this meeting. A tone of frustration of not being familiar of the past projects and of this program.

Point of Order – Have the new members been provided the past records of the committee? Staff will provide after the meeting.

Timson added that it seems very unfair that all of these projects of improvement (CIP) are being only for the Wai'anae community and nothing is done for the Kapolei and Makakilo parks.

Kelii informed the members that he will support these CIP projects and the improvements planned for the Wai'anae district parks. He also questioned whether the Makakilo district park supervisors were in discussion to allocated their projects as well as funding for their immediate areas.

Another issue raised is items seem to be weighted in favor of Waianae Coast. A breakdown of how and where purchases will be used will be pulled from the record.

The funding for summer fun excursion has resulted in full booking of the summer fun programs early. A first.

Kelii added that giving the summer fun programs funds was a good move for the committee and supported the fees being waive for the children along the Coast.

Discussion ensued regarding the appropriation of funds being equally divided to the area communities. The Honokai Hale, Makakilo and Kapolei members expressed their concerns openly

and stated that most of the funds and projects was shifted to the Wai'anae Coast area and seems that they felt left out .

It was noted that through this period of this program, the Makakilo and Honokai representatives had the opportunity to input of any or recommend projects in their area. It was also added that some of the projects suggested by these representatives was also tuned down by area residents who represented the Honokai Hale community. When the projects moved forward each member had the opportunity to vote and discuss of grants and all CIP projects prior to accepting.

### **Approval on Minutes**

April 24, 2008 minutes approved.

### **Old Business**

A. Approval of 2008 request proposal –

Discussion- should there be a restriction on the number of years you can win an award- no

Will those not funded one year get special consideration- no

A discussion was presented to the members to not add that restriction on the RFP and allow each and every organization to have the opportunity to present their application. This grant is open to everyone that provide the services in the area community's and while their application is in place and justified, the RFP should not prevent them from applying. The grant committee agreed that such limitations should not be added on the RFP and allow to look at this in the future.

Discussion ensued.

Approved as drafted.

B. Approval of time line for Leeward Coast Community benefits Program- approved

It was clearly mentioned that this year's timeline was moved forward for organizations to be notified sometime in September of 2008. With the grant committee's sugeestions was not to work through the Holiiday season and to get the notification earlier.

### **New Business**

A. Approval of funds for advertising proposal requests and awards- \$10,000

-emphasis on local publications to encourage local organizations.- Approved

It was approved by the motion of having the advertisement in the Kapolei Knolls, Wes side Stories as well as the Advertiser and Star Bulleting newspapers.

B. Approval of \$12,000 not used for Waianae Complex summer fun meals- (addition to agenda)

- proposed by Waianae Complex ( itemized spread sheet with justification provided to committee) This was also proposed to the Parks Improvement Sub-Committee. The sub-committee recommended approval.

Question raised as to whether these funds were assigned to the Waianae Complex. The Sub-Committee assumed so. There is no set policy. Arguments were made for these funds to be assigned to Makakilo/Kapolei/Honokai Hale to "rebalance the allocations". Also asked if funds needed to be set aside to cover higher costs than budgeted for acquiring items on the list..

With full discussion of members objecting to the operating budget under the CIP focusing to only the Wai'anae Coast, the motion to continue to support as follows:

Proposed list from Waianae complex Approved. Roll call vote  
Yes- Jo Jordan, Kimo Kelii, Roy Wickramaratna, Patty Teruya, John DeSoto, Mark Suiso

No- Maeda Timpson, Ku'ulei Jolonino

Board member Wickramaratna added that the project distribution was fair and as a representative of the Makakilo area, he also expressed that his area was covered in receiving projects.

A discussion on dis-agreement between area representatives.

#### Community Concern-

- A. Need a form so community to submit requests for parks improvements independent of Park Staff .
- B. Need to request more funding from the City for community benefits Because of the increase of community projects, it was expressed that an increase of 2 million dollars should be provide to this program and community's that are impacted by this Landfill.
- C. Beach Park patrol by HPD is making a difference in park. Much less lawlessness.

**Next meeting-** June 26, 2008 5:30 pm

**Adjournment -** 7:10 pm

Community Benefits Advisory Committee  
Full Committee  
Conference Rm B- Ground Floor  
Kapolei Hale

Draft Minutes- April 24, 2008

Members present: John DeSoto, Bernard Kaahanui, Roy Wickramamtatma,  
Ku'ulei Jolonino, Jo Jordan, Mark Suiso

Members absent: Kimo Kelii, Patty Teruya, Neddie Waiamau-Nunuha

Vacancy - 2 members

Staff: Dawn Spurlin, Gail Haraguchi, Chris Garth, Jimmy Lota, Ernie Martin

Guests:

**Call to Order-**

John DeSoto called meeting to order at 5:40 pm

**Introduction of new members-**

The 2 vacancies continue. Ernie says the Mayor plans to make the announcement with the finalization of committee membership given that terms will expire after June 08.

**Subcommittee Reports-**

**Grants update-**

**2006-07:** handout provided to all.

\*Ho'a aina o Makaha will be submitting a revised budget by end of April to use funds not needed in the proposed matter valve upgrade as initially budgeted.

Adult Friends for Youth serving 30 youth (13 very high risk youth)  
Contracted for 10 very high risk youth

Big Brothers Big Sisters providing mentoring services at  
Nanikapono, Nanakuli Elementary and Maili Elementary

Helping Hands Hawaii serves over 835 clients

**2007-08:** Contract Status Report provided to all

- 18 agreements signed by BFS director
- 3 agreements awaiting provider revisions
- 2 agreements awaiting corporation counsel review
- 2 agreements awaiting BFS account set up.



**Parks Improvement-  
2006-07-**

- Nanakuli Canoe Halau, Play apparatus Completed
- Mali parking lot awaiting SMA permit before starting the building permit and State highway access permit.
- Waianae District Park- awaiting draft EA
  - not concern of funds lapsing given the lengthy permit process.

**2007-08-**

- \*play apparatus and fitness stations in design phase
- \*equipment purchases in the procurement process
- \*summer fun meals funded by another source. \$12,000 available
- more details will be at next meeting.

**Approval on minutes**

February approved with sufficient quorum

March minutes approved with amendment to show insufficient quorum on vote to approve February minutes

**Old Business-**

**Approval of 2008-09 time line**

Deferred. pending discussion and decision on how to handle repeated applicants and awardees, given the intent to fund as many groups as possible. Issue also raised of whether groups should be seeking other sources if intending to sustain a project for future years.

**New Business-**

**Membership in Committee July 2008- June 2009.**

Ernie said the Mayor is asking all members to continue to serve.

Anyone wishing not to continue is asked to submit a letter to the Mayor before May 15. If not you will be assumed to want continue to serve for the next term.

Mark said he will not serve the next term and will send a letter.

**Next Meeting- May 29, 2008 Kapolei Hale Conference Room B**

**Adjournment – 7:01pm.**

Community Benefits Advisory Committee  
Full Committee  
Conference Rm A- Ground floor  
Kapolei Hale

Draft minutes- March 27, 2008

**Members present:** John DeSoto, Bernard Kaahanui, Neddie Waiamau-Nunuha, Patty Teruya, Mark Suiso, Jo Jordan

**Members absent:** Ku'ulei Jolonino, Roy Wickramatatma,

**Staff:** Jennifer Waihee, Jimmy Lota, Ernie Martin, Cynthia Ramirez, Gail Haraguchi

**Guests:** Pat Chardon, Lorraine Martinez

**Call to Order-**

Chair Pro Tem John DeSoto called meeting to order at 5:46.

**Introduction of New Members-**

Kimo Kelii will be representing Nanakuli. He is not able to make this meeting. The mayor will be selecting a representative from Makakilo and Maili before the next meeting.

**Election of Officers-**

**Chair-** John DeSoto

**Vice-Chair-** Mark Suiso

Note- since Mark is currently secretary and election for secretary will be held at the next meeting.

**Approval of February 28, 2008 Minutes-**

Approved with out revision

Jordan abstain

**Subcommittee Reports-**

**A. Grants Update- DCS Staff**

**2006-07-** handout provided to all.

16/21 projects will be completed by end of March '08.

No-cost time extensions of 30-60 days given to 11 projects to accommodate final payments.

Steadfast housing will extend until Sept. 30 due to issues with another funding source.

2 projects will close in May.

2 projects will close in June

note: delays partly due to not being familiar with documentation standards

**2007-08-** handout provided to all.

25 projects funded

Valley of rainbows completed 1/29 conference.

16 projects with Department of Budget and Finance awaiting signature by director.

4 projects with Corporation Counsel for review and signature. Should complete in 3-5 workdays.

1 project awaiting signatures of principal.

1 needed revisions to equipment request.

1 awaiting signatures to corrected agreement.

1 not yet sent revision.

Note- requests were made to verify Boy's and Girl's Club allocations.

**2008-09** – timetable and draft RFP provided to all  
plan to distribute RFP on May 15

Note: earlier distribution is intended to encourage more applicants that have not yet submitted applications.

A suggestion was made to lower the \$100,000 threshold since most projects funded were lowered to accommodate more projects. It is believed this will make review easier.

A suggestion was made to lobby the City Council for more Funds. April 23 will be the day for a public meeting on funding .

Staff intent is to align funding cycle with the fiscal year.

**B. Parks Improvement – DPR staff**

**2006-07-** Gail will report at next meeting.

**2007-08-** items are in process of being obtained. Gail expects to have a report at the next meeting.

Note: no new staff will be hired to use the new equipment.

All equipment is dedicated to the Kapolei to Keaau region and will be housed here.

Gail will report on equipment scheduling at a future meeting.

**Community Concerns-**

Neddie furnished a photo showing the original name Kalaniana'ole Park at Nanakuli. She wants the park named back to the original .

John restated that many beach parks are still overloaded with homeless people. There is poor enforcement of rules there and a lot of lawlessness. Aggressive dogs and intimidation of residents is common.

There is an exception at Makaha Beach. It is believed this is because the regular users of that park will not tolerate it.

Lorraine wants additional funding to the community because of the past years of the landfill impact - not just the current impact.

Lorraine suggests a form to facilitate residents' suggestion for future park improvements.

State Dept of Transportation official response to the need for vehicle barrier at Kamokila was denied. Lorraine is pursuing.

Patty is also seeking impact funding from the PVT landfill in Nanakuli for residents there.

Patty noted that Nanikai and Maili beach parks are now in great condition and was well used this past weekend. However, many of the homeless have relocated to other parks over burdening these parks. In particular Ulehawa 1 which is now a greater eyesore.

Ernie reported that the mayor has created the HPD 3-person park detail dedicated to the parks in our area. This is mainly due complaints of lawlessness at parks.

Mark also restated the need to step up maintenance at parks with homeless as well as law enforcement.

**Next Meeting- April 24 5:30 pm Kapolei Hale**

**Adjournment- 6:52 pm.**

**Community Benefits Advisory Committee**  
Full Committee  
Conference Rm A- Ground floor  
Kapolei Hale

Minutes - February 28, 2008

Members present: Roy Wickramatatma, John DeSoto, Neddie Waiamau-Nunuha, Patty Teruya, Mark Suiso, Jo Jordan

Members absent: Ku'ulei Jolonino, Bernard Kaahanui

Staff: Gordon Nelson, Ernie Martin, Jimmy Lota, Dexter Liu, Ken Shimizu, Ed Freitas, Cindy Ramirez, Christopher Garth

Guests: Pat Chardon, Lorraine Martinez, Kerry Komatsubara, James Pakele, George and Jeanette Grace

**Call to Order**

Secretary Mark Suiso called meeting to order at 5:30pm.

**Election of a Chair Pro-Tem**

John DeSoto selected as Chair Pro Tem.

Note- rules do not allow same person to be secretary and chair.

**Election of Officers**

Tabled until vacancies filled.

**Approval of Nov 29, 2007 minutes**

Approved. With correction to subcommittee report section 1 first bullet.  
3 projects completed, not 8.

**Subcommittee reports**

1. Grants update- Ernie
  - A. '06/07 projects on track.-(handout provided)
    - 12 are expected to be completed by the end of March and 3 more in April.
    - 3 of the late funded alternate plans are expected to be completed in June.
  - B. '07/08- (handout provided)
    - All project contracts are expected to be executed within 30 days.
2. Parks Improvement update- Dexter Liu

Sub committee met on Jan. 24 ( draft sub-committee minutes provided to all))

- a. Park staff considered recommendations from Dr. Brosnan.  
In particular with reference to:

- field closures to schedule restoration- Dexter Liu says they are unable to schedule field closures long enough for field restorations.
- getting field users to do maintenance- There was nothing reported on support of park users assistance in field restoration.
- scheduling staff to do restoration- Dexter Liu reported they do not have staff to do the extra work for field restoration as recommended by Dr. Brosnan.
- Field by field assessment.- Dexter reported that they do not yet have a field by field report.

Kerry Komatsubara shared that his family has been involved with ball field maintenance for many years. He said his experience is it takes a long time to restore a ball field and volunteers do not tend to get involved until fields are in relatively good shape.

- b. list of projects recommended by the committee in November was adjusted and the revised list was distributed to the committee.

### **Old Business-**

#### 1) Recommendations for balance of park improvement projects-

Recommendations suggested by the subcommittee during the Jan. 24 meeting with Dr. Brosnan and park staff was revised by park staff after consideration of field closure requirements and staffing. An amended project list was submitted. Emphasis is on larger more efficient lawn mowers that reduce the time needed to cut a field. The fields will have more frequent cutting to once a week.

It is unclear if 1 or 2 3/4-ton pick trucks are being requested. There is a request on the earlier list that was approved in November and a truck is also on the new list.

There is a question regarding the location of the speed bump at Uanakuli Beach Park and the source of this request.

There is a question on the location of the water fountains and the court resurfacing.

There is a question that some items on the park improvement list should be a part of the regular budget. There is an expectation that park service will be improved beyond its current level.

The list was approved by the committee subject to answers to the above questions.

**New Business-**

1. Time table for FY 08-09 community benefits proposals.-  
Ernie handed everyone a time line for the 2008 - 2009 benefits program. The intent is to get an earlier start and get more community involvement.
2. Membership- resignations, vacancies  
There are three vacancies representing Maili, Makakilo and Nanakuli.  
Names have been submitted for consideration. More names are being sought.  
Contact Ernie Martin ([emartin@honolulu.gov](mailto:emartin@honolulu.gov))

**Community Concerns-**

Mark voiced concern over the need to increase maintenance and security in parks experiencing homeless activity early. These parks usually deteriorate under these conditions and need more attention.

John shared an initiative in Makaha to adopt Lahilahi Beach Park and to partner with the city to upgrade the maintenance and security of the park.

Mark expressed that there is a need for stronger community involvement in the parks.

**Next meeting-**

Thursday March 27.

**Adjournment-**

6:50 pm

## **Community Benefits Advisory Committee**

Full Committee  
Conference Room A - Ground Floor  
Kapolei Hale

Minutes - November 29, 2007

Members present: Roy Wickramaratna, John DeSoto, Neddie Waiamau-Nunuha, Patty Teruya, Ku'ulei Jolonino, Mark Suiso, John Kaopua, Bernard Kaahanui, John Kapololu, Jo Jordan

Members absent: Aimoku McCellan

Staff: Gordon Nelson, Ernie Martin, Dana Takahara-Dias

Guests: Pat Chardon, Lorraine Martinez, Cynthia Emoto, Evelyn Souza, Missy Tenneson

### **Call to Order**

Vice-Chair John Kaopua called meeting to order at 5:30 p.m.

### **Approval of October 25, 2007 Minutes**

Approved.

### **Subcommittee Reports**

1. Grants update- Ernie Martin
  - 2006/2007 projects on track with 3 projects completed.
  - 50% of total grants projects expected to be complete in 90 days.
  - One project is completed, under budget. They are submitting a revised budget to allow for use of the residual.
2. Parks Improvement update- Mark Suiso
  - Subcommittee met on November 13, 2007.
  - Draft Minutes were previously sent to committee members.
  - List of recommended projects for funding was discussed in new business

### **Old Business- Recommendations From Permitted Interaction Group**

1. List made available at the October 25, 2007 meeting was recommended for adoption.
2. Ernie Martin shared:



- One member of the Permitted Interaction Group expressed a conflict and chose to be excused from review, evaluation and deliberations for that applicant.
- Members of the committee were reminded not to discuss the findings of the Permitted Interaction Group with the public until this meeting. Public inquiry to be directed to Ernie Martin and staff.
- Full committee approved recommended list and list has been adopted.
- Ernie Martin reiterated:
  - i. Intent of Mayor is to fund as many projects as possible.
  - ii. Those not funded this year will be considered next year without need to resubmit.
  - iii. Recommendation to begin the process earlier next year for 2008/09 budget.

### New Business

#### A. Recommendations for Parks Improvement Projects

1. The list of recommended projects was generated by DPR staff, committee members, carry over from last year's recommendations and community input.
2. Recommendation data was presented by Complexes - (see list)
  - Ewa Complex ( Kapolei, Makakilo, Honokai Hale)- \$116,925
  - Waianae Complex ( Nanakuli, Maili, Waianae, Makaha, Keaau)- \$172,550
  - Maintenance Complex (Kapolei, Makakilo, Honokai Hale, Nanakuli, Maili Waianae, Makaha, Keaau)- \$286,700
  - DPR – 2<sup>nd</sup> list ( all affected areas) - \$300,500
  - Other items for consideration- no costs estimate at this time.
3. Discussion
  - A few items appear to be standard operating items such as: fax machines, computers, weed whackers, mowers. A few committee members expressed these items should not come from the benefits package, but from the regular budget. Dana Takahara-Dias responded that these particular items are not provided in the standard budget but are additions that they would not get if not for this funding.
  - Purchase of truck and buses were questioned also as a standard appropriation and whether there would be funding for maintenance and operation. Dana Takahara-Dias responded that they would be assigned to these areas and would not be purchased if not for this funding. These items would allow for more travel activities and the truck will provide for more frequent park maintenance.
  - Purchase of a Field Top Dresser- To be housed at the central motor pool and be used island wide with Kapolei to Keaau parks getting priority use. It will not be an exclusive benefit to this area. Currently, the Department does not own a Field Top Dresser and relies on the City golf course to access and borrow their machine.
  - Committee requested additional information including list of parks to receive benefits. Dana Takahara-Dias will provide more information.

- All parks were inspected by Mark Suiso and Jo Jordan.
  - Community Concerns:
    - i. Kamokila Community Park is only receiving a kitchen improvement with the grease trap. Request for air conditioning of recreation building and vehicle barrier from highway are not on the list.
    - ii. Makakilo Neighborhood Park is scheduled to receive a new field score board. Request for ADA access is not on the list. Dana Takahara-Dias reiterated that the ADA improvements are scheduled via a separate funding source. Ball field improvements will be addressed in the second round of improvements.
    - iii. There were questions as to whether the park staff consulted with the community when developing their requests. Perhaps park staff could be at a future meeting.
4. Full committee approved recommended list and list has been adopted. (6 in favor, 0 against, 3 abstentions)

**B. Turf Specialist**

- The subcommittee solicited the help of an expert to address concerns of ball field conditions in the parks in this area.
- The resume of Dr. James Brosnan from the University of Hawaii was distributed to all committee members. He has offered to assess and make recommendations for the following ball fields: Kamokila Community Park, Kapolei Community Park, Kapolei Regional Park, Kaupuni Neighborhood Park, Maili Community Park, Makaha Community Park, Makakilo Community Park, Makakilo Neighborhood Park, Maukalani Neighborhood Park, Nanakuli Beach Park, Palailai Neighborhood Park, Pililaa Neighborhood Park, Pu'u O'Hulu Community Park, Waianae District Park and Waianae Regional Park.
- The conclusions of the assessments will determine what course of action is required to improve the turf and dictate maintenance requirements.
- Dr. James Brosnan will complete work pro bono.
- There are no turf experts on staff with the Department of Parks and Recreation.
- The subcommittee will reconvene when Dr. James Brosnan completes his assessments and provides recommendations.
- Motion passed.

**Community Concerns**

1. People residing at beach parks continue to be a challenge for park maintenance, such as broken water lines and dirty comfort stations.
2. Large coconut trees at the beach parks have died. Why? How can this be prevented?

3. It appears that input for the park improvement projects were provided by DPR employees rather than with community input.

**Next Meeting**

1. Full committee will convene at a later date and recess on December 27, 2007.
2. Park Improvement Subcommittee will convene upon Dr. James Brosnan's submission of final report on ball fields.

**Adjournment**

Meeting adjourned at 6:25 p.m.

## **Community Benefits Advisory Committee**

Full Committee  
Conference Room A- Ground floor  
Kapolei Hale  
Minutes - October 25, 2007

Members Present: Aimoku McClellan, Roy Wickramaratna, John DeSoto, Neddie Waiamau-Nunuha, Patty Teruya, Ku'ulei Jolonino, Mark Suiso, John Kapololu, Jo Jordan

Members Absent: John Kaopua, Bernard Kaahanui

Staff: Gordon Nelson, Ernie Martin

Guests: Pat Chardon, Lorraine Martinez, Cynthia Emoto

### **Call to Order**

Chair Aimoku McClellan called meeting to order at 5:30 p.m.

### **Approval of September 27, 2007 Minutes**

Approved.

### **Subcommittee Reports**

1. Grants Update- Ernie Martin
  - 2006/2007 projects on track.
2. Parks Improvement Update- Mark Suiso
  - Subcommittee met on October 9, 2007 (Draft will be sent to committee).
  - Park staff submitted wish lists which were largely accepted.
  - Painting of buildings is recommended to be completed by community.
  - Ball fields will be inspected by an expert and recommendations for improvement plan and maintenance plan will be provided.
  - Recommendations from subcommittee member of park inspections were provided.
  - List will be revised for full committee recommendation at next subcommittee meeting on November 13, 2007.
  - 2006/2007 CIP Projects Update
    - a. Nanakuli Beach Park Canoe Halau completed.
    - b. Pokai Bay Beach Park play apparatus foundation completed and apparatus expected soon.
    - c. Remaining projects still in design phase.

**Recommendations of the Permitted Interaction Group - Ernie Martin**

1. 42 applications were received.
2. 2 were ruled ineligible.
3. Ernie Martin presented the entire list and a list recommended by the Permitted Interaction Group. This was not for discussion and decision making set for the November 29, 2007 meeting.
4. Members were asked to keep confidential.

**Community Concerns**

Patty Teruya acknowledged Ernie Martin for his outstanding guidance of the Permitted Interaction Group.

**Next Meeting**

November 29, 2007 at 5:30 at Kapolei Hale, Conference Room A.  
Aimoku McClellan will be out of town. Vice-Chair or Secretary will chair November 29 meeting.

**Adjournment**

Meeting adjourned 5:55 p.m.

# **Community Benefits Advisory Committee**

Full Committee  
Conference Room A - Ground floor  
Kapolei Hale

Minutes - September 27, 2007

Members present: Patty Teruya, Neddie Waiamau-Nunuha, Ku'ulei Jolonino, Aimoku McClellan, John Kapololu, Mark Suiso, Roy Wickramaratna, Bernard Kaahanui, John DeSoto

Members absent: Jo Jordan (excused), John Kaopua

Staff: Gordon Nelson, Dana Takahara-Dias, Ernie Martin, Jimmy Lota

Guests: Tercia Ku, Pat Chardon, Lorraine Martinez

## **Call to Order**

Chair Aimoku McClellan called meeting to order at 5:30 p.m.

## **Approval of August 30, 2007 Minutes**

Approved.

## **Introduction of New CBAC Member**

Bernard Kaahanui of Kapolei introduced himself to all and was welcomed.

## **Subcommittee Reports**

### **1. Grants Subcommittee Update**

#### **a. Patty Teruya presented a timetable as follows:**

October 16-18, 2007 - Eligibility assessment by DCS staff

October 22-24, 2007 - Evaluation by Permitted Interaction Group

October 25, 2007 - Recommendations to full advisory committee

November 29, 2007 - Approval of recommendations by full advisory committee

December - Submittal of recommendations to Mayor for final decision and announcement.

Ernie Martin and Jimmy Lota submitted a status report on the 2006/2007 grant awards:

- i. 3 projects completed - U.S. Vets, Valley of Rainbows, Alternative Structures
    - ii. All remaining grant projects are on track.
  - c. Applications for the new proposals are continuing to be distributed.  
No completed proposals have been received as of yet. Deadline is October 15, 2007. Resubmitted applications from 2006/07 award recipients will be accepted and evaluated along with new proposals and organizations.
2. Park Improvement Subcommittee Update
  - a. Mark Suiso distributed the September 10, 2007 Parks Improvement Subcommittee draft minutes.
  - b. Consideration for park improvement operational budget \$1 million and Park CIP \$500,000 from list carried over from 2006-2007 meetings of CIP subcommittee, list provided by Dana Takahara-Dias gathered from Parks Dept. staff and community input.
  - c. A list of parks with Adopt-a-Park agreements was provided.
  - d. Available talent within the Parks Department will be given additional considerations.
  - e. Projects that are visible and quickly completed will be given additional consideration.
  - f. Concern about spending on projects that are not likely to have a useful life will be considered.
  - g. A list of possible projects for each park was provided and is listed in the Park Improvement minutes.
  - h. A list of miscellaneous items was also for consideration: power washers, topsoil/fertilizer, supplies and equipment for park programs.
  - i. Next Parks Improvement Subcommittee meeting will be held on October 9, 2007 at 5:00 p.m. at Kapolei Hale, Conference Room A.

### Community Concerns

1. Enforcement deficiency at parks was discussed.
2. Solutions discussed were:
  - to empower lifeguards
  - provide security cameras at strategic locations
  - provide on-site residence for permanent caretakers at parks.

### Adjournment

6:36 p.m.

# **Community Benefits Advisory Committee**

Full Committee Meeting  
Conference room A - Ground Floor  
Kapolei Hale

Minutes- August 9, 2007

**Members present:** Roy Wickramaratna, Patty Teruya, Jo Jordan, Ku'ulei Jolonino, Aimoku McCellan, Neddie Waiamau-Nunuha, Mark Suiso

**Members absent:** John DeSoto, John Kapololu, John Kaopua - excused

**Staff:** Ernie Martin, Kathleen Kelly, Dana Takahara-Dias

**Guests:** Lorraine Martinez, Pat Chardon & Wendy Sefo

## **Call to Order**

Chair Aimoku McClellan called meeting to order at 5:32 pm

## **Approval of July 26, 2007 Minutes**

Minutes approved.

## **Old Business**

- A. Appointment of Kapolei/ Honokai Hale/ Makakilo representative yet to be determined.
- B. The list of grants funded during FY 2007 was distributed to members.
- C. Website link of committee agenda and approved minutes confirmed.  
[www.honolulu.gov/dcs/sprojects.htm](http://www.honolulu.gov/dcs/sprojects.htm)
- D. Once the Committee's membership is increased to 11, the Grants subcommittee may be appointed to serve as a permitted interaction group.

## **New Business**

- A. RFP for FY 08 draft was discussed and approved for distribution beginning August 15, 2007.
- B. Publicity Budget was discussed and approved for \$10,000. Focus will be on the two Island wide newspapers, public notices and the 3 local community papers (West Side Stories, West Oahu Chronicle and Voice of Kapolei)

## **Public Comments**



- A. CIP sub committee will meet at 4:30p.m., on August 30, 2007 prior to the full committee meeting.
- B. The agenda will be:
  - 1) Review list of 2006-07 projects
  - 2) Discuss and set priorities for Operational and CIP projects
  - 3) Discuss what can be completed in house with DPR staff and what will require outsourcing.
  - 4) Discuss use and purpose of contracted consultant/project manager.

**Announcements**

Updates at Neighborhood Board by the city representative not occurring yet.  
Next meeting will be August 30, 2007.

**Adjournment**

Meeting adjourned 6:15 p.m.

## **Community Benefits Advisory Committee**

Full Committee Meeting  
Conference room A- Ground Floor  
Kapolei Hale

**DRAFT Minutes - July 26, 2007 meeting**

**Members present:** Roy Wickramaratna, Patty Teruya, Jo Jordan, Ku'ulei Jolonino, John Kaopua, John Kapololu, Mark Suiso

**Members absent:** Excused - Aimoku McClellan, John DeSoto, Neddie Waiamau – Nunuha

**Staff:** Ernie Martin, Kathleen Kelly, Dana Takahara-Dias

**Guests:** Lorraine Martinez, Pat Chardon

### **Call to Order**

Vice chair John Kaopua called meeting to order at 5:32 p.m.

### **Approval of June 28 Minutes**

Minutes approved.

### **CBAC Member Additions**

- Decision made to request the Mayor to appoint someone from Kapolei/ Honokai Hale to be the eleventh person on the committee and that person attend the August regular meeting.
- There are several names on the list from the initial pool of candidates and individuals are free to submit names to the Mayor's Office.

### **Status of Community Benefits Advisory Committee**

#### **A. Grants Update**

1. Draft RFP was given to each member to review and comment at the next meeting. A special meeting on August 9, 2007 is being planned in order to have the RFP approved. Any priorities that will be targeted by the Committee through the RFP for Fiscal Year 2008 should also be discussed at the August 9<sup>th</sup> meeting and included in the RFP. Purpose of this meeting is for distribution to begin on August 15, 2007.
2. Approval of a publicity budget will also be required in order to meet publication deadlines for the community newspapers.
3. Web link to the City Department of Community Services will be established to post committee agenda and approved minutes.

4. Project Status- a report was distributed.
  - Projects completed/near completion- Valley of Rainbows, Alternative Structures and Waianae Coast Coalition
  - All projects are on target with slight delays with Salvation Army and Leeward Kai Canoe Club.

#### **B. CIP Update**

1. \$60,000 has been returned from the Nanakuli Beach Park Canoe Halau project and those funds are earmarked to the parking lot construction fund.
2. Existing plans for the Maili Beach Park Parking lot have been located with DDC . There is no need to make new plans. They are awaiting a decision with the State Highway division on access points from the parking lot to the highway.
3. Play apparatus has been ordered and is awaiting shipment.
4. Design for Waianae District Park and Nanakuli Beach Park parking lot is underway.
5. Project Manager names have been suggested by committee to the Parks Department. In light of potential labor issues and to comply with procurement, a suggestion was made to hire a firm from the approved list. This could increase the cost to \$150,000 to \$250, 000. The committee is concerned about the cost taking too much of the budget.
6. There is still a question as to what project(s) should be scheduled using existing Parks Department staff and what would be outsourced.
7. The matter was referred to the CIP sub-committee to review making reference to a list projects which can be done with existing staff and what requires outsourcing.
8. It was suggested that the sub-committee meet immediately after the full committee on Aug 9.

#### **Permitted Interaction Group**

##### **A. Requires 3 meetings-**

1. To appoint, establish purpose and authority.  
Membership minimum 2 and maximum less than Quorum. Unsure if sub-committee can serve also as permitted interaction Group.
2. Next meeting to present finding to the full committee- no decision making
3. Third meeting – decision making

- B. Time line suggested - appoint the Permitted Interaction Group at the September meeting. The group can present their findings at the October meeting and decision making completed at the November meeting or at a special November meeting.

#### **Adjournment**

Meeting adjourned at 7:00 p.m.

## **Community Benefits Advisory Committee**

Full Committee Meeting  
Conference Room A- Ground Floor  
Kapolei Hale

Minutes - June 28, 2007

- Members present:** Aimoku McClellan, Ku'ulei Jolonino, Neddie Waiamau-Nunuha, Roy Wickramaratna, Jo Jordan, John DeSoto, John Kaopua, Mark Suiso
- Members absent:** Patty Teruya & John Kapololu - excused
- Staff:** Ernie Martin, Kathleen Kelly, Dana Takahara-Dias
- Guests:** Lorraine Martinez, Pat Chardon, Mercy Mott, Wendy Sefo

### **Call to Order**

Chair Aimoku McClellan called meeting to order at 5:36 pm.

### **Approval of May 31 Minutes**

Correction - Pg. 1, 2007-08 CBAC Commitment Status, item b.  
Add Kapolei and Honokai Hale.  
Minutes approved with corrections.

### **Status of Community Benefits Advisory Committee**

#### **A. Grants Update**

1. Funds for Kapolei School were forfeited and re-designated for the following alternate projects as approved by the committee:  
Kamp Hawaii - \$20,000, Adult Friends for Youth - \$ 25,000, Catholic Charities of Hawaii - \$55,000.
2. Interim reports from the projects will be given at the next meeting.
3. Review process for next round of grants will be discussed at the next meeting.
4. Chair McClellan asked Kathleen Kelly to provide an overview to the Committee on the Permitted Interaction Group process with respect to the Evaluation and recommendations of projects to be considered for FY08 funding.

**B. CIP/ Operations Update**

1. Nanakuli Canoe Halau was dedicated on June 17, 2007.
2. No update on play apparatus or parking lots.
3. 2007-08 Parks Budget: \$500,000 for CIP and \$1 million Operations
4. Parks Department does not have current in-house staff to administer the dedicated \$ 1 million in the Operations Budget. Dana proposed a short-term Project Manager position for approximately \$70,000. This individual will scope project, coordinate bids, contracts and follow up. It is unclear if they can find someone. It was suggested that this be encumbered by the Operations Budget. These projects would most likely be contracted out.
5. Outsourcing these projects will also be difficult. Current experience shows few bids received and often over budget.
6. Parks Department budgets \$50,000 - \$70,000 for a comfort station make over. DPR is in the process of identifying future locations of comfort stations make-overs.
7. CIP Subcommittee and the Parks Department have a long list of projects.
8. One possible project is the makeover of the Honokai Hale kitchen/pavilion and a vehicle barrier.
9. CIP Subcommittee will have to prioritize projects partly based on ability to accomplish the job.

**Communications**

1. Approved Minutes will be sent to Kapolei and Waianae Neighborhood Boards.
2. Copies will also be sent to the Mayor's Representative for these boards.
3. Ernie Martin will research the possibility of listing the Agenda, Minutes and Notices of the Committee on the City's website.

**Adjournment**

Meeting adjourned 6:16 p.m.

## **Community Benefits Advisory Committee**

Full Committee Meeting  
Conference Room A- Ground Floor  
Kapolei Hale

**Draft- Minutes of May 31, 2007 meeting**

**Members present:** Aimoku McClellan, Ku'ulei Jolonino, Neddie Waiamau-Nunuha, Patty Teruya, Roy Wickramaratna, John Kapololu, Jo Jordan, Mark Suiso

**Members absent:** John DeSoto (excused), John Kaopua

**Staff:** Ernie Martin, Kathleen Kelly, Dana Takahara-Dias

**Guests:** Lorraine Martinez, Pat Chardon

### **Call to Order**

Mark Suiso called meeting to order at 5:32 p.m.

### **Approval of April 19, 2007 minutes**

Correction - Pg. 2 2008 CBAC Status-

Paragraph 2, sentence 3; changed to read, "Funding should include Makakilo as an impacted community and not only District 1, excluding Ewa."

Aimoku arrived and took control of meeting.

Minutes approved with correction above.

### **2007-08 CBAC commitment status of Individual members**

- a. All current members must be committed to serve until June 30, 2008.
- b. Should consider adding another Makakilo, Kapolei and Honokai Hale member.
- c. Members that do not attend, except for excused absences, will be asked to resign. Commitment of personal attendance and participation minimum 85% of scheduled meeting.
- d. Members are to call Chair McClellan in advance if unable to attend scheduled meetings.

### **Report on Chair McClellan's letter to Councilman Apo**

- a. Wendy Sefo from Councilman Apo's Office unable to attend meeting.
- b. Councilman Apo initially proposed adding another \$1 million to each of the CIP and Grants-In-Aid. This would have brought the total to \$2 million in each category.
- c. At present his proposal and that of the Council is \$500,000 in Park CIP, \$1 million in Park Operations, and \$1 million in Grants-In-Aid. The final Council vote will be held on June 6, 2007.
- d. Reasons for the change were: a tighter budget; many park projects needs did

not meet the requirements of the "CIP" definition, they should be categorized under the Operations side; and many of the projects should be done under the regular city budget. This budget should be over and beyond what is normally allocated to the district for CIP and Operations.

- e. Controls of \$ in Operations will require more effort of the committee and Parks Department to administer. These Operational monies are to be earmarked for the Leeward Coast and are to be in addition to the regular allocation. Dana Takahara-Dias can provide documentation of this.

### **Status of Community Benefits Advisory Committee**

#### **A. Grants Update**

1. 18 of 19 have proceeded. Kapolei Elementary School has not primarily because the Attorney General has not consented to the Indemnification provision in the Agreement. A motion was approved to redesignate the Kapolei School award if they do sign by June 8. The award will be accordingly redesignated to the alternate awardees: Adult Friends for Youth, Kamp Hawaii, Catholic Charities. All contracts must be executed before June 30, 2007 in order to encumber the funds.
2. For 2007-08 funds will be available as of July 1, 2007. The RFP will be revised by the committee primarily to identify the priorities for the FY 2007-2008 funds.

#### **B. CIP Update**

1. Nanakuli Beach Canoe Halau is almost completed. The final walk thru will be conducted soon.
2. Pokai Bay Beach Park play apparatus contract will be awarded shortly.
3. Parking lot design and plans are underway. Any remaining funds will be used to expand the parking lot at the Waianae Regional Park.
4. 2007-08 parking lot closures should be put into affect before the cattle gates are installed.
5. Project lists from previous CIP subcommittee discussions were provided. Items on list did not meet the CIP definition of a 20 year life, but are eligible under the Park Operations definition. This is a partial list and did not include Honokai Hale.
6. Maintenance issues can also be addressed in the Operations budget.

### **2007-08 CBAC Meeting Dates**

Meetings will be convened on the last Thursday of each month at 5:30 p.m. in Conference Room A, Kapolei Hale, until the last Thursday in June 2008.

### **Adjournment**

Meeting adjourned 6:45 p.m.

## **Community Benefits Advisory Committee**

Full Committee Meeting  
Conference Room A – Ground Floor  
Kapolei Hale

Minutes of April 19, 2007 meeting

**Members present:** Aimoku McCellan, Ku'ulei Jolonino, Neddie Waiamau-Nunuha, Patty Teruya, Roy Wickramaratna, John Kapololu, Jo Jordan, Mark Suiso

**Members absent:** John DeSoto, John Kaopua

**Staff:** Dana Takahara-Dias, Debbie Kim Morikawa, Ernie Martin, Kathleen Kelly

**Guest:** Ron Schaedel

### **Call to Order**

Aimoku McClellan called meeting to order at 5:30 p.m.

### **Approval of December 27, 2007 minutes**

Approved

### **Status of Community Benefits Advisory Committee:**

- a. update on 2007 Projects
  - i. Grants- 17 of 19 contracts have been executed. All but 2 projects given notice to proceed.
    - Kapolei Elementary School is working with the Department of Education to finalize contract.
    - Hawaii Food Bank will be preparing contract upon the conclusion of their annual Food Drive campaign.
  - ii. CIP
    - Play apparatus bid is over budget by \$25,000.
    - Anticipated cost for construction of parking lots is higher than expected.
      - Nanakuli Park construction- 10 stalls- \$120,000
      - Mali Beach Park- 20 stalls- \$235,000
      - Waianae District Park- 20 stalls- \$235,000
    - Dana asked the committee for direction. After discussion the following motions were decided.
      - 1) Allow additional money to complete the play apparatus



- 2) Use the current funds for planning and design of full project at Nanakuli, Maili, and Waianae. Remaining money can be used for construction and seek additional funding for construction in 2008.

**2008 CBAC Status:**

The Mayor has requested that the committee continue and not be disbanded. Chair McClellan will poll each member for a commitment to attend monthly meetings until June 2008. Each will be given an opportunity to accept or decline. He will report findings at the next meeting. Vacancies will be filled by the mayor and recommendations will be sought from the neighborhood boards of Waianae and Kapolei.

Budget appropriations for the upcoming year (FY 08) are being discussed with the City Council. A budget hearing at the City Council will be on April 25, 2007. Funding should include Makakilo as an impacted community and not only council district 1 excluding Ewa. Funding for CIP needs to be specific for specified departments.

Discussion on committee make up and process lead to the following recommendations.

- 1) Committee should keep and post regularly scheduled monthly meetings.
- 2) Neighborhood Board and the respective Mayor's Representatives should be briefed on committee activity.

Written critiques that were solicited at previous meetings and submitted earlier from Aimoku McClellan and Mark Suiso were passed to the members.

Additional critiques will be discussed at the next meeting.

**NEXT MEETING** will be called by Chair Aimoku McClellan after he completes polling all members.

**Adjournment:**

7:00 PM

## **Community Benefits Advisory Committee**

Seventh Full Committee Meeting  
Conference Room A- Ground Floor  
Kapolei Hale

Minutes of December 27, 2006

Members present: Aimoku McClellan, Ku'ulei Jolonino, Patty Teruya, Jo Jordan,  
Mark Suiso, Roy Wickramanatna, John Kapololu

Members absent: John Kaopua, John DeSoto, Neddie Waiamau-Nunuha

Staff: Dana Takahara-Dias, Ernie Martin, Kathleen Kelly

### **Call to Order**

Aimoku McClellan called meeting to order at 5:51 p.m. at the arrival of Kathleen Kelly, Corporation Counsel.

### **Approval of Minutes**

November 14- Approved with corrections:

- Pg. 2- B. Grants- first bullet point. Remove" no decision by committee yet", replace with " accepted – only a few minutes late."
- Pg. 2 – Reconvene first paragraph remove and replace with " Upon reconvening, the committee discussed forming a permitted interaction group, comprised of four members of the Committee, to review, evaluate and make recommendations on the grant proposals. The city staff discussed with deputy corporation counsel sunshine requirements for forming a permitted interaction group, and for acting on the groups findings and recommendations."

December 19- Approved with corrections:

- Approval of Minutes- December 6 approved. Add- Jordan with reservations subject to ok from Corporation Counsel.
- Pg. 2 - Add last paragraph to discussion on permitted interaction group- (Teruya gave written addition- to the affect that the permitted interaction group is not willing to repeat the review process again.)

### **Ratification of Committee's action on November 14 appointing and authorizing John Kaopua, Ku'ulei Jolonino, Patty Teruya and Neddie Waiamau-Nunuha to special investigative committee**

Approved

### **Ratification of Committee's action on December 19 adopting recommendations of the permitted interaction group**

Approved.

Chair McClellan will send a letter of recommendation from the full committee to the Mayor. The Mayor will make the final decision and a formal announcement will be made on January 8 at 10 a.m. at the Waianae District Park. Prior to this staff will send notices to each submitter of a proposal.

Members of the full committee are encouraged to attend the January 8 event.

**Next meeting**

None scheduled.

Members are encouraged to send comments on what we did right as a committee and ways the process can be better. Send to Dana Takahara- Dias.

**Adjournment**

6:15 p.m.

## **Community Benefits Advisory Committee**

Sixth Full Committee Meeting  
Conference Room A- Ground Floor  
Kapolei Hale

Minutes of December 19, 2006

Members present: Aimoku McCellan, Ku'ulei Jolonino, Neddie Waiamau-Nunuha, Patty Teruya, Roy Wickramaratna, John Kapololu, Jo Jordan, Mark Suiso

Members absent: John Kaopua, John DeSoto

Staff: Dana Takahara-Dias, Ernie Martin, Jimmy Lota

### **Call to Order**

Aimoku McCellan called meeting to order at 5:35pm.

### **Minutes of November 14 and December 6**

November 14- deferred awaiting corporation counsel.

Dec 6- approved, Jo Jordan with reservations subject took from Corporation Counsel.

### **Discussion and decision-making on grants and recommendations of the Permitted Interaction Group.**

- The December 15, 2006 date for announcement of award has been delayed. Protocol for Permitted Interaction Group must first be settled with corporation counsel. This is expected to be soon.
- Recommendations exceeded stated maximum of 15 awards. Ernie Martin assured the committee that the department will be able to administer the increased numbers.
- No individual on the permitted interaction group is on the board of any organizations submitting proposals.
  - Mark Suiso declared that he is on the board of one of the organizations, Ho'o mau ke ola.
- Project priority was given to those proposals with the highest worksheet evaluation scores. Many of the projects, especially the public service projects recommended for funding have been scaled back.
- The permitted interaction group acknowledged that the reduced scope would focus on the most important aspects and fund more projects. The organizations will be asked to submit revised budgets when notified.

- A recent news article on Alternative Structures disclosed present challenges with their septic system. The facility is currently vacant and was questioned if they could be operational within the year.
- Ernie will follow-up to check and monitor actual operational capacity of each awardee as a part of city oversight process.
- Once this committee makes its recommendation, a report will be sent to the Mayor.
- The Mayor will make the final selection and announce grant recipients.
- The committee voted to accept the Permitted Interaction Group recommendations. (Teruya gave written addition-to the affect that the permitted interaction group is not willing to repeat the review process again.)

#### **CBAC final report**

- The Mayor requested to keep the committee intact at least until 2008 budget process.
- Aimoku encouraged members to submit comments via e-mail by next meeting:
  - what did we do right.
  - how can this process be improved.
  - if assembled again how can overall process be improved.

#### **Next meeting**

Nothing set

#### **Adjournment**

5:46pm.

## **Community Benefits Advisory Committee**

Fifth Full Committee Meeting  
Conference Room A- Ground Floor  
Kapolei Hale

Minutes of December 6, 2006

Members present: Ku'ulei Jolonino, Neddie Waiamau-Nunuha, Patty Teruya, John Kaopua, Roy Wickramaratna, John Kapololu, Aimoku McClellan, Mark Suiso, Jo Jordan

Members absent: John DeSoto

Staff: Dana Takahara-Dias, Ernie Martin

Guest: Lucy Gay

### **Call to Order**

Aimoku McClellan called meeting to order at 5:33pm.

### **Minutes of November 14, 2006 meeting**

Patty Teruya noted Subcommittee Report B Grants. Remove "no decision by committee yet," replace with accepted since they were only a few minutes late".

Decision on minutes deferred awaiting input from Debbie Morikawa at next meeting.

### **Subcommittee Reports**

#### **A. CIP**

- Aimoku McClellan sent the Recommendations for Expenditure of Capital Improvement to the Mayor on November 22, 2006.
- Copies of the recommendations were sent to each member of the full committee.
- CIP Subcommittee work is completed.

#### **B. Special Investigation Committee- (permitted interaction group)**

- Patty Teruya submitted a report of the special investigation committee which evaluated the grant proposals.
- Patty Teruya thanked each member of this committee for accomplishing a very hard task.
- Patty Teruya thanked Ernie Martin for his guidance and patience.
- \*31 proposals were received.--1 proposal ineligible ( a for-profit corporation)
- \*30 proposals evaluated by each member individually. (copy of form on file)

- \*Committee met on Nov. 30 and Dec. 4 to collectively evaluate, compile scores and rank based on RFP selection criteria.
- \*The committee also took into consideration-
  - necessity of service or capitol improvement
  - sustainability
  - ability to meet objective with reduced funding
  - if supported by Parks CIP program
  - direct cost over administrative costs
  - similarity to other programs previously recommended for funding
- 19 proposals have been recommended for funding. A description with comments was given to each member for consideration. **Note: Members were told this list is confidential and not to be shared given that these were just recommendations for the Committee's consideration.** Discussion was limited to process and not on the projects. Further discussion on the projects and decision making will be at the next meeting. Then a report will be sent to the Mayor for his decision and announcement.
- Letters will be sent to all who submitted applications. Request for scores from the agencies would be only available by written request to the City whereupon the City will consolidate the evaluations and provide the requesting agency with a summary of the scores and comments of the review panel. The same process would hold true for requests from the Committee.

**Next Meeting**

December 12, 2006 5:30 p.m. at Kapolei Hale Conference room A.

**Adjournment**

6:05 p.m.

## Community Benefits Advisory Committee

Fourth Full Committee Meeting  
Conference Room A - Ground Floor  
Kapolei Hale

Minutes of November 14, 2006

Members present: Aimoku McClellan, Patty Teruya, Neddie Waiamau-Nunuha, Ku'ulei Jolonino, John DeSoto, John Kaopua, Mark Suiso, Jo Jordan, Roy Wickramaratna

Members absent: John Kapololu

Staff: Debbie Morikawa, Jimmy Lota, Dana Takahara-Dias

Guests: Barbara Gaboya, Lorraine Martinez, Pat Chardon, Makanani Cabunol

### Call to Order

Aimoku McCellan called meeting to order at 5:05 p.m.

### Minutes of August 31 meeting

Approved

### Subcommittee Reports

#### A. CIP

- Draft minutes of November 2 meeting shared with all.
- Summary of Community Benefits Proposal prepared by the Department of Design & Construction used on November 2 meeting shared with all.
- Discussion at November 2 meeting from guests wanted lighting at Kamokila Park removed from priority list. They spoke of need to close park at night to stop use of park by people from outside of the neighborhood and causing disturbances. They prefer repair of kitchen/pavilion at the park. Dana spoke of Park policy halting use kitchens at Parks until settled with government regulators.
- Priorities
  1. Nanakuli Beach Park Canoe Halau - **\$95,000**
  2. Pokai Bay Beach Park play apparatus - **\$120,000** to plan, design and construct
  3. Nanakuli Beach Park - additional parking and lighting - **\$265,000** to plan, design and construct (coincides with current activity already underway)
  4. Maili Beach Park parking lot expansion - **\$500,000** to plan, design and construct
  5. Waianae District Park - **\$425,000** to plan, design and construct. (coincides with initial clean up work)

Note: Construction phase on items 3, 4 & 5 will not be likely to be used in coming year due to lengthy SMA permit procedure required.



Project priorities approved by full committee.

Aimoku will send list with CIP minutes and summary by Design and Construction to Mayor.

**B. Grants**

- 22 service proposals and 8 CIP received (2 were received late – accepted – only a few minutes late).
- List of proposals was shared, but it was found to be incomplete. Dana will email each member a complete list by November 15.
- Sub-committee plans to meet on November 30 in executive session, allowing time for subcommittee members to review each proposal prior to meeting. Debbie Morikawa will check with Corporation Counsel for an opinion on executive session rules.

**Next Meeting**

Grants Committee to meet November 30 at 5:00 p.m. at Kapolei Hale Conference Room A.

Full committee to meet December 6 at 5:30 p.m. at Kapolei Hale Conference Room A.

**Adjournment**

5:37 p.m.

**Reconvene**

5:40 p.m.

Upon reconvening, the committee discussed forming a permitted interaction group, comprised of four members of the Committee, to review, evaluate and make recommendations on the grant proposals. The City staff discussed with deputy corporation counsel sunshine requirements for forming a permitted interaction group, and for acting on the groups findings and recommendations.

John Kaopua, Ku'u lei Jolonino, Patty Teruya and Neddie Waiamau-Nunuha were nominated and approved as members of the special committee. The meeting of this committee will be on November 30 at 5:00 p.m. at Kapolei Hale Conference Room A.

The next meeting of the Full Committee will be on December 6 at 5:30 p.m. at Kapolei Hale Conference Room A to hear from the special committee.

The full committee will meet again on December 12 at 5:30pm at Kapolei Hale Conference Room A for decision making.

**Adjournment**

5:45 p.m.

## **Community Benefits Advisory Committee**

Third Full Committee Meeting  
Conference Room A- Ground Floor  
Kapolei Hale

### Minutes of August 31, 2006

Members Present: John DeSoto, Ku'ulei Jolonino, Georgette "Jo" Jordan, Thomas Aimoku McCellan, Mark Suiso, Roy Wickramaratna, John Kapololu, Neddie Waiamau- Nunuha

Members Absent: Patty Teruya, John Kaopua

Staff: Ernie Martin, Debbie Morikawa, Dana Takahara-Dias, Joyce Oliveira

Guests: Sophia McNeil-Aikala, Kanani Kaaiawahia Balawan, Ka'ui Kapu, Tulu Toa, Laura Pitolo, Franny Navarro, Michael Ullman, Wendy Sefo, Joy Barva

### Call to Order

Aimoku McCellan called meeting to order at 5:30 p.m.

### Minutes of August 8 meeting

Approved with changes (Jo Jordan)

### Subcommittee Reports

#### A. CIP

- Draft minutes of August 16, 2006 meeting shared with all
- Project ideas added to list
- List of 10 CIP projects for consideration by City
- List of 32 non-CIP projects also for consideration
- City needs a shorter list of 5 CIP projects for study. The sub committee will meet again to create the shorter list for the full committee to approve at the next full meeting.

#### B. Grants

- Proposal kits are available at: Kapolei Hale, Room 204; Waianae Community Center at Ohana work links; City web site Honolulu.gov.
- Recap of Grants program given to guests and everyone encouraged to pick up a kit for details.
- Projects can be capital purchase or service, target communities between Kalaeloa and Keeau,
- Must be to a 501©3 organization, minimum \$25,000 and a maximum of 15 awards will be made, 1 award per organization
- October 27 is deadline for proposals

**Next meeting-**

Full committee- November 14, 2006, 5:00 p.m. Kapolei Hale Conference Rm. A  
CIP sub committee- September 11, 5:30 p.m. - 3<sup>rd</sup> floor Kapolei Hale  
Grant Sub committee- no meeting planned

**Adjournment**

6:13 p.m.

**Community Benefits Advisory Committee**  
**Second Full Committee Meeting**  
**Conference Room A- Ground Floor**  
**Kapolei Hale**

**Minutes of August 8, 2006**

**Members Present:** John Desoto, Ku'ulei Jolonino, Georgette "Jo" Jordan, Thomas Aimoku  
McClellan, Mark Suiso, Patty Teruya, Roy Wickramarata, John Kapolu  
**Members Absent:** Neddie Waiamau-Nunuha, John Kaopua  
**Staff:** Ernie Martin, Debbie Morikawa, Joyce Oliveira, Dana Takahara-Dias,  
Eugene Lee  
**Guests:** Chad Kane, Wendy Sefo

**CALL TO ORDER**

Aimoku McClellan called meeting to order at 5:30pm

**MINUTES OF JULY 17 MEETING**

Approved

**INTRODUCTION OF NEW MEMBER**

By Mayor Mufi Hannemann  
John Kapolu of Makakilo to replace Carolyn Golojuch

**ELECTION OF SECRETARY**

Mark Suiso

**SUBCOMMITTEE REPORTS**

a. CIP- Mark Suiso

Draft minutes of July 27 meeting shared with all.  
Item 1 list all current parks projects underway in the area.  
Item 2 list criteria for setting priorities.  
Item 3 list project ideas for parks in the area  
Item 4 list other projects not linked to a specific park

- i. Criteria- Project funds to be encumbered asap and before Dec. '07
- Tangible results
  - Quick results
  - Benefits to all
  - Longevity
  - Benefits to impacted community
  - Maintainable

Approved

ii/iii. Timeline/prioritization - Project ideas listed on Item 3 & 4, along with additions submitted before the next sub-committee meeting will be prioritized based on approved criteria. Results will be reported at the next meeting of the full committee. City Staff will then put price tags and time lines on each priority project.

Eugene Lee, Director of Design & Construction explained that projects are often in two phases (design and construction). These projects will be in the current budget and need to be encumbered before Dec. '07. This means the actual completion can be a year or more later. A simple project could be completed in this timeline if no design work is needed. However, design work often takes a year to complete with a lag of a few months before the construction phase which often takes a year or more. Example of simple projects- vehicle constraint, play apparatus...

A special appeal was made for the Nanakuli Canoe Halau. This is a current project underway and has been for over a decade. The budget for construction is short and an additional \$95,000 is requested from the CIP project ASAP in order to finalize the construction contract. A motion was made to make a special allowance for this project. Motion passed.

b. Grants- Patty Teruya

Draft minutes of July 26 meeting was shared with all.

i. Criteria-

- Proposals can be for operational or capital projects.
- minimum award will be \$25,000 and not to exceed more than 15 projects.
- eligibility based on City standards for funds to private organizations. (see minutes)
- Organizations without 501©3 status can partner with an umbrella agency.

Criteria approved

ii. Timeline-

RFP available 8/31/2006

Deadline for submittal- 2:30 p.m. Oct. 27, 2006

Evaluate Proposals by sub-committee deadline- Dec. 7. 2006

Notice of awards- Dec. 15, 2006

Funds given with in 3 months of announcement

Timeline approved

iii . Advertise RFP-

\$10,000 maximum requested from Grant Budget to advertise -- local papers: West Oahu Current, Voice of Kapolei, Westside stories, Star Bulletin, Advertiser and press release. The City will administer and not hire a special press agent.

### **FOLLOW UP – DISTRICT 1**

Chair Aimoku McClellan met with Councilmen Garcia and Apo.

They reviewed the budget committee meeting of May, 31 and recall the intent is to support the Mayor with funds for District 1. Councilman Garcia wanted to be sure there will be representatives from Kapolei/ Makakilo on the committees.

### **NEXT MEETING**

Full committee on Aug 31, 5:30 p.m. at conference room A, Kapolei Hale

Grant Subcommittee- Aug. 16, 4:30 p.m. at conference room A, Kapolei Hale

CIP Subcommittee- Aug 16, 5:30 pm conference room A Kapolei Hale

### **ADJOURNMENT - 7:07 pm**

Leeward Coast Community Benefits  
FY2007 Projects

Organization	Proposed Program/Activity	Amount
Leeward Kai Canoe Club	Repair of exiting Koa Canoe; Purchase of a Koa log; Construction of a Koa canoe. (CIP)	\$15,000.00
Waianae Coast Christian Women's Job Corps	Life skills and job skills classes and activities. (Public Services)	\$82,088.13
Young Women Christian Association	Microloan program. (Public Services)	\$33,000.00
Hoa `Aina O Makaha	Replacement of an existing, outdated 5/5 inch water meter and line to a five-acre agricultural parcel in Makaha. (CIP)	\$68,365.60
Big Brothers Big Sisters of Honolulu	Mentoring services. (Public Services)	\$25,000.00
Ka`ala Farm, Inc	School Partners Program - Hands-on, place-based educational activities through local elementary schools. (Public Services)	\$35,000.00
Ho`omau Ke Ola	Renovation of the 16-bed transitional shelter. (CIP)	\$85,850.00
US Vets	Food assistance for homeless veterans; pilot transportation/shuttle van service from Kalaeloa to Kapolei; emergency food service. (Public Services)	\$37,500.00
Helping Hands Hawaii	Community Clearinghouse Program - provision of material goods and financial assistance. (Public Services)	\$61,633.00
Hawaii Foodbank Inc.	Leeward community nutrition program. (Public Services)	\$60,500.00
Hawaii Family Services, Inc.	Keiki Support Project - Cultural identification and peer support services. (Public Services)	\$25,000.00
Waianae Coast Coalition	On-line community website that will include an online community resources directory, online community calendar and a community e-newsletter. (Public Services)	\$30,000.00
Steadfast Housing Development Corporation	Upgrade of existing electrical and emergency system backup system for 71-unit residential and supportive service program. (CIP)	\$100,000.00
Valley of the Rainbows	Educational youth conference. (Public Services)	\$60,000.00

The Salvation Army	Mobile assistance program that provides comprehensive social services that are focused on homeless prevention. (Public Services)	\$25,000.00
Hale Kipa, Inc.	Outreach program and drop-in center. (Public Services)	\$25,000.00
Alternative Structures International	Renovation of Raphael House (licensed residential building for people with disabilities.) Scope of work: re-roofing, painting, flooring and other miscellaneous repairs. (CIP)	\$100,000.00
Ke Ola `Ana (Umbrella Organization: The Forward Foundation)	Acupuncture detoxification program. (Public Services)	\$21,063.27
Kamp Hawaii	Life mentoring program that includes drug awareness training, classroom outreach and camping. (Public Services)	\$20,000.00
Adult Friends for Youth	Therapeutic intervention, prevention, educational, and support services for high-risk youth. (Public Services)	\$25,000.00
Catholic Charities Hawaii	Renovation of the 44-unit Ma`ili Land Transitional Housing facility. (CIP)	\$55,000.00

### **2007 CBAC CIP Projects**

NANAKULI BEACH PARK – Canoe Halau

- Completed May 2007

POKAI BAY BEACH PARK – Play Apparatus

- completed January 2008

MAILI BEACH PARK – Parking Lot Expansion and ADA Improvements

- Construction contract executed, **however**, DDC recently received approval of modification to existing SMP (Shoreline Management Permit), consultant will start the building permit process.
- DDC in process of fulfilling requirements imposed by SDOT for the new driveway from Farrington Highway to serve this lot.

WAIANAE DISTRICT PARK – Parking Lot Expansion

- Design phase executed in December 2007.
- DDC in review process for draft EA

### **2008 CBAC CIP Projects**

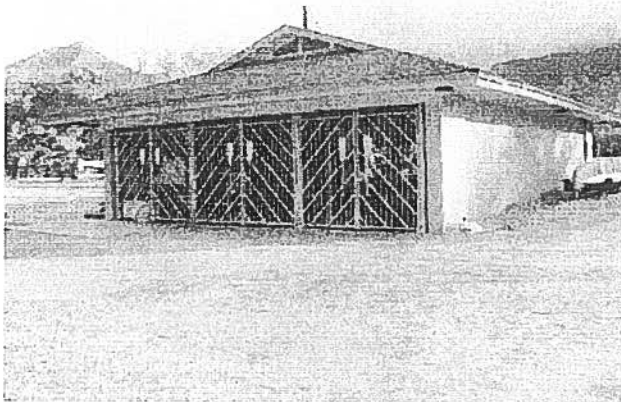
MAKAKILO COMMUNITY PARK – Adult Fitness Station

NANAKULI BEACH PARK – Play Apparatus

- DDC developing design



**2007**  
**Community Benefits Advisory Community**  
**CIP Projects**



**NANAKULI BEACH PARK**

**Canoe Halau**

**Completed: May 2007**



**POKAI BAY BEACH**  
**PARK**

**Play Apparatus**

**Completion: January 4,**  
**2008**



## **MAILI BEACH PARK**

### **Parking Lot Expansion and ADA Improvements**

**Construction contract executed, however, DDC just received approval of the modification to existing SMP, so consultant will start building permit process. DDC in process to fulfill requirements imposed by SDOT for entrance driveway into new parking lot.**

## **WAIANAE DISTRICT PARK**

### **Parking Lot Expansion**

**LEEWARD COAST COMMUNITY BENEFITS NON-PRIVATE PROVIDERS FOR 2007 – 2008**

<b>Agency</b>	<b>Mission</b>	<b>Priorities</b>
Big Brothers Big Sisters of Honolulu	Helping children become responsible adults.	Provide one-on-one mentoring to increase levels of self esteem, creative thinking, and problem-solving skills.
Boys and Girls of Hawaii (Nanakuli) (Waianae)	To inspire young people to become responsible citizens. (Motto: A positive place for Kids)	Committed to development of youth from disadvantaged economic, social and family circumstances and allow access to quality programs and services to enrich their lives.
Catholic Charities Hawaii	Helping people in need to help themselves, regardless of their faith.	Provide services that help, support, and strengthen families and communities in Hawaii, especially children, single-parent families, individuals under stress and those with the greatest need.
Child and Family Service	Strengthening families and fostering the health development of children.	Provide services to meet needs of target populations, including children, youth, families, older adults, frail, disabled and isolated individuals.
Corvette Center Ministries	To transform lives and communities with the love of God.	Provide assistance and services for homeless and needy individuals through outreach and referral activities in communities.
Easter Seals Hawaii	To provide exceptional services to ensure that all people with disabilities or special needs and their families have equal opportunities to live, learn, work and play in their communities.	Provide programs and services to improve the quality of life for children and adults with disabilities or other special needs.
Habitat for Humanity Leeward Oahu	To eliminate substandard housing and homelessness in Leeward Oahu. (Motto: Building homes, building hope)	Local affiliate of the world-wide organization that builds houses with volunteer labor and sells those houses to low-income families.
Hale Kipa, Inc.		Provider of services to children, youth and their families, especially those youth experiencing homelessness.

**LEEWARD COAST COMMUNITY BENEFITS NON-PRIVATE PROVIDERS FOR 2007 – 2008**

<b>Agency</b>	<b>Mission</b>	<b>Priorities</b>
Hawaii Building Industry Foundation	To provide education and training that supports a sustainable construction workforce.	As the workforce development arm of the Building Industry Association of Hawaii, the provider outreaches to communities at large, and provides continuing education to the construction industry.
Hawaii Family Services	To provide family centered services promoting safety and well being of children and their families. (Motto: Ho'omohala Ikaika o ke Kaiaulu) (Uncovering the strength of the community)	Formed in response to a community-based concern to provide culturally appropriate social programs on the Waianae Coast.
Hawaii Nature Center	To foster awareness, appreciation and understanding of the environment by and for the people of Hawaii, and to encourage wise stewardship of the islands in the future.	Provides outdoor, science and culture based environmental education experiences to schools and community groups, individuals and organizations.
Honolulu Community Action Program		Provide services for low- and moderate-income residents to become self-reliant individuals through job training, education, basic skills training and support services, including early childhood education.
Ho'o'ikaika O Hawaii, Inc.		To support the critical need to combat obesity among Hawaii's adolescent population through participation in sports activities, and community service projects.
Ho'olana	To inspire with courage, spirit and hope.	Provide after-school tutoring and career counseling services through an academic enrichment program.
Ho'omau Ke Ola	To provide treatment and promote healing from the effects of chemical dependency in an environment based on Hawaiian spiritual values.	Provides treatment and housing for homeless individuals, Native Hawaiians and those in substance abuse recovery.

**LEEWARD COAST COMMUNITY BENEFITS NON-PRIVATE PROVIDERS FOR 2007 – 2008**

<b>Agency</b>	<b>Mission</b>	<b>Priorities</b>
Kamp Hawaii	<p>The pursuit of the following principles:</p> <ol style="list-style-type: none"> <li>1. Teach positive values</li> <li>2. The importance of teamwork</li> <li>3. Leadership skills</li> </ol>	Focus on disadvantaged and at-risk youth teaching life mentoring skills to prevent risky, unhealthy behavior.
Leeward Kai Canoe Club, Inc.	To perpetuate the Native Hawaiian culture through the sport of Hawaiian canoe racing.	Provider seeks to educate, foster healthy minds, bodies and spirits, instill Hawaiian values, perpetuate the Hawaiian culture, develop relationships for at-risk youth.
Life Foundation	To stop the spread of HIV and AIDS. To empower those affected by HIV/AIDS and maximize their quality of life. To provide leadership and advocacy in responding to the AIDS epidemic. To apply the skills and lessons learned from the AIDS epidemic to other related areas of public health or concern.	Provides a comprehensive array of HIV-related care and prevention services.
Making Dreams Come True ... Valley of Rainbows	To prepare individuals to embrace a diverse community, attain their personal goals, and aspire to become contributing citizens by providing assistance and support.	Provide programs for youth to achieve life goals, including higher education, through three programs – Youth scholarships, youth leadership conferences, and career and college counseling.
Victory Outreach Christian Recovery Homes		Provide outreach, intake, assessment, case management and referral services for individuals with extreme anti-social behaviors to improve their lifestyles.

**LEEWARD COAST COMMUNITY BENEFITS NON-PRIVATE PROVIDERS FOR 2007 – 2008**

<b>Agency</b>	<b>Mission</b>	<b>Priorities</b>
Waianae Coast Coalition	To educate, empower and advocate for our communities through economic development, collaboration with residents, agencies and government to meet community goals.	Provides oversight as a fiscal sponsor for startup non-profit groups within the district and assists with organization and training for these groups.
Waianae Coast Christian Women's Job Corps	To provide a Christian context in which women in need are equipped for life and employment.	Provide job skills training, financial management training and increase levels of self-esteem through personal development and self-empowerment.
Waimanalo Construction, Coalition		Provide CDL training and construction skills training for unemployed or underemployed individuals.
Westside Athletics Foundation (Hawaii Intergenerational Community Development Association)		To assist youth sports organizations to set and achieve advancement of members and communities, promote healthy family activities, good citizenship and encourage education.

COMMUNITY BENEFITS ADVISORY COMMITTEE  
2008

NAME	ADDRESS	CITY	ST	ZIP
John DeSoto	84-1060 Mai Ola St.	Waianae	HI	96792
Ku'ulei Jolonino	92-769 Paakai St.	Kapolei	HI	96707
Georgette "Jo" Jordan	P. O. Box 1398	Waianae	HI	96792
Bernard L. Kaahanui	91-1123 Kumuiki Street	Kapolei	HI	96707
John Kaopua	94-497 Ukee Street	Waipahu	HI	96797
John Kapololu	92-683 Palailai St.	Kapolei	HI	96707
Thomas Aimoku McClellan	1001 Bishop St., Ste 705 Pauahi Tower	Honolulu	HI	96813
Mark Suiso	84-370 Makaha Valley Rd.	Waianae	HI	96792
Patty Teruya	P. O. Box 2308	Waianae	HI	96792
Neddie Waiamau-Nunuha	P. O. Box 844	Waianae	HI	96792
Roy Wickramaratna	92-755 Makakilo Dr. #50	Kapolei	HI	96707

# **APPENDIX F**



# EXECUTIVE SUMMARY

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## Background – 25-Year Plan

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 legislation<sup>1</sup> 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.

## Waste Generation -- Projections

The first step in developing a long-term solid waste management plan is to quantify and project the amount of waste that will be generated. Waste generation is the sum of waste that is disposed, converted to energy, composted, recycled and reused. As shown in Table ES-1, it is estimated that 1,793,560 tons of solid waste was generated during FY 2006.

**Table ES-1**  
**Waste Generated, July 1, 2005 through June 30, 2006**

Management	Tons
Recycled, Reused, Composted	628,373
Waimanalo Gulch Landfill <sup>(1)</sup>	337,667
H-POWER	602,520
PVT Landfill (est.)	200,000
Unpermitted disposal sites (est.)	25,000
<b>TOTAL</b>	<b>1,793,560</b>

<sup>(1)</sup> An estimated 153,801 tons of waste delivered to the Landfill was redirected from H-POWER due to periodic closures due to maintenance or capacity limitations.

The size of the population has a direct influence on the amount of waste generated in a given area. The greater the population, the more waste is generated, although other

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<sup>1</sup> Section 9-.13 of the Revised Ordinances of Honolulu 1990

## EXECUTIVE SUMMARY

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factors such as commercial growth are also likely to have an impact in the City. Table ES-2 shows the projected de facto population for the planning period from July 1, 2005 through June 30, 2030 based on the projections published in *The State of Hawaii Data Book 2005 (Data Book 2005)*<sup>2</sup>. De facto population is defined as “the number of people physically present in an area, regardless of military status or usual place of residence. It includes visitors, such as tourists, but excludes residents temporarily absent, both calculated on an average daily basis.”<sup>3</sup> Because tourism is the largest industry in the City, visitor impact is important to include when projecting population and amounts of waste generated.

Waste generation throughout the 25-year planning period is calculated by multiplying the projected de facto population in each year by the projected per capita generation rate in each year. To ensure that facilities and programs are evaluated and designed to account for reasonable growth, the projected annual total waste generated is based on the per capita generation rate correlating with the United States Environmental Protection Agency (USEPA) estimate of an increase of approximately 1 percent per year until FY 2013. After FY 2013, the generation rate is projected to remain constant, as the actual generation rate will be recalculated during the 2012 plan update.

**Table ES-2**  
**Populations and Waste Generation Projections**  
**FY 2007 through 2030**

<b>Fiscal Year</b>	<b>Population</b>	<b>Tons/Cap/Year</b>	<b>Tons</b>
2007	978,700	1.88	1,821,730
2008	988,000	1.90	1,859,180
2009	997,400	1.92	1,897,220
2010	1,006,850	1.94	1,935,810
2011	1,016,550	1.96	1,975,030
2012	1,026,500	1.98	2,015,100
2013	1,036,550	2.00	2,056,120
2014	1,046,700	2.02	2,097,760
2015	1,056,950	2.02	2,118,300
2016	1,066,750	2.02	2,139,050
2017	1,076,100	2.02	2,158,900
2018	1,085,550	2.02	2,177,840
2019	1,095,100	2.02	2,196,950
2020	1,104,700	2.02	2,216,210
2021	1,114,150	2.02	2,235,640

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<sup>2</sup> *Data Book 2005*; the source of de facto population data as referenced by Steve Young, City Department of Planning and Permitting, in an e-mail dated June 7, 2007.

<sup>3</sup> *Data Book 2005*; Table I-27, footnote 3.

**Table ES-2  
Populations and Waste Generation Projections  
FY 2007 through 2030**

<b>Fiscal Year</b>	<b>Population</b>	<b>Tons/Cap/Year</b>	<b>Tons</b>
2022	1,123,450	2.02	2,254,770
2023	1,132,800	2.02	2,273,570
2024	1,142,250	2.02	2,292,530
2025	1,151,800	2.02	2,311,650
2026	1,161,100	2.02	2,330,940
2027	1,170,200	2.02	2,349,800
2028	1,179,400	2.02	2,368,220
2029	1,188,600	2.02	2,386,800
2030	1,197,900	2.02	2,405,500

## Existing Programs and Facilities

The next step in the planning process is to inventory the City's existing solid waste program and facilities and identify any "gaps" in their ability to achieve goals and manage waste throughout the planning period. To comply with HRS, Chapter 342G, the following solid waste system components were included in this inventory:

1. Source Reduction
2. Recycling and Bioconversion
3. Special Waste Management
4. Household Hazardous Waste and Electronics Management
5. Solid Waste Collection and Transfer
6. Waste To Energy and Alternative Disposal Technologies
7. Landfill Disposal
8. Public Education
9. Market Development

## Source Reduction and Reuse – Existing

Source reduction and reuse includes any activity that causes a net reduction in the generation of waste before it is collected. For example, some of the source reduction programs operating on Oahu include thrift stores, the Aloha Shares Network, reuse of construction materials at Nanakuli Housing Corporation, Grasscycling and backyard

## **EXECUTIVE SUMMARY**

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composting, and Freecycle™ Honolulu. The City's Partnership for the Environment emphasizes source reduction and reuse by local businesses.

### **Recycling and Bioconversion -- Existing**

The City's recycling and bioconversion programs and private sector initiatives increased the quantity of municipal solid waste (MSW) recycled into new products from approximately 74,000 tons in 1988 to approximately 628,000 tons in FY 2006, which is equivalent to approximately 35 percent of the waste stream. Some of the recovery programs and policies that fostered this increase include:

- The Community Recycling Bin program;
- Twice-a-month curbside collection of residential green waste;
- Island-wide, curbside collection and recovery of residential bulky items;
- Recovery of scrap metal at Honolulu Program of Waste Energy Recovery (H-POWER); and
- Ordinances and technical assistance to facilitate business recycling of corrugated cardboard, office paper, glass containers, green waste and food scraps.

To foster an increase in the quantity of MSW that is recycled into new products, the City began a pilot program in November 2007 to supplement the twice-a-month residential green waste collection with twice-a-month, residential curbside collection of mixed recyclables.

The City has also partnered with the State to institute initiatives such as the HI-5 program. In addition, the City has worked with local companies to divert materials such as construction and demolition debris (C&D) and abandoned vehicles from landfill disposal.

### **Special Waste Management -- Existing**

The City operates programs to manage materials that require unusual handling and/or have disposal restrictions. These special wastes typically are not collected with regular MSW. Residential white goods and other bulky items are collected separately at the curb. In addition, the City accepts residential tires, batteries, and white goods at their convenience centers and transfer stations. Asbestos, medical waste, and foreign wastes can be landfill disposed, but only after certain procedures related to their handling have been followed. While municipal wastewater sludge can be landfilled after being treated, the City works with private vendors to divert this material from landfill disposal. Currently, the City is contracting with Synagro to generate fertilizer pellets from approximately 20,000 tons of sewage sludge from the Sand Island Wastewater Treatment Plant, and working with the State Department of Health (DOH) to use the fertilizer pellets on Oahu. Some special wastes, such as used motor oil and auto batteries, also are handled for recycling by businesses on Oahu.

## Household Hazardous Waste and Electronics -- Existing

### Household Hazardous Waste

“Hazardous waste” is defined in HRS Section 342J-2, as “a solid waste, or combination of solid wastes, which because of its quantity, concentration, or physical, chemical, or infectious characteristics may: (1) Cause or significantly contribute to an increase in mortality or an increase in a serious irreversible or incapacitating reversible illness; or (2) Pose a substantial existing or potential hazard to human health or the environment when improperly treated, stored, transported, disposed of, or otherwise managed.” Commercially generated hazardous waste is banned from disposal at the City’s Waimanalo Gulch Sanitary Landfill (Landfill).

Household-generated hazardous waste (such as automotive products, cleaners, pesticides, herbicides, paints and solvents), is exempt under both the Resource Conservation and Recovery Act (RCRA) rules of the Code of Federal Regulations (40 CFR Part 261.4) and the HAR, Title 11, DOH, Chapter 261<sup>4</sup>. HAR 11-261-4(b)(1) states that the following solid wastes are not hazardous wastes and are exempt from regulation: solid wastes derived from households (including single and multiple residences, hotels and motels<sup>5</sup>, bunkhouses, ranger stations, crew quarters, campgrounds, picnic grounds and day-use recreation areas). These wastes will be referred to as household hazardous wastes (HHW).

To manage HHW, the City hosts a HHW collection day every other month. Residents can dispose of HHW that requires special handling at these events by calling the Refuse Division or sending an e-mail to [info@opala.org](mailto:info@opala.org) to schedule an appointment.

In addition, the Refuse Division and Wastewater Treatment Division have worked cooperatively to determine the most appropriate approach for managing over 60 HHW products. The list of these materials and recommended management approaches can be found at [www.opala.org](http://www.opala.org).

### Used Electronics

Used electronics or “e-waste” includes, but is not limited to discarded computers, cell phones, televisions and other electronic products. Those with cathode ray tubes (CRTs) such as color computer monitors and televisions are considered hazardous when discarded because of the presence of lead in the CRT.

Electronics from commercial/government generators were banned from landfill disposal in July 2006. Commercial/government generators are directed to seek recycling alternatives by contacting the DOH, one of the reuse organizations or

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<sup>4</sup> Hawaii Administrative Rules: <http://www.hawaii.gov/health/about/rules/11-261.pdf>

<sup>5</sup> Although wastes generated by hotel guests are non-hazardous and are not regulated under hazardous waste rules, hazardous wastes generated by hotel activities and operations are regulated. See the State DOH/Solid & Hazardous Waste Branch’s “Regulatory Education: Hotels Bulletin” at: <http://www.hawaii.gov/health/environmental/waste/sw/pdf/200512wmin.pdf>

## EXECUTIVE SUMMARY

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computer manufacturers listed on the City's website, [www.opala.org](http://www.opala.org). The website also includes updated information regarding alternatives to disposing of e-waste.

Residential electronics are not banned from disposal with MSW. However, residents are encouraged to find alternatives to landfill disposal. Until 2006, the City coordinated a semi-annual collection event for e-waste. However, these were discontinued after the November 2005 event when local recyclers stopped accepting e-waste for processing at no fee.

### **Solid Waste Collection and Transfer – Existing Collection**

The Refuse Division provides weekly collection of MSW to nearly 200,000 accounts including all single-family residences, City agencies, and a limited number of multi-family properties and commercial establishments. Refuse Division accounts receive the following services:

- Residential MSW is collected curbside two times each week;
- Bulky items are collected monthly; and
- Green waste is collected twice a month in certain areas.

Currently, Oahu is the only Hawaiian Island to offer this comprehensive level of solid waste management service. Except for a limited number of businesses served by the Refuse Division, commercial refuse, which includes hotels and most apartment and condominium complexes, is collected by private haulers.

During the last several years, the City converted its refuse and green waste collection from a manual to an automated system. Briefly, manual collection consists of vehicles where a driver has two collectors who are required to exit the vehicle and physically lift cans and bags to discard material into the vehicle. This type of system requires each collection crew to manually lift eight to 10 tons of material each day. Conversely, automated collection typically requires one individual to drive the vehicle and the vehicle uses an automated arm to lift a refuse cart and deposit the garbage into the vehicle. As many large municipalities are doing throughout the United States, the City converted to an automated collection system to reduce costs with associated worker injuries and labor, as well as improve neighborhood aesthetics.

In addition to curbside collection, the Refuse Division operates six convenience centers throughout Oahu where residents can deliver MSW, green waste, large appliances, tires, bulky items and lead-acid batteries. Residents can also deliver MSW directly to the Landfill for disposal.

### **Transfer Stations**

The City operates three transfer stations in Kapaa, Keehi, and Kawaihoa that consolidate waste from MSW collection trucks into large transfer trailers for more efficient and economical transport to H-POWER or the Landfill. In FY 2006,

approximately 270,000 tons of MSW, 4,000 tons of green waste, 15,000 white goods, and 15,000 tires were delivered to the City's transfer stations.

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 its own company's trucks. The Island Demo facility receives C&D, sorts materials for recycling, and transfers the non-recyclable portion to H-POWER or the PVT Landfill.

### **H-POWER – Existing**

The majority of residential and commercial MSW discarded on Oahu is delivered to H-POWER, a waste-to-energy (WTE) facility located in the Campbell Industrial Park. The facility is owned by DFO Partners, Bank of America, Inc., and the Ford Credit Corporation and operated via contract with a full-service vendor since May, 1990. Combustible MSW is processed into refuse derived fuel (RDF) that is used to generate electricity. Approximately 90 percent of the volume and 70 to 75 percent of the weight of the MSW processed at H-POWER is diverted from the Landfill to generate electricity. The ash and residue from H-POWER is delivered to the Landfill for disposal. In FY 2006, over 600,000 tons of waste was recycled for energy at H-POWER.

### **Landfill Disposal – Existing**

The Landfill is the only permitted landfill accepting MSW on Oahu. It has been in operation since September 1989. The Landfill, located in Kapolei on the leeward side of Oahu in Waimanalo Gulch, is owned by the City and operated by Waste Management of Hawaii, Inc. (WMI). In FY 2006, the Landfill received 337,667 tons of MSW, of which approximately half was considered combustible MSW. This is primarily due to H-POWER being designed to process approximately 600,000 tons per year of combustible waste and the quantities of combustible solid waste exceeded the existing H-POWER plant capacity. Population and commercial growth in Oahu since 1989 have resulted in significantly higher quantities of combustible waste being annually generated. As outlined below, the City is in the process of developing additional WTE capacity to address this growth. The Landfill also received approximately 88,500 tons of ash and 79,500 tons of residues in FY 2006 from the H-POWER waste-to-energy facility.

A private landfill (PVT) is located in Nanakuli and is permitted to accept only C&D waste and petroleum contaminated soils. Information on the specific annual quantity of materials received at this facility was not available; however it is estimated at approximately 200,000 tons per year. The PVT Landfill reportedly has approximately 18 years of remaining permitted capacity at its existing fill rate.

### **Public Education – Existing**

The City maintains an active and innovative Education and Awareness program about its solid waste management programs. The cornerstone of these programs is the City's

## **EXECUTIVE SUMMARY**

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website, [www.opala.org](http://www.opala.org). Other programs and educational materials include but are not limited to:

- Videos;
- Tour de Trash;
- School Teacher Kits;
- Partnership for the Environment, a coalition of businesses working with the City to reduce waste;
- Print Ads;
- Refuse and Recycling Guide;
- Environmental Concern Line; and
- Special Events and Public Education Campaigns.

### **Market Development – Existing**

Local recyclers process and sell commodities, usually through brokers, on the mainland (usually the west coast) or the Pacific Rim. 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. Materials that are marketed locally include organics (untreated wood, green waste, food waste), aggregate (concrete, brick, aggregate), glass, and used tires.

### **The Future Solid Waste Management System**

The primary objective that was used to design an integrated solid waste management system for the City was to maximize the recovery of solid waste through reuse, recycling, composting and energy conversion, in order to minimize the amount of waste that requires landfill disposal. The following narrative summarizes the tasks that will be initiated to achieve this objective of minimizing the need for landfill disposal. Because the City already has a number of effective programs and facilities in place, many of the proposed future tasks entail the continuation and expansion of those existing activities.

### **Source Reduction – Future**

Significantly reducing the amount of waste that is produced requires substantial changes in the amount of packaging that is used in consumer products, as well as the durability of these products, and/or changing consumer habits through education and economic incentives. As the City does not have the ability to dictate the design of consumer products and packaging, the City focused its evaluation on educational and economic options that are available to the City to reduce the amount of waste that Oahu residents and businesses produce. At this point, the City plans to encourage residents and businesses to reduce the amount of solid waste they produce through



education. In the future, the City may consider instituting a system where residents are charged for the amount of garbage they set out for collection.

Action items that the City has already implemented or plans to implement to encourage residents and businesses to reduce the amount of waste they produce include:

- Continue to promote source reduction and reuse through the City's website, [www.opala.org](http://www.opala.org), and other educational avenues.
- Continue to encourage *Grasscycling* and backyard composting that conforms to the City's storm water management plan through workshops with Hawaiian Earth Products, [www.opala.org](http://www.opala.org), and other avenues.
- Beginning in 2009, increase the emphasis on source reduction and reuse in the City's procurement policies.
- Beginning in 2009, join with other Hawaii counties to advocate for manufacturer responsibility for product waste.

### **Recycling and Bioconversion – Future**

To increase the amount of solid waste recovered through recycling, reuse, and composting (bioconversion), the City plans to implement the following initiatives:

- In late 2007, the City began providing curbside collection of residential mixed recyclable materials and green waste to approximately 20,000 residential customers in Mililani and Hawaii Kai. In January 2008, program participants in Hawaii Kai had their refuse collection reduced from twice-a-week to once-a-week. The program participants in Mililani still have the option of twice-a-week refuse collection, but are required to pay \$10 per month if requesting a second day of refuse collection. The City will obtain and analyze data from these two approaches for curbside refuse collection, and determine the most appropriate approach for providing mixed recycling collection by the end of 2008.
- To process the residential mixed recyclables collected during the phase-in of the curbside program, the City entered into a short-term materials processing contract. The City plans to procure multi-year processing capacity by 2009 to manage residential, mixed recyclables from an island-wide collection system.
- By the end of 2010, all residential customers who have automated refuse collection will also be provided with curbside collection of mixed recyclables.
- Once the City has fully implemented the curbside recycling program, the need for the Community Recycling Bin program may be reduced in some locations. Therefore, in 2010, the City will evaluate the impact of curbside recycling on this program. Based on the results of this analysis, the City will decide whether to procure a vendor to provide this program. If the City decides to continue the program, the procurement process for a vendor will be commenced in 2011 and a new contract will be awarded by 2012.

## **EXECUTIVE SUMMARY**

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- The City will continue to provide financial assistance to condominiums to facilitate recycling programs.
- The City will issue an Invitation for Bids (IFB) for a vendor to compost 100,000 tons of green waste, sewage sludge and food waste in the spring of 2008 with the expectation of awarding a contract in the fall of 2008, with the facility scheduled to commence operation in fall of 2010.
- The City will continue to work with the DOH to identify acceptable methods to recycle residual waste and ash from H-POWER and additional WTE capacity.
- Beginning in 2008, the City will work with the DOH to acquire recycling receptacles to collect HI-5 containers in public locations such as parks, government buildings and special events. The City will distribute the containers, but the host site will be responsible for maintaining the container(s).
- The City will continue to increase the number of customers that use green waste carts rather than setting out green waste in bags or bundles.
- The City will continue to restrict the disposal of green waste from commercial and governmental generators at transfer stations, WTE facilities and the Landfill.
- In 2009, the City will target landscapers and gardeners for educational messages on separating green waste from garbage.

### **Special Waste Management – Future**

The City does not currently plan to adopt any new strategies for managing special wastes. However, in 2009, the City will begin to work with DOH to develop local markets for components of C&D waste.

### **Household Hazardous Waste and Electronics – Future**

The City will continue to host every-other-month collection events for HHW, as well as to monitor quantities collected and per ton costs associated with these events. In 2010, the City will conduct an analysis to determine if a more cost effective approach for providing this service is available.

In 2009, the City will evaluate options to recycle electronics from residential generators. The City will continue to pursue through the State legislature the establishment of a program for used electronics.

### **Solid Waste Collection and Transfer – Future**

#### **Collection**

The City plans to expand the number customers who set out the refuse in carts, versus cans and bags in 2011 and 2012. For those areas of Oahu that cannot accommodate fully-automated collection vehicles, the City will unload the carts using packer trucks with tippers. This type of system is known as semi-automated collection.

## Transfer Stations-Future

Site visits and assessments of the three City transfer stations were conducted as part of the Plan development. The assessments consisted of interviews of transfer station staff, including the Disposal Facilities Superintendent who oversees all of the transfer stations, and review of operating plans and DOH permits for all City transfer stations. The objective of the assessments was to identify how current operations could be improved and what would be required to meet future needs at each of the facilities. The summary conclusions of the assessment of each of the City transfer stations are described below, along with the City's planned facility upgrades.

**Keehi Transfer Station** – In 2009, the City will perform a cost-benefit analysis to determine whether to convert this transfer station to top loading. The conversion to a top loading operation at the Keehi Transfer Station may offer the following benefits:

- Increased surge storage area in the refuse pit;
- Increased daily loading rate of the transfer station;
- Reduced overnight storage required in the refuse pit;
- Reduction (15-20%) in the daily number of trailer roundtrips due to the increased load weight;
- Reduced maintenance costs by eliminating the stationary compactors; and
- More efficient staffing.

By converting to a top loading operation, all of the City's three transfer stations would use the same type (walking floor) of trailers. Use of the same trailer type would offer the following benefits:

- Simplified purchasing of trailers;
- Opportunity to share trailers amongst all transfer stations;
- Improved sharing of operators between the transfer stations due to similar operations; and
- Reduced special training required for new operators at the Keehi Transfer Station.

Other planned projects at the Keehi Transfer Station include fuel station renovations which will install an automated electronic card reader system and relocating of the existing fuel station to enable fueling on both sides of the pump.

To accomplish this, the City plans to award a contract to implement the improvements identified above at the Keehi Transfer Station in 2009. The project is scheduled to be completed by 2010.

**Kawailoa Transfer Station** - When the next modification of the solid waste permit application is submitted in 2010, the City will consider requesting an increased permitted capacity for the transfer station because of anticipated growth in the waste stream on the part of the island served by this transfer station.

Providing adequate transfer capacity for the North Shore area will most likely include retrofitting the existing transfer station site to provide more efficient collection and

## EXECUTIVE SUMMARY

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storage of green waste. The planned site improvements include paved parking, staging, and circulation areas; an extended tipping area with a new green waste receiving bay; a mulch distribution area; new water main; new sewer main; and a new operations building. The 330-square-foot operations building will consist of an office, a restroom, equipment storage, and circulation space. The upgraded transfer station will receive and transfer green waste separately. The primary traffic pattern will not change at the improved facility. The present mulch distribution area is located at the rear of the site and is not easily accessible to residents. The upgraded mulch distribution area will positively change the traffic pattern for residents picking up mulch at the site.

In 2010, the City plans to award a contract to expand capacity and upgrade handling of materials at Kawaioloa Transfer Station. The project is scheduled to be completed by 2011.

**Kapaa Transfer Station** - Expansion of the Kapaa Transfer Station should not be necessary during the first 10 years of the planning period with the present average daily receipt of MSW at less than one half of its permitted design capacity. However, since its age is approaching 20 years old, the facility now requires major repairs and replacements. Therefore, in 2011, the City will award a contract to update structure and equipment at Kapaa Transfer Station. The project is scheduled to be completed by 2012. As part of the 2012 Plan update, the City will reevaluate the adequacy of processing capacity of the Kapaa Transfer Station.

The City will evaluate each of these transfer stations every five years throughout the planning period to identify any capacity, operational or infrastructure deficiencies.

### **Trans-shipment to the Mainland**

In January 2008, the City issued an Invitation for Bids (IFB) for the baling, shipment, unloading, transportation and disposal (transshipment) of City-provided MSW to a mainland landfill for a term of at least 36 months.

The bids are due in June 2008 and the City plans to consider awarding a contract to a service provider in late 2008. The process of annually transshipping 100,000 tons of MSW will begin in 2009.

To assure flow control by the City, the service provider will be required to provide the City with sufficient space for the placement of a City-owned scale and scale house, as well as associated equipment and vehicle access. The Refuse Division will direct select MSW to the scale house as part of its flow control plan for the City.

The City only plans to transship waste to the mainland on an interim basis, until adequate WTE capacity becomes available. Additional proposed WTE capacity is scheduled to become available in 2011.

## **Alternative Disposal Technologies – Future**

As part of the Plan update, the City evaluated a variety of conversion technologies, other than landfilling, to ultimately manage the portion of Oahu's solid waste stream that is not targeted upstream to be reduced, reused, recycled or composted. The first step in this analysis was to review different alternatives to landfill disposal including the following four options:

- Anaerobic Digestion;
- WTE;
- Pyrolysis/ Gasification; and
- MSW Composting.

Table ES-3 (at the end of the Executive Summary and Implementation Plan) represents an overview of the alternatives presented to the SWAC for consideration.

Based on the commercial status of the four technologies, anaerobic digestion and pyrolysis/gasification were excluded from further consideration. These two technologies have been applied commercially to various components of the solid waste stream outside of the U.S. However, there are no full-scale commercially operating facilities in the U.S. using these technologies with MSW as their feedstock.

The two remaining technologies, MSW composting and WTE, are being used by commercially operating facilities in the U.S. MSW composting requires extensive pre-processing to ensure decomposition and volume reduction up to 70 percent. The industry's historical operating history has reflected volume reduction of less than 70 percent and inadequate markets for the compost by-product. In many instances throughout the U.S, MSW compost facility operators receive no revenues from compost sales.

WTE has an extensive operating history with a proven track record of volume reduction approaching 80 percent to 90 percent. WTE facilities, such as H-POWER, generate electricity that has a continuous and well-defined market. H-POWER currently is a RDF facility that involves some pre-processing of the MSW (removal of metals and other non-combustibles) to enhance the heating value of the MSW. The demand for the energy from non-conventional sources, such as WTE, continues to grow and is critical to Hawaii which has the highest cost of energy in the U.S. Moreover, in Hawaii, the generation of electricity from a WTE plant directly offsets fossil fuel, importation, combustion, and greenhouse gas emissions, as virtually all of Hawaii's electricity, apart from H-POWER, is generated from imported fuel oil or coal.

Therefore, based on the criteria of commercial operating viability, landfill diversion potential and by-product demand, the City selected WTE as its preferred alternative to landfill disposal. However, the City plans to continue to monitor new technologies throughout the planning period to determine if revisiting these technologies may be appropriate at some point in the future.

## **EXECUTIVE SUMMARY**

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### **WTE Capacity**

Based on the alternative disposal technology analysis, the City considers maximizing the conversion of WTE as an essential element of this Plan. As previously discussed, H-POWER successfully diverts approximately 600,000 tons per year of waste from landfill disposal by converting it to energy. However, each of the last three years of waste receipts at H-POWER has indicated a need to increase WTE capacity as approximately 100,000 to 150,000 tons of combustible waste were landfill disposed due to WTE capacity limitations. Initially, the City planned to procure the development of a facility that would provide an alternative WTE technology to H-POWER's Refuse Derived Fuel (RDF) technology on a site adjacent to the H-POWER site. However, the City has opted to increase the capacity at H-POWER by procuring a mass burn combustion system that is capable of annually processing at least 300,000 tons of waste.

As shown in Table ES-4, (at the end of the Executive Summary and Implementation Plan) the additional 300,000 tons of processing capacity at H-POWER and implementation of the residential curbside recycling program will significantly reduce the quantity of MSW that requires landfill disposal.

During the next ISWMP update (2012), the City will reassess the waste generation projections to update them in the context of population and commercial development growth. If the 2012 assessment indicates that waste generation and disposal quantities will continue to grow at the same or greater levels than projected, the City will then need to assess whether to reinstitute interim transshipment of MSW to the mainland, further increase WTE capacity, implement an alternative disposal program or employ a combination of these options. In addition, as previously discussed, the City will determine whether to implement economic incentives to reduce the amount of waste that residents and businesses set out for disposal.

### **City Acquisition of H-POWER**

H-POWER is located in Kapolei, Hawaii on a 28-acre site in the James Campbell Industrial Park near interstate highway H-1. H-POWER has a nominal rating of 2,200 tons per day of MSW throughput and is capable of generating approximately 46 megawatts of electric energy and a separate, derivative amount of Renewable Energy Credits (RECs). Through a sale-lease back arrangement authorized by state law, the facility is owned by DFO Partners, Bank of America, Inc., and the Ford Credit Corporation and operated via contract with a full-service vendor since May, 1990. Per the terms of the original contract, the City has begun negotiating with the Bank of America to officially acquire full ownership of the H-POWER generating facility during 2008. The City plans to continue to contract for the operations of the facility.

Through the official acquisition and expansion of H-POWER, the City will be able to strengthen its ability to integrate the entire solid waste stream on the island of Oahu to benefit the health, safety, and welfare of all its citizens.

### **H-POWER Environmental Compliance**

By to May 2010, H-POWER will need to retrofit the Air Pollution Control (APC) system to meet the future air emission standards. The most significant change in the air emissions regulations is for the emission limits of Dioxin/Furan. The City is presently working with the existing facility operating vendor to retrofit the APC equipment to add bag houses for compliance with future requirements. The bag houses should be installed by September 2010 and certified six months later. The City has included \$10 million in the Fiscal Year 2009 capital improvement budget for this project.

### **Landfill Disposal – Future**

#### **Expansion of the Waimanalo Gulch Landfill**

As shown in Table ES-4, increasing recycling and expanding WTE capacity will not permanently or totally eliminate the need for landfill disposal capacity for combustible MSW, and some residual landfill capacity will be always be required for residue and ash.

At the time of this Plan's issuance, the State Land Use Commission has only approved an 18-month extension of the Landfill's current land use permit until November 1, 2009. The City is currently processing an Environmental Impact Statement (EIS) for the property affected for the proposed expansion of the Landfill. The EIS process includes public involvement and is currently scheduled to be completed by November 2008. Upon acceptance of the EIS, the City will seek all necessary land use permits through a process requiring public hearings. Concurrent with the filing of land use approval applications, the City would also submit a solid waste operating permit application to the DOH. The DOH will also conduct a public hearing on that application. If the permit approval process is successfully completed as currently scheduled, then construction of the Landfill expansion could begin in mid-October 2009.

#### **Development of a New MSW Landfill**

The City will begin the process of identifying a new landfill, beyond the capacity at the Waimanalo Gulch Landfill, in 2011. The siting of a new MSW landfill will avoid areas situated west of Makakilo. As detailed in Section 11 of this Plan, the City anticipates that it will reconvene a Landfill Siting Committee (Committee) in 2011.<sup>6</sup> The Committee will be assigned the responsibility of adopting the process outlined in Section 11 to identify a site for a new Subtitle D MSW landfill by 2012. In 2013, the City Council will review the Committee's findings and take action regarding the Committee's recommendation.

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<sup>6</sup> In 2003, the Mayor appointed a special advisory committee, the Mayor's Advisory Committee on Landfill Site Selection, to address the siting of a new landfill.

## EXECUTIVE SUMMARY

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### Public Education – Future

The City currently provides comprehensive and innovative public education programs and plans to continue to following initiatives:

- Maintain, update, and promote the City's website, [www.opala.org](http://www.opala.org).
- Support the Partnership for the Environment to encourage and promote business source reduction and recycling.
- Educate students on source reduction, recycling, and solid waste management through Recycle Hawaii Teacher Kits, Recycling Teacher Partners, the Learning Center at [www.opala.org](http://www.opala.org), and by siting Community Recycling Bins at schools.
- Develop, produce, and distribute collateral materials to encourage proper solid waste management.
- Operate the Environmental Concern Line.
- Planning and participation in special events to promote source reduction, recycling, and sound solid waste management.
- Offer the public opportunities to provide input into recycling and solid waste management programs through public meetings, surveys, and other avenues.
- Inform residents of changes to the solid waste management system through [www.opala.org](http://www.opala.org) website, press releases, Public Service Announcements, printed materials, and the Wasteline newsletter.

At least every two years, the City will reevaluate these initiatives to assess the following:

- Are the goals of the education initiatives being achieved?
- Are target audiences being reached?
- Are the messages and promotional materials relevant?
- Are labor and financial investments a valuable investment?

### Market Development – Future

The City and the other Hawaii counties face unique challenges when developing recyclable materials markets due to:

- The State's remoteness and resulting high transportation costs;
- Limited competition among shipping lines to ensure competitive transportation costs;
- Limited volumes of recyclables generated; and
- Limited end-use capacity coupled with high costs of manufacturing.

Therefore, the City will focus its market development efforts where City government has a viable opportunity to influence the markets for recyclables, including:



- Work with other Hawaii counties to advocate for State initiatives to extend producer responsibility.
- Enhance City procurement policies to purchase more products with recycled content.
- Work with large retailers to encourage the backhauling of plastic film.
- Work with local concrete paving companies to increase the use of recovered concrete as aggregate in new Portland cement concrete, or as aggregate in road sub base.

### Impact on Energy Use

Energy is a valuable and a critical resource within the State of Hawaii. Because Hawaii is isolated from the U.S. mainland, its energy infrastructure and consumption are unique amongst the states. Hawaii depends heavily on imported fossil fuels to meet energy demand. Close to 90 percent of Hawaii's energy comes from fuel oil to supply more than three-fourths of Hawaii's electricity generation. The remaining ten percent generated through a combination of synthetic natural gas, coal and renewable energy<sup>7</sup>.

Plan Section 10 uses the EPA WARM Model to evaluate the incremental impact of key components of the City's proposed solid waste management systems on reducing dependency on fossil fuel. The WARM Model demonstrated that the City's mixed recyclables and green waste collection programs, and expanded WTE capacity, will yield additional net energy savings of approximately 12,033,100 mm BTUs of energy or 62,636 metric cubic tons of greenhouse gas emissions, which is equivalent to:

- Annual energy consumption for 10,800 households;
- 354,100 barrels of oil;
- 16,419,200 gallons of gasoline; or
- Removing 49,711 cars from the road each year.

### Financial Analysis

During FY 2006, the City's total expenditures for solid waste management services were \$177,485,669. Based on FY 2006 data, approximately 34 percent of the Refuse Division's operating and capital expenses were paid for through assistance from the General Fund, which derives its revenues from property taxes. Solid waste tip fees and other revenues pay for the remaining approximately 66 percent of operating and capital expenses.

Under the proposed collection scenario, when the Plan is fully implemented in FY 2012, it is estimated that approximately 54 percent of the Refuse Division's operating and capital expenses will be paid for through assistance from the General Fund and

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<sup>7</sup> Energy Information Administration – State Energy Profiles: July, 2007.

## **EXECUTIVE SUMMARY**

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approximately 46 percent will be funded through solid waste tip fees and other revenues.

As the City's General Fund may not be able to absorb these additional costs, the City may need to explore in the future whether or not to assess a portion of annual cost of solid waste management services to its customers.

### **Summary**

As shown, the solid waste management planning process will provide the City with the needed strategies to minimize the amount of residual solid waste that requires landfill disposal and the infrastructure necessary to manage the overall waste stream. While the plan identifies the system components through 2030, the City will update this plan in 2012 and every five years thereafter to address demographic, technological, economic and regulatory changes that may affect the City's approach to managing its solid waste.

Table ES-3  
Alternative Solid Waste Reduction Technologies Matrix

Technology	Applicability to Oahu Waste Stream	Commercial Status	Risks (i.e., technology, environmental, financial)	Waste Diversion Potential
Anaerobic Digestion (AD)	Based on a 2006 waste characterization analysis, the overall waste stream is composed of nearly 70% of organics including, but not limited to, food waste, yard waste, paper, and wood. This estimate excludes the yard waste that is separated from the mixed refuse by homeowners and businesses. AD can be applied to this fraction of the waste stream to convert organics into biogas and digestate (i.e., solid residues).	A few pilot facilities using MSW as feedstock have operated in the U.S. in the past. The wastewater treatment industry has used AD to manage biosolids and generate biogas for decades. There are more than 100 commercially operating facilities using the organic fraction of the MSW stream and/or organic industrial wastes located in Europe, Canada, and Australia, but no commercially operating facilities in the U.S.	Technology risks may include inadequate materials processing because of an underperforming digestion process caused by contaminated feedstock, inadequate moisture content, etc. Environmental risks may include odor from pre-processing and/or digestion activities, exceedance of air emissions limits when using the biogas as a fuel, and the inability to site a facility due to perceived threats to water, air, and property values. Financial risks may include lack of markets for biogas and/or residues and failure to receive adequate quantities of materials to ensure needed economies of scale.	Volume reduction is projected up to 75% assuming the pre-processing of the feedstock to remove non-organics and the beneficial reuse of digestate. Without beneficial use of the digestate, the potential volume reduction is projected to be approximately 60%.

Table ES-3  
Alternative Solid Waste Reduction Technologies Matrix

Technology	Applicability to Oahu Waste Stream	Commercial Status	Risks (i.e., technology, environmental, financial)	Waste Diversion Potential
Waste-to-Energy	Based on the 2006 waste characterization analysis, the overall waste stream is composed of approximately 80% to 90% combustible materials by weight.	MSW combustion is a fully commercialized processing technology with nearly 90 WTE projects (mass burn and RDF) operating in the U.S. alone. Many others are operating throughout the world. The facilities in the U.S. are sized to process, on average, approximately 1000 tons per day. Some smaller WTE facilities are operating in the U.S, but in many instances struggle to remain economically competitive with landfill disposal options. Many of these smaller WTE facilities have had to be retrofitted for additional air pollution control equipment in the last decade, which has dramatically increased overall costs.	Technology risks may include boiler corrosion due to waste variability, which requires excessive unscheduled maintenance. Environmental risks may include exceedance of air emissions limits, metals in ash, and inability to site a facility due to perceived threats to water, air, and property values. Financial risks may include high operating costs and variability in energy sales.	Volume reduction for WTE facilities is 85% to 90% of the waste that is processed, depending on the type of technology and system that is used. Historically, H-POWER has reduced 90% of the waste that is processed.

Table ES-3  
Alternative Solid Waste Reduction Technologies Matrix

Technology	Applicability to Oahu Waste Stream	Commercial Status	Risks (i.e., technology, environmental, financial)	Waste Diversion Potential
Pyrolysis/Gasification	<p>This technology process converts the carbon-based portion of the waste stream into a syngas that can be used to generate electricity or fuels. The carbon content of the waste stream can vary considerably. However, the organic content which is carbon-based composes approximately 60% to 75% of the waste stream.</p>	<p>There are a handful of commercially-operating gasification plants operating worldwide, including Canada, using MSW as feedstock. A small number of pilot facilities reportedly are operating or have operated in the U.S. using pre-processed MSW as feedstock to produce syngas. Operating data is very limited for the application of this technology to MSW and thus this technology is not considered fully commercialized. The technology has been used for other types of feedstock such as coal and uniform types of biomass. Plasma arc thermal gasification, a variation of conventional gasification, has reportedly been used in Japan to manage pre-processed</p>	<p>Technology risks may include inadequate materials processing resulting in underperforming gasification process because of the lack of uniform feedstock. Moreover, multiple technical issues associated with scaling up demonstration projects may exist. Environmental risks may include odor at the pre-processing stage, air emissions when using the syngas as a fuel in a boiler, disposal and/or beneficial reuse of residues (i.e., char, silica, slag, and ash), and inability to site a facility due to perceived threats to water, air, and property values. Financial risks may include lack of markets for sales of syngas and uncertain capital and operating costs due to lack of full-scale projects with</p>	<p>Volume reduction for pyrolysis/gasification can theoretically reach up to 90% with limited pre-processing. However, limited operating data using MSW as feedstock exists to confirm this projection.</p>

Table ES-3  
Alternative Solid Waste Reduction Technologies Matrix

Technology	Applicability to Oahu Waste Stream	Commercial Status	Risks (i.e., technology, environmental, financial)	Waste Diversion Potential
MSW Composting	<p>Food wastes, yard wastes and compostable paper alone compose nearly 30% of the waste stream. MSW aerobic composting converts the organic portion of the waste stream into a compost product that can have a beneficial reuse as a soil conditioner and/or erosion control.</p>	<p>MSW and other types of homogeneous solid wastes, such as auto shredder fluff in commercially proven settings.</p> <p>MSW composting facilities were first developed in the 1960s in conjunction with the Solid Waste Disposal Act. A renewed interest in this technology emerged in the 1980s with many states passing legislation promoting landfill diversion and recycling. By the early 1990s there were more than 25 commercially-operating MSW composting facilities in the U.S. However, the overall number of MSW composting facilities has not grown over the last decade. In 2000, <i>BioCycle</i> reported 16 commercially-operating MSW composting facilities. The trend in solid waste composting over the last five</p>	<p>MSW as the feedstock.</p> <p>Technology risks may include limited materials decomposition because of insufficient pre-processing of non-organics. This occurrence may result in extensive quantities of residuals needing disposal. Environmental risks may include odor from pre-processing and/or the composting process. potential for metals in the compost end-product, and inability to site a facility due to perceived threats to water, air, and property values. Financial risks may include lack of markets for the compost by-product and failure to receive adequate quantities of materials to</p>	<p>Volume reduction for MSW composting is projected up to 70% assuming the extensive pre-processing of the feedstock to remove the non-organics and the successful marketing of the compost by-product for beneficial reuse. The actual operating history of many MSW composting facilities over the last 10 to 15 years has generally reflected a volume reduction level less than 70%. However, the development of source-separated organics composting facilities offers an opportunity for greater volume reduction.</p>

Table ES-3  
Alternative Solid Waste Reduction Technologies Matrix

Technology	Applicability to Oahu Waste Stream	Commercial Status	Risks (i.e., technology, environmental, financial)	Waste Diversion Potential
		<p>years has been the development of source-separated organic composting facilities for residential and commercial organics programs in such communities as San Francisco, San Jose, Seattle, and others.</p>	<p>ensure economies of scale.</p>	

ES-4  
Waste Flow Analysis With 300,000 Tons Additional WTE Capacity

FY Year	Population	Generation Rate [1]	Waste Generated [2]	Commercial Waste Reused, Recycled, Composted [3]	Reused, Recycled, Composted That Is Managed By the City [4]	Recycling Rate Per Capita	Waste Disposed At PVT And Unpermitted Facilities [5]	Trans-Ship Capacity	Non Combustible Waste		WTE Ash And Residue Requiring Disposal [8]
									Requiring Landfill Disposal [6]	Requiring Landfill Disposal [7]	
2006	960,940	1.87	1,793,560	411,828	216,545	0.23	225,000	0	139,141	191,046	167,800
2007	969,530	1.88	1,821,730	1,821,730	232,670	0.24	229,280		141,330	188,790	167,800
2008	978,720	1.90	1,859,180	1,859,180	247,980	0.25	233,770		144,230	195,320	167,800
2009	988,010	1.92	1,897,220	1,897,220	283,390	0.29	238,350		147,180	182,040	167,800
2010	997,380	1.94	1,935,810	1,935,810	306,280	0.31	243,010	100,000	150,180	81,540	167,800
2011	1,006,850	1.96	1,975,030	1,975,030	312,230	0.31	247,780	100,000	153,220	98,290	167,800
2012	1,016,550	1.98	2,015,100	2,015,100	318,350	0.31	252,660	100,000	156,330	115,300	167,800
2013	1,026,500	2.00	2,056,120	2,056,120	324,640	0.32	257,690		159,510	-67,380	250,320
2014	1,036,550	2.02	2,097,760	2,097,760	331,040	0.32	262,810		162,740	-49,870	250,320
2015	1,046,700	2.02	2,118,300	2,118,300	334,250	0.32	265,390		164,330	-41,420	250,320
2016	1,056,950	2.02	2,139,050	2,139,050	337,510	0.32	267,990		165,940	-32,900	250,320
2017	1,066,760	2.02	2,158,900	2,158,900	340,620	0.32	270,470		167,480	-24,730	250,320
2018	1,076,120	2.02	2,177,840	2,177,840	343,580	0.32	272,850		168,950	-16,940	250,320
2019	1,085,560	2.02	2,196,950	2,196,950	346,590	0.32	275,240		170,440	-9,100	250,320
2020	1,095,080	2.02	2,216,210	2,216,210	349,610	0.32	277,650		171,930	-1,180	250,320
2021	1,104,680	2.02	2,235,640	2,235,640	352,650	0.32	280,090		173,440	6,800	250,320
2022	1,114,130	2.02	2,254,770	2,254,770	355,660	0.32	282,480		174,920	14,670	250,320
2023	1,123,420	2.02	2,273,570	2,273,570	358,610	0.32	284,840		176,380	22,390	250,320
2024	1,132,790	2.02	2,292,530	2,292,530	361,570	0.32	287,210		177,850	30,200	250,320
2025	1,142,240	2.02	2,311,650	2,311,650	364,580	0.32	289,610		179,330	38,040	250,320
2026	1,151,770	2.02	2,330,940	2,330,940	367,600	0.32	292,030		180,830	45,970	250,320
2027	1,161,090	2.02	2,349,800	2,349,800	370,560	0.32	294,390		182,290	188,790	250,320
2028	1,170,190	2.02	2,368,220	2,368,220	373,440	0.32	296,700		183,720	195,320	250,320



ES-4  
Waste Flow Analysis With 300,000 Tons Additional WTE Capacity

FY Year	Population	Generation Rate [1]	Waste Generated [2]	Commercial Waste Reused, Recycled, Composted [3]	Reused, Recycled, Composted That Is Managed By the City [4]	Recycling Rate Per Capita	Waste Disposed At PVT And Unpermitted Facilities [5]	Trans-Ship Capacity	WTE Capacity	Non Combustible Waste		WTE Ash And Residue Requiring Disposal [8]
										Requiring Landfill Disposal [6]	Requiring Landfill Disposal [7]	
2029	1,179,370	2.02	2,386,800	2,386,800	376,350	0.32	299,020	910,000	910,000	185,160	182,040	250,320
2030	1,188,610	2.02	2,405,500	2,405,500	379,270	0.32	301,370	910,000	910,000	186,610	81,540	250,320

[1] The per capita generation rate is projected to increase by approximately 1% annually until FY 2013 and for this analysis remains constant after that. The per capita generation rate will be reassessed during the 2012 Plan update.

[2] Includes MSW and C&D. Annual waste generation projections are based on population changes and the per capita generation rate. Please refer to Table ES-2.

[3] In FY 2005, 23% of the waste stream was recycled by commercial sources. This recycling rate is projected to remain constant for this analysis.

[4] This is the waste stream the recycled and composted waste stream that the City manages either directly or via contracts. Recycling quantities reflect an increase in the annual per capita recycling rate from 0.22 tons in FY2005 to 0.32 tons in FY2013 due to the introduction of the residential mixed recycling program, increase diversion of green waste and the expansion of the Community Recycling Bin program during that time. The rate will remain constant until FY2030. However, the City will update this Plan in 2012, and additional waste diversion program may be identified at that time and the rate will be adjusted accordingly.

[5] During 2005, approximately 12.5% of the waste generated in Oahu was disposed at PVT Landfill and unpermitted facilities. For planning purposes, this percent is projected to remain constant. However, the City will annually monitor this waste stream.

[6] In 2006, approximately 6% of the waste that was generated and disposed at the Landfill can be defined as non-combustible. For planning purposes, this percent is projected to remain constant.

[7] Combustible MSW Requiring Disposal at MSW Landfills is Waste Generated minus Waste Reused/Recycled/Composted minus Waste Converted to Energy minus Waste Disposed at PVT Landfill/unpermitted facilities minus waste Transshipped minus Non-Combustible waste.

[8] Based on data from H-POWER, approximately 28% of waste receipts become ash and residue that requires landfill disposal.

# APPENDIX G

**SOLID WASTE ADVISORY COMMITTEE MEETING**

Wednesday, October 31, 2007

2:30 PM – 5:30 PM

Mayor's Conference Room

Honolulu Hale

**GROUP MEMORY**

**AGENDA**

- Welcome, Opening Comments, Review of Minutes from October 10, 2007 Meeting
- Recommendations Matrix and Discussion
- Next Steps
- Adjournment

The following Solid Waste Advisory Committee (SWAC) members were present:

Greg Apa

Christopher Ballesteros

Steve Chang

Linda Henriques

Lori Hoo

Dan Ikei

Mike Irish

Col. Howard Killian

Councilman Gary Okino

Rodney Smith

Terry Telfer

Kathy Whitmire

Others in attendance included:

Crystn Eades, Office of the Mayor

Karen Luken, R. W. Beck

Martin Okabe, Environmental Services Department

Frank Doyle, Environmental Services Department, Refuse Division

Suzanne Jones, Environmental Services Department, Recycling Division

Wilma Namumnart, Environmental Services Department, Refuse Division

**WELCOME / OPENING COMMENTS / REVIEW OF MEETING MEMORY FROM  
OCTOBER 10, 2007 MEETING**

SWAC members were welcomed to the meeting. Copies of the draft group memory for the October 10 meeting were provided for review by SWAC members. Any suggested changes to the group memory can be sent via email to Wilma Namumnart.

Members were thanked for returning the recommendations matrix. Based on their responses, the meeting discussion will start with those issues which the SWAC indicated needed the most discussion. A handout using the PowerPoint slides was prepared which ordered the responses in the following manner: (1) Highest number of reservations; (2) Highest number of need discussion/reservations; and (3) Highest number of need discussion.

## **RECOMMENDATIONS MATRIX AND DISCUSSION**

SWAC members provided the following comments, questions, and concerns regarding the various recommendations which the consultant will consider in writing the draft report:

### *Make Solid Waste Division Financially Self Sustaining*

- C: Don't see how the gap can be closed (\$60 million).
- C: Concern that the assessment will be carried primarily by the commercial sector; need to even the gap between commercial and residential sectors.
- C: If the assessment is split evenly (i.e., residential, H-POWER, transfer stations, etc.), then it is more palatable.
- C: This is a perfect case for user fees – those who get the services pay the user fee.
- C: Businesses and condo property owners are paying the fee for disposal as well as paying property tax. Single family residences are covered by what they pay in property taxes.
- Q: Should the single family dwellers be paying the user fees?
- Q: The net cost for the City is \$30-\$35 per month per household. Should the user pay all or part of the fee?
- C: Complex issue
- Q: Do your reservations regarding this recommendation deal with the concept or with the equality of the implementation?
- C: Don't agree with the recommendation; services are being paid for via the property tax. The total cost needs to be analyzed in order to identify what percentage will be allocated. If not getting the services, the percentage should be taken off the property tax.
- C: Section 12 of the Draft Plan has extensive financial and cost analysis information that addresses this concern.
- C: Everybody pays for services that are delivered. Need to identify where it comes from.
- C: Proposal is to shift the burden to whomever gets the service.
- C: SWAC members agreed to pursue the concept that any cost to sustain this recommendation should not equate to the allocation.
- C: Financial self-sufficiency should not be the priority – it will lose touch with other important issues.
- Q: Does the city have a position on this?
- A: At this time, the Mayor does not feel user fees should be implemented.

### *Enhance enforcement of disposal bans and recycling ordinances*

- C: Suggest that it should be educational. The City should work with businesses to help them understand the disposal bans and recycling ordinances.
- C: City would hire additional officers to monitor what is being thrown away and assist businesses in setting up programs to comply with disposal bans and recycling ordinances.
- Q: Honolulu has a tradition of having lots of rules on the books and no uniform enforcement of these rules. How will you do it? How will it be fair?

- C: The Solid Waste Division should work with businesses to understand what bans/ordinances currently exist and assist in setting up programs.
- C: Key components should include that it addresses primarily businesses; is educational; fair, uniform enforcement is needed.
- C: Need financial incentive to take recyclables out of the waste stream – by imposing fines if they don't comply.
- C: Use garbage cops with rules that are strong, that are enforced fairly and uniformly as opposed to selectively.
- C: Need to increase enforcement because of the landfill crisis the City is faced with
- C: Residents may have an additional gray garbage bin; but they must demonstrate that they are participating in curbside recycling program
- Q: What is the composition of waste that is going in to H-POWER? Where is it coming from (i.e., residential, commercial, etc.)
- A: Consultant will look at the waste characterization study to get this information.
- C: Recommend breaking this recommendation into two parts: businesses and residential
- Q: What if businesses don't have enough space?
- A: Exemptions are allowed, and if they have the space and still don't set up a program then fines are imposed.

#### Trans-shipment

Frank Doyle of the Environmental Services Division explained that an invitation for bid is currently under review, and should be issued before the end of 2007. It includes a cost analysis for all of the steps in the process, from baling to shipping, unloading to transporting the waste to the designated site on the mainland. Until the City goes out to bid, the City is uncertain regarding what the costs are. Frank noted that the City has a contractual obligation to provide a specific amount of garbage to H-POWER, which the city will continue to pay even if it does not meet the obligation; therefore, the City must retain flow control. The City would also have a contractual obligation to ship 100,000 tons of waste per year, with a provision that the City could add additional tonnage at an additional cost.

- C: Trans-shipment would address the current volume of trash going to the landfill.
- Q: Wouldn't it take a long time to get operational?
- A: It can be developed in a timely manner.
- Q: What happens if the additional waste-to-energy goes online before the trans-shipment of waste becomes operational?
- A: Trans-shipment is time-limited. It may become operational close to when the additional waste-to-energy becomes operational.
- Q: Why not ship out the compacted ash?
- A: This option will be explored in the invitation for bid process – some landfills limit the types of waste they will accept. This is envisioned to be an interim program with a contract for 5 years. If the City needs to terminate the contract, it will do so.
- C: No matter how many waste-to-energy plants are built, there will always be residue. The amount of trash is increasing annually.
- Q: Why does the Environmental Services Division have reservations/concerns regarding trans-shipment?
- A: Need to see what the costs are, understand that it is temporary, and that the City maintains the flow control

C: Another concern is that the money flow into the local economy will be going elsewhere.

No New Landfills on the Leeward Side of O'ahu

C: SWAC should not discuss this recommendation. It is a political rather than scientific-based recommendation.

C: SWAC lacks knowledge regarding this recommendation.

Green Waste: Assess a Fee or Eliminate the Provision of Second Day Refuse Collection which would promote additional source separation of green waste

C: Against this recommendation until complete information (financial analysis) is provided.

C: The city shouldn't assess a fee.

C: There is a need for better cost information.

C: Some feel that this recommendation should be scrapped. If this recommendation moves forward, it should be done after the pilot program is fully implemented, an evaluation should be conducted.

Q: If a resident is willing to pay the fee each month for the second gray bin, will there be enforcement?

A: Second day collection is a convenience; \$10 covers the cost of the second collection. Second bin will be provided if residents demonstrate that they are participating in the curbside recycling program.

C: During the pilot program, the City will be instituting a two-month grace period where no fee will be imposed.

Begin purchasing H-POWER in 2010

Q. Why should this be included in the plan?

Q: Why 2010?

A: Ties in with the 20-year lease which will be ending in 2010.

Pursue Approval to Expand Waimanalo Gulch Sanitary Landfill

C: The City is working with the Land Use Commission decision to keep the landfill operating. Until 2010

After 2010, there will be a need for physical expansion of the Waimanalo Gulch Landfill. If the Landfill is expanded, the City will have approximately 15 years of MSW disposal capacity

C: The City is currently working on date change and physical expansion issues.

C: The City needs to continue to use the Waimanalo Gulch Landfill because the infrastructure exists and it is cost-efficient.

An explanation was provided regarding when the prior Blue Ribbon Committee addressed the Waimanalo Gulch landfill, it identified potential landfill sites in all parts of the island. Historically, the City has not closed landfills before they reached permitted capacity. Another factor considered was the difficulty for potential landfill sites to pass Federal, State, and City criteria. The Blue Ribbon Committee used a double blind scientific ranking to determine which landfill to recommend – with the Waimanalo Gulch surfacing as the number 1 choice. At the end, the process became political. Blue Ribbon Committee bullets and an Executive Summary were provided to SWAC members for their information before the October 10<sup>th</sup> meeting.

Establish a residential curbside mixed recyclables collection program

- Monitor its effectiveness (60% to 70% participation)
- Monitor impact on community recycling bins
- Does the City need both?

Q: How was the 60% - 70% determined?

A: SWAC determined 60% - 70% households should be participating to get additional tonnage to reach the target of an additional 2% of the waste stream being diverted.

C: SWAC recommended to monitor the program based on tonnage diverted, rather than participation rates.

C: Need to monitor the effectiveness of the community recycling bins to see if it is cost-effective, determine economic and social costs.

C: When fully rolled out, approximately 40,000 tons of additional household waste will be collected. If recyclables are not diverted from the community recycling bins, the City should achieve an incremental increase of 40,000 tons residential mixed recyclables being diverted from the landfill.

Q: What is the profitability of drop-off bins located at the schools?

A. The City recently entered into a new contract where schools will receive \$15 per ton for fibers, \$75 per ton for commingled containers, and \$0.05 for each HI-5 container.

Market Development

- Enhance City Procurement Policies

C: Need to enhance City procurement policies to include that the City purchases recycled materials, if cost-effective.

Transfer Stations

- Keehi Transfer Station
  - Modify operations to allow refuse to be removed from the refuse pit each day
  - Conduct a cost-benefit analysis as a basis for converting to top loading system
  - Consider implementing a night shift to avoid traffic congestion
- Kapaa Transfer Station
  - Update structure and equipment
- Kawaihoa Transfer Station
  - Expand transfer station capacity
  - Upgrade overall refuse and recycling handling

Q: Why are the dates set so far out?

A: It is a multi-year plan that expects the growth of the waste stream

C: First year of the plan in FY2009 (7/1/2008)

C: Will upgrade one transfer station each year.

C. All times were set to be efficient and finish the upgrades prior to the stations reaching capacity and having problems

Green Waste

- Evaluate increasing the frequency of collection

C: City will evaluate if there is a need to increase the frequency of collection

#### Source Reduction

- Advocate for Producer Responsibility (i.e., states which require electronic manufacturers to develop recycling programs for their products)

C: State legislation needs to be enacted to address this recommendation.

- Institute a canvas shopping bag program

C: Some feel recommendation should be kept in plan – others feel it should not.

C: When recommendations are written up, need to explain problem that plastic bags create (i.e. litter)

#### Market Development

- Work with and advocate for State initiatives to expand producer responsibility

C: Recommendation is under Source Reduction and Market Development sections

C: Need to develop market for recyclables

#### Electronic Waste Initiatives

- Provide an annual collection event if the City finds a partner

Q: Why wait for a financial partner before we take this on?

A: The City instituted a collection event that cost \$100,000. No funds provided from City; CompUSA worked with the City.

C: City needs to provide more information to the public regarding electronic wastes.

C: City needs to advocate with all users for more programs.

C: Can be done – Example is Department of Education and Apple Computer partnership in October 2006 which resulted in shipment of 50 Matson containers of electronic waste at the cost of \$1 million

C: The City announced that they have annually allocated \$2.3 million for electronics management

#### Source Reduction

- Institute a variable rate user fee (customers with twice a week collection pay more than once a week collection)

C: The goal should be once a week pickup; add green waste

C: Some SWAC members opposed to this recommendation: shouldn't be offered a second day, fee doesn't cover the cost

C: One SWAC member suggested keeping collection at two times per week or get a \$10 rebate if you use only one day

C: Concern regarding needing to address behavior

C: Need to lower taxes for services delivered and charge accordingly



### Green Waste

- Provide more customers with carts

C: Not all City residents have carts; the goal is to have most customers using carts and collecting the carts with a semi-automated or fully automated collection vehicle

### Recycling

- Proactively encourage businesses to provide recycling for products they sell

C: This is the responsibility of business.

### Electronics

- Continue to promote producer responsibility and take-back recycling programs

C: This recommendation is redundant

C: The City should check with the carriers (i.e., Matson, etc.) to see if they are willing to help

C: If the opportunity arises, should the City be looking at back-haul options? Examples of successful backhauling working with retailers (i.e., Sears, K-Mart)

C: Consider making this a quarterly event, partnering with the City

C: City has looked at back hauling options in the past and has had no luck with shippers or businesses

### Waste-to-Energy

- Increase WTE Capacity as soon as possible

C: Need to move forward as quickly as possible.

### Construction and Demolition Materials

- Develop additional markets for C&D

C: This should be added to the State and City procurement policies.

### Ash

- Get approval from DOH for reuse alternatives such as road base aggregate, concrete additive, soil stabilization

C: Should move forward with this

### Recycling

- If cost effective, increase the number of community and HI-5 recycling bins

C: This is included in the pilot program.

C: There should be a caveat regarding cost-effective.

- C: The goal of the City is to focus on multi-family dwellers to use these bins, which the City is planning to monitor.
- Q: Will the new contract for HI-5/recycling events allow schools and non-profit organizations to raise funds?
- A: Yes.

Matrix exercise indicated that no discussion on these issues was needed

- Target landscapers and gardeners for educational messages on separating green waste from their garbage in multiple languages
- Provide more recycling containers where residents and tourists gather
- Continue existing collection program as it relates to quantities collected and costs

**NEXT STEPS**

Wilma Namumnart outlined the process that will follow once the Draft Plan is written.

- SWAC members will receive Draft Plan by 11/15/2007
- Once Draft Plan comes out, SWAC members have 120 days to review and provide comments. 120-day mark is 3/14/2008.
- After receipt of comments within 120 days, Draft Plan will be submitted to the Department of Health.
- The Department of Health has up to 90 days for review.
- Department of Health returns Plan to City by 90-day mark, 6/26/2008.
- SWAC review of DOH comments and Notice of public hearing will be published within 60-day comment period. 60-day mark is 9/16/2008.
- Plan is returned to Department of Health for comments, approval or disapproval. Department of Health has another 60-days.

Wilma asked SWAC members to email her if they are willing to receive their copy of the Draft Plan in electronic format.

Councilmember Gary Okino announced that the City Council will be conducting a workshop to review the status of the SWAC on 11/27/2007 at 1:00 p.m. He explained that this is an informational briefing that will provide City Council members an explanation of the work of the SWAC. Some members were concerned that this makes the draft public prior to the end of their review period.

Frank Doyle extended an invitation to SWAC members to visit the Waimanalo Gulch Sanitary Landfill and H-POWER next week (11/5-9/2007). If interested, SWAC members should contact Wilma's office.

**NEXT MEETING:**

The SWAC indicated that a meeting should be held approximately 60 days into the 120 day review period. Wilma Namumnart will survey SWAC members to determine the specific date for that meeting.

## **SOLID WASTE ADVISORY COMMITTEE MEETING**

Wednesday, October 10, 2007

2:30 PM – 5:30 PM

Mayor's Conference Room

Honolulu Hale

### **GROUP MEMORY**

#### **AGENDA**

- Welcome, Opening Comments, Review of Minutes from September 12, 2007 Meeting
- Update Waste to Energy Proposals and H-POWER Purchase
- Review Baseline System and Proposed System - Committee Member Recommendations
- User Fees
- Energy / Greenhouse Gas Impact Analysis
- Next Steps
- Adjournment

#### **ATTENDANCE**

The following Solid Waste Advisory Committee (SWA) members were present:

Greg Apa  
Christopher Ballesteros  
Linda Henriques  
Dan Ikei  
Mike Irish  
Col. Howard Killian  
Russell Nanod  
Dayton Nakanelua  
Rodney Smith  
Terry Telfer  
Kathy Whitmire

Others in attendance included:

Robert Craggs, R.W. Beck  
Karen Luken, R.W. Beck  
Martin Okabe, Environmental Services Department  
Frank Doyle, Environmental Services Department, Refuse Division  
Wilma Namumnart, Environmental Services Department, Refuse Division

## **WELCOME / OPENING COMMENTS / REVIEW OF MEETING MEMORY FROM SEPTEMBER 12, 2007 MEETING**

SWAC members were welcomed to the meeting. Copies of the final group memory for the June 27 meeting, as amended, were provided to Committee members. Draft September 12 minutes were also provided for review by SWAC members. Any suggested changes to the group memory can be sent via email to Wilma Namumnart for consideration at the next meeting.

Members were reminded that the purpose of the SWAC is to provide feedback and advice to the Mayor, his staff and consultants from each member's perspective about the various issues involved in developing and implementing a solid waste management and recycling plan for the island of 'Oahu. As such, SWAC members were encouraged to represent the broader public and all interests as they develop the final SWAC recommendations.

### **UPDATE WTE Proposals and Purchase of H-POWER – Frank Doyle**

#### *WTE Proposals*

Frank Doyle of the Environmental Services Department explained that negotiations for the WTE and purchase of H-POWER were still in progress and that little information could be provided until the Evaluation Committee has made its recommendation. The Evaluation Committee, consisting of City officials and outside consultants, is currently reviewing the proposals and will be coming up with a recommendation by November 15, 2007. The request-for-proposal (RFP) process is complex, and the Evaluation Committee will take into consideration various factors prior to making its recommendation. A question was asked regarding what information is provided to the public, as well as the process that is used to make the recommendation. It was noted that very little information can be provided until the award of contract is completed. It is expected that the best and final offer will be received by June 2008.

#### *Purchase of H-Power*

Frank also explained that the project has been financed through Geo bonds. Ford Credit Financing purchased the facility with \$386 million as tax credits and \$160 million of benefit to the City. The City wants to buy the facility back from Ford Credit and Bank of America, with negotiations currently in progress. The City is planning to buy H-POWER earlier than 2010, when the contract expires. The City owns the property where H-POWER is located.

### **REVIEW BASELINE AND PROPOSED SYSTEM WITH SWAC RECOMMENDATIONS – Karen Luken and Bob Craggs**

R. W. Beck Consultants Karen Luken and Bob Craggs provided a PowerPoint presentation on the Existing and Proposed Solid Waste Management System. The presentation covered the following areas:

#### *Source Reduction*

Currently, the following Source Reduction Initiatives have been instituted:

- City website: [WWW.OPALA.ORG](http://WWW.OPALA.ORG).
- Promoting reuse
- Backyard composting
- Grasscycling
- Business Waste Prevention Guide

Recommendations for Source Reduction Initiatives include the following:

- Variable Rate User Fees
- Canvas Bag Program
- Advocate for Producer Responsibility
- Increased Public Education / Awareness through paid advertisements

SWAC members provided the following comments/questions regarding source reduction initiatives:

- C: Public education and awareness efforts need to be increased, including paid advertising.
- C: The City needs to go to the manufacturers regarding waste management and also serve as the collection and consolidation point.
- C: City will be the advocate for producer responsibility (i.e., certain states have legislation that makes electronics manufacturers responsible for disposal including costs. For example, in California, a fee is imposed and deposited into a special fund that is used for recycling when a consumer purchases a computer.)
- C: The City should also advocate where possible for reduced packaging with manufacturers.
- C: The City needs to identify programs, including manufacturers and businesses with waste management components, that are available.
- C: The City needs to be more proactive and a better advocate by identifying opportunities and bringing cutting edge programs that exist elsewhere to Hawai'i.
- Q: Who should take the lead, the City and County or the State?
- C: The City should coordinate with the State in contacting manufacturers/businesses to become more responsible.
- A: Need to review the bill introduced during the 2007 Legislature. Both (City and State) should take the lead.
- C: The City should get more proactive, work with the State, and not just pass the buck to the State to be proactive.

### Green Waste Management

The Consultants discussed that there has been a significant increase in green waste from the residential waste stream between 1999 and 2006.

*Current Green Waste Management Initiatives* include the following:

- Twice a Month Green Waste Collection
- Backyard Composting
- Grasscycling
- Free mulch

It was noted that the second day waste pick up has significantly more green waste than the first day. This could be an indication that the City is headed in the right direction with moving to once a week waste pick up.

The following recommended *Green Waste Management Initiatives* were offered:

- Assess Fee for Second Day Waste Collection
- Target landscapers/gardeners
- Evaluate increasing the frequency of collection of green waste
- Expand automated collection

SWAC members provided the following comments and questions:

- C: Need to monitor fees collected for second day waste collection to determine impacts.
- C: Target landscaping/gardeners - using multiple languages.
- C: Evaluating increasing the frequency of green waste collection can work but will need fine tuning.
- C: The City plans to expand the automated collection with the goal to get as many homes on the system as possible. All will be monitored with regards to the pilot program.
- Q: How hard will it be to get a second trash bin?
- A: Everyone will have one green bin for green waste and a second will be available on request. Residents will be able to get a second waste bin after the city verifies that the household is fully participating in all recycling pick ups and still needs a second bin for waste
- C: Certain assumptions are made with set-outs for green waste. Routes will be designed to address what is put out. The City will need to review manual and automated routes.
- A: Homes who will need two grey bins can request a second bin. As long as there is compliance as noted above, and the second bin is not being used for green waste, resident will be allowed to keep the second bin. Monitoring will need to be conducted to ensure compliance.

The Consultants discussed the City's current and proposed recycling initiatives:

*Current Recycling Participation Initiatives:*

- Recycle Hawai'i Educator Kits
- Financial Incentives for School
- Recycling and Disposal Guide
- Print Advertisements
- Condominium Assistance
- Tour De Trash (recent recipient of a City Livability Award from the US Conference of Mayors)
- Mandatory Food Waste Composting – Large Food Waste Generators
- Mandatory Office Paper Recycling
- Mandatory Glass Bottle Recycling – Restaurants of a Certain Size
- Limits on Cardboard Disposal

### *Recommended Recycling Initiatives*

- Establish a residential curbside recycling program
- Monitor its effectiveness (60% to 70% participation)
- Enhance Recycling Partnerships with Educational Institutions (currently 75 schools have community drop bins; 2009 goal is 100 community drop bins)
- Enhanced enforcement of Disposal Bans and Recycling Ordinances
- Expand WTE capacity
- Work with DOH to establish criteria to recycle ash and by-pass waste of WTE facilities
- Increase visitor recycling

The following comments, concerns, and questions were raised in response to the discussion on current and recommended recycling initiatives:

- Q: The community drop bins seems duplicative of curbside recycling. The City should assess whether they are necessary to continue based on the cost to the City in the pilot areas. This would enable the City to make an informed decision about whether the continuation of this program is cost effective.
- A: The City is encouraging the use of these drop bins as they work with condominiums to increase their recycling programs as these are not eligible for the City's curbside recycling program. The collection point that makes sense for condominium programs at this point is the community bin system.
- C: Need to post amounts received by schools from recycling via community drop bins to educate people about benefits derived by schools through its recycling efforts as well as to encourage their continued participation.
- Q: What is the return from community drop bins? Does the City spend more money to run this program than it benefits? These questions need to be tracked and answered through the pilots.
- C: Schools like receiving recycling monies. Recycling also serves as an educational experience for children – consider HI-5 container program events.
- C: Need to monitor if you can't get multi-family/condominium units to use.
- C: As the City institutes pilot programs, it needs to look at the impact on community bins, cost benefits, and increase the number of condominium bins; not just curbside.
- C: There are seven million visitors to Hawai'i annually. Hotels recycle behind-the-scenes but also need more visible ways for visitors to participate. The City/State needs to also work with other islands and educate visitors regarding the importance of recycling.
- C: Guests need to be educated and encouraged to participate. Hotels have economic incentives to recycle.
- C: The SWAC recommendations should also include a recommendation that the City/State should look at other public areas, beyond Waikiki/tourist areas (i.e., government buildings, airports).
- C: Private vendor has sponsored HI-5 school pickup program over the last 2 ½ years. The program has been highly successful with a pay-out of \$200,000.
- C: Need to track the costs for evaluation purposes.
- C: The City needs more staffing to work with businesses to make their programs work better.

The Consultants presented current household hazardous waste and electronics initiatives that are provided by the City:

#### *HHW and Electronics*

- HHW collection events every 2 months
- Residents schedule appointments
- [www.opala.org](http://www.opala.org) provides information; is this system adequate for residents?
- No residential electronic recycling at this time due to costs
- State legislature has introduced Producer Responsibility legislation; how much would residents pay to recycle electronics?

The following questions and comments were provided by SWAC members:

- C: Citizens need more education regarding the program.
- C: Costs in Hawai'i are much more expensive.
- Q: If the City reestablishes the program for residents to bring in computers, what would be the price for this service?
- A: An estimate would be approximately \$30 per computer would be the cost to recycle the unit.
- C: To be effective, it needs to be convenient, hassle-free for the consumer.
- Q: Why not have a household pickup of computers?
- C: Collecting computers at the home would significantly increase costs. Programs effective elsewhere includes setting a day to bring computers to a set location. A fee is paid by the resident for the disposal of the computer. Volunteer labor is used to defray costs. The City needs to partner with others to make it less cost prohibitive.
- C: The target is large quantity programs. Work with manufacturers to take back products (i.e., Dell).

#### *H-POWER*

- Receives 600,000 tons waste annually (400,000 converted to energy; 200,000 non-combustibles and ash are landfill disposed.)
- Recycles virtually 100% of metals and plastics.
- Revenues substantial for electricity produced.

#### *Additional Waste-to-Energy Capacity Needed*

- Increasing material recycling does not eliminate need for more WTE capacity
- H-POWER has continued to perform beyond contract capacity (561,600 tons annually)
- Capacity limitations required H-POWER to divert approximately 150,000 tons to the landfill in 2005
- Population and commercial growth continues

C: The City has issued a RFP for future WTE processing capacity- 200,000 to 400,000 tons per year.

#### *Comparative Benefits: Energy and Material Recycling*

- Increases the percentage of waste stream diversion attainable from 79% to 90%
- 35% current material recycling
- 22% H-POWER



- 11% Additional WTE
- 6% Optimize Performance
- 3% Curbside Green Waste
- 2% Curbside Mixed Recyclables
- 21% Disposal

Q: Does projection optimize where we can be with WTE? Are we doing everything we can with WTE capacity?

A: The 10/31/07 deadline won't be met for the RFP. Currently the evaluation is about 1 ½ to 2 months behind schedule. Hope to catch up.

Q: Is 11% size increase adequate? Should the city be asking for more funds?

C: Yes, if the facility can process an additional 400,000 tons of waste, this will be adequate for the next 25 years.

#### *Transfer Stations and Disposal Capacity*

The plan will include a section that describes:

- 3 City Owned/Operated Transfer Stations
- 2 Private Owned/Operated Transfer Stations (Honolulu Disposal; island Demo)

#### *Transfer Stations Recommendations*

- Keehi Landfill
  - Modify operations of Keehi Transfer Station to allow refuse to be removed from the refuse pit each day.
  - Conduct a cost-benefit analysis to convert to top loading system
  - Consider night shift to alleviate traffic issues.
- Kapaa Transfer Station
  - Update structure and equipment
- Kawaihoa Transfer Station
- Possibly increase capacity

C: Will consider recommendation to add funding for updating structure, increasing capacity of transfer stations to address the future growth in transfer stations.

Q: What type of costs are you looking at?

A: Approximately \$3 to 4 million for all three sites.

Q: If you go top loading, will it increase the number of trucks on the road?

A: No truck traffic will not increase.

#### *Disposal Capacity*

- On 7/6/2007, the City filed an application to request a date extension of the current State Special Use Permit (SUP) from 5/1/2008 to 5/1/2010, or until the landfill reaches its permitted capacity, whichever comes first.
- Public hearing on the application currently expected to be held on 11/14/2007 and is scheduled for 11/14/2007.
- If approved by the Planning Commission, the application will be sent to the State Land Use Commission for final action.

- The City plans to seek approvals to expand the landfill at Waimanalo Gulch on currently owned property.
- The environmental review process is underway.
- The Draft Environmental Impact Statement (EIS) is currently expected to be published in November.
- Upon approval of the final EIS, the City must obtain SUP approvals from the Planning Commission and the Land Use Commission, as well as obtain a DOH Solid Waste Management Permit for the expansion of the operations.

Q: What happens if the EIS doesn't clear hurdles?

A: Don't know.

Q: Are the chances good at getting through the process?

Q: Waimanalo Gulch expansion - SWAC members would like more information regarding the landfill siting process that was held.

C: SWAC members may testify at hearings should they feel that the City's proposal is the best one at this time. SWAC support at the City Planning Committee meetings would be welcome as balanced testimony is needed.

C: Need to understand the history of searching for new landfill site over the last 30 years which includes the 2005 Blue Ribbon Committee that gave Waimanalo Gulch the highest ranking.

C: Concern about selecting a landfill site that is not over an aquifer and that will last as long a period of time as possible.

C: EIS looks at alternatives to landfill (i.e., technologies, etc.)

Q: What about the neighbor islands as a potential landfill site?

A: Other islands have less landfill capacity than O'ahu.

C: Landfill site is considered an emergency, public health issue.

C: Landfill siting study can be obtained at the opala.org website.

C: Need point/counterpoint prepared by the City re landfill (i.e., digest of arguments regarding the siting study).

C: Shipping offsite is okay if it is cost-effective, does not interfere with the continued viability of H-POWER and would not affect the viability of the additional WTE facility proposed.

C: Need status, timeline (i.e., steps, how long, etc.) regarding shipping trash offsite.

#### *Current Market Develop Initiatives*

- City Purchases Recycled Content Paper
- City Showcases Recycled-Content Products
- Plastic lumber benches and fences
- Crumb-tire playfields
- Grassphalt walkways, parking lots and construction projects
- Provides free mulch to residents.

#### *Unique Challenges to Market Development*

- Except for organics, markets are based on international and national conditions
- Land and water limitations create barriers to developing end use industries
- Limited customer base

*Recommended Market Development Initiatives*

- Work with and advocate for State Initiatives
- Extend producer responsibility
- Reuse of Ash from H-Power
- Enhance City Procurement Policies

C: What will all this cost?

A: R.W. Beck is working with the City on the cost issue.

**USER FEES – Karen Luken and Bob Craggs**

- The curbside recycling recommendation involves one day mixed waste pick-up only or option of second day with fee (SWAC members were to interview 5 people to determine preferences). Also, the issue of user fees needs to be addressed.

*Average Monthly Net Cost per Equivalent Single-Family Household*

- \$/Household/Month	
- FY2006	\$23.50
- FY2007	\$29.75
- FY2008	\$38.60
- FY2009	\$38.15
- Average FY2010 – FY2014	\$42.95

*FY2006 Operating Expenses*

- Inspection and Investigation	0.2%
- Transfer Station	3.9%
- Landfill	4.2%
- Recycling	4.9%
- Administration	0.6%
- Collection	9.3%
- H-POWER	45.5%
- Other Divisions	31.6%

*FY2006 Revenues*

- Transfer Station	1.1%
- Landfill	8.6%
- Glass Recycling	0.4%
- Recycling	5.5%
- Collection	0.5%
- H-POWER	83.9%

Q: Can you provide a breakdown of the 31.6% “Other Divisions” FY2006 Operating Expenses?

A: Other Divisions includes use of City services. Breakdown will be provided at October 31 meeting.

- C: \$10 second day collection fee will cover cost to get trucks out. Not sure how many will opt for the \$10 fee.
- Q: Can we benchmark what per household expenses are in comparable communities with public, public/private, private services. Information should also include communities with automated refuse collection and possibly H-POWER.
- A: R.W. Beck will provide this information.
- Q: Should SWAC recommend that user fees be imposed?
- Q: Regarding the pie chart, what dollars are related to percentages?
- A: The City will provide how much it spent for the cost of operations and revenues.
- C: The City needs to make up the difference between revenues and costs and compete for general fund dollars.
- Q: Should Solid Waste Division be proposed as an enterprise?
- C: H-POWER excess revenues have been used for other uses outside of Solid Waste.
- C: Need to determine whether specified amount should be provided from property tax and allocated to the program, or whether to create an enterprise fund. One option to consider: rather than assess fee or tax, deduct from the property tax.
- C: Need to present information similar to how business decision is made; package information better. The more self-sufficient they can become, the more the Solid Waste Division would be able to operate as a business.
- Q: Should Solid Waste Division become autonomous like the Board of Water Supply?

In preparation for today's meeting, SWAC members were given a homework assignment pertaining to the City's pilot of two types of curbside recycling programs. In one program, the participants do not have second day refuse collection. In the second program, participants will have a second day refuse collection with a \$10 per month fee. Members were asked to interview five people regarding which system would have the greatest impact on encouraging residents to participate in recycling; and which program they prefer.

Responses were as follows:

- I don't know.
- About 2 out of 3 interviewed wanted \$10 per month fee for second collection.
- Just cut out second day
- Concern about the possibility of people from other areas coming into neighborhood and rummaging through curbside recyclables.

## **ENERGY/GREENHOUSE GAS IMPACT**

### *Sustainability – Material – Energy Recycling*

- Both yield environmental benefits:
  - o Reduction in green house gas emissions
  - o Energy benefits
  - o Landfill diversion
  - o Economic benefits related to jobs
- Waste-to-energy provides greater benefit when considering on-island impacts. Material recycling offers great benefit when considering off-island impacts

## **NEXT STEPS**

The next step will be to draft final recommendations for the plan and provide these recommendations to SWAC members by 10/24/2007 for discussion at the October 31<sup>st</sup> meeting. The draft final report will be provided to the SWAC member by Mid November and they will then have 120 days to review the Plan. No endorsement will be made until the end of the 120 day period. This does not preclude meetings being scheduled to discuss the recommendations if necessary within that 120 day timeframe.

SWAC members also requested more information on landfill issues. They will be provided this information (i.e., digest of arguments for and against the landfill, off-island shipping information, chronology, highlights of chronology as related to the siting process) at the October 31, 2007 meeting.

SWAC members agreed to keep the scheduled October 31 meeting to discuss the proposed recommendations as well as receive information regarding transshipment of trash.

## **NEXT MEETING:**

The next SWAC meeting will be held on Wednesday, October 31, 2007 from 2:30 p.m. to 5:30 p.m. in the Mayor's Conference Room of Honolulu Hale.

## **BIN ITEMS:**

- Include statement regarding broadening recycling bins beyond community drop bins.
- In pilots look at the impact on school bins, community drop bins, costs.
- The City needs to become more proactive with manufacturers, especially for programs in existence elsewhere.
- WTE should be prioritized.
- Landfill issue need to be addressed as a Committee. Committee needs more information.
- Landfill: where will it be? What will it do? Need to couple with recycling plan.
- Breakdown of 31.6% "Other Divisions" FY2006 Operating Expenses

## **SOLID WASTE ADVISORY COMMITTEE MEETING**

Wednesday, September 12, 2007

2:30 PM – 5:30 PM

Mayor's Conference Room

Honolulu Hale

### **GROUP MEMORY**

#### **AGENDA**

- Welcome and Minutes
- Source Reduction
- Green Waste Management
- Encouraging People to Participate in Recycling
- Recycling Market Development
- Landfill: Previous Siting Process and Continued Operations
- Next Steps

#### **ATTENDANCE:**

- Greg Apa
- Christopher Ballesteros
- Steven Chang
- Linda Henriques
- Dan Ikei
- Mike Iris
- Tate Kaneshige
- Howard Killian
- Russell Nanod
- Gary Okino
- Laura Robertson
- Brian Schatz
- Terry Telfer
- Kathy Whitmire

Others in attendance included:

Chrystn Eades, Office of the Mayor

Karen Luken, R. W. Beck

Martin Okabe, Environmental Services Department

Ken Shimizu, Environmental Services Department

Wilma Namumnart, Environmental Services Department, Refuse Division

Changes were made to the draft June 27 minutes that are reflected in the final minutes.

In preparation for today's meeting members of the SWAC were provided a list of questions pertaining to the agenda items for today's meeting. They were asked to interview five or more friends concerning these questions and bring responses today. These responses were shared after the appropriate presentation and are included in these notes. The question asked and the responses are recorded after the presentation on the topic area.

### SOURCE REDUCTION

Karen Luken of RW Beck made a presentation on source reduction issues. Current source reduction initiatives include education through the website, promoting reuse, backyard composting, grasscycling and a business waste prevention guide. Suggested initiatives included variable rate user fees, canvas shopping bag program, and advocacy for producer responsibility.

**HOMEWORK IDEAS:** How can we get people on O`ahu to reduce the amount of garbage they create?

- Education – Public Service Announcements, advertisements
- Charging for trash service by volume
- Each of us should set an example and talk to people who are not inclined to reduce their trash generation through recycling
- Eliminate the second trash pick up
- Eliminate plastic bags from stores etc.
- Encourage all types of reuse
- Increase public awareness
- Make source reduction more convenient
- Institute fines and penalties for not practicing source reduction
- Make consumers aware of the need to reduce our carbon footprint and how this helps
- Have refillable plastic bottles
- Get packagers to use more reusable containers
- Start a program where the money from the recyclables placed at the consumers curb goes to an organization of the consumer's choosing through the city
- Measure consumers use in comparison to others
- Find a use for expired food prior to its expiration date so that it is not just landfilled
- Make recycling easier
- Encourage stores to adopt an incentive for persons who bring their own bags
- Mandate that stores take trade-ins for disposable items such as e - waste
- Work to decrease packaging that is not recyclable
- Explore financial incentives as they work best
- Stores need to be required to educate on reuse programs
- We all need to make converts
- Make it mandatory
- Reduce the waste produced and distributed – like free phone books

- Increase the costs of disposal to the consumer
- Reduce the size of the collection containers
- Work to change the culture
- Encourage household composting

## GREEN WASTE

The next presentation was on green waste. The consultant noted that the residential green waste stream had reduced by a little over 10% from 1999 to 2006. Current green waste management initiatives were identified as every other week green waste collection, backyard composting, grass cycling and free mulch sites. Suggested initiatives included assessing a fee for second day waste collection.

**HOMEWORK IDEAS:** Do you separate out your green waste? Why or why not?

- Provide more education
- Decrease regular garbage can size
- Deal with the schedule. Many feel it is confusing so why bother
- Some people did not know what green waste was
- Target yard workers – my yard worker comes on a non - green waste days so I can't use the service was a response
- I tried putting it out but they did not take all the bags so they sat
- Some felt it was too much of a commitment to participate
- Some compost at home
- Landscapers do not know about the program and many people have landscapers doing their yard work – need to target landscapers education – need to do this in the languages of the landscapers
- Community Associations that write tickets if things are left on the curb discourage the use of this system by landowners and landscapers
- Encourage people to plant trees that do not drop leaves and flowers – education
- Several did not participate because it was not picked up – this was especially frustrating if this happened in a neighborhood where the non pickup resulted in a ticket to the homeowner from the association
- People are confused about the system
- Need to educate gardeners

## RECYCLING

The next topic was recycling. Current initiatives included Recycle Hawai'i educator kits, financial incentives for schools, a recycling and disposal guide, print advertisements, condominium assistance, Tour de Trash, mandatory food waste composting for large generators, mandatory office paper recycling, mandatory glass bottle recycling for restaurants of a certain size and limits on cardboard disposal. Suggested initiatives included improving what is being done by increasing convenience, and setting up a system of rewards or credits that could be banked in an account through an automated pick up system. There are several jurisdictions on the mainland exploring this and the city should keep informed on how these systems are progressing.



## HOMEWORK IDEAS: Do you recycle? Why or Why not?

- Too lazy to turn material back in
- I do it because it improves the environment
- I do it for the money
- I do not have the storage area necessary to collect enough to make it worthwhile to turn it in
- It's the right thing – good for the environment – and money
- I don't because I produce such a small amount
- Suggestion that you be able to return them at the store and get 5 cents off on your next purchase of certain items which would translate into product marketing for those businesses that participate
- It's too much trouble for any container that is not a HI-5
- I'd do it if it were more convenient or if someone would do it for me
- Would not participate even if it came to the curb – would give it to someone else and not participate at curb – worried that putting HI-5 at curb will encourage “poaching” and draw undesirable elements to the neighborhood
- It needs to become a habit
- I will continue to give it to the school as helping the school feels good
- Need to educate that it is not just HI-5s that are collected in curbside and that you are not required to place your HI-5s out for the city
- I do it because of the environmental stewardship angle
- School donations

## PURCHASING RECYCLED PRODUCTS

Discussion next focused on market development. Current initiatives in market development included: the city purchases recycled content paper; the city showcases recycled content products i.e. plastic lumber, crumb tire playfields etc. and the city provides free mulch to residents. The city has a number of unique challenges to market development, such as with the exception of organics (green waste etc.) markets are based on international and national conditions. Land and water limitations create barriers to developing end use industries within the city and there is a limited customer base. Suggested market development initiatives included working with the state to advocate for extended producer responsibility, reuse of ash from H-Power, and enhancement of city procurement policies.

## HOMEWORK IDEAS: When purchasing products, does recycled content packaging influence your decision? Why or why not?

- Yes – I look for it in my products
- Manufacturers, distributors, consumers and the city need to work to create this awareness – see the 5 cent reduction on products when HI-5s returned to store previously mentioned
- Need to make incentives to encourage this not taxes

- Price is a factor if two items were the same price and one was recycled materials and one wasn't I would buy the recycled
- Need to increase markets at home so things stay here instead of having to be shipped to China
- None of the people I talked to said it made a difference to them
- Quality and price are their first considerations
- About half the people I talked to said they would the other half wouldn't – those that would also said they were not sure where to look on the product to find out if it was recycled
- Everyone I talked to said no
- One person said yes the others said it was all price dependent
- Need to support green manufacturing – manufactures should have to put the product carbon footprint on the label
- Not part of the choice for many currently
- Many that did look for recycled said it was hard to find and not easy to buy recycled
- The question was asked as to what is the average % of difference in price between virgin and recycled products? Karen said she would look into an answer for that.
- There have been moves at the legislature to require e-waste recycling by stores that sell the products
- Need to find away to recycle Styrofoam

There was a discussion on the previous landfill siting process and continuing operations at Waimanalo Gulch. It was noted that the siting process started with 47 sites and that the vast majority of the sites were removed from consideration due to EPA and other mandatory siting criteria. The remaining sites were put through a double blind process with a citizen's advisory group resulting in ranking of 4 potential sites and identifying expansion at the current site as the best alternative. The City is in the process of applying for necessary permits to expand and continue operations at Waimanalo Gulch while developing and promoting initiatives to reduce the amount of materials being sent to the landfill.

The next meeting is October 10 and will include:

- presentations on the major recommendations in the plan for feedback from the group
- Discussion on technologies for waste to energy
- Pros and Cons for purchasing H-POWER

Keep October 31 in your calendars as we may need to meet briefly

There was a question about what the process was after the SWAC made its final recommendations.

Once the plan is completed it will go out for 120 day review and we will want to know what can be supported and what is questionable – there will be public hearing etc. If there

are significant changes we would come back to the SWAC for input. The project itself does not end until November of 2008.

**SOLID WASTE ADVISORY COMMITTEE MEETING**

Wednesday, June 27, 2007

2:30 PM – 5:30 PM

Mayor's Conference Room

Honolulu Hale

**GROUP MEMORY**

**AGENDA**

- Welcome and Overview of Meeting
- Review Meeting Memory from May Meeting
- Overview of Waste Conversion Technologies
- Presentation of Preliminary Results of Barging Study
- Further Defining Curbside Recycling Evaluation Criteria
- Public Comment
- Adjournment

**ATTENDANCE:**

The following Solid Waste Advisory Committee members were present:

Greg Apa  
Steve Chang  
Linda Henriques  
Lori Hoo  
Dan Ikei  
Mike Irish  
Tate Kaneshige (left early)  
Col. Howard Killian  
Beau Mohr  
Gary Okino  
Brian Schatz  
Karen Shinmoto  
Rodney Smith  
Terry Telfer  
Kevin Vacarello  
Kathy Whitmire

Others in attendance included:

Robert Craggs, R. W. Beck  
Karen Luken, R. W. Beck  
Chrystn Eades, Office of the Mayor  
Frank Doyle, Environmental Services Department, Refuse Division  
Suzanne Jones, Environmental Services Department, Refuse Division  
Wilma Namumnart, Environmental Services Department, Refuse Division  
Karen Takahashi, Recorder

## **Welcome and Review of Meeting Memory from May Meeting**

Members of the City's Solid Waste Advisory Committee (SWAC) were welcomed to the second meeting by Karen Luken, R.W. Beck consultant, who served as facilitator for this meeting. Karen asked if everyone received the minutes from the May 23<sup>rd</sup> meeting and had any corrections to the minutes. There being none, the meeting memory was approved as circulated.

## **Overview of Meeting**

The purpose of the SWAC is to provide feedback and advice to the Mayor, his staff and consultants from each member's individual perspective about the various issues involved in developing and implementing a solid waste management and recycling plan for the island of 'Oahu. The agenda for this meeting included an overview of the waste conversion technologies, presentation of preliminary results of the barging study, further defining curbside recycling evaluation criteria, and comments from the public in attendance at the meeting (**no members from the public were present**). SWAC members were provided with the following handouts: (1) 6/27/07 Meeting Agenda; (2) PowerPoint presentation handout on Waste Conversion Technologies; and (3) List of the 2005 Residential Recycling Rates of the Most Populous U.S. Cities with Curbside Recycling.

## **Overview of Waste Conversion Technologies**

Consultant Bob Craggs of R.W. Beck presented an overview of Solid Waste Conversion Technologies to Committee members.

### *Solid Waste Conversion Facility*

The Consultant explained that there is interest in solid waste conversion technologies on the part of the City and that the presentation would provide background information that is put into context with the City and County of Honolulu's Solid Waste Management Plan. Solid waste conversion involves taking a portion of the waste stream and converting it to marketable by-products plus energy. It was noted that there is some debate today regarding whether solid waste conversion is recycling. For example, the State of California excludes solid waste conversion to electricity as recycling.

### *Types of Conversion Technologies*

Conversion technologies are usually classified as thermal, biological, or chemical. Thermal conversion technologies include mass burn, refuse derived fuel, plasma arc, and gasification.

#### **THERMAL**

- Refuse derived fuel process takes municipal solid waste, pulls out the bulky items (and in the case of HPOWER the recyclable materials), and then generates waste to energy.

- Mass Burn: The difference between mass burn and refuse derived fuel process is that mass burn can accept a wider range of items such as bulky items that are now pulled out.
- 
- Plasma arc residuals have much higher metallic content than mass burn. Plasma arc technology is being used in Japan to process about 80 tons of material per day and has NOT generated electricity for commercial use. This process is currently being considered by St. Lucie, Florida to utilize 1000-1500 tons per day with the capital cost being greater than 450 million dollars. This process is typically applied to waste streams that are not amenable to other less costly disposal processes.
- 
- Gasification takes carbon from waste, gasifies it and creates slag.

### BIOLOGICAL

- Biological involves anaerobic digestion, which is basically composting without oxygen. Composting facilities are common in Europe and other parts of the world. The outputs include water, compost, and other residuals that are directed to the landfill. The process works best with the organic portion of the waste stream (i.e., yard and food wastes in Europe). Many sites do not have standards regarding marketable compost products, so the compost goes to the landfill.

It was noted that regulations from the Department of Health and/or other regulatory agencies are needed at the backend of these processes to get marketable products from residuals. HCR 162 was passed in the 2007 legislative session to convert H-POWER ash to reusable materials. There has also been some discussion regarding the use of bugs to eliminate dioxins should they be present in residuals. H-POWER has undergone 2 ½ years of testing ash and nothing has been found in the way of dioxins and/ or metals.

### CHEMICAL

The third category is chemical and includes ethanol production and hydrolysis, or converting cellulose through a chemical process.

### Waste Conversion Technology Drivers

With increases in energy prices, there is much interest in waste-to-energy initiatives (tax credits, etc.) which will displace non-renewable fuel and use "waste as a resource". Enhanced landfill diversion is also another means of addressing the issue. For example, the State of California has a 50% mandate requiring that this percentage of the waste stream be disposed by alternative means i.e. conversion technologies. When looking at these conversion technologies, it is important to keep in mind the waste conversion technology drivers, which include the need to displace fossil fuels, the need to look at other technologies, and the need for markets, in order to make the technology successful.

There is a bill currently pending approval by Governor Lingle which establishes a greenhouse gas emissions reduction task force to prepare a work plan and regulatory

scheme to achieve the statewide greenhouse gas emissions limits by January 1, 2020. It should be noted that waste-to-energy facilities generate less greenhouse gases than burning fossil fuels.

### Evaluate Applicability of Technologies

There are technical, economic, and policy issues that must be addressed when evaluating the applicability of technologies. These include: (1) Cost competitiveness (i.e., what's the market); (2) Commercial operating status ; (3) Waste diversion potential and residuals; (4) Energy and by-product market opportunities; (5) Applicability to waste stream (waste stream characterization study); (6) Risks (i.e., business, technical, environmental, and regulatory); and (7) Stakeholder support (i.e., social and political). These are important since investors won't invest unless the technology works and is able to be implemented in a timely manner.

### City and County of Honolulu Solid Waste Conversion RFP (proposals due in July)

The City has requested proposals for the financing, design, construction, and operation of an Alternative Technology Facility (400,000 TPY) including combustion, gasification, vitrification, or other conversion technology producing marketable products. It is also requesting proposals for the financing, design, and construction of improvements to the operation of the existing H-POWER (600,000 TPY), which handles a significant amount of waste that would otherwise go to the landfill.

### Evaluation Criteria

The evaluation criteria that will be used to determine the best proposal includes the following: (1) Cost to the City; (2) Vendor's experience with design, construction, and operation of similar conversion facilities; (3) Length of successful reference facility design, construction, and operation; (4) Proposed facility reliability represents manageable City risks (technical, financial); (5) Capability of proposed processes to convert materials received into marketable by-products as applied to the Honolulu waste stream (material quantities and types); and (6) Quantities of ash, slag, or other residues generated.

The following questions were raised regarding evaluation criteria:

- (1) If the proposal uses a specific process, how much must still be disposed in a landfilled?
- (2) Have the consultants considered a limit on carbon emissions?
- (3) Could the City end up with two different companies one operating H-POWER and one operating the second plant? (Answer: Yes; proposals could include H-POWER and a possible supplemental service. One or both services can be proposed.)
- (4) When will the current H-POWER operating contract end? (Answer: 2010.)

### Description of Relevant Conversion Technologies

Relevant conversion technologies include WTE facilities which are fully commercialized technology for energy generation. There are two types – refuse derived fuel (RDF) and Mass Burn. H-POWER is a refuse-derived fuel facility which pulls out non-combustibles via air classifiers and magnets, and feeds combustibles into a furnace where it is burned. Some of the materials not going to H-POWER (such as bulky items i.e. furniture) may be more compatible with mass burn. Most of these items currently go to the landfill. There are identifiable technology, environmental, and financial risks attached to all alternatives. Also, waste to energy provides potentially 75% to 90% volume reduction with pre-processing.

A question relating to returning to 1990 levels of green house gas emissions was asked. The concern was that green house gas emissions may actually be higher if 1990 levels were used as more Honolulu waste was landfill disposed at that time because of less recycling and know WTE.

Would increasing WTE capacity allow for the establishment of a carbon market in Hawaii (carbon credits), and if so how will this be addressed in the proposals? Answer: Certification will be needed. It was noted that the Environmental Services Refuse Division, along with other City and County departments would be involved in evaluating the proposals.

The Consultant explained that gasification converts the carbon portion of the waste stream into syngas. It was noted that there are a limited number of reference facilities available. Without a reference facility, it is difficult to determine the scope of the risks involved with the technology. Technological, environmental, and financial risks are difficult to clearly define. The carbon portion of the waste diversion potential is up to 90%.

### **Presentation of Preliminary Results of Barging Study**

#### Why Consider Long Haul Export?

Because the additional WTE capacity will not come online for approximately 4 to 5 years, R.W. Beck was been asked to estimate the cost of transporting refuse via barge to an out of state disposal facility to provide additional disposal capacity for the near and intermediate term.

#### Why This Option Was Not Previously Considered

United States Department of Agriculture, Animal and Plant Inspection Service (APHIS) is the responsible federal agency. This agency completed an environmental assessment in May 2005. Due to the completion of the EA APHIS issued regulations to handle waste



in August 23, 2006 that were effective September 22, 2006. The regulations allow for different handling of materials.

#### What Do the Regulations Address?

The regulations address Municipal Solid Waste. The regulations requires solid waste baling and plastic wrapping. There are also safeguards and guidelines for stacking and proper land filling. The bales of waste cannot contain more than a small percentage of green and/or food waste.i.e. less than 5%

#### Plastic Wrapping MSW Bales

Applications are currently pending for a facility which would wrap municipal solid waste. The technology has been used in Europe but not to the requirements set by the USDA.

#### Risks and Limitation with Long Haul Export

There are issues relating to whether public/private partnerships can be developed to demonstrate long haul exporting of the City's Municipal Solid Waste. Other risks and limitations include: (1) Limited port capacity on Oahu; (2) Inclement weather; (3) Labor strikes; (4) Breaking and spillage of bales; (5) Federal and out-of-state regulatory oversight; (6) Increased greenhouse gas emissions; (7) Local disposal bans will not apply. These bans will also need to be checked by the State of Hawai'i to regulate compliance.

#### Shipping Basis for the Analysis

The Consultant explained the premise of the shipping waste study is based on the City shipping municipal solid waste elsewhere and that cost will depend on responses to bids. Also, it was noted that R.W. Beck worked with a transportation firm to develop the following analysis, with certain assumptions: (1) 600,000 tons per year will be transported and disposed; (2) The City and County will own the new baling facility; (3) A private firm will operate the baling facility; (4) The baling facility will be located in Campbell Industrial Park; (5) The existing transport network will be maintained; (6) Bulk shipping of double-plastic wrapped bales will result in a decreased cost; (7)Kalaeloa/Barbers Point Harbor will be used to stage and load bales of waste; and (8) Bales will be loaded on cargo barges for ocean line hauling.

There was some discussion whether this is a temporary solution. The City Council is concerned with preserving and extending the life of the existing landfill. The Consultant, R.W. Beck, is currently doing the analysis. For the short-term, there appears to be a definite need, while for the long-term, further evaluation will need to be continued.

Other comments included the following:

- Need to check if ash is an acceptable product to ship.
- Need to determine requirements for shipping.
- Current permit would need to be modified to take ash to monofill.
- Costs (i.e. greenhouse gas emissions, etc.) were not considered.
- If shipping doesn't work, the City will need to turn to the landfill, especially during the transition period.
- The City should consider modifying the tipping fee when capacity is reached at the landfill.

### Receiving Basis for the Analysis

Similar to the above, there were certain assumptions made relating to the receiving side. These include: (1) The cargo barge would be received at the Port of Portland, Oregon and transported by land to Roosevelt Regional Landfill, Klickitat County, Eastern Washington (2,600 miles by barge, 300 miles total by flatbed trailer priced as round-trip since no backhaul load); (2) The waste would be loaded on flatbed trailers at the Port of Portland due to Roosevelt's requirements; (3) The waste would be unloaded from trailers for disposal at a private landfill that accepts municipal solid waste from as far away as Seattle; (4) Tipping of bales is prohibited at the working face of the landfill – municipal solid waste would need to come in on flatbed; (5) The contract would be between the City and County of Honolulu and private contractor to ship waste.

### Basis for Cost Analysis

The following factors were used by the Consultant to develop the cost analysis: (1) 1.9 tons per bale; (2) 13 bales per trailer with 92 deliveries per day; (3) 3,600 bales shipped per barge stacked three high; (4) 2 barge deployments per week; (5) 17 bales per trailer from the Port of Portland; (6) 212 truck roundtrips per barge to the landfill.

The following questions were asked regarding cost: Does the pricing get better with a long-term contract? Yes. Also, why is this cost analysis restricted to the Port of Portland and Roosevelt Regional Landfill? This location was chosen just for planning level purposes.

### Long Haul Export

The proposal reflects costs associated with the different steps in the process. The report in final plan will include more detail about the above-mentioned assumptions. The most cost-effective steps that need to be followed will be included. Until a competitive procurement process is in place, there is no way to know if costs could be reduced. The Consultant also discussed the possibility of backhauling building materials from Oregon to Hawaii to reduce costs. Also, higher fees could be assessed. It was suggested that costs could be compared with waste shipped from Juneau, Alaska.

Conclusions – Long Haul Export

The Consultant concluded that the long haul export of municipal solid waste is expensive compared to Oahu-based options. If implemented, it will preserve capacity at the current landfill. Needed port improvements for Oahu may limit the deployment schedule. Also delays in the sequence of activities would adversely impact an optimized schedule. Varying landfill disposal costs will impact financial feasibility.

**Further Defining Curbside Recycling Evaluation Criteria**

SWAC members were asked to think about what the goal of participation should be for curbside recycling. Discussion groups were established to address this question. The Consultant asked each group to consider whether communities with the highest recycling rates should have some kind of economic incentive. Another question posed was whether the City should have the \$10 fee for a second day of mixed waste pickup if there will be a curbside recycling program? It was explained that the Charter Amendment mandates that a program be implemented. The question to be discussed included which curbside program people should opt for. Also, Councilman Gary Okino asked whether we should provide an economic incentive.

Curbside Recycling Evaluation Criteria

SWAC members were provided information about participation rates from other jurisdictions (see handout). Per the presentation a program would be considered successful if it resulted in a 25 to 70% participation rate. On Oahu, at 25% participation, 0.5% of the waste stream would be captured and at 70% participation, the capture would increase to 2%.

Curbside Recycling Evaluation Criteria

The following curbside recycling evaluation criteria was provided:

	<b>Curbside</b>	<b>Drop-Off</b>	<b>H-POWER</b>
<b>Tonnage Recycled</b>	40,000	12,000	396,000
<b>Landfill Diversion</b>	2%	> 1%	22%

SWAC members were divided into three breakout groups which included a facilitator and recorder to assist the group in their discussions of the following questions: Facilitators were Wilma Namumnart (Group 1), Karen Luken (Group 2), and Bob Craggs (Group 3). Recorders for each group were Chrystn Eads (Group 1), Suzanne Jones (Group 2), and Karen Takahashi (Group 3). The following comments came from each of the groups in answer to questions.

**Discussion Questions:**

***Question #1: Should long-hauling refuse serve as a contingency for managing Honolulu garbage?***

Group 1:

- No discussion

Group 2:

- Yes; need to qualify type of garbage for shipping.
- Could it be shipped to a waste-to-energy plant instead of a landfill?
- Shipping to a waste-to-energy plant could increase costs for shipping.

Group 3:

- Yes, if there is a contingency tied to it
- Need to know what it will cost.

***Question #2: Should Honolulu have to recycle the same materials as the community where they are sending their garbage?***

Group 1:

- no discussion

Group 2:

- If there are local bans on certain materials and we dispose our solid waste in other communities, we should not dispose materials that we ban from our landfills.
- Need to maintain enforcement of local bans in shipping.
- Need to comply with other bans/regulations.

Group 3:

- Group reached consensus: We should comply with their requirements.

***Question #3: What participation rate should be achieved to have a successful curbside recycling program?***

Group 1:

- No discussion

Group 2:

- Participation should be anticipated to be lower than what the goal rate is for the first two years of a program.
- Can't compare with mature programs elsewhere.
- Incremental goals should be established.
- 60% participation rate at the start of a program is doable.
- 70% participation rate in 3 years.

Group 3:

- If it is not mandatory, participation rate will be 50%.
- 50% for a pilot program – and see if the demonstration program is successful in affecting behavior.
- The percentage of participation rate should be used for evaluation to benchmark success.
- Need to allow for tweaks and adjustments over time.
- Military curbside recycling programs are successful and could serve as one pilot program. Need to explore observation of military curbside program as soon as possible.
- Need to call the various military branches to discuss their recycling programs.

**Question #4: *Should a fee for 2<sup>nd</sup> day refuse collection be a required part of the curbside recycling program?***

Group 1:

- \$10 fee is not a good idea; people should not be penalized. Rather, they should be financially rewarded for participating in curbside recycling.
- School recycling bins will serve as competition for people participating in the curbside recycling programs; need to get rid of community school bins.
- Concerns regarding roving groups of scavengers raiding bins to get recyclables that they can cash in on.
- Need to increase the frequency green waste recycling program first (i.e. once a week) before implementing mixed curbside recycling.
- Do a pilot program to gather and evaluate data.
- Pilot communities should be a mix of income types; suggested communities are too similar.

Group 2:

- There should be no fee for 2<sup>nd</sup> day pickup.
- Should offer financial incentives and credits rather than fee.
- What would the group advise for implementing billing for second day pick up - Bar codes.

Group 3:

- There was consensus that some kind of financial incentive would be necessary in order for the program to be effective.
- Bottle/can bill pulls out lots of recyclables; may impact quantities.
- What will it cost the City?
- Need to confer with City Council; maybe 2<sup>nd</sup> pickup shouldn't be offered.

**Next Meeting:**

The next SWAC meeting will be held on Wednesday, August 8, 2007 in the Mayor's Conference Room of Honolulu Hale from 2:30 p.m. to 5:30 p.m. Agenda items

will include information on R.W. Beck Cost Study, brainstorming ways to get more source reduction, and discussion of market recyclables.

## **SOLID WASTE ADVISORY COMMITTEE MEETING**

Wednesday, May 23, 2007

2:30 PM – 5:30 PM

Mayor's Conference Room

Honolulu Hale

### **GROUP MEMORY**

#### **AGENDA**

- Welcome and Overview of Meeting
- Overview of Mailed Materials / Questions
- Presentation of Existing System (Refuse Collection, H-POWER facility, Waimanalo Gulch Sanitary Landfill, Recycling/other matters)
- Small Group Discussion (Curbside recycling, Expansion of H-POWER and/or alternative waste-to-energy facility)
- Small Group Report Backs
- Next Steps

#### **ATTENDANCE:**

The following Solid Waste Advisory Committee members were present:

Greg Apa  
Chris Ballesteros  
Paul Burns  
Steve Chang  
Linda Henriques  
Lori Hoo  
Dan Ikei  
Mike Irish  
Tate Kaneshige  
Col. Howard Killian  
Beau Mohr  
Laura Robertson  
Brian Schatz  
Karen Shinmoto  
Terry Telfer  
Kevin Vacarello  
Kathy Whitmire

Others in attendance included:

Frank Doyle, Environmental Services Department, Refuse Division  
Chrystn Eades, Office of the Mayor  
Ann Hajnosz, R.W. Beck  
Karen Luken, R.W. Beck  
Wilma Namumnart, Environmental Services Department, Refuse Division

DeeDee Letts, Facilitator  
Karen Takahashi, Recorder

### **Welcome and Overview of Meeting**

Members of the Mayor's Solid Waste Advisory Committee (SWAC) were welcomed by the facilitator to the second meeting. The facilitator explained the purpose of the SWAC is to provide feedback and advice to the Mayor, his staff and consultants from each members individual perspectives about the various issues involved in developing and implementing an Integrated Solid Waste Management Plan for the island of 'Oahu.

### **Overview of Mailed Materials / Questions**

The facilitator then asked R. W. Beck Consultant Karen Luken to review each of the materials that were mailed to Committee members prior to the meeting. The materials included: (1) Solid Waste 101; (2) 2006 Final Waste Characterization Study; and (3) Comparison of Material Recycling.

#### *Solid Waste 101*

Consultant Karen Luken explained that there were two issues to consider: Source Reduction and Recycling. Source reduction addresses changes in consumer habits and behavior and getting the message out to the public. Recycling exists in a variety of forms such as curbside, drop off sites, businesses, energy and green waste composting. To be successful, recycling requires that markets are available for the recycled materials to be converted to new products. She noted that Honolulu has an advanced collection system that utilizes technology and is looking toward emerging technologies for additional materials recycling.

#### *2006 Final Waste Characterization Study*

The purpose of the 2006 Final Waste Characterization Study was to look at what was in the waste stream. A question was asked why the construction and debris landfill was not included in the study. The Consultant explained that the Study focused on city-managed landfills. It also addressed what is the best way to use the material, via H-POWER/WTE or recycling. A question was asked regarding whether there is a way to integrate paper into the global market?

Another question was asked relating to what percentage of the trash going to H-POWER is paper. 50% of materials going to H-POWER are paper, which contributes to the mass needed for H-POWER to convert trash to energy. The definition of "recycling" was raised since the United States Environmental Protection Agency doesn't recognize incineration as recycling. The SWAC members wanted to know where waste-to-energy is happening and if it is considered recycling in these jurisdictions. The Consultant responded that some states, such as Ohio, do legally consider waste-to-energy as a form of recycling.



## **Presentation of Existing Systems**

### **Refuse Collection**

Refuse Division Coordinator Wilma Namumnart explained that the City and County of Honolulu provides refuse collection for all single-family residences via automated collection system (cart provided) and a 1-person crew or via manual collection requiring a 3-person crew. It collects about 160,000 homes via automated collection and another about 20,000 homes are collected manually. The Refuse Division offers front loader collection services in certain multi-family projects. It also provides green waste pick up twice a month. The City also collects appliances via curbside pickup and takes these appliances to recyclers. The refuse is taken to the landfills and H-POWER where the metals are sorted out and taken to recyclers.

Green waste collected curbside is taken to a contractor who produces mulch. The City operates convenience centers where residents can drop off refuse at no charge. There are three transfer stations on Oahu which are used to sort out and compact materials before the refuse is transported to H-POWER.

A question was asked as to whether the Refuse Division deals with abandoned vehicles. The City contracts with a vendor to pick up abandoned vehicles which are taken to Schnitzer Steel. Costs for the pickup of the car are paid by the City. Another question was asked about how the City handles used electronics (e-waste.) It was explained that the City used to partner with a private company to provide residential e-waste collection events. However, the City's partner is no longer able to provide the service. The City is trying to find a new partner. Commercial e-waste is banned from landfill disposal and it is the responsibility of commercial generators to arrange for the proper management of these materials. It was noted that the cost for shipping CRTs and other e-waste are high and thus limit the amount of shipping of these types of materials. The City is trying to streamline the process to allow shipping out-of-state for recycling.

Another question was asked about Carbon Florescent Lightbulbs and the problem with mercury. These are banned from the landfill; however, homeowners have an exemption for this. Unless the amount of mercury is reduced considerably, mechanisms to treat universal waste versus hazardous waste need to be addressed.

### **H-POWER facility**

Frank Doyle discussed the individual components that make up the waste stream. Burning "choice" garbage from residences powers H-POWER. The garbage must contain sufficient combustibles such as paper to continue burning. H-POWER began operation in May, 1990. The facility processes 610,000 tons annually, which results in 80,000 to 90,000 tons of non-combustible ash for landfill disposal. The design capacity for H-POWER is 561,600 tons, so H-POWER is currently operating above capacity. H-POWER is "full" so the City is looking at expanding the WTE capacity on the 25-acre parcel adjacent to the H-POWER plant. The City is open to alternative WTE technologies and supports WTE as a form of recycling.

Some concerns have been raised regarding stack emissions and ash residues, but it should be noted that there are stringent, costly regulations that the H-POWER operator must comply with as part of its operating permit. H-POWER meets the requirements set by the United States Environmental Protection Agency to protect the environment and public health. The City wants to reuse the ash and is looking to recycling these materials. They are working with DOH to obtain permission to use recycled ash. Also, when the ash is taken to the landfill, it is disposed in a monofill section of the landfill. The City is now researching the use of "bugs" to help break down and process further residue from the WTE process.

During 2005, 150,000 tons of waste that was delivered to H-POWER was turned away because of capacity limitations. A question was asked regarding what is the timeframe for the bid process. It was explained that in July proposals would be reviewed, in October the best final offer would be accepted, and by 2011 the facility should be online. It was noted that the project could be a public/private partnership but the intent is for the City to always own the facility at the end of the contract term. It was noted that the new facility will put in redundancy with two boilers that can handle capacity. If privately owned, the contractor is responsible for the cost of the facility with escalators included (i.e., CIP, electricity, maintenance).

#### Waimanalo Gulch Sanitary Landfill

Paul Burns, Vice President of Waste Management of Hawai'i, explained that he is part of a new management team that was brought on board to address past concerns at the facility. Waimanalo Gulch Sanitary Landfill began operation in 1989. The facility is owned by the City and County of Honolulu and operated under a contract to Waste Management.

The existing facility is permitted by the Hawaii Department of Health, State Land Use Commission, and United States Environmental Protection Agency. The property encompasses 200 acres. The landfill permitted footprint is 78.9 acres, of which 20 acres is ash mono-fill and 58.9 acres is municipal solid waste. The facility employs 17 full-time employees. The landfill has approximately 8.4 million tons in place.

Over the last three years, the Waimanalo Gulch Sanitary Landfill has accepted an average of 250 tons per day of ash and 1,200 tons per day of municipal solid waste. The ash comes from the H-POWER facility while the municipal solid waste comes from the public/self-haul, commercial haulers, and City and County of Honolulu trucks. The landfill is an integral part of the solid waste management system for Oahu.

A site plan for the Waimanalo Gulch Sanitary Landfill was provided to SWAC members to illustrate the current use of the landfill. The liner systems that are used were described. Also, Environmental Protection Programs such as groundwater monitoring, surface water/stormwater program, leachate monitoring, air quality programs (Title V), and waste acceptance/hazardous waste exclusion plan were explained. Photos of the landfill were provided to illustrate how it is currently used as well as areas available for development.

A SWAC member explained that when H-POWER closes, refuse trucks are directed to the landfill. Trucks line up and oftentimes have a long wait before being able to unload their haul. No accommodations have been made to change landfill hours or notify private refuse companies. It was explained that permits allow for the landfill to operate between the hours

of 7:00 a.m. and 4:30 p.m. Another concern raised is that private refuse companies are being charged an \$82 tipping fee plus surcharge and the extra monies collected are being used to subsidize residential refuse collection.

Another question asked addressed how much of the 79 acres are filled to capacity. All that remains is 3 years of capacity within the existing permitted areas. The undeveloped areas of site would allow for extended capacity if the required permissions were attained. How long will it take to develop this? According to estimates, it should take about 6 years to build out.

### Recycling/other matters

Consultant Karen Luken noted that the presentation would include where the City is at, where it is going, and how it will get to the goal of developing a five-year Integrated Solid Waste Management Plan that includes the City's landfill diversion goal and current strategies to achieve the landfill diversion. These include processes such as energy and materials recycling. She noted that additional strategies to increase landfill diversion would also be discussed, including ways to optimize performance of existing programs, instituting residential curbside recycling programs and expanding waste-to-energy capacity. The impact of additional strategies on landfill diversion would be analyzed and comparative benefits of energy and materials recycling would be discussed.

### *The Goal: Landfill Diversion*

The Consultant explained that material and energy recycling both aim to divert garbage from the landfill and be recycled into materials or serve as feedstock that can be converted to energy. Statistics were provided on where the City is right now and the impact of energy and materials recycling on landfill diversion. The total waste generated in 2005 on Oahu was 1.76 million tons, of which 1.00 million tons were recycled into energy/materials and kept out of the landfill. The combined landfill diversion from this recycling initiative is 57%, which is above the national average of 44-46%. Of the total 1.76 million tons of waste generated, a total of 400,000 tons was converted into energy, with a diversion rate of 22%, which exceeds the national average of 14%.

### *Energy Recycling*

The Consultant explained that H-POWER (Honolulu Program of Waste Energy) is a waste-to-energy facility which keeps waste out of the landfill. Waste taken to H-POWER is converted into energy. Annually, H-POWER receives 600,000 tons of garbage of which 400,000 tons are converted to energy and 200,000 tons of non-combustibles and ash (by-products of waste-to-energy process) are disposed at the landfill. H-POWER recycles virtually 100% of the ferrous/non-ferrous metals by using metal magnets and other extraction methods to keep them out of the landfill.

There are several benefits of energy recycling for Oahu. Energy recycling produces enough energy for 40,000 homes. It also generates \$30 million in annual revenues from the sale of electricity along with another \$1.5 million from the sale of ferrous metals. It reduces the island's reliance on fossil fuel by replacing 600,000 barrels or 7% of oil imports per year.

## *Materials Recycling*

The Consultant presented statistics on the impact of materials recycling on landfill diversion. Of the total Oahu 1.76 million tons of waste generated in 2005, 612,000 tons were recycled into new products, with a diversion rate of 35%, which is higher than the national average of 27-32%. Since the late 1980's the percent of tonnage generated has increased six-fold by focusing on a wide variety of materials along with residential, commercial, and public/private partnerships. In 2005, the materials being recycled include paper, metals, glass, plastic, green waste, tires, auto batteries, electronic scrap, wood waste/pallets, construction and demolition debris, food waste, sewage sludge, and materials being reused. In 2005, 612,000 tons of materials were recycled, and as a result, these materials were kept out of the landfill, H-POWER, and transfer stations.

The City has focused on residential and commercial recycling of a variety of materials. For residential recycling, drop-off programs and bottle redemption programs have significantly reduced container littering. Started in the early 90's, the number of drop-off sites throughout Oahu that accept paper and mixed containers (glass, plastic, and aluminum) has increased from 20 bins to about 75 drop-off bins. Other residential materials recycling include appliance recycling and the conversion of green waste to compost through curbside pickups and convenience centers. The City has also addressed battery and tire recycling by banning these items from landfill disposal and requiring their drop-off at convenience centers.

The City has focused on materials recycling by commercial businesses since 1990 by mandating all City offices recycle their office paper. In 1996, this program was expanded to all commercial office buildings. Hotels and restaurants must recycle their beverage containers. Commercial businesses must also recycle other types of paper materials (i.e., cardboard, newspaper, office paper, low grade paper) and are limited in the amount of green waste they are allowed to put out for collection. The City has also encouraged recycling food waste for compost or pig fodder and implemented the conversion of cooking oil to bio-diesel fuel to power city vehicles.

The Consultant explained that the City has developed public-private partnerships with recycling businesses who are seeking to divert waste materials from the landfill. For example, the City has partnered with Schnitzer Steel to use magnets at the landfill for the extraction of ferrous metals. The City has contracted with Synagro to convert sewage sludge into compost or fertilizer pellets.

### *Strategies to Further Increase Landfill Diversion*

The Consultant explained that the City wants to increase recycling further. It is now faced with developing strategies to increase landfill diversion by increasing the performance of existing programs (i.e., organic composting, drop bins and HI-5, and office paper and cardboard recycling), instituting curbside recycling for residential mixed recyclables, and increasing energy recycling. The City is looking at what it can do to get the public to recycle more and participate in the various programs that are offered.

The City is looking at ways of recycling more green waste into compost. Organics composting can be increased by optimizing the performance of existing Curbside Green

Waste Collection. The curbside recycling program is the City's attempt to keep the green waste separated from other waste. By collecting, composting, and reusing green waste, it is being kept out of the waste stream that goes to the landfill and being converted to a recyclable product that can be used by residents i.e. mulch. Other organics include food waste that is recycled through different methods. For example, low-technology recycling of food waste goes to pig farmers, medium technology recycling of food wastes can go to composting facilities, and high-technology recycling of cooking oils to bio-diesel fuel for use by city vehicles and buses. Sludge can be composted and does not need to go to the landfill.

The City is also increasing multi-material residential recycling programs by expanding drop-off community recycling bins (i.e., multi-material bins, site rotating HI-5 fundraiser bins) locations. Many schools have multi-material recycling bins situated on their campuses as a means for fundraising. The City wants to get this program out to more schools. These programs generate monies that go directly to the school, not the City.

#### *Proposed Curbside Recycling Program*

Currently, refuse is collected two times a week and green waste is collected every other week or two times a month. The proposed curbside recycling program includes once/week refuse collection and once/week mixed recyclables collection. Mixed recyclables collection consists of alternating weekly pick-ups of green waste and mixed recyclables. A second day garbage collection will be made available by request (if needed) for \$10/month. Residents will have weekly refuse collection via a 96-gallon receptacle (grey bin), alternating weekly green waste or mixed recyclables collection via a 96-gallon receptacle (green bin) for green waste (i.e., grass, tree and hedge trimmings) and a 64-gallon receptacle (blue bin) for mixed recyclables (i.e., newspaper, corrugated cardboard, aluminum, glass, plastic (#1 and #2)). The Consultant explained how the collection service would change, including an additional green bin for high volume green waste households and an additional grey bin for high volume refuse households, collected once per week at no charge. A resident would qualify for a second grey bin only if they were fully participating in the recycling programs offered and still had more refuse than one bin could hold.

The Consultant cited the waste characterization study that was conducted by R.W. Beck to analyze the waste stream. The results of this study are posted at [www.opala.org](http://www.opala.org).

It is anticipated that the proposed program will decrease the need for second refuse collection. The average 96-gallon bin holds 72 pounds of garbage. The average Oahu household sets out 40 pounds on the first day of collection and 25 pounds on the second day. Participating in recycling programs will decrease total refuse set out by 15 pounds per week.

The proposed program will increase overall collection service costs if residents elect to maintain twice per week refuse collection in addition to new curbside recycling collection. The Consultant explained that it all comes down to the number of times collection service is provided. Currently, a City collection vehicle drives by your home 10 times a month – 8 times for refuse and 2 times for green waste. The proposed curbside recycling program would require 2 more collections per month (i.e., 3 pickups per week – refuse, recycling/green waste, and second-day refuse) thereby requiring collection vehicles to drive by your home 12 times per month, assuming everyone maintains twice per week refuse collection. The question is who should pay for the extra collection? Should it be those who recycle or those

who are large garbage producers who continue to want to put out their garbage 2 times per week?

The proposal of the additional fee of \$10 for a second refuse pick up assumes that the large garbage producers or those that do not want to participate fully in the City's recycling programs would bear the additional cost of having a second refuse pick-up. If a resident recycles, and requires only one refuse collection, they won't have to pay an additional fee. However, if a resident is using more services, i.e. second refuse collection, they will pay \$10/month.

### *Comparison with Other Islands*

Solid waste services on the other islands vary. For example, Maui County has once a week pickup for \$12 per month that may be increased to \$16 per month (if approved by the Maui County Council this month). An additional fee of \$17 per month is charged for curbside recycling and there is no curbside bulky item pickup. Kauai County has a once a week free curbside refuse collection with all other services paid for by the consumer. It has no bulky item pickup. Hawaii County provides no collection services. All collection services must be contracted with private companies or residents self-haul their trash to transfer stations. The City and County of Honolulu currently has curbside refuse pickup two times a week, island-wide bulky waste pickup, and curbside green waste pickup twice a month.

### *Proposed Program Increases Participation*

To be successful, the proposed curbside recycling program seeks to increase participation. Along with the 3R's (reduce, reuse, recycle) there must be the 3C's (commitment, convenience, cost). For example, people will recycle if they are committed to recycling, some are willing to recycle if convenient, or some will only recycle if there is an economic incentive.

The proposed program is not unique to Honolulu. The Consultant shared examples of other locations where recycling efforts have been successful. For example, San Francisco, California uses three carts for refuse: blue cart for glass, plastic, cans, foil, paper, and cardboard (recyclables); green cart for yard trimmings, food scraps, and soiled paper (green waste), and a black cart for non-recyclable, non-compostable refuse. Residents pay a \$19 monthly refuse fee and are provided 32-gallon cart for refuse as opposed to our 96-gallon cart. Another example is Tacoma, Washington where the cost increases (i.e., \$16.69/month for 20-gallon container to \$41.85/month for 90-gallon container) as the size of the garbage container increases. There is no additional charge for green waste and mixed recyclables, which are collected on alternating weeks.

### *Potential Effectiveness of Proposed Programs on Material Recycling*

How will these programs impact the waste stream? Where will this take us in the future? The Consultant explained that the current recycling rate of 35% can potentially be increased to 46% by doing what we do better. Optimizing the performance of existing programs (+6%), instituting the Mayor's proposed curbside mixed recyclables collection (+2%), and additional green waste collection (+3%) will increase the potential effective of materials recycling programs. However, increasing recycling will not eliminate the need for more waste-to-

energy capacity. Without additional capacity, the overage must be sent to the landfill. H-POWER was built in 1989 and has continued to perform beyond contract capacity (561,600 tons).

The Consultant noted that the potential effectiveness of the proposed expansion of energy recycling will be an additional 200,000 tons of waste converted to energy. The additional energy recycling rate of 11% would increase the current 22% energy recycling rate to 33% total energy recycling rate. The combined effectiveness of energy and materials recycling will increase to 79% of the waste stream being diverted from the landfill.

#### *Combined effectiveness of Energy and Material Recycling*

The Consultant explained this 79% diversion rate breaks down as follows. Of this total amount, 35% is made up of garbage that is converted to new products (i.e., current materials recycling); 22% is garbage that is converted to energy via H-POWER; 11% is additional energy derived from new waste to energy; 6% comes from optimizing the performance of existing programs; 3% is gained by optimizing curbside green waste that is converted to compost; and 2% comes from the initiation of a curbside mixed recyclables program.

#### *Comparative Benefits of Energy and Material Recycling*

What this all means is that both converting waste-to-energy and waste to other products has benefits. Reducing dependence on fossil fuels can lead to reducing greenhouse gas emissions. This reduced reliance and decreased dependence on foreign markets can help to create jobs and keep waste out of the landfill. Globally, fossil fuels are saved and greenhouse gases are produced at lower rates than with burning fossil fuels when waste is converted to energy. Cost saving are also realized by not having to pay to transport recyclable materials to manufacturing markets.

Both materials recycling and waste to energy recycling, yield environmental benefits by reducing greenhouse gas emissions, creating energy benefits, providing landfill diversion, and economic benefits related to jobs. Both create jobs (i.e., more jobs and more higher paying jobs). Waste-to-energy provides greater benefit when considering on-island impacts. Materials recycling offers greater benefit when considering off-island impacts.

#### **Small Group Discussion**

The following questions were discussed by each of the three groups led by Resource Persons Wilma Namumnart, Frank Doyle, and Karen Luken:

**Question #1: Curbside Recycling:** Since materials targeted for curbside recycling can be diverted from the landfill through WTE and the HI-5 program, what is the goal of the curbside recycling program and how do we determine if that goal has been achieved? Based on the materials that you have read and the feedback received at the public meetings, should the city provide mixed curbside recycling or continue to recycle by pulling out all recyclables at H-POWER?

**Question #2:** The Mayor has suggested piloting the mixed curbside recycling plan in one of three communities - either Hawai'i Kai, Kailua, or Mililani. What participation rate should be used to determine if the pilot is success in garnering support and thus should continue to be implemented?

**Question #3:** The City already has a green waste curbside recycling program and only 30% of the residents are participating. What can be done to encourage more residents to participate?

**Question #4:** What are the implications and how do you feel about the proposal to ship waste off-island?

Each group held a discussion around these questions and provided the following report backs. As the report backs were limited as to time each resource person has provided some comments in bold at the end of their group's report back to further elaborate on the discussion.

*Frank Doyle's Group:*

Question #1:

- What are the reasons for having the curbside recycling program in the first place? What is the goal of the program?
- There is a paradigm shift taking place that is leading to the City's commitment to recycling.
- The goal should be to reduce waste and divert waste from the landfill by the most efficient method.

Question #2:

- The group did not discuss this question.

Question #3:

- The group did not discuss this question.

Question #4:

- The group prefers keeping trash here and using H-POWER to convert waste to energy.
- What happens to the glass that is taken to H-POWER?
- The City needs to improve drop-off bins, public education, and change attitudes towards recycling

*Wilma Namunnart's Group:*

Question #1:

- The group agrees with the curbside recycling program and wants to see service not only to single-family homes.



- The City needs to get the word out to the multi-family homes and condominiums.
- The curbside recycling programs should be mandatory.

Question #2:

- To ensure participation and success, the recovery rate should start out at a lower rate, 25%, within the first two years and then be increased
- The City also needs to engage in an aggressive education program to ensure success.

Question #3:

- The curbside green waste recycling program needs to be a mandatory program.

Question #4:

- Need to understand the economic cost benefits along with what the future capacities will be.

*Karen Luken's Group:*

Question #1:

- Curbside recycling will take too much effort.
- Kick it to the curb i.e. don't pursue it.
- If all of the curbside materials could be converted to energy or recycled through the Hi-5 program, why would the City spend the extra money for another program?
- The Mandate as passed in the election is poorly written.

Question #2:

- If you pursue the curbside recycling program the participation rate should be 50-75% in order for the program to be successful. If it is less than that, less than 2% of the waste will be diverted through the curbside program.

Question #3:

- Group did not discuss

Question #4:

- The group is open to shipping waste off-island as a short-term solution.
- The problem is with the landfill and the length of time it may take to resolve the issues.
- Okay with the understanding that the City will need time for expansion of H-POWER.
- If the City expands H-Power, then partnerships with the private sector need to be established so the City has a guarantee on the amount of waste that will be delivered

**Next meeting:**

- Wednesday, June 27, 2007
- 2:30 p.m. to 5:30 p.m.
- Mayor's Conference Room, Honolulu Hale
  
- Send information to Wilma for dissemination to SWAC members by 6/9/07.

**Questions / Discussion**

Question: Are there any professional organizations that set standards relating to solid waste management?

Answer: Solid Waste Association of North America (SWANA); National Solid Waste Management Association (NSWMA)

2006 SOLID WASTE ADVISORY COMMITTEE

SENIOR MEMBERS

First	Last	Title	Company	Address	City	State	Zip
Mr.	Paul	Vice President	Waste Management of Hawaii	92-460 Farrington Highway	Kapolei	Hawaii	96707
Ms.	Linda	Secretary/Treasurer	Rolloffs Hawaii	P.O. Box 30046	Honolulu	Hawaii	96820
Ms.	Lori	Director of Community Relations	Hawaiian Electric Industries Inc.	P.O. Box 2750	Honolulu	Hawaii	96840
Mr.	Dan	Vice President	SD Systems Commander	852 Maunapuna Street Building 580	Honolulu	Hawaii	96819
Colonel	Howard		U.S. Army Garrison Hawaii	Fernandez Hall (Stop 107)	Schofield Barracks	Hawaii	96857
Mr.	Beau	Owner	The Pearl Ultralounge	1450 Ala Moana Boulevard, #3230	Honolulu	Hawaii	96814
Mr.	Greg	Sr. Vice President	Honolulu Disposal Service, Inc.	1189 Milkole Street	Honolulu	Hawaii	96819
Ms.	Laura	President and CEO	Goodwill Industries of Hawaii	2610 Kilihau Street	Honolulu	Hawaii	96819
Mr.	Brian	Chief Executive Officer	Helping Hands Hawaii	2100 N. Nimitz Highway	Honolulu	Hawaii	96819
Ms.	Karen	Business Manager	Island Recycling	91-140 Kaoml Loop	Kapolei	Hawaii	96707
Mr.	Rodney	Business Manager	Covanta Energy	91-174 Hanua Street	Kapolei	Hawaii	96707
Mr.	Terry	President	Reynolds Recycling	P.O. Box 29639	Honolulu	Hawaii	96820
Mr.	Kevin		Sustain Hawaii	3442 Waiiale Avenue, Suite 8	Honolulu	Hawaii	96816
Ms.	Kathy			46-192 Lilipuna Road	Kaneohe	Hawaii	96744
Mr.	Mike	Chief Executive Officer	Halm's Enterprises, Inc. United Public Workers	966 Robello Lane	Honolulu	Hawaii	96817
Mr.	Dayton	State Director	Local 646	1426 N. School Street	Honolulu	Hawaii	96817
Mr.	Gary	Public Works Chair	City Council	City Hall	Honolulu	Hawaii	96813
Mr.	Steven	Chief Solid and Hazardous Waste Branch	State Department of Health	919 Ala Moana Blvd. Rm. 212	Honolulu	Hawaii	96814

2006 SOLID WASTE ADVISORY COMMITTEE

YOUTH MEMBERS

Mr	First	Last	Title	Company	Address	City	State	Zip
Mr	Christopher	Ballesteros		Damien Memorial High School	1576 Molina Street	Honolulu	Hawaii	96818
Miss	Aime'e	Frisbee		Leeward Community College	95-1020 Maepa Street	Mililani	Hawaii	96789
Miss	Amanda	Harrison		Kalaheo High School	558 N. Kainalu Dr.	Kaitua	Hawaii	96734
Miss	Tate	Kaneshige		Iolani School	4615 Aukai Avenue	Honolulu	Hawaii	96816

# **APPENDIX H**

**PROGRESS ON 19 CONDITIONS OF JUNE 9, 2003 DECISION AND ORDER**

No.	Condition	June 2005 Status	June 2007 Status	June 2008 Status
1	The Blue Ribbon Site Selection Committee shall make its recommendation for a new landfill site by June 1, 2004. This Special Use Permit shall immediately expire. (amended May 10, 2004). Extension of deadline to select a landfill site from June 1, 2004 to December 1, 2004.	Council Resolution 04-348, DC1, FD1 adopted December 1, 2004	No Change	No Change
2	In the event that Condition No. 1 is satisfied, Condition No. 14 shall become effective.	Condition 14 now effective.	No Change	No Change
3	That an earth berm shall be installed prior to the commencement of any waste disposal operations.	Completed	No Change	No Change
4	The landscaping plans which would include plant names, sizes, quantities and location shall be submitted to the Department of Planning and Permitting for approval and shall be implemented within 90 days of completion of the berm work.	Completed	No Change	No Change
5	The facility shall be operational between the hours of 7:00 a.m. and 4:30 p.m. daily.	On-going	No Change	No Change
6	The Applicant shall obtain all necessary approvals from the State Department of Health, Department of Transportation, Commission on Water Resource Management, and Board of Water Supply for all on-site and off-site improvements involving access, storm drainage, leachate control, water, well construction, and wastewater disposal.	Completed	No Change	No Change
7	The Planning Commission or Director of the Department of Planning and Permitting may at any time impose additional conditions when it becomes apparent that a modification is necessary and appropriate.	No Change	No Change	No Change
8	The Applicant shall notify the Planning Commission of termination of use for appropriate Planning Commission action of disposition of the permit.	No Change	No Change	No Change
9	In accordance with Chapter 11-60, "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 to generate fugitive dust.	Plan Completed	No Change	No Change
10	That 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.	No Change	No Change	No Change
11	The Applicant shall coordinate construction and operation of the landfill with the Hawaiian Electric Company.	On-going	No Change	No Change
12	Within five years from the date of this Special Use Permit Amendment approval or date of the Solid Waste Management Permit approval for this expansion, whichever occurs later but not beyond May 1, 2008, the 200-acre property shall be restricted from accepting any additional waste material and be closed in accordance with an approved closure plan.	No Change	Time extension application will be submitted to Department of Planning and Permitting in June 2007.	The time extension application was submitted to the Department of Planning and Permitting on July 6, 2007. It was approved on August 30, 2007, and sent to the Land Use Commission on January 31, 2008. A public hearing was held on February 21, 2008, after which a time extension until November 1, 2009, was granted.

**PROGRESS ON 19 CONDITIONS OF JUNE 9, 2003 DECISION AND ORDER**

No.	Condition	June 2005 Status	June 2007 Status	June 2008 Status
13	Prior to commencing land filling in the 21-acre expansion area, the Applicant shall submit to the Director of the Department of Planning and Permitting for review and approval, a metes and bounds description and map of the approved landfill area as permitted by this Special Use Permit and amendments thereto. Any minor modifications to allow reasonable adjustments of the approved area due to engineering and/or health and safety requirements may be approved by the Director of the Department of Planning and Permitting; provided that there is no net increase to the improved area of 107.5 acres. A copy of the metes and bounds description and map shall be provided to the Land Use Commission.	Completed	No Change	No Change
14	The Applicant shall promptly provide, without any prior notice, annual reports to the Department of Planning and Permitting and the Land Use Commission in connection with the status of the landfill expansion and the Applicant's progress in complying with the conditions imposed herein. The annual report shall be submitted in a form prescribed by the Executive Officer of the Commission.	On-going	No Change	No Change
15	The City and County of Honolulu shall select a new landfill site. The recommendation for a new site shall be forwarded to the Planning Commission and City Council no later than December 1, 2003.	Recommendation to City Council on December 1, 2003 completed. Recommendation to Planning Commission in May 2005 due to oversight.	No Change	No Change
16	The City and County of Honolulu shall ensure that funding for design and planning is included in the FY05 budget to demonstrate the City's commitment to the new site and to ensure that no further extensions are necessary.	FY05 Capital Budget provides \$301,000.00 for new MSW landfill.	No Change	No Change
17	The City and County of Honolulu shall initiate the public comment and environmental review process for the new site no later than December 31, 2004.	On-going	No Change	No Change
18	The City and County of Honolulu shall, to the extent feasible, use alternative technologies to provide a comprehensive waste stream management program that includes H-POWER, plasma arc, plasma gasification, and recycling technologies.	On-going	No Change	No Change
19	The City and County of Honolulu shall appropriately implement by executive order or ordinance the seven bullet points identified in the Applicant's Exhibit 3, Appendix H, page 1-3, regarding the third boiler at H-POWER, wood recovery, metal recovery, gypsum recovery, enhanced enforcement of landfill bans, implementation of the bottle bill, and establishment of user fees.	On-going	No Change	No Change