Environmental Impact Statement Preparation Notice
Prepared in Accordance with Chapter 343, Hawaii Revised Statutes and Title 11, Chapter 200, Hawaii Administrative Rules

Waimanalo Gulch Sanitary Landfill Expansion

Waimanalo Gulch, Oahu, Hawaii
TMKs: (1) 9-2-003: 072 and 073

November 2006

City & County of Honolulu
Department of Environmental Services
1000 Uluohia Street, 3rd Floor
Kapolei, Hawaii 96707

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1-19777-01

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Prepared by:
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Honolulu, Hawaii 96817

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Project Summary

Project:	Waimanalo Gulch Sanitary Landfill Expansion
Proposing Agency:	City & County of Honolulu, Department of Environmental Services 650 South King Street, Honolulu, Hawaii 96813 Eric Takamura, Ph.D., P.E., Director
Accepting Authority:	County of Honolulu, Department of Planning and Permitting 650 South King Street, Honolulu, Hawaii 96813 Henry Eng, AICP, Director
TMK:	(1) 9-2-03: Parcel 072 and 073
Location:	Waimanalo Gulch, Island of Oahu
Project Area:	92.5 acres proposed for development within the 200 acres of the Waimanalo Gulch Sanitary Landfill property site.
SEIS Preparers:	R. M. Towill Corporation 420 Waiakamilo Road, Suite 411 Honolulu, Hawaii 96817 Contact: Brian Takeda, Planning Project Coordinator
County Zoning:	Ag-2, General Agricultural District
State Land Use:	Agricultural
Existing Land Uses:	The proposed area of use is undeveloped.
Proposed Action:	92.5 acre expansion of the existing 200 acre landfill property.
County Permits Required:	Special Use Permit Amendment
State Permits Required:	Department of Health Landfill Operating Permit and National Pollutant Discharge Elimination System (NPDES), Permit Application, for Discharges of Storm Water Associated with Construction Activities (NOI C) and Industrial Activities (NOI B)

Section 1
Project Background

1.1. Introduction

Waimanalo Gulch Sanitary Landfill is an important City & County of Honolulu facility that provides municipal and solid waste disposal for all the communities of Oahu. Refuse that is disposed of at the landfill includes Municipal Solid Waste (MSW); recycling residue; and, Honolulu Program of Waste Energy Recovery (H-POWER) ash, residue, and unacceptable waste. The landfill has been in operation since 1989 and has capacity remaining for at least 15 years. This time period is anticipated to increase as the City's recycling efforts and use of proven alternative technologies divert more materials from landfill disposal. However, even with the present adoption of increased recycling and new technology based solutions, the Waimanalo Gulch Sanitary Landfill will remain a vital and key part of the City's waste management system.

The proposed project to expand the use of the Waimanalo Gulch Sanitary Landfill will extend the use of the site beyond May 1, 2008, the date the approved State Special Use Permit calls for the closure of the landfill from the acceptance of municipal waste (excluding H-POWER ash, residue, and unacceptable waste). This section provides the background of the project and the events that have influenced and affected the City's determination that an extension of use of the site is required.

1.2. Recent Events Affecting the Decision to Expand Waimanalo Gulch

On December 24, 2002, the Final Supplemental EIS (FSEIS) for a 14.9 acre expansion of the Waimanalo Gulch Sanitary Landfill was approved. The EIS supported the expansion of the site from 86.5 acres to 101.4 acres. According to the FSEIS the final closure of the last cell was planned to be completed at the end of 5 years from the start of use of the expansion area.

On March 27, 2003, a State Special Use Permit (SUP) Amendment application for the expansion area was also approved. The SUP Amendment identified the specific area requirement at 21 acres which included the space needed for excavation, storage and stockpiling of daily cover material, and other earthwork necessary to support the landfill. The total expansion area was adjusted to 107.5 acres, and the SUP required that on May 1, 2008, that the 200 acre property be restricted from accepting any further municipal waste material and be closed in accordance with an approved closure plan[1].

Three important events have occurred since approval of the FSEIS and the SUP Amendment that are relevant to the background of this EIS. Difficult issues were addressed by several important elected and appointed officials regarding Oahu's need for a landfill requirement. These events, however, also point to the difficulty and infeasibility of selecting a new landfill site to meet the condition of the SUP Amendment and the honoring of the commitment by the prior administration that the site would be closed in 2008. These events include the proceedings of the Mayor's Advisory Committee on Landfill Site Selection; Council Resolution 04-348; and Council Bill 037.

1.2.1. The Mayor's Advisory Committee on Landfill Site Selection

A Mayor's Advisory Committee (Committee) was formed by the previous City administration to comply with Condition No. 1 of the SUP that required that the Committee recommend a new landfill site to the City Council by December 1, 2003.

[1] Docket No. SP87-362, Decision and Order Approving Amendment to Special Use Permit For An Amendment to the Special Use Permit Which Established a Sanitary Landfill on Approximately 86.5 Acres of Land Within the State Land Use Agricultural District at Waimanalo Gulch, Honouliuli, Ewa, Oahu, Hawaii, TMK No. 9-2-3: Portion 72 and Portion 73 (fka TMK No.: 9-2-3: Portion 2 and Portion 13), March 27, 2003.

The Committee was comprised of 15 members selected by the prior mayor from various communities on Oahu. The Committee deliberated between June and December 1, 2003.

A major concern of the Committee during its deliberations involved the prior City administration's commitment to close the existing Waimanalo Gulch Sanitary Landfill (despite the fact that it had remaining capacity) in five years, or by 2008. The Committee chose to consider a possible expansion of Waimanalo Gulch in its deliberations. The Committee developed and used a double blind methodology for ranking the potential sites. This methodology meant that the Committee members were not aware of the identity of the sites being ranked and the consultant also was not allowed to see the identity of the sites as they applied the weighted criteria adopted by the Committee. The result of this process was that the Waimanalo Gulch Expansion was identified as the highest ranked site. This caused a division in the Committee which resulted in the decision-making process being changed from a consensus to a voting basis. This resulted in the Waimanalo Gulch site being removed from consideration and the resignation of four of the members of the Committee. The final action of the Committee was concluded with the delivery of its report to the City Council on December 1, 2003.[2]

The final Committee recommendation included four potential landfill sites and other recommendations for future consideration by the City and Council. The four sites were: Ameron Quarry; Maili Quarry; Makaiwa Gulch; and Nanakuli B. Other Committee recommendations were that: (1) the City Administration and City Council should not zone or permit any site unless a Host Community Benefits package is negotiated with the affected community where a landfill is sited; and, (2) the City is encouraged to land

[2]Report of the Mayor's Advisory Committee (Blue Ribbon Committee) on Landfill Site Selection, December 1, 2003, City & County of Honolulu, Prepared by the Committee's Report Subcommittee, Pacific Waste Consulting Group and R.M. Towill Corporation.

bank sites to reduce the potential for future land use conflicts when another landfill is needed.

1.2.2. Council Resolution 04-348, CD1, FD1, Selecting a Site for a New City Landfill

On December 1, 2004, Resolution 04-348, CD1, FD1, calling for the selection of the Waimanalo Gulch Landfill as the new landfill site was adopted by the City Council. The purpose of the resolution was to address a requirement of the approved SUP Amendment calling for the Council to render a decision on the selection of a new landfill site by December 1, 2004[3].

In preparing for the resolution, the Council's Committee on Public Works and Economic Development (PWED) submitted its Summary Report on its Findings During its Landfill Site Selection Process, November 16, 2004. Potential landfill sites reviewed included Ameron Quarry; Maili Quarry; Makaiwa Gulch; Nanakuli B; and Waimanalo Gulch. Information concerning these sites was obtained from the Department of Environmental Services, the Mayor's Advisory Committee Report, landowners and lessees, other departments and agencies, and the public. As a part of its deliberations the PWED held two public meetings, one in Windward and one in Leeward Oahu, attended by well over a hundred concerned citizens.

The Summary Report did not include recommendations for a specific site, but provided background information for the PWED Committee and Council. It noted that regardless of which site was selected that it would have to go through the EIS process and comply with all Federal and State landfill siting requirements. Environmental concerns raised at that time would need to be addressed during the EIS process.

[3] On April 1, 2004, the LUC approved an amendment to extend the deadline for the City Council to select a new landfill site from June 1, 2004 to December 1, 2004.

The notes to the Summary Report indicated that originally,

> *"Waimanalo Gulch was not included as a recommended site in the final report of the Mayor's Blue Ribbon Committee on Landfill Site Selection. The Office of Information Practices then ruled that this final report was void due to violations of the sunshine law which occurred when the Waimanalo Gulch was taken off the recommended list. The PWED Committee, out of respect for the OIP's decision and in order to preserve the open process had included the Waimanalo Gulch as one of the options available for the next landfill site."*

The Summary Report and Council Resolution 04-348, CD1, FD1, adopted following the Report noted that while the Council must select a landfill site, it recognizes there are promising new methods and processes to reduce the amount of municipal solid waste going into a landfill. The Council resolved that,

> *"…the city must employ sustainability concepts in the handling of its municipal solid waste so that the maximum recyclable materials, energy and alternative products are extracted before any waste is placed in our landfills; and", "…that the council will work with the incoming mayor and his administration to devote all available resources to ensuring the maximum use of recycling and the development of alternative technologies for disposal of municipal solid waste with the intention to effectively eliminate, to the extent possible, the need for a landfill by 2008;" and,*
>
> *"… in accordance with the conditions set forth by the state land use commission, that the Waimanalo Gulch site is selected as the site for the city's landfill because:*
>
> *(1) The site currently has over 15 years capacity left with further expansion, and this capacity can be further extended should the city be successful in reducing*

the amount of waste currently entering the landfill through recycling and the use of new technologies;

(2) The city already owns the property and the infrastructure is already in place, making the site the most economical and least expensive to develop and maintain as a landfill;

(3) Other sites will require a large capital outlay by the city to acquire the land through condemnation and to develop and construct the site and required supporting infrastructure;

(4) A landfill management contract is already in place for 15 years;

(5) This is the only site where the costs and revenues for a landfill are known factors; and

(6) The current landfill operator is committed to implementing necessary improvements to landfill operations to address community concerns regarding visual impact, odors, airborne waste, litter and dust control;"

The resolution concluded with a request that the City Administration immediately contact the Planning Commission, the State Department of Health, and the LUC to satisfy any necessary requirements for the use of the selected landfill site; and, the transmittal of the resolution to the State LUC, Department of Health, the Mayor, the Managing Director, the Department of Environmental Services, and the City Planning Commission.

1.2.3. Mayor's Message 037, Calling for a Veto of Bill 37 (2005), CD2

Council Bill 37 (2005), CD2, was prepared by the City Council to address solid waste and ensure compliance with (1) the provisions of Chapter 342G, HRS, relating to solid waste, and (2) the previously approved SUP permit for the use of Waimanalo Gulch Sanitary Landfill until May 1, 2008. The bill passed the third reading of the Council on February 15, 2006. In particular, the Bill 37 provisions noted,

> *"SECTION 2. Section 9-1.1 ("Findings—Determinations—Goals"), Revised Ordinances of Honolulu 1990, is amended by amending subsection (a) to read as follows:*
>
> *(a) The council of the City and County of Honolulu (the "city") makes the findings and determinations set forth in this section:*
> *(7) Waimanalo Gulch Landfill.*
> *(A) After May 1, 2007, it is in the best interests of the city and its residents to permit the disposal into the Waimanalo Gulch landfill of only: (i) processed solid waste; (ii) any other material of a nonhazardous nature that cannot be converted into processed solid waste solely because such a conversion method does not exist; and (iii) any non-hazardous material that must be disposed of to protect the health and safety of the public due to an emergency or disaster declared by the council. After May 1, 2008, it is in the best interests of the city to comply with the state land use commission's special use permit granted to the city, the terms and conditions of which require that no additional waste be deposited at that facility and that the facility be closed in accordance with an approved closure plan.*
>
> *(B) In addition to facilitating the city's compliance with its special use permit granted by the state land use commission, the disposal parameters established in paragraph (A) are needed to: (i) eliminate litter, odor, and vector problems in the area surrounding the landfill caused by the disposal at the landfill of refuse*

and other types of municipal solid waste: (ii) alleviate the aesthetics problem to some degree; and (iii) set the city on the path towards: (aa) operating and maintaining disposal facilities capable of reducing the volume and complexity of refuse and other solid waste prior to landfill disposal; (bb) intensifying the effort to recycle or reuse solid waste that cannot be combusted, gasified, or vitrified: and (cc) exploring other means to address solid waste disposal."

And,

"SECTION 4. Section 9-1.7, Revised Ordinances of Honolulu 1990, is amended to read as follows:

Sec. 9-1.7 Acceptable and nonacceptable refuse and other solid waste at disposal facilities.

(g) After May 1, 2007, the director shall permit the disposal into the Waimanalo Gulch landfill of only:
(1) Processed solid waste;
(2) Any other material of a non-hazardous nature that cannot be converted to processed solid waste solely because such a conversion method does not exist: and
(3) Any non-hazardous material that must be disposed of to protect the health and safety of the public due to an emergency or disaster declared by the council.

Material produced from the recycling or processing of refuse or other solid waste may be used to cover processed and other solid waste disposed of at the landfill.

(h) After May 1, 2008, the Waimanalo Gulch landfill shall be closed."

Section 5 of the Bill further directed the City to submit to the Council by December 31, 2006, its plan to comply with the ordinance and noted that at a minimum, the City administration shall include in the plan the strategies for and costs of compliance.

On February 28, 2006, the Mayor having reviewed and evaluated the contents of Bill 37, vetoed it citing that it would "cripple" the City's ability to responsibly carry out its municipal solid waste obligations since the expiration of the SUP permit would mean that the City could no longer legally use the Waimanalo Gulch landfill. Mayor's Message No. 037, dated February 28, 2006, noted:

> *"…given the indisputable facts that (1) the City cannot have a new landfill in operation by May 1,2008, and (2) for the foreseeable future, the City needs a landfill on island,[4] the Bill's requirement that the Waimanalo Gulch landfill be closed after that date exposes the City to an untenable choice in 2008 between (1) continued illegal operation of the landfill, thereby subjecting the City to possible regulatory fines, injunctions, and other lawsuits, or (2) the cessation of any landfill activity, which will mean no collection of municipal solid waste, island-wide. Neither alternative is acceptable to me, nor to you and your constituents. As such, Bill 37, C.D. 2, cannot be allowed to become law."*

And,

> *"…even if a new landfill site is selected this year, the reality of our current situation is that the City will not be able to cease use of the Waimanalo Gulch landfill by May 1, 2008. The planning, permitting and construction of an alternate landfill location will take longer than the two years remaining before that deadline.*

[4] "We are not aware of any company that has obtained USDA approval to ship waste off-island, nor are we aware of any technology that can eliminate our solid waste without residue that needs disposal." Mayor's Message No. 037, February 28, 2006.

Other alternatives such as shipping off-island or new technologies have many issues, familiar to the Council, which will not be resolved before May 1, 2008. However reluctantly, the City must therefore seek to extend the permits for operating the Waimanalo Gulch landfill in any event. If Bill 37, C.D. 2, becomes law, please understand that the City would be prohibited by its own law from pursuing regulatory approvals to operate the Waimanalo Gulch landfill beyond 2008, even for extensions of a limited duration or scope. Consequently, we will be further hampered in our efforts to resolve this difficult and long-standing matter."

Mayor's Message No. 037 identified a number of actions taken to address and improve management of the solid waste all of Oahu's citizens and visitors produce, including the search for an alternative site for a new landfill.

"In addition to all these efforts, I was personally committed to reexamining the city's options for locating a new municipal landfill to ensure that no viable alternative sites had been overlooked. In both the final report of the Mayor's Blue Ribbon Panel in 2003 and the 2004 updated Solid Waste Integrated Management Plan, five of the eight final sites evaluated were on the Waianae Coast. I have consistently stated that it is patently unfair for the Leeward Coast to be the sole repository for the island's opala.

…we reexamined all the potential landfill sites on this island, trying to determine if there were realistic options elsewhere on Oahu. We looked at Kapaa Quarry on the Windward side, and had discussions with Ameron, which operates the quarry there. We looked at Poamoho Gulch on the North Shore. We looked hard at all the possible sites that would enable the City to relocate its municipal landfill operations and thereby bring a measure of fairness to the Leeward Coast. Ultimately, none of those sites was without serious impediments.

> *Regrettably, we are compelled to reaffirm the conclusion reached by the Council in Resolution No. 04-348, C.D. 1, F.D. 1, that the Waimanalo Gulch landfill is the most viable, least expensive alternative for the citizens of Honolulu beyond May 2008."*

In closing, the message noted that while a landfill is of vital necessity on Oahu, that a reduction of this dependency requires the efforts of both the City and the Council.

> *"It is clear that reducing the need for a landfill remains a goal of my Administration and the Council, but we will need your cooperation to advance that goal. I ask your cooperation in working with my Administration to deal with the solid waste disposal challenge in a constructive manner for the benefit of all our constituents."*

The content of Mayor's Message 037 established the reason for the veto of Council Bill 37, and the selection of Waimanalo Gulch. However, the events involving the Mayor's Advisory Committee, Council Resolution 04-348, and the veto, do not obviate the requirements of Hawaii's Environmental Impact Statement law and regulation, Chapter 343, Hawaii Revised Statutes (HRS), and Chapter 11-200, Hawaii Administrative Rules (HAR). The preparation and filing of the subject Environmental Impact Statement Preparation Notice (EISPN) and the future filing of the required EIS documents are intended to address these requirements.

1.3. Previously Filed Environmental Impact Statement Compliance Documents

Chapter 343, HRS, and Chapter 11-200, HAR, environmental compliance documents have been previously filed for the use of this site. These documents include the: Revised Environmental Impact Statement for the Leeward Sanitary Landfill at Waimanalo Gulch Site and Ohikilolo Site, City & County of Honolulu, March 1984, filed to utilize an area of approximately 60.5 acres for landfilling.

The Revised Draft Supplemental Environmental Impact Statement for the Waimanalo Gulch Sanitary Landfill Expansion, City & County of Honolulu, June 2001, was initially filed to utilize the remaining space of the landfill, but was subsequently revised reducing both the timeframe and the area that would be used in the final published version of this document. See below.

The Final Supplemental Environmental Impact Statement for the Waimanalo Gulch Sanitary Landfill Expansion, City & County of Honolulu, December 2002, was prepared to utilize only a limited area of the landfill that would expire within 5 years, or by 2008. This document was supported by the prior City administration's commitment to close the site at the end of 5 years.

Section 2
Introduction

2.1. Project Location and Area of Use

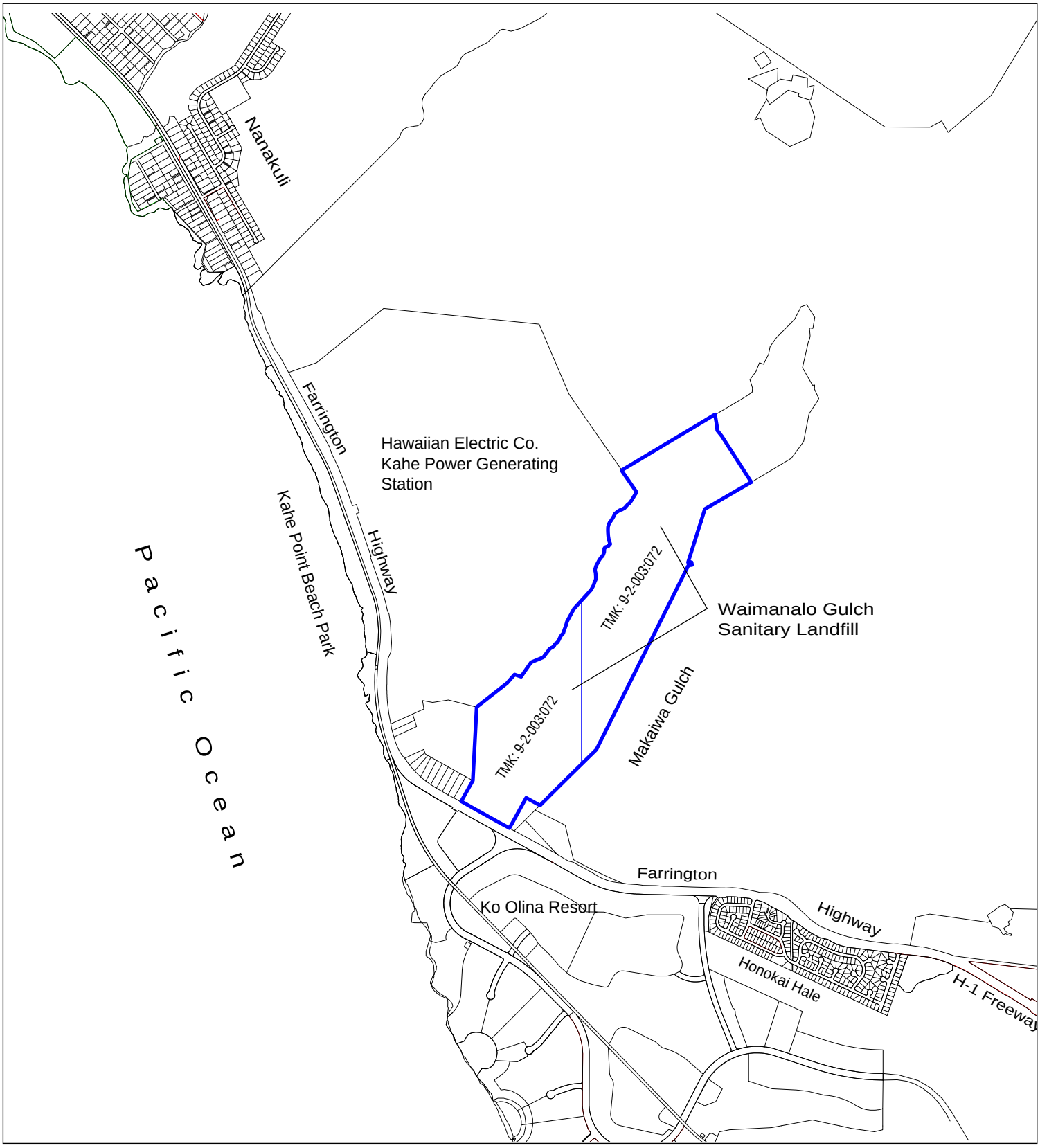
Waimanalo Gulch Sanitary Landfill is located in Waimanalo Gulch, Kahe Valley, Oahu. The property is owned by the City & County of Honolulu, and under jurisdiction of the Department of Environmental Services (ENV). The landfill is operated for ENV by Waste Management of Hawaii, Inc.

The landfill became operational in September 1989 and comprises an area of approximately 200 acres (**Figure 2-1, Waimanalo Gulch Landfill Property**). According to records for the project filed with the Department of Planning and Permitting (DPP), approximately 107.5 acres of the site are comprised of used landfill area, operational and maintenance area, internal roadway area, and the current space in use for landfill purposes. The remaining acreage of the site comprising 92.5 acres is proposed to be used for the future expansion area (**Figure 2-2, Waimanalo Gulch Sanitary Landfill Expansion Site**). A breakdown of this site acreage is provided in **Table 2-1**, below:

Table 2-1

Existing and Proposed Use of Waimanalo Gulch Sanitary Landfill

Acreage	Description
60.5	Used Landfill Area, Scheduled for Closure
20.0	Administrative and Operational Support
6.0	Roadway and Drainage Area Improvements
86.5	Subtotal
21.0	2003 Expansion Area
107.5	Subtotal
92.5	2008 Planned Expansion Area
200.0	Total Approximate Area of Site



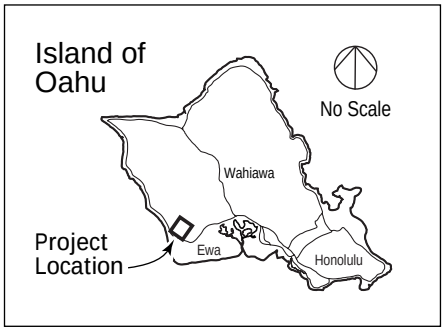


Figure 2-1
Waimanalo Gulch Landfill Property
Waimanalo Gulch Sanitary Landfill Expansion
Department of Environmental Services

0 2000 Feet 4000

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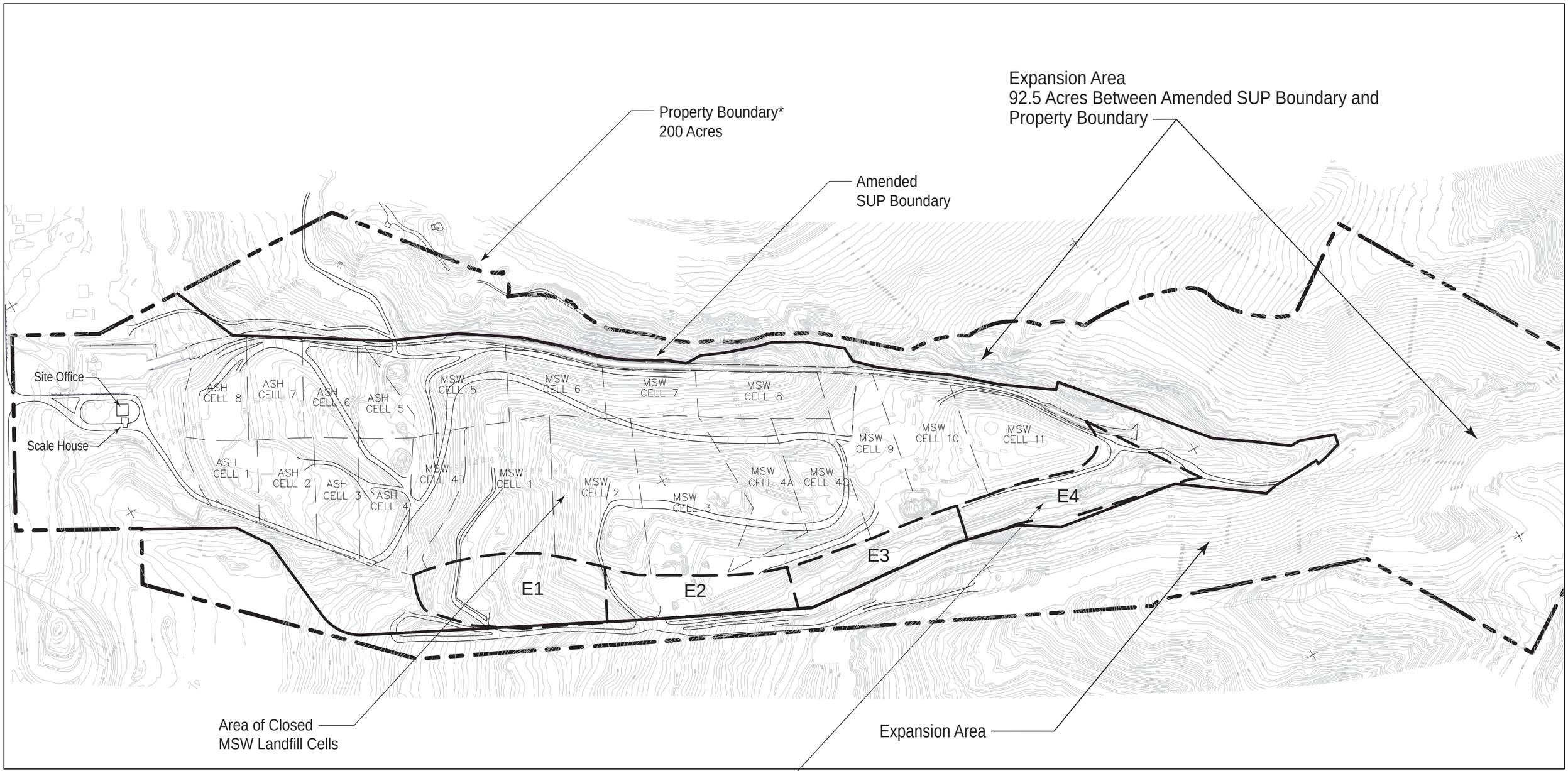

Note: *Property boundary subject is subject to a 100 foot buffer from landfilling activities.

Source: Base Drawing - GeoSyntec Consultants, Site Plan and Topography, Waimanalo Gulch Landfill, Ewa Beach Oahu, Hawaii, April 2006

Figure 2-2
Waimanalo Gulch Santiary Landfill Expansion Site
Waimanalo Gulch Sanitary Landfill Expansion
Department of Environmental Services

0 400 Feet 800

R.M. TOWILL CORPORATION Sept 2006

The 92.5 acre area is proposed for uses that include: construction of landfill cells; earthwork to support construction of an access roadway, drainage controls, berms and stability slopes; and excavation and stockpiling of cover material. A 100 foot buffer will be maintained around the perimeter of the property boundary to reduce the potential for impacts to neighboring properties.

2.2. Purpose of the Environmental Impact Statement Preparation Notice

This Environmental Impact Statement Preparation Notice (EISPN) is being filed with the State Office of Environmental Quality Control (OEQC) in compliance with the requirements of Chapter 343, HRS, and Chapter 11-200, HAR. The triggers that require preparation of this EIS document involve: (1) the use of state or county lands or funds; and (2) the proposed action involving a landfill[1].

This EISPN and the subsequent Draft Environmental Impact Statement (DEIS) and Final Environmental Impact Statement (FEIS) will provide information and evaluation of the potential for environmental impacts on the natural and built environment associated with the planned 92.5 acre expansion of the Waimanalo Gulch Sanitary Landfill. This EISPN will also inform interested parties of the proposed project and will seek public comment on subject areas that should be addressed in the preparation and filing of the DEIS.

2.3. Need for the Proposed Project

The proposed project is required to address the municipal waste disposal needs of the island of Oahu beyond May 1, 2008, when the permitted 21 acre area of the site will expire in accordance with a condition of State Special Use Permit (SUP), Docket No.

[1] Chapter 343-5, Hawaii Revised Statutes, Environmental Impact Statements, Applicability and Requirements.

SP87-362. According to ENV and the site operator, Waste Management of Hawaii, there is sufficient space remaining within the existing 21 acre expansion area to at least the year 2008, contingent on no unexpected events that would prematurely exhaust this capacity[2].

Waimanalo Gulch receives solid waste from all of Oahu. Approximately 800 tons[3] per day from municipal solid waste (MSW) and recycling residue, and approximately 600 tons per day from ash, residue, and unacceptable waste, from the Honolulu Program of Waste Energy Recovery (H-POWER), for a total of approximately 1,400 tons daily is accepted or delivered. The closure of the landfill beyond May 1, 2008 without a means of disposal of municipal, recycling, and H-POWER refuse is unacceptable because it would fail to provide for the sanitary treatment of municipal generated waste essential to the maintenance of public health and safety on a islandwide level.

ENV, which is responsible for the disposal and management of refuse in the City & County of Honolulu, proposes to address this requirement by utilizing the remaining 92.5 acres of the existing Waimanalo Gulch for future landfilling purposes (a 100 foot buffer, self-imposed, at the property boundary would remain in place). This area of expansion will extend the life of the site for a minimum of 15 additional years beyond the May 2008 timeframe at the current rate of disposal.

[2] These unexpected events primarily include a hurricane, tsunami, or earthquake induced event where the landfill would be utilized on an emergency basis to serve in the cleanup and recovery effort for the disposal of storm and disaster generated debris.

[3] This includes a small amount of recycling residue associated with waste generated from the recycling effort. Department of Environmental Services, August 2006.

2.4. Community EIS Scoping Meetings

2.4.1. Background

A series of four EIS Community Scoping Meetings was convened by ENV between July 10 and August 10, 2006 to obtain community input on environmental issues that the public feels should be addressed in preparation of the EIS for the expansion of the Waimanalo Gulch Sanitary Landfill. Waimanalo Gulch is located in proximity to the boundaries of the Nanakuli and Ewa regions of Oahu but is used islandwide by all Oahu communities for the disposal of municipal refuse. The public scoping meetings were held to obtain input from the communities closest to the landfill, as well as other communities that are important users of the facility. The meetings were held on the following dates and at the following locations:

Mtg. No. 1	July 10, 2006	Nanakuli High and Intermediate School 98-980 Nanakuli Avenue Waianae, Hawaii 96792
Mtg. No. 2	July 11, 2006	Benjamin Parker Elementary School 45-259 Waikalua Road Kaneohe, Hawaii 96744
Mtg. No. 3	July 27, 2006	Mission Memorial Auditorium 550 South King Street Honolulu, Hawaii 96813
Mtg. No. 4	August 10, 2006[4]	Kapolei Hale 1000 Uluohia Street Kapolei, Hawaii 96707

[4] The date for this meeting was changed from July 26th which conflicted with the Neighborhood Board No. 34, Makakilo/Kapolei scheduled meeting.

2.4.2. EIS Public Scoping Meeting Agenda

Each of the four scoping meetings was conducted by a meeting facilitator who explained that the purpose of the meetings is to obtain community input on environmental issues the public feels should be addressed in preparation of the project EIS. The same agenda was used for all meetings and included:

A. A statement of purpose for the meeting;
B. A statement by ENV concerning the need for the project and the events that have transpired since 2003 when the last EIS for the expansion of Waimanalo Gulch was approved;
C. Time was allotted during the meeting to hear community concerns on issues or subject areas that they felt should be addressed in the EIS;
D. The facilitator summarized the input provided by the community during the last 15-30 minutes of the meeting; and
E. The facilitator and ENV thanked the community for its attendance and the meeting adjourned.

2.4.3. List of Participants

Participants who signed the attendance sheets for this series of meetings are provided in **Appendix A - EIS Public Scoping Conducted for the Proposed Expansion of the Waimanalo Gulch Sanitary Landfill**.

2.4.4 Summary of Issues and Concerns Raised

A number of issues and concerns were raised by the community during the series of scoping meetings. The following list is a consolidation of all issues and comments received when the comment period ended on August 30, 2006. The comments will be

addressed in the Draft EIS, as appropriate to the requirements of Chapter 343, HRS, and Chapter 11-200, HAR:

Note: Issues that are in **bold** are those that were received in writing by August 30, 2006, and are not duplicative of what was already stated by the community during the course of the meetings.

General

- The 2001 EIS should not be used as the basis for this EIS
- EIS needs to clearly illustrate what expansion is taking place
- Need to provide number of years of continuing operation as well as the number of acres the expansion will take
- Need to clarify the location, size of the area and what the current zoning is. Documents need to be very clear and specify the boundaries
- Need to look at mainland sewage sludge studies
- New ash area that is covered in EIS needs to be specified where and size
- Impact of other new proposed private sites such as Nanakuli B – do not need both
- Need to identify impacts to RFP process
- Need to consider federal draft rules for shipping of waste
- Need to look seriously at all sites available around the island
- Need to discuss worst case scenario contingencies including earthquake etc.
- Need to determine how the DEIS will tie-in to the City's comprehensive, Solid Waste Integrated Management Plan (SWIMP) update that the city is supposed to prepare
- There is a need to be aware that other areas of the island have hosted landfill sites in the past until their capacity was reached i.e. Aikahi, Kawaianui Marsh, Kapa`a Quarry etc. – they have not all been on the Leeward side
- The EIS needs to reflect the current status at the landfill not the preferred status
- There was a concern expressed about the ability of a local planning firm to be neutral on this issue with all the political pressure
- Need to include all Federal, state and local laws that affect landfill operations
- Need to address Waste Management's 1999 contract with Mayor Harris
- Need clarity between airspace and landfill

- Need to explain why the community should believe the City at this point and why promises have not been kept
- HPOWER has never failed an EPA test on its ash – need to know why DOH has not approved reuse for concrete etc.
- Need to deal with the reality that because of our tourist economy or per person generation of waste is 7 pounds per day instead of the national average of 4 pounds
- Need to consult the County of Hawai`i who has just completed review of 61 alternatives and chosen 3 proven technologies to address this same issue
- **EIS needs to comply with all EIS rules and statutes – including those that require "good faith"**
- **Must not just address expansion but cumulative impacts since the 1980s**

Closure of Landfill

- EIS needs to focus on closing of Waimanalo Gulch now or as soon as possible – should not just go for life of area but should have a plan to reduce waste stream as quickly as possible to provide for closing sooner rather than later
- Review all alternatives available to reduce the waste stream with the intent of closing the landfill as soon as possible
- Need to consider the fact that many landowners and developers were fully aware of the landfill's existence pre-development of their current homes and projects and moved in anyway
- Landowners in the area maintain that they were told the landfill would close in '08 when they bought and had depended on these representations in making their decisions
- Need for active recycling program that would cut down the need for a landfill; need for a sensible plan that would allow for the earliest possible closure of the landfill
- Need for finite planning – Hawai`i should be at the cutting edge and shouldn't worry about costs to keep it a paradise
- City must explain why we are here – other meetings have been held in the past which promised closure of the landfill by 08 and it is still open
- EIS needs to provide factual/historic information for the issue of the promised closure in 2008 and the issuance of an operating permit that required closure in '08
- **Need a comprehensive closure plan for the existing Waimanalo Gulch landfill site irrespective of the proposed closure date**
- **Need to address the State Land Use Commission Decision and Order calling for closure in 2008**

- **Need to address the conflicting position of the 1984/1985 EIS which stated that only 57+/- of the 200 or so acres owned were feasible for utilization as a landfill due to the slop angles of the hillsides.**
- **Close it and put it somewhere else on the island**

Environmental

- Need to explain what the relationship will be between the newly created topography of the expanded landfill, and the prevailing wind patterns of the area including any impact on ocean currents and near shore water temperatures as well as any impacts the new topography may have on adjacent landowners (including the slope integrity along shared property lines, and heights and distances along these lines)
- Need to review Hawaiian Electric Company's wind study and explain the logic of the increase in height of the landfill in light of the wind energy study
- Need an assessment of the static stability of the landfill both ash and solid waste areas including consideration of past history as well as the dynamic stability of the landfill recognizing the fact that we live in a seismically active area
- Need to address how much of the mountain land space is being shaved for the landfill and discuss blasting or grading setbacks that are necessary
- Need to address environmental impacts of potential hazards
- Need to understand how 20 years of further capacity will be provided without excavation as previously stated – if there is excavation need to address where the soil will go
- Need to review recent State of Hawai`i Supreme Court case (Hokulia) regarding State DOH responsibility for water quality in relation to how it is being affected by the landfill e.g. ocean run off
- If expansion moves forward, storm water retention basins, leachate and gas monitoring systems are needed
- Address future ash monofills
- Need to know chemical composition of ash
- The location of potential hazards such as asbestos within the landfill need to be identified
- **Address unknown effects to the land, water, and air**
- **Need to address odor issues – will the expansion take sludge and if so for how long**
- **How is the liner tested and how secure is it needs to be addressed**
- **The ability of the rock berm to handle the expansion needs to be discussed**
- **Needs to address the need for a surface water management plan**
- **Need fugitive trash plan designed to end this problem**

Infrastructure

- Impact to landfill when H-POWER is down is an issue
- Impact on highway; road blockages, etc.
- Maintenance issues along Farrington Highway with heavy truck use – standards for adequate maintenance of this highway
- Any new access points and their impacts on adjacent property owners

Economic Issues

- Economic impacts
- Costs of closing landfill
- Need a solution to address lost revenues to the city should the solid waste go to a private landfill – tipping fees

Explore Alternatives

- Need to look at all alternatives that are appearing (i.e., Plasma ARC gasification, etc.) and determine how these alternatives fit in with everything else that the City is doing – including how they can reduce the waste stream to allow for the earliest closing possible of the landfill
- Need to explore all viable alternatives
- Need to look at other places, especially Europe, and how they dispose of their waste, the kinds of incentives/taxes/sanctions they use to reshape people's attitudes at the curbside
- Expansion should be limited to a specific time and coupled with a plan to reduce the waste stream
- Need to address things that can be done to reduce the amount of waste that goes to the landfill – curbside recycling, alternative technologies, partnerships with the business community to promote recycling and reuse, etc. Need to get innovative and creative.
- Need to increase HPOWER and explore reuse of ash – HPOWER type facilities could be decentralized and built anywhere
- Need to address trans-shipping of waste
- Need to address providing a funding stream to address alternatives
- Need to speed up action on alternatives
- **Plasma Arc Gasification – Jacoby Inc.**
- **Need to address the implementation of the comprehensive and mandatory island-wide recycling program (proposed to be done by December 2006)**
- **Alternatives looked at must be explained including why they are rejected – the exploration must be rigorous**

Facilities Management

- Need to look at as a facilities management problem and apply technologies correctly (especially as pertains to smells and debris)
- The EIS should address the status of all violations and what has been done regarding violations – need to close violations prior to new EIS and permit
- Hours of operation need to be clear and adhered to – the community recently expressed concerns about night operations taking place and the impact of the lighting on houses and neighborhoods
- Need to address overfilling of landfill site
- Need to look at rubbish control and sludge issues
- Need a specific operational plan for soil cover
- **Explain the contracts between the city and Waste Management Inc and the timing of these contracts.**
- **There should be a clearly identified, separate (physically divided) MSW and ash monofill cells for the expansion**
- **A separate area should be identified for asbestos disposal**
- **A full discussion of all management techniques must be included**
- **Impact of expanded operations on adjacent property owners including line of sight issues**

Monitoring and Enforcement

- Need to provide for air quality monitoring, testing as it corresponds to traffic at the site, and along the route to/from the site
- Need to examine enforcement capability and capacity of DOH – including the lack of resources required for monitoring, enforcement, reporting, and accountability
- Major dirt and dust issues; monitoring doesn't work – need for more data collection
- Need to consider past problems with the landfill (i.e., EPA violations, leachate collection system) and be sure the DEIS identifies ways to assure that they do not happen again
- Need to address and explain the $2.8 million fine that has been imposed on the landfill by the Department of Health and assure that these types of practices/violations do not continue in the expansion
- Need to assure that a system is in place to hold the operator accountable
- Monitoring should be adequate so that after the fact permit modification should not happen – example the permit modification needed for the leachate sump pump system
- Need to monitor methane gas levels

- Need to have rigid standards and adequate monitoring to ensure the health and safety of the community
- Need regular monitoring by the Department of Environmental Services
- Need to address who will be responsible for enforcement of things in the EIS and what guarantees will be made in the EIS
- Need to include status of compliance with current permit – by modifying the permit, are we negating prior violations which should not be allowed
- **Need to assure timely reporting by the operator and public access to these reports – consider webcam on site for monitoring purposes**

Leachates

- Need to also address leachate and its impact to groundwater, runoff to ocean, subsidence and slippage resulting from seismic activity, methane fires, and EPA violations relating to gas collection systems
- Need to look back and forward – what has been/will be done to take care of leachate problems and make sure these do not reoccur in the future
- Need to address leachate pumped out to the sewer treatment plant and what happens to it and what is its effect on the final outflow water quality from the sewer treatment plant
- Need to discuss comprehensively the leachate management system – including possible failure of the geo-membrane lining system and how it will be taken care of

Environmental Justice

- Need to address “environmental justice” along the Leeward Coast and as it pertains to this landfill, including the multitude of existing private and proposed sites in the area

Health impacts

- Need to include discussion of potential health hazards
- Who is liable for the health costs to residents should the landfill cause health problems
- When considering expansion, need to discuss EPA finding regarding gas collection system issues
- Compensation to neighbors for health impacts
- Impact of multiple landfills, both public and private, on air quality needs to be addressed
- Higher standards are needed for dust and debris and possible impacts to health

Community issues

- The DEIS needs to deal with the lack of sensitivity to cultural sites and issues
- What communities will benefit - who will be selected and how will the compensation benefits committees be set up also needs to be addressed
- Need to include impact of non-closure of Waimanalo Gulch on for-profit businesses in the area or planning to locate in the area
- Smells, trash escape, floating dust, truck traffic and speeding, trash on road, visual blight all need to be addressed
- Landfill should not be going above the ridge lines, which can be seen from Waianae
- **One of the conditions of the permit was to allow for ridgeline and site views being maintained**
- **No trucks should be parked on Farrington Highway waiting for entrance to the facility**
- **Trucks should be cleaned when leaving facility so the there is no mud or dirt dropped on the highway**
- **Route along Farrington Highway should be kept clean of rubbish or dirt generated by the facility**
- **There should be identification of how the Waimanalo Gulch Sanitary Landfill will be maintained facing Farrington Highway, landscaped to reflect surrounding areas, park-like upkeep, greenbelt, setbacks, etc.**

Section 3
Project Description

3.1. Project Location and Site Characteristics

The Waimanalo Gulch Sanitary Landfill is located in Waimanalo Gulch, Kahe Valley, Oahu (**Figure 2-1, Waimanalo Gulch Landfill Property**). The landfill is an elongated shaped property oriented in a roughly north-south alignment. Approximately 92.5 acres of the 200 acre property is unused and is proposed for landfill expansion (**Figure 2-2, Waimanalo Gulch Sanitary Landfill Expansion Site**). The property is owned by the City & County of Honolulu, and under jurisdiction of the Department of Environmental Services (ENV). The landfill is operated for ENV by Waste Management of Hawaii, Inc.

Access to the property is from Farrington Highway (FASP No. S-900(4)) serving as the primary thoroughfare for the area. Farrington Highway is under jurisdiction and management of the State Department of Transportation (DOT), Highways Division.

3.2. Facility Characteristics

The Waimanalo Gulch Sanitary Landfill has been in operation since September 1989. The landfill accepts municipal refuse in the form of municipal solid waste (MSW), recycling residue, and H-POWER[1] ash, residue, and unacceptable waste. These refuse sources come from waste collected by the City & County of Honolulu, private collection companies, residential and commercial self-haulers, non-hazardous industrial solid waste generators, and sludge from wastewater treatment plants.

[1] The H-POWER facility has been in operation since 1987 and processes MSW into refuse derived fuel (RDF) for combustion, while generating up to 57 megawatts of energy from this renewable resource. According to Covanta H-POWER produces up to approximately seven (7) percent of the electricity needs of the Island of Oahu. (Covanta, 2006, http://www.honoluluhpower.com/About.asp).

The landfill is also the only facility on the island of Oahu that meets requirements for the Resource Conservation and Recovery Act (RCRA) Federal Regulations Subtitle D which includes landfill leachate and gas monitoring and collection. RCRA Subtitle D includes regulations on landfill location, facility design standards, operating requirements, groundwater monitoring and corrective action, closure, and post-closure care, and financial assurance that the landfill operator is capable of completing and monitoring final landfill closure.

RCRA Subtitle D regulations governing location restrict siting a municipal landfill near airports or in ecologically or geographically sensitive areas (e.g., near or within flood plains, fault lines, seismic zones, and unstable terrain). Operating requirements include prohibiting regulated hazardous waste, applying daily cover, controlling disease vector populations, monitoring methane gas, restricting public access, controlling storm water run-off, protecting surface water from pollutants, and maintaining appropriate records. Design standards require a landfill to have a composite liner made of a synthetic flexible membrane over a compacted clay layer. All landfills must have groundwater monitoring wells, and landfill operators are responsible for cleaning up any contamination if it does occur. Upon closure, the landfill owner/operator is responsible for capping the landfill and monitoring groundwater, methane gas and leachate for 30 years. Landfill owners/operators must also prove financial capability to cover costs of closure, post-closure, and if necessary, clean-up activities.

The landfill receives approximately 800 tons per day (tpd) of MSW and approximately 600 tons per day from H-POWER. The MSW is received from all areas of Oahu. The H-POWER ash and noncombustible residue has been processed and reduced by combustion which creates electricity as a by-product.

Waimanalo Gulch Sanitary Landfill is open to receive solid waste seven days a week, from 7:00 am to 4:30 pm, except on Christmas and New Year's Day. H-POWER generated refuse is delivered twenty-four hours a day according to refuse disposal

requirements. Yard lighting is provided to facilitate delivery of materials from H-POWER after regular working hours. Security is provided at the site daily from 3:30 p.m. to 6:30 a.m.

The proposed expansion area is comprised of heavily weathered boulder and cobble rubble with a generally thin soil cover. The land is classified as rock land (rRK) and stony steep land (rSY) by the U.S. Department of Agriculture (1972).

3.3. Construction Requirements

Construction activities will include mobilization, clearing, excavation and grading, and landscaping. During mobilization, ground disturbance during clearing and grading shall be held to the minimum area necessary to accommodate movement of heavy equipment and materials required for construction. This will insure protection of the site from erosion during storm conditions. Staging and stockpile areas shall be prepared as necessary with appropriate storm water discharge pollution prevention features, fugitive dust containment, parking areas for workers, water, and waste water facilities.

The development process of constructing the proposed sanitary landfill will include clearing and grubbing of vegetation for initial delineation of the expansion area including areas of the site that will be used for access roads, drainage, and stockpiling of cover material; excavation and grading to provide slope stabilization and the construction of landfill cells; and, installation of monitoring equipment and wells, and liner material.

Upon completion of construction activities restoration of the site will include, but is not limited to, the following:

Modifications to existing utilities, including power, water, or sewage lines will be restored to their pre-existing operational condition.

Roadways providing access to the site and surrounding areas shall be cleared of construction debris. Any damage from construction traffic will be repaired. Gates and/or fencing removed to provide access to the site shall be replaced and/or repaired.

All areas damaged by construction staging shall be restored. Exposed ground areas shall be seeded, hydro-mulched, or revegetated, as appropriate.

Information concerning these construction details and discussion of potential impacts and recommended mitigation measures relating to construction associated noise, odor, airborne litter, and storm water erosion will be provided in the Draft EIS.

3.4. Project Schedule and Cost

The proposed project will commence on or prior to May 1, 2008, contingent on acquisition of the necessary land use permits and approvals to operate a municipal sanitary landfill.

A landfill cell will be filled completely with municipal refuse or ash and residue before starting to fill another cell. The preparation of the final cell in the proposed expansion area is planned to be completed when the landfill space is nearing exhaustion. This is anticipated to take place approximately 15 years after the start of use of the expansion area in 2008.

A preliminary cost estimate for construction and operation of the project is approximately $5 million per year over the approximately 15 year period of construction. Funding for the project is planned to be provided by the refuse operating budget of ENV.

Section 4
Environmental Setting

This section provides a description of the environmental setting of the site. A further assessment of the environmental consequences of the proposed action and mitigation measures to reduce or eliminate the potential for negative impacts will be provided in the project Draft EIS.

4.1. Climate and Rainfall

The climate of Waimanalo Gulch and the surrounding Nanakuli vicinity is arid due to the "rain-shadow" effect of the Waianae Range. Average rainfall is approximately 15 inches per year. Annual precipitation within the sanitary landfill expansion area is expected to range from approximately 15 to 20 inches, based on prior Waimanalo Gulch landfill rainfall data collected at the site.

The Waianae weather station, 10 feet above mean sea level (msl), has registered extreme temperature records of 45 degrees Fahrenheit (F) and 96 degrees F (DBEDT, 1996). The proposed landfill expansion site is located at an elevation of approximately ±400 feet msl, with average temperatures expected to be several degrees cooler than the lower elevation areas.

Tradewinds at the site normally have a northeasterly origin. The Waianae and Koolau Mountains tend to sweep air masses along the Nanakuli coastline in a roughly southeast to northwest direction at an average annual speed of 10 knots. Between October and April, Hawaii may come under the influence of southerly winds associated with Kona storms or of southerly winds that precede cold fronts[1].

[1] Atlas of Hawaii, 2nd Edition, 1983).

4.2. Geology

4.2.1. Geologic Setting

The Island of Oahu covers approximately 604 square miles of land area and was formed by the merging of basaltic lava flows from the Waianae and Koolau shield volcanoes. The Waianae Range contains the older basalt-rock formations on the island. The proposed project vicinity is located within one of a series of parallel trending gulches that drain from the upper reaches of the southwest portion of the Waianae Range down towards the southwest-facing coastline.

Erosion has removed most of the western slope of the Waianae shield and exposed the internal structure of the volcano. Overlying the volcanic sequences and filling valleys along the coastal plains is a geologic lithology known as "caprock." Caprock forms a cover overlying a volcanic field or range along much of the Oahu coastline and is generally only about 1/500th as permeable as the main island volcanic aquifers (Hufen and others, 1980). The caprock consists primarily of alluvium, terrigenous and marine clays, and fossilized coral reef with associated detritus (rock fragments or organic particles that result directly from coral disintegration)[2]. Where caprock occurs, rainfall, surface water, and runoff discharge are prevented from percolating into the aquifer.

4.2.2. Soils

According to the U.S. Department of Agriculture[3], there are two soil associations found at the project site: Lualualei-Fill Land-Ewa Association, and Rocky Land-Stony Steep Land Association.

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[2] Rust Environment & Infrastructure, Inc. 1993, revised 1997. “Groundwater and Leachate Monitoring Plan for Waimanalo Gulch Sanitary Landfill, Ewa Beach, Oahu, Hawaii.”

[3] U.S. Department of Agriculture, 1972. "Soil Survey of Islands of Kauai, Oahu, Hawaii, Molokai, and Lanai, State of Hawaii."

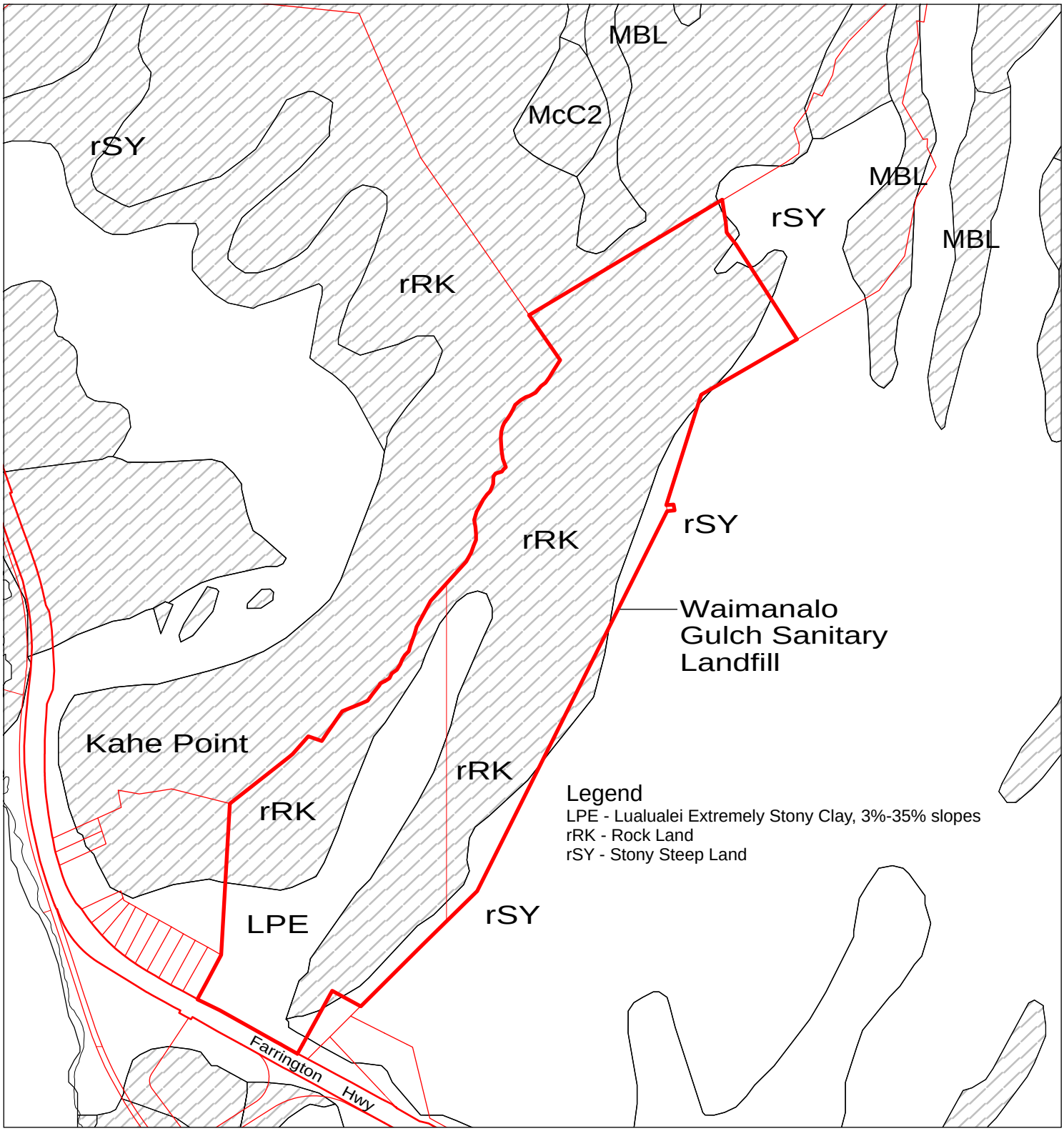
The Lualualei-Fill Land-Ewa Association consists of deep, nearly level to moderately sloping, well-drained soils that have fine textured or moderately fine textured subsoil or underlying material, and areas of fill land, on coastal plains. This soil association is primarily located from coastal areas to approximately 1,500 feet mauka of Farrington Highway, within the landfill property.

The Rocky Land-Stony Steep Land Association consists of steep to precipitous, well-drained to excessively drained, rocky and stony land. This soil association is located within the remainder of the approximately 200 acre landfill property.

Soil types at the project site consist of Lualualei Extremely Stony Clay, 3 to 35 percent slopes (LPE), Rock Land (rRK), and small areas of Stony Steep Land (rSY) (USDA, 1972) (**Figure 4-1, Soils Map**).

LPE, soils occur on talus slopes on Oahu and Kauai. The slope range is from 3 to 35 percent, but in most places the soil is moderately sloping to steep. This soil type is similar to Lualualei clay, 0 to 2 percent slopes, except that there are many stones on the surface and in the profile. It is impractical to cultivate this soil unless the stones are removed. Runoff is medium to rapid, and erosion hazard is moderate to severe. This soil type is primarily used for pasture.

rRK, is a type of soil where exposed rock covers 25% to 90% of the surface. Rock outcrops and very shallow soils are the main characteristics. The rock outcrops are comprised primarily of basalt and andosite. This land type is nearly level to very steep. Soil materials associated with the rock outcrops are very sticky and very plastic, and have a high shrink-swell potential when moisture-laden. The slopes generally range from 40 to 70 percent with elevations of 100 to 1,500 feet. Stones and boulders usually cover 50 to 90 percent of the surface. There are usually small amounts of soil among the stones that provide a foothold for plants. The natural vegetation consists of kiawe, koa haole, and grasses.



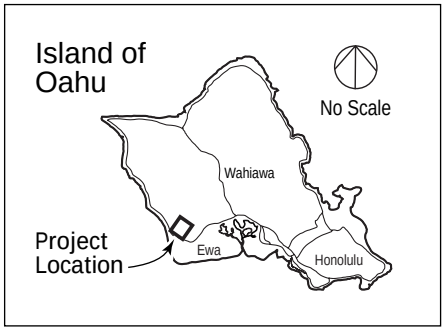


Figure 4-1
Soils Map
Waimanalo Gulch Sanitary Landfill Expansion
Department of Environmental Services

0 1000 Feet 2000

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rRK soil properties are not conducive to urban development, as they can cause buildings to slide and foundations and retaining walls to crack when the soil becomes saturated with water. Intensive land use development on this soil type is therefore usually difficult and costly because of construction restraints and requirements. Foundations for buildings and structures require additional construction effort to achieve a stable base for development, which are provided for the administrative buildings within the existing landfill site.

rSY, consists of a mass of boulders and stones deposited by water and gravity on side slopes of drainageways. It occurs on the island of Oahu. The slopes range from 40 to 70 percent with elevations from 100 to 1,500 feet. Annual rainfall in these areas range from 20 to 80 inches.

Stones and boulders cover 50 to 90 percent of the rSY soil type. There is a small amount of soil among the stones that provide a foothold for plants. Rock outcrops occur in many places. This land type is used for wildlife habitat and recreation.

Further information relative to the geologic setting and soils found at the project site will be provided in the Draft EIS. This will include a discussion of the potential for adverse impacts and the mitigation measures that will be employed to ensure against adverse effects.

4.3. Surface Water Resources

There are three sources of surface water that affects WGSL: precipitation (rainfall); surface run-off, which affects the generation of leachate; and potable water used for sanitary landfill operations. There are no surface perennial streams located on the project site.

Precipitation at the project site reflects the extremely arid conditions at the landfill, with maximum annual rainfall averaging approximately 20 inches.

Approximately 80% of the surface water runoff comes from areas upstream of the landfill[4]. These surface flows are intercepted along the property boundary and within the landfill site by engineered drainage control facilities including berms and a stormwater drainage control channel located along the eastern portion of the site.

The sanitary landfill process requires limited use of water sprinkling to control fugitive dust generated by compacting and daily placement of intermediate cover on waste materials. This includes the transiting of vehicles from the project site that requires occasional wetting of the ground to reduce airborne dust.

Further information and discussion relative to surface water control and management will be provided in the Draft EIS. This will include a discussion of regulatory requirements and compliance, and a description of the drainage control system that will be employed to manage runoff.

4.4. Groundwater and Hydrology

4.4.1. General Groundwater Characteristics

The principal groundwater reservoir in the southeastern portion of the Waianae Range is in the middle and lower members of the Waianae Volcanic Series. The volcanic aquifers are recharged by infiltration of rainfall and surface runoff originating in the Waianae and Koolau Ranges (Rust Environment and Infrastructure, Inc., 1997).

[4] Questa Engineering Corporation. June 15, 2001. *"Master Drainage Plan for the Waimanalo Landfill."* Letter report to GeoSyntec Consultants.

4.4.2. Site Groundwater Hydrogeology

Groundwater generally flows from inland areas outward toward the coastline. In the vicinity of the existing landfill, this general flow direction is altered by caprock, a variably-thick cap of calcareous and non-calcareous sedimentary lithology that overlies the volcanics along much of the coastal portions of Oahu. The caprock acts as a no-flow boundary to groundwater occurring in adjacent basaltic rock, and the typical Ghyben-Herzberg lens[5] is altered by increasing the thickness of basal groundwater in areas of sufficient recharge[6] (Hufen and others, 1980). This caprock is effective at preventing the free discharge of groundwater to the ocean, and causes a diversion of groundwater flow parallel to the coastline in the southwestern portion of the island. That is, because of the caprock, the groundwater flows generally to the west rather than to the south into the ocean (Rust Environment and Infrastructure, Inc., 1997).

The caprock unit trending east-west in this area deflects southward-flowing groundwater within the fractured basalt to the west. The groundwater beneath the Waimanalo Gulch Sanitary Landfill is ultimately discharged to the ocean near Kahe Point, where the caprock is absent (Waste Management of Hawaii, Inc., 1998). Complicating the groundwater situation are the near-vertical dikes trending diagonally across Waimanalo Gulch about midway up the landfill property. The dikes produce a damming effect on the local groundwater table, offsetting water levels on either side by about 10 feet (**Figure 4-2, Hydrogeology/Geology of Oahu**) (Rust Environment and Infrastructure, Inc., 1997).

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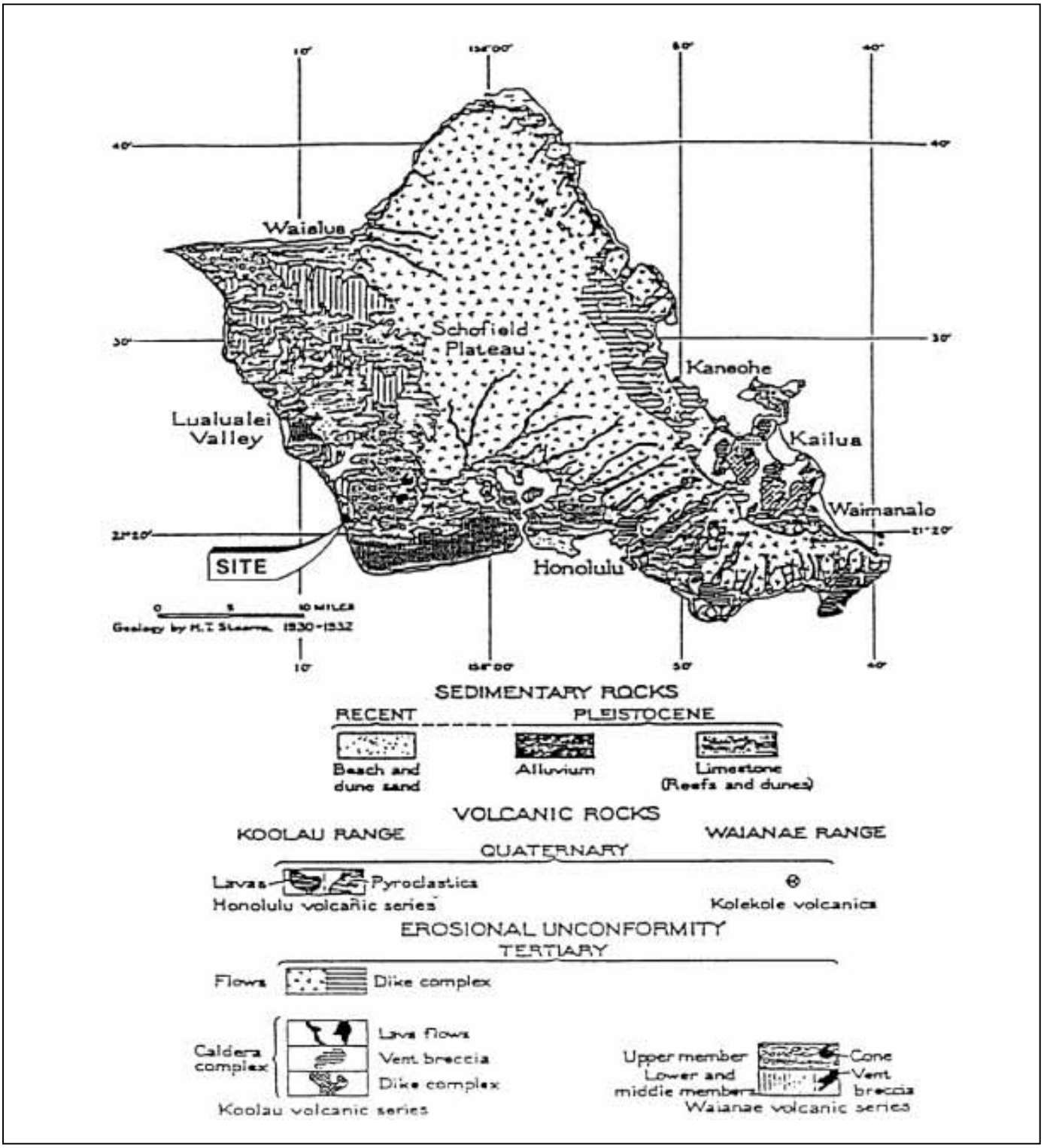
[5] Basal groundwater in regional aquifers on Oahu occurs similarly to the so-called Ghyben-Herzberg lens, where the groundwater floats on and displaces sea water in a lens-like configuration (Hufen and others, 1980). The fresh water lens generally thins towards the edges of the island (at sea level), and is thickest at the center of the island (Harding ESE, 2001).

[6] Hufen, T.H , Eyre, P. and William, M., 1980. "*Underground Residence Times and Chemical Quality of Basal Groundwater in Pearl Harbor and Honolulu Aquifers, Oahu, Hawaii.*"



Source: Stearns, 1932.

Figure 4-2
Hydrogeology/Geology of Oahu
Waimanalo Gulch Sanitary Landfill Expansion
Department of Environmental Services

No Scale

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Salinity measurements of ocean water along this stretch of coastline performed by the U. S. Geological Survey and Tom Nance Water Resource Engineering (TNWRE)[7] in 1991 confirm that dramatic basal groundwater discharge is occurring at this location. This information, along with the established westward groundwater flow occurring in this portion of the island, plays an important role in the siting location of the landfill groundwater monitoring wells (Rust Environment and Infrastructure, Inc., 1997).

Data from site groundwater monitoring wells confirmed that, on the western side of the dikes (i.e., in the 3 to 4-foot head aquifer, down-gradient of the landfill), groundwater is moving toward the vicinity of Kahe Park west of the landfill. This local groundwater flow direction roughly coincides with the regional groundwater flow direction that exists to the east of the dikes in the 14-foot head aquifer[8], and also supports the conclusions of the geochemistry study (Rust Environment and Infrastructure, Inc., 1997).

4.4.3. Project Site in Relation to Protected Groundwater Areas

Groundwater found below and surrounding the Waimanalo Gulch Sanitary Landfill is not designated as a groundwater recharge area by the City & County of Honolulu Board of Water Supply. **Figure 4-3, Groundwater Protection Zone and Underground Injection Control (UIC) Zone**, identifies areas with brackish water supply and additional areas identified by BWS which may be acceptable for sanitary landfill development.

Prior to 1987, groundwater recharge areas were identified by BWS. Since 1987, DOH has administered the No Pass Program. The approximately 200 acre landfill property is outside the groundwater recharge zone, in the area designated as “Pass Zone.”

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[7] Tom Nance Water Resource Engineering (TNWRE), December 5, 1991. *“Site Water Levels in Relation to Regional Groundwater Flow.”* Memorandum to Waste Management of Hawaii.

[8] TNWRE, 1991.

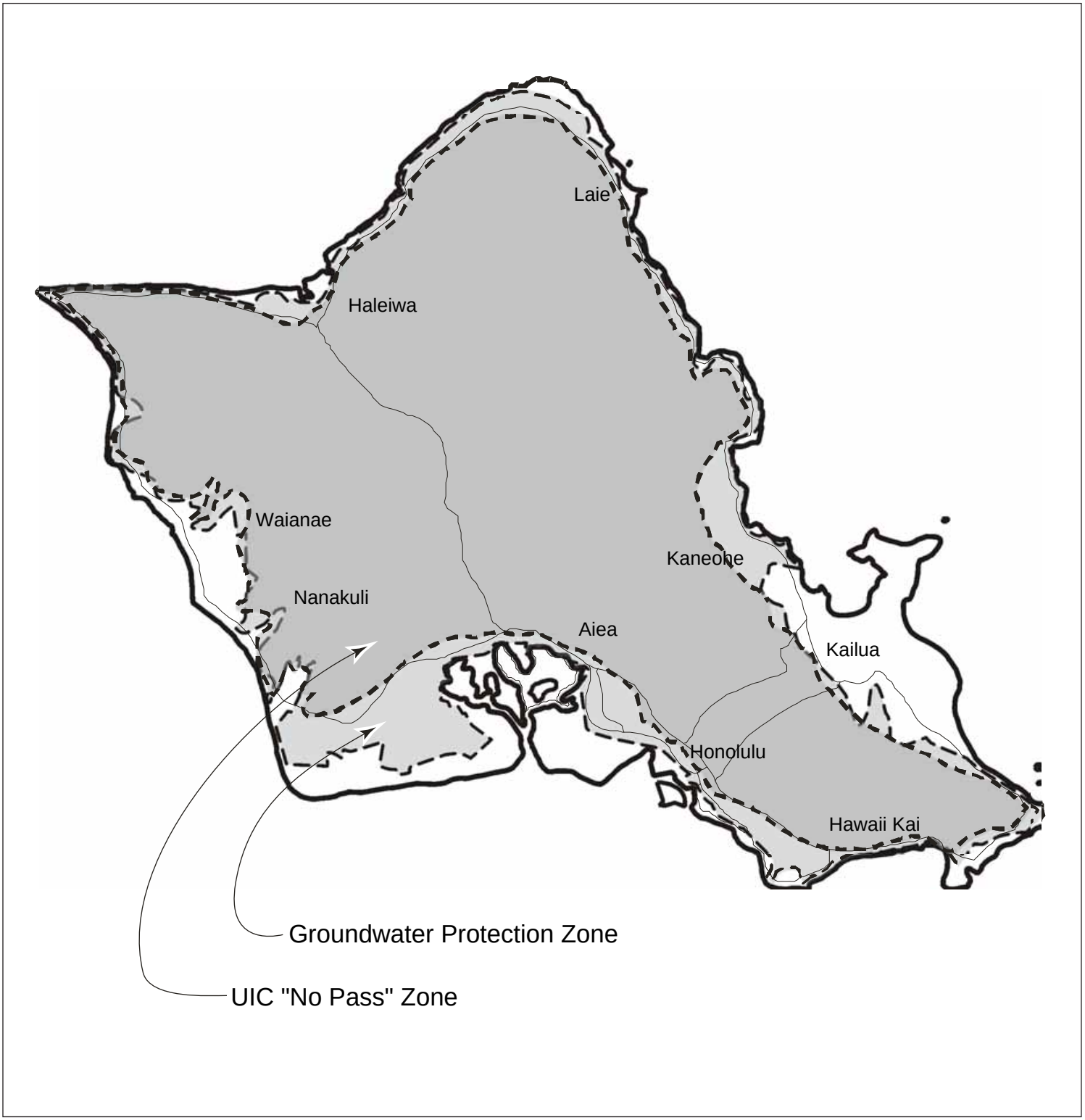

Figure 4-3
Groundwater Protection Zone &
Underground Injection Control (UIC) Zone
Waimanalo Gulch Sanitary Landfill Expansion
Department of Environmental Services

0 6 Miles 12

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The Pass Zone is an area where sanitary landfills and shallow waste disposal systems are generally permitted. (The areas designated as “No Pass Zone” are areas where sanitary landfills and waste disposal systems are not permitted.)

The proposed expansion of the site is consistent with the State Department of Health (DOH), Underground Injection Control (UIC) program established in 1984. Rules for the UIC program are promulgated in Chapter 11-23, HAR. The program is intended to protect the State’s potable groundwater resources from pollution by subsurface wastewater disposal. The program regulations are accompanied by UIC maps demarcating a boundary line known as the “UIC Line.” Land that is makai of this line is not restricted from subsurface wastewater disposal by underground injection.

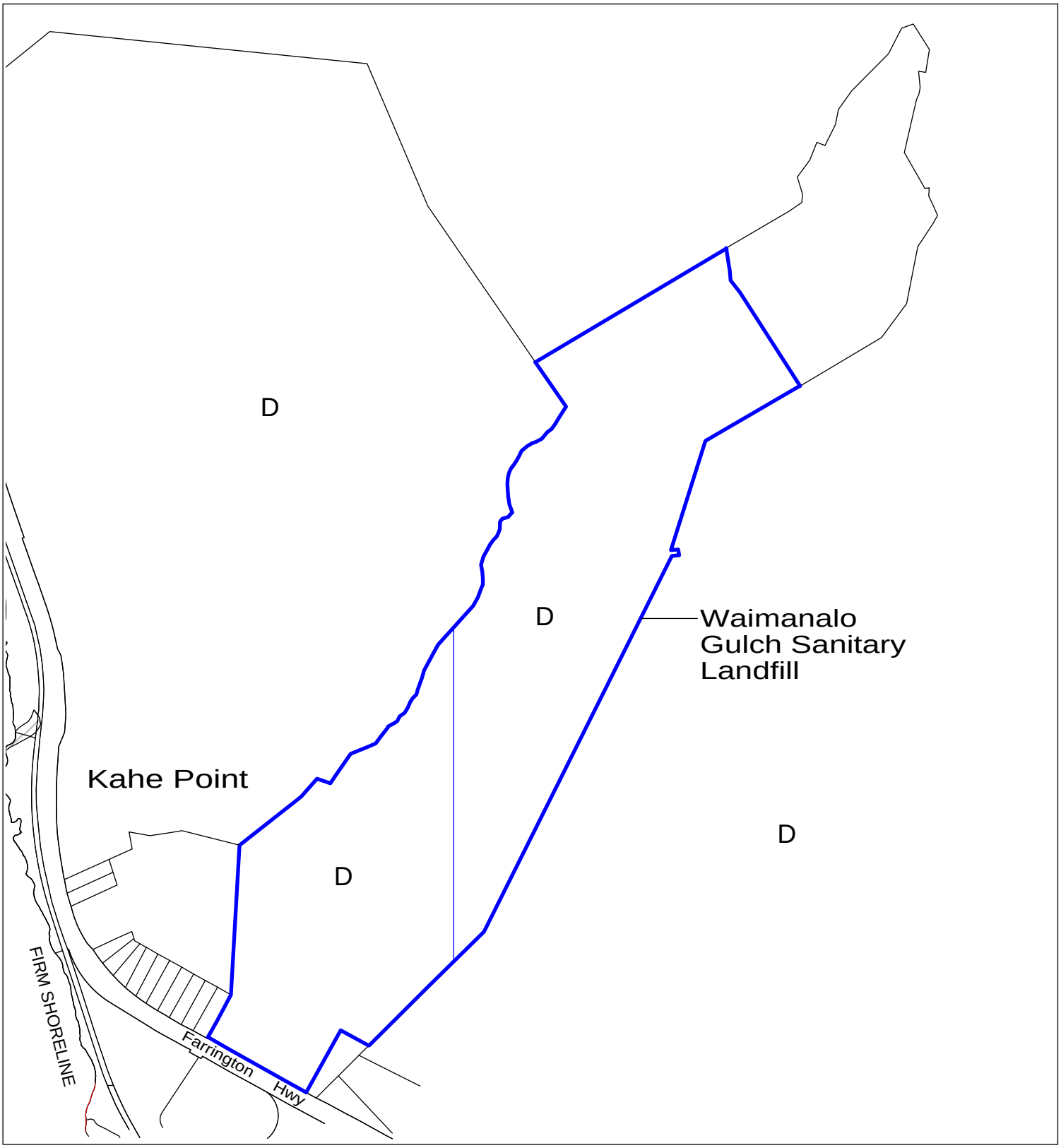
4.5. Natural Hazards

The following discussion provides information on flood, seismic and flood hazards that may adversely affect the project site. The information presented will be supported with additional discussion and identification of mitigation measures in the Draft EIS.

4.5.1 Flood Zone

The proposed project area will be situated at an elevation of approximately 400 - 700 feet above mean sea level (msl). The Federal Emergency Management Agency (FEMA), Flood Insurance Rate Map (FIRM) identifies the proposed project site as lying within “Zone D” - an area in which flood hazards are undetermined (**Figure 4-4, FEMA Flood Insurance Rate Map**).

The proposed project is not anticipated to experience or result in adverse impacts due to flooding based on the existing arid conditions and high elevation of the site.



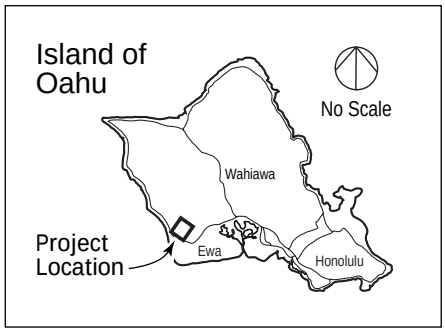


Figure 4-4
FEMA Flood Insurance Rate Map
Waimanalo Gulch Sanitary Landfill Expansion
Department of Environmental Services

0 1000 Feet 2000

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4.5.2. Seismic Characteristics

The proposed project is not anticipated to be adversely affected by seismic activity. Buildings constructed at the site will be in accordance with the Uniform Building Code (UBC) that provides minimum design criteria to address potential for seismic damage. The UBC scale is rated from Seismic Zone 0 to Zone 4, with 0 the lowest level for potential seismic induced ground movement. The project area, as is all of the island of Oahu, is designated in Seismic Zone 2a[9] (**Figure 4-5, Oahu Seismic Zone**).

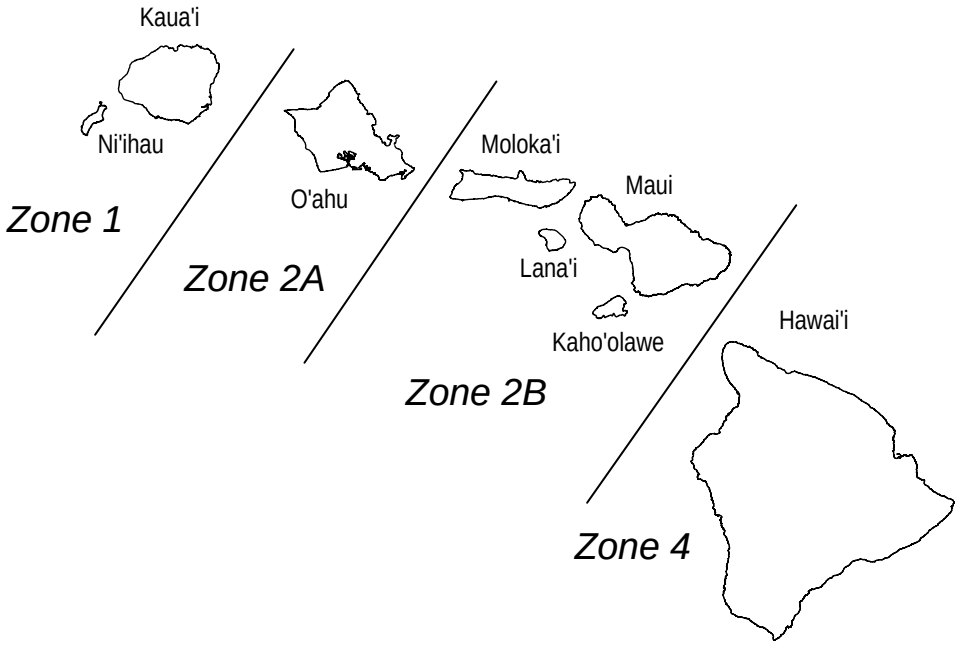
The structural integrity of the landfill and supporting infrastructure was recently tested when a magnitude 6.7 earthquake occurred about 10 miles north-northwest of Kailua-Kona at 7:07 a.m., on Oct 15, 2006. Power outages occurred throughout the Hawaiian Islands and initial damage estimates were placed at $73 million, primarily on the Island of Hawaii.[10] According to the operator, Waste Management of Hawaii, an inspection following the earthquake indicated there was no failure or damage to the landfill and supporting infrastructure as a result.

4.5.3. Hurricane Hazard

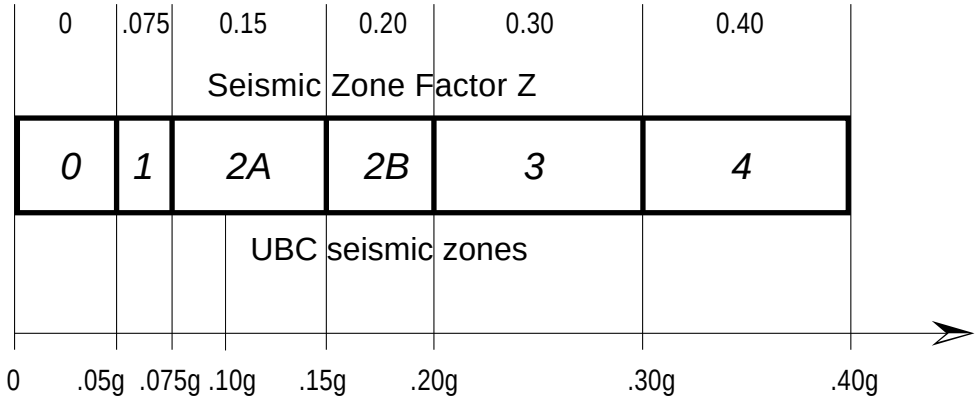
The Hawaiian Islands are seasonally affected by Pacific hurricanes during the late summer to early winter months. Oahu's Ewa Coastal Plain is infrequently hit by severe storm events. It is difficult to predict these natural occurrences, but it is reasonable to assume that future events will occur. The primary impacts of past hurricanes in the Waimanalo Gulch Sanitary Landfill region resulted from high waves. Waves and storm surge from future hurricanes, however, are not anticipated to affect the integrity of the landfill based on the location of the project site far from the shoreline and because the active working area will be at a much higher elevation relative to the shoreline.

[9] U.S. Geological Survey (USGS), 1997. "Hazards in Hawaii."
[10] http://earthquake.usgs.gov/eqcenter/eqinthenews/2006/ustwbh/#summary

State of Hawai'i Seismic Zones



Seismic Zone Factors



Effective peak ground acceleration, 10% exceedance probability for 50 years exposure time

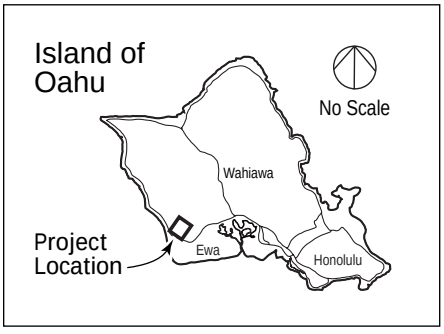


Figure 4-5
Oahu Seismic Zone
Waimanalo Gulch Sanitary Landfill Expansion
Department of Environmental Services

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Source: United States Geological Survey, Website: http://hvo.wr.usgs.gov/earthquakes/hazards/

Extremely high wind conditions are of concern for any landfill site with an active cell in use. The operation of the MSW section of the landfill provides some mitigation against widespread wind impacts by allowing active filling of only one cell at a time. Landfill cells that have been exhausted are covered by soil and revegetated to stabilize the surface thereby reducing wind and runoff (or potential wave run-up in the event of a hurricane). Standard operating procedures also require covering of the active cell at the end of each work day with soil. These combined measures reduce the potential for landfilled refuse materials to become displaced and airborne.

The ungrassed portion of the ash fill area could be impacted in a situation involving hurricane force wind speeds. The ash fill operation does not require daily cover. The rate of disposal and routine 24 hour a day delivery of H-POWER associated ash, residue, and unacceptable waste make the application of daily cover infeasible. Mitigation to address loss of ash is therefore based on the characteristics of the material which itself exhibits good compaction and handling properties that inhibit loss during high winds. The material arrives on-site with a specified moisture content that is sufficient to prevent it from becoming airborne in a windy situation. The material is uniformly spread out within the disposal area and left to dry. The ash hardens as it dries becoming cohesive and less affected by high winds. If the ash is frequently covered this drying process will be impaired.

Intermediate cover is placed over suitable cell areas that are not being actively worked. The intermediate cover is compacted to a minimum of one foot, and graded to promote runoff in a controlled manner. The process of compacting the solid waste and soil material increases the stability of the site.

4.5.4. Tsunami Hazard

A tsunami involves the generation of a series of destructive ocean waves that can affect all shorelines. The generation of these waves can occur at any time with limited or no

warning. Persons in shoreline or beach areas are advised to go to higher ground immediately.

According to the Oahu Civil Defense Agency, the evacuation boundary for the area of the project site is formed along Farrington Highway. The location of the project site mauka of the highway is considered to be safe from wave action and is not identified as a location subject to inundation by a tsunami[11].

4.6. Air Quality

Air quality at the project site is relatively good. Although the natural incidence of tradewinds helps to dissipate some of the odor that is associated with operation of a landfill, winds also increase the incidence of litter, dust, and odors blowing from active working areas of the site.

Construction activities required at the site involve clearing, grubbing and earthwork. Measures to address generation of fugitive dust during these activities include use of dust fencing and water tanker trucks and/or a sprinkler system to wet actively worked areas. Only enough water will be used to inhibit dust from becoming airborne to control the potential for commingling of runoff with soils and other debris.

Other dust control practices will be applied in accordance with Chapter 11-60, Air Pollution Control regulations of the State DOH. These measures include compacting and use of intermediate cover, use of portable and permanent litter fences along the working face of the landfill in relation to prevailing winds to confine windblown litter, and use of maintenance personnel on standby at all times in the event of high winds to collect litter off-site.

[11] Tsunami Evacuation Oahu Map 17: Kahe Point to Ewa Beach, Oahu Civil Defense Agency, 2003.

Operation of the expansion area will involve daily traffic from refuse compactor trucks, transfer trailers, commercial vehicles, and public self-haul vehicles. Air pollution emissions from these vehicles collectively are not anticipated to result in the potential for adverse air quality impacts. Operation of the expansion area is expected to be similar to the on-site conditions involving use of the existing landfill area.

Municipal refuse in the form of sewage sludge is currently disposed of at the landfill. The method of treatment, however, is being modified to reduce the potential for nuisance impacts from the migration of odors during deliveries to the landfill. The major source of sewage sludge requiring disposal is from the Sand Island Wastewater Treatment Plant. A sewage sludge digester has recently been constructed and is designed to accept wastewater solids for treatment into solid fertilizer pellets for the agricultural industry and other users. During the current "shakedown" period it is anticipated that some deliveries of sludge will require disposal at the Waimanalo Gulch Sanitary Landfill. Mitigation measures to address the odor that is generated during these deliveries involve: scheduling to minimize deliveries during periods of expected heavy traffic; prohibiting the parking or queuing of delivery trucks along Farrington Highway outside the landfill while awaiting delivery of their loads; and, trucks awaiting prolonged delivery of their loads within the landfill property will be treated with odor neutralizer. These measures will be implemented on a short-term basis or until such time that the sewage sludge digester is fully operational.

A landfill gas recovery system constructed in 2004 is in operation to handle any gasses that have been generated with the use of the currently permitted area of the landfill. The ongoing generation of landfill associated gasses is expected to continue as municipal refuse undergoes decomposition within the expansion area. The generation of gas from the expansion area, however, is not expected to occur immediately, but over the course of several years.

Major constituents of decomposing landfill gas are carbon dioxide and methane. Lesser amounts of nitrogen and hydrogen sulfide are also generated. The gas recovery system will include the expansion area and will utilize a system of manifold piping feeding to a pumping apparatus to achieve negative air pressure over the surface of the landfill to prevent escape of gas.

Further discussion of the items above as well as further potential for impacts and recommended mitigation measures will be provided in the Draft EIS.

4.7. Acoustic Characteristics

The proposed project is expected to result in lower noise levels than produced from current operations at the site. Construction equipment will be relocated from the existing area of use to the new expansion area. This source of noise will shift northeastward or to the mauka-most portion of the 200 acre property.

The potential for short-term noise impacts will primarily be related to construction activities. The majority of this noise will be during operation and mobilization of heavy construction equipment, particularly during site preparation and earthwork. Some blasting will be required to fracture the harder rock areas of the site in preparation of earthwork. Mitigation of short-term construction impacts will be based on compliance with the provisions of Chapter 11-46, HAR, “Community Noise Control.” Mitigation measures are anticipated to include the following:

- Construction vehicles and internal combustion powered machinery will be muffled with noise attenuation equipment in good operating condition.
- Landscaping will be used for visual cover and soil stabilization. Some noise reduction may occur with use of trees and other plantings at the site.

ENV and Waste Management of Hawaii, Inc., will maintain efforts to advise the surrounding neighborhood of operational practices and procedures including limited use of blasting and noise mitigation plans or programs.

Long-term noise impacts will be primarily from use of construction equipment and vehicles at the project site. This will include use of bulldozers, refuse hauling and water tanker trucks, and other types of earthmoving equipment necessary to utilize the expansion cells.

4.8. Flora and Faunal Resources

4.8.1. Flora

A prior botanical field reconnaissance was conducted on August 11 and 12, 1999 for the previous area of expansion[12]. Plant species found within and surrounding the landfill site consisted primarily of introduced, non-native plant species. The study identified the two predominant vegetation types as Kiawe scrub and roadside vegetation. The general physiognomy of the vegetation is very open kiawe forest, with 10 to 20% tree cover, and a somewhat dense cover of Guinea grass between trees. Kiawe scrub covered the majority of the site.

A new botanical study has been commissioned to examine the currently proposed area of expansion. The findings and recommendations of the study, including potential for adverse impacts and mitigation measures, will be included in the project Draft EIS. It is preliminarily anticipated that findings will be similar to other botanical studies conducted for the sanitary landfill site (Environmental Impact Study 1983; City and County of Honolulu, Department of Public Works 1984); and for the nearby Makaiwa Gulch (Makaiwa Hills residential development surveyed by Char & Associates in 1990).

[12] Botanical Survey Waimanalo Gulch Expansion, Ewa District, Oahu, Char & Associates, August 1999.

4.8.2 Fauna

A fauna field survey for the prior area of expansion was conducted on July 28, 1999, by Phillip L. Bruner, PhD[13]. Birds commonly found in and surrounding the sanitary landfill property include barred dove, lace necked dove, cardinal, common mynah, Japanese white-eye, cattle egret and house finch. Mammals within the project site include an occasional mongoose or cat. There are field mice within the project area, but little to no evidence of rats.

A new fauna study has been commissioned for the new expansion area of the site to investigate and document bird and mammal species found on the property; assess the presence or potential occurrence of any native fauna, particularly those that are listed as "Endangered" or "Threatened"; and assess if there are any important or unique resources in the proposed area of expansion that supports native wildlife.

The result of the fauna study will be provided in the Draft EIS. The study findings including potential for adverse impacts, and recommendations including mitigation measures as appropriate, will be provided.

4.9. Historic and Archaeological Resources

Historical accounts of the region indicate that the lower forest once extended down to the 500 foot elevation range, with sandalwood observed down to the 300 foot level. The historical location of the lower forest is therefore hypothesized to cover at least the upper slopes of the northeastern portion of the project area. According to Cultural Surveys Hawaii, because this slope area is in the rain shadow, the area may be more

[13] Survey of the Avifauna and Feral Mammals for the Proposed Waimanalo Gulch Landfill Expansion Project, Oahu, Phillip L. Bruner, August 2, 1999.

accurately envisioned as an early Hawaiian park land community rather than as a thick forest.

There is no specific documentation of pre-contact or early historic land use within the project area. However, various Hawaiian legends and historical accounts indicate the Honouliuli Ahupua'a, in which the project site is located, was once widely inhabited. This would be attributable to the ready availability of marine resources along the coastline and the lowlands (ili) which would have been suitable for cultivation of taro and other crops. Following western contact after about 1790 the surrounding landscape was adversely affected with the removal of the sandalwood forest, the introduction of domesticated livestock and animals, and introduced exotic plant species. The combined removal of sandalwood, intensive pasturage, and release of new plant species eventually resulted in a shifting of the area ecology. Later development and land use lasting from the mid-nineteenth century to the present continue to reflect these changes.

Further information to ascertain the potential for historic and archaeological resources in the proposed area of expansion has been commissioned and will be included in the Draft EIS. This will extend to an assessment of the potential for adverse impacts and proposed mitigation measures as appropriate to ensure no effect.

Archaeological studies of the prior area of expansion identified no archaeological sites, midden, or artifacts of any kind despite the inspection of several small overhang caves which may have offered potential shelter.[14] This included an investigation of the Battery Arizona site, a relocated petroglyph, and two stones that are regarded by some in the community as sacred.

[14] An Archaeological Inventory Survey for the Waimanalo Gulch Sanitary Landfill Project Site, Honouliuli, Ewa, Oahu, Cultural Surveys Hawaii, August 1999 and Waimanalo Gulch Sanitary Landfill Meeting of August 10, 2001 with Waianae Community Members to Address Concerns for Native Hawaiian Burials and Other Issues Related to the Landfill, Letter from Cultural Surveys Hawaii, April 12, 2001.

4.10. Cultural Impact Assessment

A Cultural Impact Assessment has been commissioned for the proposed area of expansion to determine and assess the effects of the project on traditional cultural practices. The Cultural Impact Assessment will collect information from historical documents, the existing record of archaeological investigations and the current archaeological study of the expansion site, and kamaaina interviews. Hawaiian organizations, government agencies, community members, and cultural and lineal descendants with ties to Waimanalo Gulch will be contacted to: (1) identify potentially knowledgeable individuals with cultural expertise and knowledge of the project area and the surrounding vicinity, and (2) identify cultural concerns and potential impacts within the proposed area of expansion.

The following provides the basis for understanding the land use context or "Cultural Landscape" of the region in which Waimanalo Gulch is located[15]:

- While rich in diverse legends, traditional Hawaiian accounts of Honouliuli focus on a few specific areas. The *`ili* of Honouliuli (West Loch of Pearl Harbor at the mouth of Honouliuli Gulch) is a focus of traditions including those of (Ka) ihuopalaai which touches on the fish pond and mullet resources.
- Another seeming focus of a settled population is Keahumoa (as reported in the accounts of Maui's grandfather and Namakaokapao`o), the location of which is not altogether clear. This is understood as a large, gently sloping "plain before reaching the Kipapa Gulch" (Fornander 1919 Vol. V

[15] A Cultural Impact Assessment for Proposed 14.9 Acre Expansion of the Waimanalo Gulch Sanitary Landfill Project Site, Honouliuli, Ewa, Oahu (TMK 9-2-3: 072 & 073), Cultural Surveys Hawaii, December 2002.

274 Note 3) which clearly must be in eastern Honouliuli if it is in Honouliuli at all.

- The Pu`u Ku`ua area is cited as a residence of *kauwa* and seems to have been an important area in O`ahu's social stratification. A *Ka Loea Kalai`aina* Hawaiian newspaper account suggests this was regarded as something akin to a plantation of the aristocracy for potential human sacrifices.
- The Ko`Ōlina area - including Kualaka`I near Barber's Point and the Hoaka-lei spring - has positive associations with the accounts of Hi`iaka and Kakuhihewa.
- The rest of Honouliuli in which the landfill site is located comes across as a somewhat scary hinterland inhabited by malevolent *mo`o* and supernatural beings. Clearly the Pōhakea Pass area was an important trail and shortcut to Wai`anae and for the view to be had there. Both the Hi`iaka and Kahalaopuna accounts associate the pass with danger and sudden death.
- It appears that the western gulches such as Awanui, Palailai, Makaīwa, Waimanalo and Lumaloa, were of relatively little importance in the context of the *ahupua`a* as a whole. However, Waimanalo may well have been significant for the people of western Honouliuli. The word *manalo* means "potable, of water that may be drunk", Wai-manalo means potable water, *manalo iki kēia wai*, this water is drinkable, but perhaps a little brackish. In a dry land, this area may have been very special.

4.11. Scenic and Aesthetic Environment

The area of Waimanalo Gulch marks a transition point between the Waianae Coast and the Ewa region. A dominant landmark in the immediate area is the Hawaiian Electric Company (HECO) Kahe Power Generating Station, located north of the landfill. The plant's smokestack can be seen north and south of Kahe Point along Farrington Highway and from various points along the shore.

Farrington Highway winds around natural land forms, causing the visual landscape for motorists to change rapidly. Views of the mountain areas from the coast are dominated by a series of hillsides covered with sparse dryland vegetation. The mountainsides adjoining Waimanalo Gulch are covered by Kiawe Scrub vegetation, including shrubs, Guinea grass and other dryland grasses that grow between large horizontal rock outcrops that stretch across the hillside. The hills turn green during the rainy months when seeds of the existing weeds germinate but are otherwise brown due to the extremely arid climate.

A small wooden sign on Farrington Highway identifies the location of the landfill. Trees and other landscaping screen the landfill administration building from Farrington Highway.

The appearance of the landfill when seen from below the elevation of the site is dominated by gray-hued ash fill that resembles a quarry. Daily soil cover on active landfill cells in the current area of expansion promotes a uniform coloration that is visible from some of the higher elevation viewpoints within the Ko Olina Resort. Also visible are:

- The existing concrete drainageway that is located along the northwest boundary of the landfill property;

- From sea, refuse vehicles can sometimes be seen driving on the hillside and higher elevation portions of the landfill;
- Landfill operations vehicles such as tractors and refuse trucks may be visible within the site;
- Plastic bags that become tangled in tree branches along the valley rim and that have fallen or blown from refuse delivery vehicles may also become readily visible to residents and guests at the Ko Olina Resort and motorists passing along the highway; and
- Infrequent queuing of refuse vehicles along the landfill access road during peak periods of use may also make the presence of the sanitary landfill momentarily apparent to motorists along Farrington Highway.

Mitigation to reduce visual impacts associated with existing operations at the site have been initially implemented but is currently being revised to incorporate the proposed area of expansion to accomplish greater integration of treatments. The existing sanitary landfill has a 400-foot-wide vegetative buffer strip along the eastern portion of the site with a north-south separation of 800 to 1,000 feet. The approved landfill area has been hydromulched to begin growth of grasses in areas that are filled. The grasses resemble vegetation on adjoining hillsides; in dry periods they appear brown and during more rainy periods they appear green. Portions of a concrete drainageway on the Waianae side of the gulch have been painted to blend in with colors in the surrounding terrain.

Further investigation and discussion of the visual aesthetics of the site will be provided in the Draft EIS. The planned landscaping treatment will promote further use of natural vegetation and trees to improve views into the landfill site. Although the proposed area of expansion will increase the area used for landfilling, portions of the landfill that have been completed will provide increased opportunities for revegetation and recruitment of vegetation.

4.12. Traffic and Circulation

Farrington Highway is the primary arterial highway serving the Waianae Coast and is under the jurisdiction of the State Department of Transportation. Access to the project site is provided by a T-intersection with Farrington Highway, a four-lane facility consisting of two 24-foot-wide travelways and a 24-foot-wide grassed median. The posted speed limit of Farrington Highway is 45 miles per hour.

The area of the T-intersection is channelized: vehicles approaching the highway from the landfill are controlled by a stop sign prior to crossing the Waianae-bound lanes of the highway to turn left and proceed Honolulu-bound. Acceleration and deceleration lanes provide entry and exit from the landfill.

Left turns onto the highway are made across gaps in the Waianae-bound traffic stream into an acceleration lane in the highway median. This traffic must then merge with Honolulu-bound traffic. A yield sign controls vehicles making right turns from the landfill access road into Waianae-bound Farrington Highway traffic.

An auxiliary lane between the on-ramp from the Ko Olina interchange and the landfill access road serves as a deceleration lane for Waianae-bound traffic turning right into the landfill site. A separate left turn deceleration lane is provided within the highway median for Honolulu-bound traffic turning left into the landfill site.

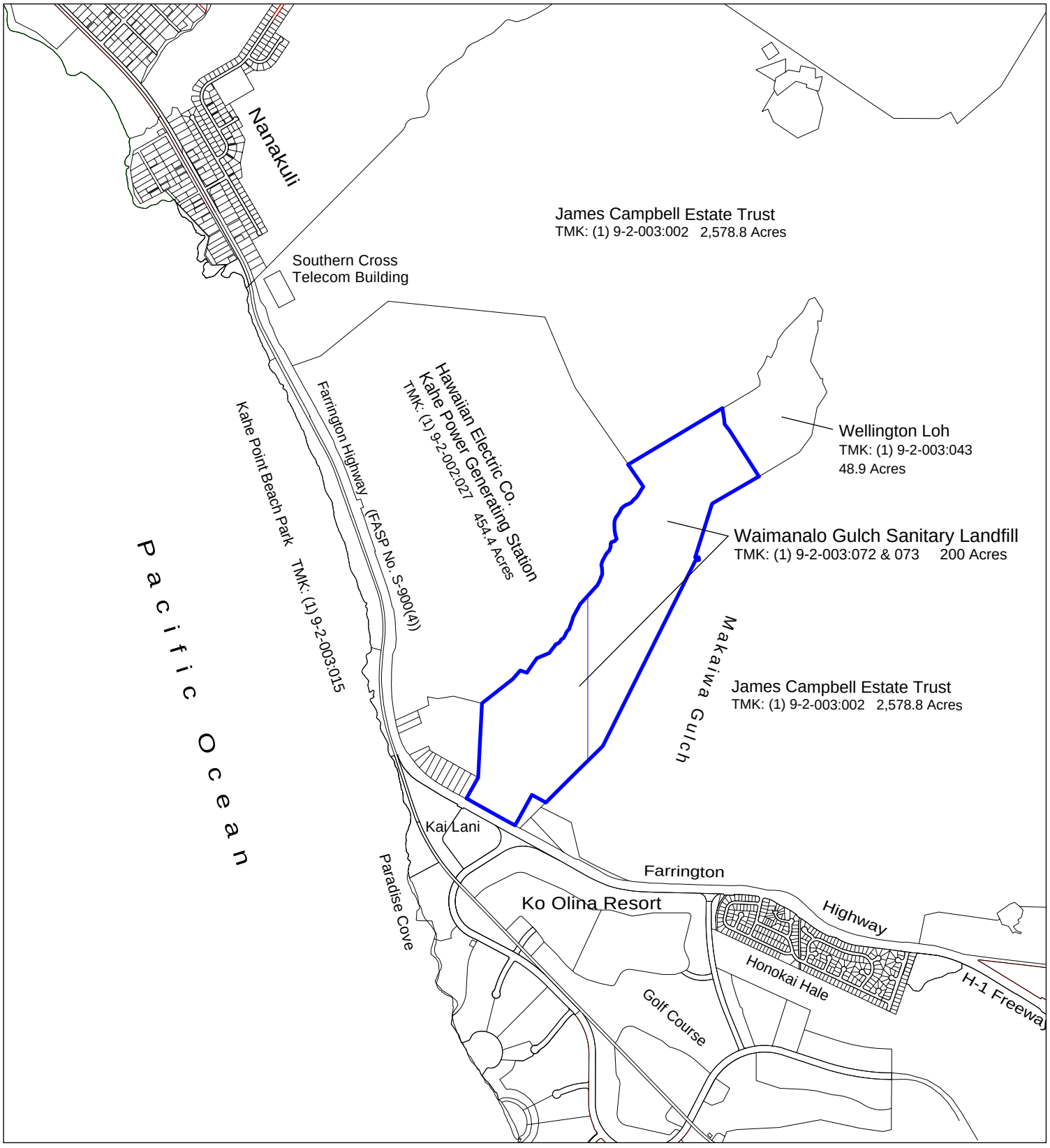
A traffic assessment report has been commissioned to examine the existing conditions of the site and to determine if traffic improvements, including the installation of additional safety measures are warranted. The traffic assessment report and recommendations for improvements will be provided in the project Draft EIS.

4.13. Land Use and Ownership

The project site is owned by the City & County of Honolulu and operated on its behalf by Waste Management of Hawaii, Inc. Existing electrical transmission lines from the Kahe Power Plant transverse the project site between elevations 760 and 840 feet. Prior to 1960, the site was periodically used for cattle grazing.

Land uses that are within proximity to the proposed area of expansion include the following (**Figure 4-6, Land Uses Surrounding Expansion Site**):

- Immediately north of the project site is land owned by Wellington Loh (TMK: 9-2-03:41 - 48.9 acres).
- Immediately south of the project site is Farrington Highway (FASP No. S-900(4)) which serves as the primary thoroughfare for the area. The highway is under jurisdiction of the State Department of Transportation, Highways Division, who is responsible for maintenance of the facility. Makai of the highway are private parcels under various private ownership.
- Across the highway is the Kahe Point Beach Park (TMK: 9-2-03:15) and Ko Olina Resort (TMK: 9-2-03, 9-1-56, and 9-1-57, various parcels). Kahe Point Beach Park is under jurisdiction of the City and County of Honolulu.
- Across from Farrington Highway and approximately 200 feet from the southwest corner of the landfill boundary is the main entrance to the Ko Olina Resort. This same boundary corner of the landfill, when extended to the east, encompasses the northwest corner of the Ko Olina Golf Course and a portion of the Brookfield Homes residential development consisting of approximately 270 multifamily units on approximately 29 acres of land located off of the Ko Olina Golf Course. The new Kai Lani residential development has also been completed and is located makai and across the Farrington Highway.



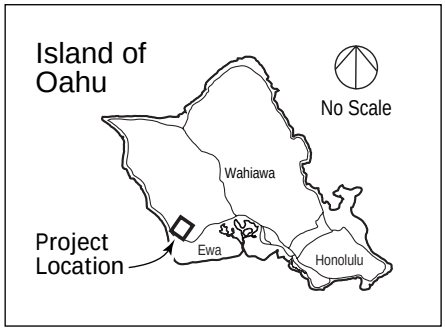


Figure 4-6
Land Uses Surrounding Expansion Site
Waimanalo Gulch Sanitary Landfill Expansion
Department of Environmental Services

0 2000 Feet 4000

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- Surrounding land along the north and west boundary of the landfill site is owned by the James Campbell Estate Trust (TMK: 9-2-03:2 - 2,578.8 acres). This property is slated for development as the Makaiwa Hills subdivision which currently remains undeveloped.
- To the east the project site adjoins the Hawaiian Electric Kahe Power Generating Station (TMK: 9-2-02:27 - 454.4 acres) and the James Campbell Estate Trust property (TMK: 9-2-03:2). The eastern boundary of the power plant is adjacent to the western boundary of the landfill.
- The northernmost boundary of the Campbell Estate property is also the location of the Southern Cross Terminal Building, a telecommunications facility using submarine fiber optic cables emanating from New Zealand, Australia, Fiji, and the continental U.S.

Additional properties and developments within the Ko Olina Resort include: Ko Olina Golf Course, Paradise Cove Luau, Lanikuhonua, JW Marriott Ihilani Resort, and the Ko Olina Fairways subdivision. Other land use developments associated with the Ko Olina Resort are present.

Potential for impacts and mitigation measures will be provided in the Draft EIS. It is anticipated that effects to surrounding land uses will be similar to potential impacts identified in the project EIS for the prior expansion of the landfill site and involve:

- Odors associated with operations of the landfill including delivery and landfilling of refuse, and potential leakage of decomposition gasses;
- Windblown litter becoming airborne and associated litter to be deposited along the highway by improperly secured loads from refuse delivery trucks; and,
- Traffic impacts associated with speeding and unsafe movement of refuse delivery vehicles.

4.14. Demographic and Economic Characteristics

The area of the proposed project is in the Ewa District, on the western side of the Island of Oahu. This encompasses the communities of Makakilo, Kapolei, developments and subdivisions such as Ko Olina, Honokai Hale, and portions of Nanakuli, along the Waianae Coastline.

The project site is within the City and County of Honolulu, Makakilo/Kapolei/Honokai Hale Neighborhood Board No. 34[16] and in the Ewa Development Plan (DP) Area, adjacent and near to the southernmost boundary of the Waianae DP Area.

According to the Ewa Development Plan, the 2020 vision for the region is for major population and economic growth. Significant progress toward providing a Secondary Urban Center for Oahu is hoped to be accomplished with a population growth from 43,000 in 1990 to almost 125,000 persons in 2020. Approximately 28,000 new housing units are also envisioned in several master planned communities. Job growth is expected to be equally high, rising from 17,000 jobs in 1990, to over 64,000 in 2020. Major growth centers are expected to include a new University of Hawaii Campus, the Ko Olina Resort, Ewa Marina, and the City of Kapolei comprising commercial, retail, and governmental offices.

The Waimanalo Gulch project site is located in census tract 86.03. According to the U.S. Census Bureau, the 1990 population of this area was 6,509 persons and by 2000 had grown to 9,882 persons[17], representing an approximate annual growth rate of 3.5 percent.

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[16] Neighborhood Board Commission Office, City & County of Honolulu, Map of Neighborhood Board Area No. 34, Makakilo/Kapolei/Honokai Hale, http://www.co.honolulu.hi.us/nco/maps/nbm34.htm.

[17] State of Hawaii, 2005 Databook, Table 1.17-Resident Population for the City and County of Honolulu, By District and Census Tract: 1990 And 2000, http://www.hawaii.gov/dbedt/info/economic/databook/db2005/section01.xls#'1.17'!A1.

According to the Socioeconomic Impact Assessment conducted for the prior expansion of the site[18]:

- The Ewa DP area has a young population. Households are larger than the average (3.69 persons per household, vs. 2.95 persons in the average household for Oahu as a whole) and tend to be affluent. The regional median household income is 115% of the island median. Fewer households have social security, retirement or public assistance income than elsewhere on Oahu. Workers living in the Ewa DP area are diverse in occupation, but even fewer are in agriculture than islandwide. Commuting times are long, and a third of the workforce normally drives over 45 minutes to work.
- Among the Ewa communities of interest in this report, Ko Olina/Honokai Hale[19] stands out in several ways. Its population tends to be older, with a median age of 36.8, slightly higher than the island median. Most households do not have members younger than 18. The median household income level is much higher than in the other communities studied. However, the share of children under 18 living with family who are below poverty level is comparable to that found in the Waianae Coast, suggesting that young families in this area face an economic situation very different from that of their older neighbors.
- The Waianae Coast Sustainable Communities Plan area also has a young age structure (with a median age of 28.5) and even larger households (the median household size is 3.97). Incomes tend to be below the island median, and dependence on public assistance – 25.5% of households – is high. While commuters' use of public transportation was slightly higher

[18] Socioeconomic Impact Assessment of Waimanalo Gulch Sanitary Landfill Expansion, SMS Research, December 2002.

[19] Ko Olina consists of Census Tracts 86.09 and 86.10, and includes Honokai Hale and Ko Olina.

than in Ewa, over 80% of workers still drove to and from work, and mean travel time to work was high (41.9 minutes).

Although the proposed project will not in itself result in increased development or population growth, the use of the site will provide for disposal of municipal generated refuse that will be a key factor in supporting and sustaining the growth and development of the Ewa DP Area and the broader communities of the island of Oahu.

Residential communities surrounding the project area are not anticipated to be adversely affected since no displacement of properties or residents will be required to support the planned expansion. Further discussion and updated information will be provided in the Draft SEIS and will include: description and analysis of the demographic and socioeconomic characteristics of the project area and vicinity; and potential for adverse impacts and proposed mitigation measures to ensure the health and safety of area residents.

Section 5
Relationship to Land Use Plans, Policies and Controls of the Potentially Affected Area

State and County land use plans, policies, and controls are established to guide development to enhance the overall environment and ensure that long-term social, economic, environmental, and land use needs of the people of Hawaii are met. The proposed expansion of the Waimanalo Gulch Sanitary Landfill addresses the requirements of State and County land use plans, policies, and objectives, as noted in the following.

5.1. Hawaii State Plan

The Hawaii State Plan, Chapter 226, HRS, serves as a written guide for the future long range development of the state. The Plan identifies goals, objectives, policies, and priorities for the state. The proposed expansion of the Waimanalo Gulch Sanitary Landfill is in conformance with the State Plan objectives and policies for facility systems.

5.1.1. Facility Systems - In General

According to Section 226-14 Objectives and Policies for Facility Systems - In General:

> *"Planning for the State's facility systems in general shall be directed towards achievement of the objective of water, transportation, waste disposal, and energy and telecommunication systems that support statewide social, economic, and physical objectives."*

The proposed project supports the disposal of municipal refuse that is the result of the use of goods, products, and materials that are no longer feasible, under existing conditions, to be further reused, recycled, or reclaimed. The disposal of this refuse in an

environmental safe and sound manner will thereby allow for the greater focus on statewide systems that support social, economic, and physical objectives.

> *"(b) To achieve the general facility systems objective, it shall be the policy of this State to:*
> *(1) Accommodate the needs of Hawaii's people through coordination of facility systems and capital improvement priorities in consonance with state and county plans."*
> *(2) Encourage flexibility in the design and development of facility systems to promote prudent use of resources and accommodate changing public demands and priorities.*
> *(3) Ensure that required facility systems can be supported within resource capacities and at reasonable cost to the user.*
> *(4) Pursue alternative methods of financing programs and projects and cost-saving techniques in the planning, construction, and maintenance of facility systems."*

Waimanalo Gulch Sanitary Landfill is a key capital component of the City's Solid Waste Integrated Management (SWIM) Plan which describes the overall system of waste collection, transport, recycling, and disposal for the island of Oahu. The SWIM Plan is designed to promote the prudent use of City land resources by accommodating changing public demands and priorities which call for increased recycling and waste reduction strategies as well as future efforts by the City to use proven technology based alternatives to reduce dependency on landfilling. The space resource that is conserved at the landfill will benefit the public by forestalling the eventual need for selection, development, and public payment for a new landfill facility, and will maintain use of much of the existing landfill infrastructure that has already been developed at the site.

5.1.2. Facility Systems - Solid and Liquid Wastes

The proposed project addresses the fundamental need for the disposal of municipal refuse. According to Section 226-15 Objectives and Policies for Facility Systems - Solid and Liquid Wastes:

> *"(a) Planning for the State's facility systems with regard to solid and liquid wastes shall be directed towards the achievement of the following objectives:*
> *(1) Maintenance of basic public health and sanitation standards relating to treatment and disposal of solid and liquid wastes."*

The proposed project will promote maintenance of basic public health and sanitation standards by providing a site that is specifically developed for the disposal of municipal solid waste generated on an islandwide level.

> *"(b) To achieve solid and liquid waste objectives, it shall be the policy of this State to:*
> *(2) Promote re-use and recycling to reduce solid and liquid wastes and employ a conservation ethic.*
> *(3) Promote research to develop more efficient and economical treatment and disposals of solid and liquid wastes."*

The proposed project, as part of the City's SWIM Plan, is designed to support and employ a conservation ethic by seeking a reduction in landfill use through on-going and future efforts by the City to increase programs to reuse and recycle recoverable components of Oahu's municipal waste stream (including the recovery of energy from waste). Inasmuch as the proposed project is a component of the SWIM Plan, the Department of Environmental Services (ENV) will continue to seek and where feasible, implement proven programs that reduce dependency on landfilling.

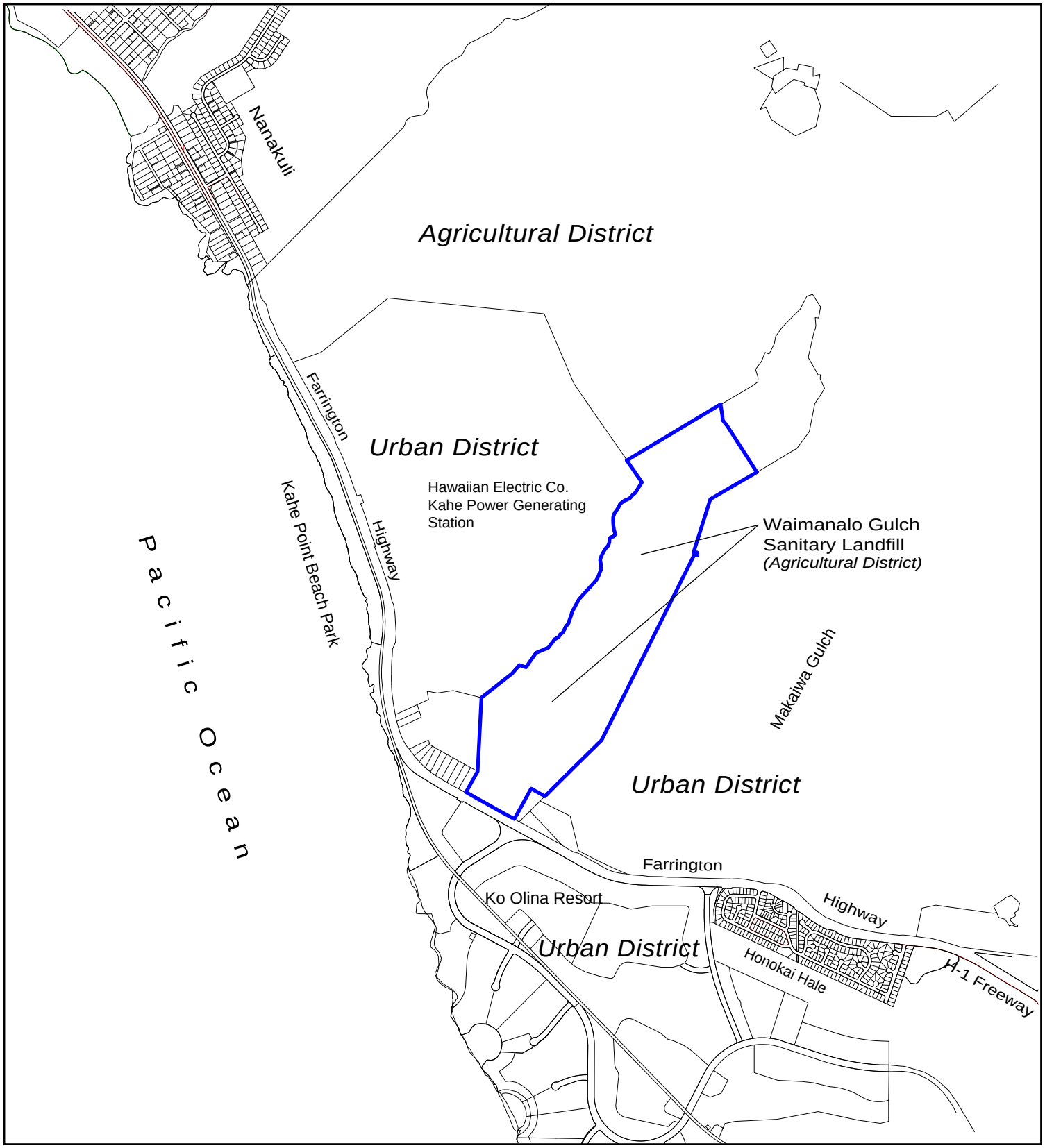
5.2. State Land Use Law

The State Land Use Commission classifies all lands in the State of Hawaii into one of four land use designations: Urban, Rural, Agricultural, and Conservation. The proposed project site is located within the State Agricultural District (**Figure 5-1, State Land Use District**). The project site is located within the State Agricultural District, but is not classified by the Agricultural Lands of Importance (ALISH) to the State of Hawaii system (**Figure 5-2, ALISH Map**). The ALISH map provides delineation of areas with Prime Agricultural Land, Unique Agricultural Land and Other Important Agricultural Lands. The location of the site within the State Agricultural District will require the filing of a State Special Use Permit from the City & County of Honolulu, Department of Planning and Permitting. The application will be filed by the City and/or the operator of the landfill, Waste Management of Hawaii, prior to construction.

5.3. Special Management Area and Coastal Zone Management Program

Special controls on development in coastal areas are established to avoid permanent loss of valuable coastal resources and loss of potential management options that may otherwise protect and preserve Hawaii's coastal areas. Special Management Area (SMA) boundaries are established by the City to delineate coastal zone areas subject to such controls. The City & County of Honolulu SMA Boundary Map for the Ewa area shows the proposed project site to be located outside of the SMA and it is therefore not subject to SMA regulation.

The State of Hawaii designates a Coastal Zone Management (CZM) program to manage the intent, purpose and provisions of Chapter 205A-2, HRS, as amended, and federal regulations for the areas from the shoreline to the seaward limit of the State's jurisdiction and any other area which a lead agency may designate for the purpose of administering the CZM Program.



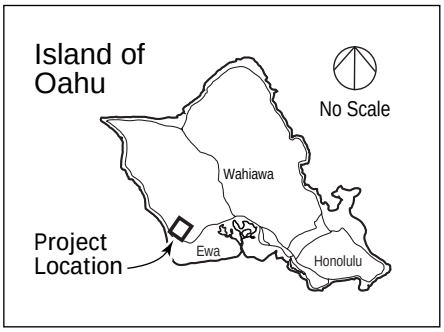


Figure 5-1
State Land Use District Map
Waimanalo Gulch Sanitary Landfill Expansion
Department of Environmental Services

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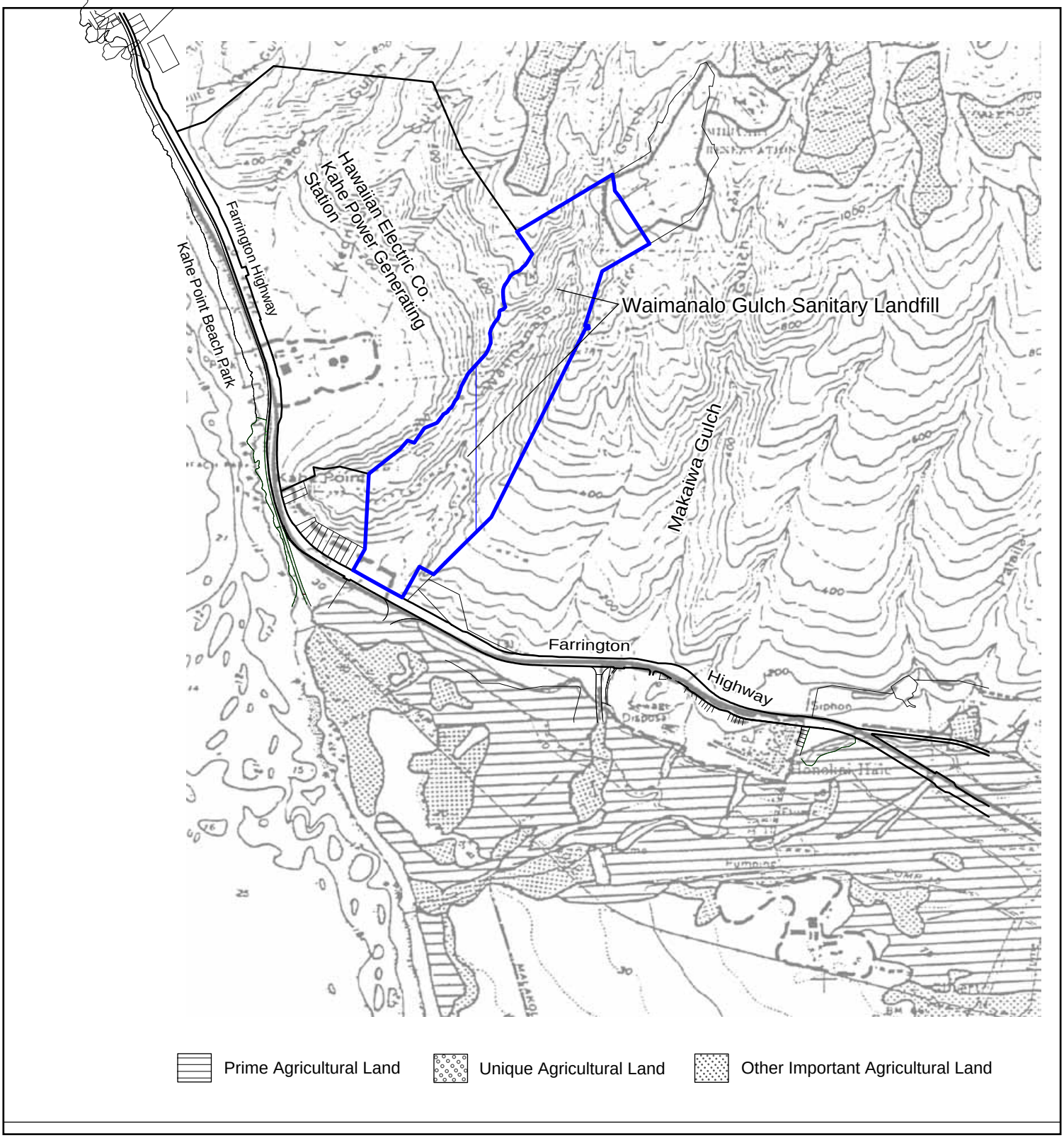

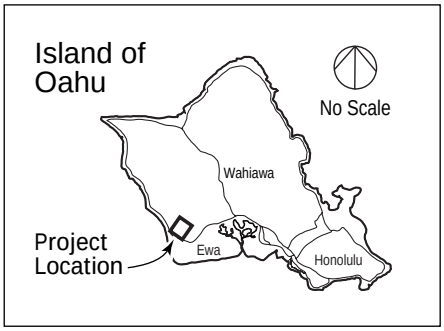

Figure 5-2
Agricultural Lands of Importance to the State of Hawaii (ALISH) Map
Waimanalo Gulch Sanitary Landfill Expansion
Department of Environmental Services

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The proposed expansion of the Waimanalo Gulch Sanitary Landfill conforms to the CZM Program, Objective 1, Recreational Resources, which calls for the provision of adequate, accessible, and diverse recreational opportunities in the CZM area. The proposed facility is in conformance with Objective 1 because it is not located on the coastline or shoreline, and does not involve the use or exploitation of coastal resources. The site is not in a location that would lead to the development of new shoreline recreational opportunities or to the dedication of new shoreline areas with recreational value.

The proposed expansion conforms to the CZM Program Objective 2, Historic Resources, which ensures that new development protect, preserve, and where desirable, restore those natural and manmade historic and prehistoric resources that are significant in Hawaiian and American history and culture. The proposed expansion achieves this objective by providing for a location that does not negatively impact the historic resources of the coastline.

Further discussion concerning CZM Program Objectives will be provided in the project Draft EIS. These Objectives will include:

Further discussion concerning other CZM Program Objectives will be provided in the project Draft EIS. The Objective areas will include:

Scenic and open space resources;
Coastal ecosystems;
Economic uses;
Coastal hazards;
Managing development;
Public participation;
Beach protection; and
Marine resources;

5.4. City & County of Honolulu General Plan

The General Plan of the City & County of Honolulu is a comprehensive statement of objectives and policies which sets forth the long-range aspirations of Oahu's residents and the strategies of actions to achieve them. It is the focal point of a comprehensive planning process that addresses physical, social, economic and environmental concerns affecting the City & County of Honolulu. Since adoption of the General Plan in 1977, the last amendment to the Plan was completed in 2002. Although the Plan has sustained a number of changes since its adoption the basic themes and directions for growth remain valid[1].

The proposed project is consistent with the General Plan objectives and policies that relate to the following:

> *"I. Population*
> *Objective B: To plan for future population growth.*
> *Policy 1: Allocate efficiently the money and resources of the City and County in order to meet the needs of Oahu's anticipated future population.*
> *Policy 2: Provide adequate support facilities to accommodate future growth in the number of visitors to Oahu."*

Although the proposed project does not directly influence future population growth, it represents an important public facility serving the island of Oahu by providing a location and means for the disposal of municipal refuse. In this regard the project is a necessary use of City resources that will meet future population needs and accommodate growth in the number of visitors to Oahu.

[1] General Plan, City & County of Honolulu. Website reference: http://honoluludpp.org/planning/GeneralPlan/GPIntro.pdf

"III. Natural Environment
Objective A: To protect and preserve the natural environment.
Policy 1: Protect Oahu's natural environment, especially the shoreline, valleys, and ridges, from incompatible development.
Policy 2: Seek the restoration of environmentally damaged areas and natural resources.
Policy 4: Require development projects to give due consideration to natural features such as slope, flood and erosion hazards, water- recharge areas, distinctive land forms, and existing vegetation."

The designation of Waimanalo Gulch Sanitary Landfill occurred in 1989 when there was limited growth in the Ewa region. Surrounding land uses were largely limited to industrial activities including the James Campbell Industrial Park and the Hawaiian Electric Company (HECO), Kahe Power Generating Station. Today, with the development of the adjoining Ko Olina Resort, Nanakuli Homesteads, Honokai Hale, Makakilo, Kapolei, and other subdivisions, the area has experienced major development and population growth. Although the proposed project will require an expansion of use of the existing facility and require transformation of the existing gulch into space that will be used for landfilling, such use will be limited by the remaining space that is available at the site. With the eventual closure of the site, the land upon which the facility is located is expected to be reclaimed for other public purposes that may be considered more compatible with area surroundings. These uses may include, but are not limited to, open space for park and recreational activities not unlike the Kakaako Community Park, which once served as a landfill in Honolulu. This practice will seek to restore use of the land for a public purpose and benefit.

"VIII. Public Safety
Objective B: To protect the people of Oahu and their property against natural disasters and other emergencies, traffic and fire hazards, and unsafe conditions.
Policy 2: Require all developments in areas subject to floods and tsunamis to be

located and constructed in a manner that will not create any health or safety hazard.

Policy 8: Provide adequate search and rescue and disaster response services."

Waimanalo Gulch Sanitary Landfill has other important functions in addition to its daily use for a municipal sanitary landfill. In the event of a public emergency involving a natural disaster such as a hurricane, tsunami, or earthquake, the facility will serve as a repository for disposal of disaster debris. This use will promote public safety by ensuring that a facility is available to handle disposal of debris that could otherwise accumulate in populated areas throughout the island, including along communities of the Waianae Coastline.

5.5. City & County of Honolulu Ewa Development Plan (Ewa Sustainable Communities Plan)

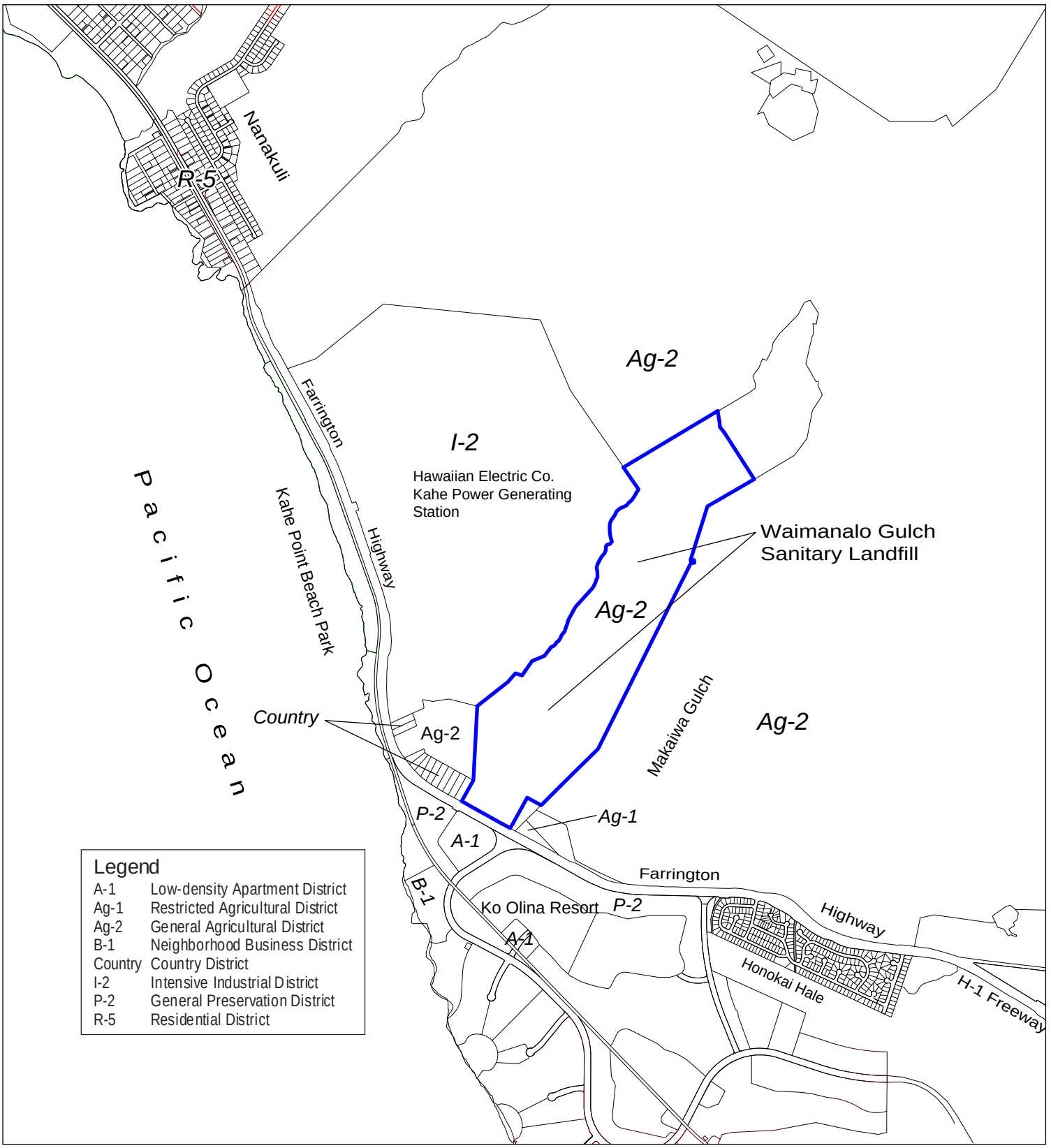
The Ewa Development Plan (DP), was adopted by the City in August 1997 and is currently undergoing a required five-year review and update. The date of completion of the review and update of the plan is not known at this time. As appropriate during the preparation of the project EIS, and upon completion of the five-year review, the proposed project will be evaluated for consistency with the updated Ewa DP.

The project site is depicted on the Ewa DP as within the Preservation District on the plan's illustrative Open Space and Phasing Maps. The Ewa DP discusses the analysis and recommendations of the Solid Waste Integrated Management (SWIM) Plan, prepared by the Department of Public Works and adopted by the Honolulu City Council in 1995. The Ewa DP states that the SWIM Plan identified the Waimanalo Gulch as having potential for expansion; however, siting and/or expansion of sanitary landfills should be analyzed and approved based on islandwide studies and siting evaluations.

The Development Plan Public Facilities Map also depicts a symbol for the existing landfill facility, but does not delineate the boundaries of the landfill.

5.6. City & County of Honolulu Zoning Law

The zoning designation of the project site is AG-2 General Agricultural District (See **Figure 5-3**, Zoning Map). According to the Land Use Ordinance, development a landfill is a permitted use in the AG-2 district. A determination of permitting requirements for this project pursuant to the zoning of the site will be completed with the Department of Planning and Permitting (DPP). It is anticipated that the existing facility and the proposed expansion will be considered a “public use” under the Land Use Ordinance. A Conditional Use Permit is not anticipated to be required.”



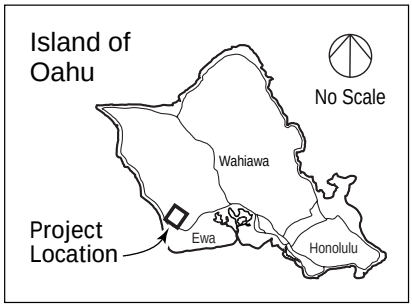


Figure 5-3
Zoning Map
Waimanalo Gulch Sanitary Landfill Expansion
Department of Environmental Services

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Section 6
Alternatives to the Proposed Action

6.1. Introduction

An alternatives analysis will be prepared for the project Draft EIS in accordance with the requirements of Chapter 343, HRS. The analysis will include a description of Oahu's municipal refuse disposal requirements to determine the capacity needed for landfill and will include current efforts of the City to increase recycling and reuse of items in the municipal waste stream and the benefit that is expected by diverting these items from landfill. The analysis will also consider use of alternative refuse disposal and/or treatment technologies suitable for use in the City & County of Honolulu, transshipment of refuse off-island, and efforts to identify alternative locations for the siting of a municipal sanitary landfill in compliance with federal EPA standards and other applicable criteria. A key source of information for Oahu's waste composition will be the City's Solid Waste Integrated Management (SWIM) Plan currently being updated.

The alternatives to the proposed project will include: the no action alternative; the use of alternative technologies to refuse disposal; the transshipment of waste off-island; and, the use of landfilling at alternative sites to meet Oahu's refuse disposal requirements.

The following is a summary of the alternatives:

6.2. No Action Alternative

Chapter 343, HRS, requires the consideration of the no action alternative to serve as a baseline against which other potential actions can be measured. The no action alternative would involve taking no further action to address Oahu's municipal refuse disposal needs through an expansion of the Waimanalo Gulch Sanitary Landfill. In as much as the closure of the landfill would fulfill Condition No. 1 of the State Special Use

Permit for the site, it would mean that after May 1, 2007, that no further disposal of MSW would be allowed and that the landfill would be closed.

The no action alternative would avoid the expenditure of public funds for use of the expansion area of the site. The potential for adverse environmental impacts associated with the use of the expansion area for landfilling would also be avoided. However, the no action alternative would result in an adverse islandwide impact to all the communities of Oahu due to loss of a location for sanitary disposal of municipal refuse.

Waimanalo Gulch Sanitary Landfill is a key facility of the City's waste management system and the final destination for municipal refuse including MSW, recycling residue, and H-POWER generated ash, residue, and unacceptable waste that cannot be further recycled or reused. The loss of this resource would similarly require the shut-down of H-POWER because of the loss of a disposal site for its by-products that cannot be further combusted, recycled or reused.

Taken together, the no action alternative would result in a major public health, safety, and economic problem for the City & County of Honolulu, its residents and visitors, and the State of Hawaii. Taking no action would also fail to address the objective of the City & County of Honolulu to provide a sanitary and secure means of disposing of municipal refuse.

6.3. Alternative Technologies to Refuse Disposal

Alternative technologies examined in the Draft EIS will include the following:

> Technological approaches that promise a dramatic reduction in the need for disposal in a landfill to minor diversion from disposal will be examined. These technologies will include but are not limited to: anaerobic digestion, hydrolysis, gasification, plasma arc incineration, and other methods that are currently under

consideration for processing to reduce or eliminate the municipal waste stream. The City's on-going efforts to investigate and implement appropriate technological approaches as a means of reducing or eliminating the need for use of a landfill will also be described.

The use of increased recycling as a means of reducing waste requiring disposal will be examined. The use of recycling alone is not anticipated to eliminate the need for a landfill. However, recycling will be described as an important component of the City's waste management system.

The potential for expansion of the H-POWER facility with the addition of a third boiler will be examined. H-POWER reduces the amount of waste requiring disposal by approximately 90 percent. This means that the waste volume converted by H-POWER into energy is reduced by 90 percent to ash and residue that cannot now be further recycled or reused. The expansion is anticipated to increase the amount of refuse that can be converted to renewable energy. Landfill capacity will be required for the disposal of H-POWER by-products including ash, residue, and unacceptable waste that cannot be further processed.

The City believes there is promise in the application of proven technology based alternatives as part of its refuse management system. The application of new technology, however, cannot replace the immediate need for a landfill within the timeframe of the outstanding State Special Use Permit. Such technologies will require, in addition to demonstrated performance and suitability for use in the City & County of Honolulu, the following:

The use of public lands or funds will require a thorough evaluation of technical approach and feasibility. Any technology that is selected will need to meet the test of proven performance and feasibility before being considered;

An evaluation of environmental issues associated with construction, operation, and decommissioning (closing down and removal) of the technology will be required. This includes the environmental issues, impacts, and mitigation measures necessary to ensure against adverse effects; and,

Selection of a suitable and acceptable location for the siting of a facility using the technology.

In addition, with the adoption of any new technology a sufficient "shakedown" period will be required to modify, adapt, or otherwise adjust operational procedures to ensure there is long term stability of service. Failure to maintain the process of refuse treatment would result in the need for disposal of unprocessed refuse, such as at a landfill.

Alternatives to the disposal of municipal refuse hold promise to divert some of the waste that generally is disposed of at a landfill. However, as will be provided in the Draft EIS, there are no alternative technologies that are currently proven or feasible that can completely eliminate the need for a municipal sanitary landfill in the City & County of Honolulu.

6.4. Transshipment of Waste Off-Island

This alternative involves the handling, processing, loading, and shipping of Honolulu's municipal refuse to another landfill site located in the mainland U.S. The factors involved in examining this alternative in the Draft EIS will involve:

Identification of a mainland U.S. landfill and owner/operator willing to contract on a long-term basis to accept Honolulu's refuse. Issues associated with identifying a potential site include: (1) the identification of waste that is appropriate, and waste types that may be either inappropriate or unacceptable for transshipment; (2) identifying how inappropriate or unacceptable waste will be handled or

disposed of; and (3) procedures for a contingency plan to address the transshipment of refuse and debris that is generated from a disaster, either natural such as a hurricane, tsunami, or other catastrophic event, or labor related, such as a strike.

Providing a suitable location for the staging, handling, and processing of municipal refuse including MSW, recycling residue, and H-POWER associated ash, residue, and unacceptable waste. Environmental issues that will be examined will include potential nuisance impacts associated with odor and windblown litter, vectors such as rats, mice, and flies, and management of storm water runoff.

The identification of the range of costs associated with transshipment including: handling, processing, and shipping costs; potential environmental costs for the City & County of Honolulu and the mainland U.S. facility receiving the waste; and the consequence of loss of revenues generated from landfill tip fees. Tip fees currently support the cost of operating the City's refuse management system.

A discussion of the environmental management and social issues arising from the transshipment of refuse to another state: (1) Oahu and the state of Hawaii are a geographically isolated island community. Transshipment of refuse will increase Oahu's dependency on resources that are not under its control, e.g., potential shipping strikes, long-term increases in disposal fees, and potential for new environmental compliance measures; (2) The state receiving Oahu's refuse will assume the long-term environmental management issues and problems associated with accepting our refuse; and (3) Transshipment will preserve more of Oahu's finite land resources for future generations.

6.5. Use of Landfilling to Meet Oahu's Refuse Disposal Requirements

The major alternative to the proposed project involves the selection of an alternative site for the development of a new municipal sanitary landfill. The consideration of alternative sites will be provided in the Draft EIS and will include additional information for the following:

An examination of the municipal waste stream requiring disposal in a landfill - The City & County of Honolulu is currently updating the Solid Waste Integrated Management (SWIM) Plan. The SWIM Plan identifies the composition of the municipal refuse stream including volume and future projected volume.

The consideration for the use of two or more landfill sites, or the use of one site only - The City has considered the potential for this approach and has determined: (1) Oahu's land resources are finite and limited. The use of more than one landfill site for disposal of municipal refuse would increase the rate of use of land for such facilities. This would reduce the land resources available for future generations; (2) major public and private effort is required to provide sufficient mitigation measures to address the potential negative environmental impacts associated with the development of any landfill. The development of two or more landfill sites would increase the potential for these impacts and the efforts necessary to mitigate such impacts; and (3) the development of a single site would provide economies of scale and result in the more efficient use of land than two or more smaller facilities. The development of two or more smaller facilities is expected to result in greater potential environmental effects and infrastructure costs. Furthermore, it is expected that the development of two or more landfill facilities will not be an acceptable social, political, or economic undertaking and that the expansion of a single facility at Waimanalo Gulch is in the best interest for all the communities of Oahu.

The potential effect of the development of the Nanakuli B landfill site in Leeward Oahu - The proposed Nanakuli B landfill project site is being undertaken as a private enterprise by the landowner and is recognized as a potentially viable site. However, the expansion of the Waimanalo Gulch Sanitary Landfill is the preferable alternative given the following factors: (1) Waimanalo Gulch has an existing unused capacity of at least 15 years; (2) Waimanalo Gulch constitutes a major capital infrastructure investment of the City & County of Honolulu. Much of this infrastructure will continue to be of service for the expansion of the site; (3) Waimanalo Gulch is already owned by the City & County of Honolulu. No major new public costs will be incurred for either the acquisition of land, or increased tip fees to amortize a completely new facility; and (4) the landfill operator, Waste Management of Hawaii, Inc., has a stated commitment to improve the mitigation of potential impacts associated with the expansion of the site.

Alternative landfill sites that have been considered - A list of alternative sites are identified in **Table 6-1, Alternative Sites Considered for a Municipal Sanitary Landfill on Oahu**. The location and description of each of the sites and the siting criteria for evaluating them will be provided. The criteria will include federal EIS exclusionary siting criteria[1], State of Hawaii regulations[2], City & County of Honolulu regulations[3], and other criteria as determined by ENV.

Selection and identification of the preferred Waimanalo Gulch Sanitary Landfill Expansion site - The major factors for the selection of the preferred alternative landfill site will be further identified in the Draft EIS. A summary of these factors include: (1) the expansion of the site will comply with federal, State

[1] Volume 40 Code of Federal Regulations (CFR), Part 258 (40CFR258).

[2] Chapter 11-23, Underground Injection Control and Chapter 11-55, Water Pollution Control, Hawaii Administrative Rules (HAR).

[3] Groundwater Protection Zone, Board of Water Supply, City & County of Honolulu.

of Hawaii, and City & County of Honolulu regulations and requirements for the expansion of the site. Prior environmental issues associated with the operation of Waimanalo Gulch have been addressed with the EPA and State DOH; (2) there is sufficient unused capacity remaining at Waimanalo Gulch to support an expansion of the site; (3) mitigation measures and compliance activities will be employed at Waimanalo Gulch to reduce and address the potential for adverse environmental effects; and (4) it is preferable to fully utilize the disposal resources of Waimanalo Gulch than to prematurely abandon it.

Table 6-1[4]
Alternative Sites Considered for a Municipal Sanitary Landfill on Oahu

No.	Site Name	Location
1	Auloa	Windward Oahu
2	Barbers Point	Leeward Oahu
3	Bellows	Windward Oahu
4	Diamond Head Crater	East Honolulu
5	Ewa No. 1	Leeward Oahu
6	Ewa No. 2	Leeward Oahu
7	Halawa A	Honolulu
8	Halawa B	Honolulu
9	Heeia Kai	Windward Oahu
10	Heeia Uka	Windward Oahu
11	Honouliuli	Leeward Oahu
12	Kaaawa	Windward Oahu
13	Kaena	North Shore Oahu
14	Kahaluu	Windward Oahu
15	Kahe	Leeward Oahu
16	Kalaheo (closed)	Windward Oahu
17	Kaloi	Leeward Oahu
18	Kapaa No. 1	Windward Oahu
19	Kapaa No. 2 & 3 (closed)	Windward Oahu
20	Kaukonahua	Central Oahu
21	Keekee	Windward Oahu
22	Koko Crater	East Honolulu
23	Kunia A	Central Oahu
24	Kunia B	Central Oahu

[4] Detailed site listing including acreage, tax map key, and additional information will be provided in the project Draft EIS.

Table 6-1, Continued
Alternative Sites Considered for a Municipal Sanitary Landfill on Oahu

25	Maili	Leeward Oahu
26	Makaiwa	Leeward Oahu
27	Makua	Leeward Oahu
28	Mililani	Central Oahu
29	Nanakuli	Leeward Oahu
30	Ohikilolo	Leeward Oahu
31	Olomana	Windward Oahu
32	Poamoho	Central Oahu
33	Punaluu	North Shore Oahu
34	Sand Island	Honolulu
35	Waiahole	Windward Oahu
36	Waianae Expansion	Leeward Oahu
37	Waihee	Windward Oahu
38	Waikane	Windward Oahu
39	Waimanalo Gulch Expansion	Leeward Oahu
40	Waimanalo North	Windward Oahu
41	Waimanalo South	Windward Oahu
42	Waipio	Leeward Oahu

Section 7
Permits and Regulatory Approvals that May be Required

7.1 State

Solid Waste Management Permit, Department of Health

Covered Source Air Permit, Department of Health

National Pollutant Discharge Elimination System Notice of Intent (NPDES NOI) Form C- Discharges of Stormwater Associated with Construction Activities, and Form B-Discharges of Stormwater Associated with Industrial Activities, Department of Health

7.2 City & County of Honolulu

State Special Use Permit, Amendment, Department of Planning and Permitting and State Land Use Commission

Section 8
Organizations, Agencies, and Public Parties Consulted in the Preparation of the Environmental Impact Statement Preparation Notice

The following parties were consulted to obtain information used in the preparation of this document.

8.1 Federal Agencies

8.2 State Agencies

Department of Agriculture (DOA)
Department of Health (DOH)

8.3 City & County of Honolulu

Board of Water Supply
Department of Environmental Services (ENV)
Department of Planning and Permitting (DPP)

8.4 Private and Community Organizations and Elected Officials

See **Appendix A - EIS Public Scoping Conducted for the Proposed Expansion of the Waimanalo Gulch Sanitary Landfill**, for a list of participants who signed in and the issues that were raised during a series of 4 islandwide meetings held by ENV between July 10 and August 10, 2006.

Section 9
Determination and Finding

The potential environmental effects of the proposed action have been determined to be of sufficient significance to warrant preparation of an EIS in accordance with the significance criteria of Chapter 11-200, HAR. This EIS Preparation Notice and a Draft and Final EIS will be prepared in accordance with Chapter 343, HRS, the Environmental Impact Statement Law, based on the consideration that the proposed undertaking involving the expansion of the Waimanalo Gulch Sanitary Landfill (1) will require the use of City & County of Honolulu land and fiscal resources for development, and (2) constitutes the development of a landfill.

Section 10
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