1271369v1

WATANABE ING LLP
IAN L. SANDISON 5597
JOYCE W.Y. TAM-SUGIYAMA 10325
RIHUI YUAN 11535
First Hawaiian Center
999 Bishop Street, Suite 1250
Honolulu, Hawaii 96813
Email: risandison@wik.com
jtam@wik.com
ryuan@wik.com

Attorneys for Intervenor
SCHNITZER STEEL HAWAII CORP.

BEFORE THE PLANNING COMMISSION
OF THE CITY AND COUNTY OF HONOLULU

STATE OF HAWAI'I

In the Matter of the Application of

DEPARTMENT OF ENVIRONMENTAL SERVICES, CITY AND COUNTY OF HONOLULU

Application to Modify SUP No. 2008/SUP-2 (SP09-403) by Modifying (1) Condition No. 1 of the Planning Commission's Findings of Fact, Conclusions of Law, and Decision and Order, dated June 10, 2019, and (2) Condition No. 5 of the LUC's Findings of Fact, Conclusions of Law, and Decision and Order Approving with Modifications the City and County of Honolulu Planning Commission's Recommendation to Approve Special Use Permit, certified on November 1, 2019

FILE NO. 2008/SUP-2
LUC DOCKET NO. SP09-403

INTERVENOR SCHNITZER STEEL HAWAII CORP.'S EXCEPTIONS TO PLANNING COMMISSION'S DRAFT FINDINGS OF FACT, CONCLUSIONS OF LAW, AND DECISION AND ORDER; DECLARATION OF JOYCE W. Y. TAM-SUGIYAMA; EXHIBITS "A" - "B"; CERTIFICATE OF SERVICE

HEARINGS:
Date: August 9, 2023
Time: 1:30 PM

Date: October 18, 2023
Time: 9:00 AM

Date: November 1, 2023
Time: 1:00 PM

INTERVENOR SCHNITZER STEEL HAWAII CORP.'S EXCEPTIONS TO PLANNING COMMISSION'S DRAFT FINDINGS OF FACT, CONCLUSIONS OF LAW, AND DECISION AND ORDER

Comes now, Schnitzer Steel Hawaii Corp. ("Schnitzer"), by and through its attorneys, Watanabe Ing LLP, and hereby submits the following exceptions to Planning Commission's ("Planning Commission") Draft Findings of Fact, Conclusions of Law, and Decision and Order, received on March 1, 2024, pursuant to the Rules of Planning Commission, City and County of Honolulu § 2-75.

Citations to the evidence in the record provided by Schnitzer within its Exceptions are not intended to be exhaustive, but merely illustrative of evidence supporting Schnitzer's exceptions. Citations to the record in these exceptions are noted by "Tr." with a date and page number for testimony during the contested case hearings. References to exhibits are denoted by "A___" for the City and County of Honolulu, Department of Environmental Services ("ENV"), "S___" for Schnitzer, and "K___" for KOCA.

I. BACKGROUND

This matter relates to the Department of Environmental Services, City and County of Honolulu's ("ENV") December 22, 2022 Application (the "2022 Application") to the Planning Commission, City and County of Honolulu (the "Planning Commission"). The 2022 Application seeks to modify (1) Condition No. 1 of the Planning Commission's Findings of Fact, Conclusions of Law, and Decision and Order, dated June 10, 2019 ("2019 PC Decision") and (2) Condition No. 5 of the Land Use Commission's ("LUC") Findings of Fact, Conclusions of Law, and Decision and Order Approving with Modifications the City and County of Honolulu Planning Commission's Recommendation to Approve Special Use Permit, certified on November 1, 2019 ("2019 LUC Decision"), such that the December 31, 2022 deadline for

ENV to identify an alternative landfill site will be extended by two years to December 31, 2024. The 2022 Application came on for contested case hearing before the Planning Commission on August 8, 2023, October 18, 2023, and November 11, 2023.

On or around December 22, 2023, ENV, KOCA, and Schnitzer (collectively, the "Parties") filed their respective Proposed Findings of Fact, Conclusions of Law, and Decision and Order. On or around January 9, 2024, ENV, KOCA, and Schnitzer filed Responses with respect to each parties Proposed Findings of Fact, Conclusions of Law, and Decision and Order. On February 7, 2024, the Planning Commission heard oral argument from the Parties with respect to their Proposed Findings of Fact, Conclusions of Law, and Decision and Order and Responses. The Planning Commission issued a Draft Findings of Fact, Conclusions of Law, and Decision and Order on March 1, 2024 ("Draft Order"). Parties were given until March 27, 2024 to submit their exceptions.

II. EXCEPTIONS

A. PROCEDURAL EXCEPTIONS TO PLANNING COMMISSION'S PROPOSED FINDINGS OF FACT

There are several procedural matters that must be addressed to maintain a complete and accurate record of this proceeding.

First, the Commission should **insert a new Finding of Fact ("FOF") 49** that reads as follows:

> **49.** Pursuant to the Rules of the Planning Commission § 2-75, on March 1, 2024, the Planning Commission served on the Parties its Proposed Findings of Fact, Conclusions of Law, and Decision and Order. The Parties were given until March 27, 2024 to submit their exceptions. *See* RPC §2-75.

Second, before voting, members of the Planning Commission who were not present during the entire contested case hearing are required to attest to the fact that they have reviewed

the transcript of the proceedings for the date(s) they were absent and that they have studied, examined, and understood the record of the hearings. *See* RPC § 2-76(a). A mix of Commissioners have been present and participated in the various stages of this contested case hearing. *See* Tr. 08/09/23, 2:1-6 (Commission members present: Chair Pane Meatoga III, and Commissioners Ryan Kamo, Ken Hayashida, Hilarie Alomar, Kai Nani Kraut); Tr. 10/18/23, 2:3-8 (Commission members present: Chair Pane Meatoga III, and Commissioners Ryan Kamo, Melissa May, Kai Nani Kraut, Joy Kimura); Tr. 11/1/23, 2:3-8 (Commission members present: Chair Pane Meatoga III, and Commissioners Ryan Kamo, Melissa May, Kai Nani Kraut, Joy Kimura); Tr. 2/7/24, 2:3-8 (Commission members present: Chair Pane Meatoga III, and Commissioners Ryan Kamo, Hilarie Alomar, Kai Nani Kraut, Joy Kimura). Accordingly, in order to comply with RPC §2-76(a), before voting, Commissioners who have not participated in all portions of the contested case hearing, must attest that they have studied, examined, and understand the record of the hearings. The Commission should **insert a new FOF 50** (assuming renumbering based upon new FOF 49 discussed *supra*), that reads as follows:

> **50.** On April 3, 2024, the Planning Commission considered the adoption of Findings of Fact, Conclusions of Law, and Decision and Order. During the hearing, Planning Commissioners _____, each attested to the fact that he or she reviewed the transcript of the proceedings for the date(s) that he or she was absent, and that he or she has studied, examined, and understand the record of the hearings pursuant to RPC § 2-76(a).

B. SUBSTANTIVE EXCEPTIONS TO PLANNING COMMISSION'S PROPOSED FINDINGS OF FACT

To prevent judicial reversal or modification of administrative findings of fact under § 91-14(g), Hawaii Revised Statutes ("HRS"), the Planning Commission should modify its proposed

findings that are "[c]learly erroneous in view of the reliable, probative, and substantial evidence on the whole record." *In re Gray Line Hawaii Ltd.*, 93 Hawai'i 45 (2000); *See Application of Kaanapali Water Corp.*, 5 Haw. App. 71, 78, 678 P.2d 584, 589 (1984). A finding of fact or a mixed determination of law and fact is clearly erroneous when: (1) the record lacks substantial evidence to support the finding or determination, or (2) despite substantial evidence to support the finding or determination, the Planning Commission is left with the definite and firm conviction that a mistake has been made. *See Kienker v. Bauer*, 110 Hawai'i 97, 105 (2006); *In re Water Use Permit Applications*, 94 Hawai'i 97, 119 (2000).

As a general matter, Schnitzer takes exception to the Planning Commission's omission of findings that the extension requested by ENV is warranted in light of the evidence presented. Such findings are foundational to support the Planning Commission's determination that ENV's request should be granted. Specifically, the Commission should make determinations that: (1) ENV appropriately considered sites within the No Pass Zone based on the 2012 Report of the Mayor's Advisory Committee on Landfill Site Selection (the "2012 MACLSS Report"); (2) ENV's site selection was delayed by circumstances beyond its control that occurred after the Land Use Commission entered its November 1, 2019 Findings of Fact, Conclusions of Law, and Decision and Order ("2019 LUC Decision"); and (3) ENV has demonstrated that it was acting diligently such that an extension is reasonable and justified, as evidenced by the meetings with BWS, meetings with federal authorities, and the ongoing landfill diversion efforts. Those findings form the factual basis and rationale for the Commission's decision to grant ENV's request for the extension. Each of the foregoing concern critical findings that have been omitted from the Draft FOF despite being supported by "**reliable, probative, and substantial evidence**" contained within the record. *See In re Gray Line Hawaii Ltd.*, 93

Hawai'i 45 (2000); *See Application of Kaanapali Water Corp.*, 5 Haw. App. 71, 78, 678 P.2d 584, 589 (1984). SSHC's exception to the omission of these findings will be discussed in further detail *infra*.

First, a finding regarding the rationale behind ENV's prior consideration of sites within the No Pass Zone provides important context for the current need for an extension. While ENV has been aware of the No-Pass Zone as a landfill siting consideration since at least 2003, ENV appropriately considered sites within the No Pass Zone based on the 2012 Report of the Mayor's Advisory Committee on Landfill Site Selection (the "2012 MACLSS Report"). K264, the 2012 MACLSS Report, was admitted into evidence pursuant to Stipulation at the August 9, 2023 contested case hearing. *See* Tr. 08/09/23, 30:20 – 32:16 (providing that the Parties stipulated to the acceptance of all of the exhibits submitted to the Planning Commission into evidence). As set forth in the 2012 MACLSS Report, the 2012 Mayor's Advisory Committee had considered the No-Pass Zone, and after deliberation had decided that "it would be more encompassing to include for assessment potential landfill sites located within the [Underground Injection Control] line and No Pass line." *See* K264[1], at 1-3. The Committee ultimately "decided to expand the list of potential sites to those located within the UIC line/No Pass line...." *Id.* at 1-7.

The Oahu Landfill Siting Study & Landfill Advisory Committee Recommendations ("LAC Final Report"), which was appended as Exhibit D of ENV's 2022 Application, documents the consideration of "43 preliminary and 11 potential landfill sites" derived from, among other things, the 2012 MACLSS Report and evaluated them against applicable

[1] For ease of reference, a true and correct copy of the 2012 MACLSS Report is attached hereto as Exhibit "A".

regulatory restrictions. *See* LAC Final Report[2], at 1-2. The LAC Final Report also stated that "ENV used the 2012 MACLSS study as a basis to develop of draft list of site evaluation criteria for discussion with the LAC." *See id.* at 1-3. All of the foregoing evidences the integral role the 2012 MACLSS Report played in ENV's consideration of sites within the No Pass Zone. To that end, Schnitzer urges the Commission to **revise** what is currently the Commission's **Draft FOF 81** as follows:

> **81.** Act 73 eliminated from consideration the previously proposed landfill sites outside of the No Pass Zone. *See* Dec. Babcock at ¶17; Tr. 10/18/23, 14:11-22. These previously proposed landfill sites had remained in consideration despite falling within the No Pass Zone as a result of the 2012 Report of the Mayor's Advisory Committee on Landfill Site Selection (the "2012 MACLSS Report"). The 2012 MACLSS Report, which provided guidance to the City in its evaluation of alternative sites, had considered the No Pass Line, and decided that "it would be more encompassing to include for assessment potential landfill sites located within the [Underground Injection Control] line and No Pass line." Ex. K264 at 1-3. The 2012 MACLSS Report, including its considerations and the sites identified therein, provided the basis for the development of areas and sites for evaluation by the 2021 Landfill Advisory Committee ("LAC"). *See* 2022 Application, Exhibit D, Oahu Landfill Siting Study & Landfill Advisory Committee Recommendations, at 1-2 and 1-3.

Second, the Commission must find that ENV's site selection process was hampered by a confluence of factors that could not have been predicted at the time of the Land Use Commission's November 1, 2019 Findings of Fact, Conclusions of Law, and Decision and Order ("2019 LUC Decision") to support the Commission's decision to grant the extension. In September 2020, Governor David Y. Ige signed into law Act 73, which amended State law to prohibit "waste or disposal facilities" (e.g., landfills) in conservation districts; and, (2) prohibit the construction of "waste or disposal facilities" within one-half mile from residential, school, or hospital property lines. *See, e.g.*, Tr. 10/18/23, (Babcock) 14:11-15; Exhibit A-14; 2022

[2] A copy of the LAC Final Report, excluding appendices, is attached hereto as Exhibit "B".

Application, at 5; DPP Recommendation, at 3; *see also* the Commission's Draft FOF 76. The restrictions imposed by Act 73 prohibited Applicant from siting a landfill on a significant portion of O'ahu and eliminated from consideration all previously proposed landfills sites outside of the No Pass Zone. *See* Tr. 10/18/23, 14:11-22, 26:18-27:4, 28:1-28:10, Exhibit "A15"; Dec. Babcock at ¶ 17; corresponding Draft FOF at 77, 81. In late November 2021, while the LAC was evaluating Applicant's six proposed landfill sites, a petroleum release from the Red Hill Bulk Fuel Storage Facility contaminated the Red Hill drinking water well. *See* Tr. 10/18/2023, 14:23-15:8; *see also* 2022 Application, at 2; corresponding Draft FOF at 84. The Red Hill facility's close proximity to Oahu's main drinking water aquifer caused widespread public health and environmental concerns about contamination of the island's drinking water. *See* Tr. 10/18/2023, 14:23-15:8, Tr. 11/1/2023, 50:20-22, 2022 Application, at 2; Commission's Draft FOF 84. It also resulted in BWS' heightened scrutiny towards the siting of uses, such as landfills, that had the potential to further contaminate Oahu's drinking water resources. *See* Tr. 10/18/23, 15:4-13; *see also* 2022 Application, at 9 and Exhibit D of the 2022 Application, and DPP Recommendation, at 5; *see* Commission's Draft FOF 85. In December 2021, BWS representatives highlighted these concerns at a LAC meeting and urged the LAC to reject any proposed landfill site that fell within the No Pass Zone. *See* Tr. 10/18/23, 15:9-13; Commission's Draft FOFs 85-86. The LAC ultimately concurred with BWS and subsequently voted not to recommend any of the six proposed sites due to each site's location in the BWS No Pass Zone. *See* Tr. 10/18/23, 15:13-18; *see also* 2022 Application, at 9; Commission's Draft FOF 88. The plethora of evidence adduced, and several findings already included in the Draft FOF, demonstrate that the circumstances that arose – Act 73 and the Red Hill Fuel Leak – were beyond ENV's control. A finding that summarizes the impact of

those two significant and separate events on ENV's efforts to identify an alternative site is important to support the Commission's determination that the extension is justified. To that end, Schnitzer submits that the Commission must **insert a new FOF 95** (assuming renumbering based upon new FOFs 49 and 50 discussed *supra*) that reads as follows:

> **95.** ENV's site selection process was delayed based on circumstances beyond its control that occurred after the SUP permit was issued. The passage of Act 73 into law and the 2021 Red Hill Fuel Leak could not have been predicted at the time of the 2019 PC Decision.

Third, the Commission must find that ENV acted diligently since the Land Use Commission's 2019 Order such that an extension is reasonable and justified, as evidenced by ENV's dialogue with BWS, meetings with federal authorities, and ongoing landfill diversion efforts. Such a finding is supported by substantial evidence that is already in the Commission's Draft Order. In October 24, 2022, after the LAC issued its final report recommending that none of the six sites be used, ENV, along with Mayor Blangiardi and other members of his administration briefed the BWS about the landfill selection status, the urgency of ENV's need to identify an alternative landfill site by December 31, 2022, and the LAC's reservations relating to the six proposed sites because of their location within the BWS No Pass Zone. *See* Tr. 10/18/23, 35:17-36:10, A-13; Commission's Draft FOF 90. At this meeting, ENV posed questions to the BWS, requested clarity on the BWS' legal authority over landfill siting in the No Pass Zone, and inquired as to whether than authority was being properly exercised. *Id.* Shortly thereafter, on November 3, 2022, via letter, ENV formally requested BWS' official position on the six potential sites evaluated by the LAC. *See* Tr. 10/18/23, 37:3-10; *see also* 2022 Application at 10 and Exhibit F, and DPP Recommendation, at 6; Commission's Draft FOF 91. BWS responded to this inquiry on November 16, 2022 and reiterated its position that

it would "not approve any of the six proposed landfill sites that are located above (or mauka) the No Pass Zone and over Oahu's drinking water aquifer system." *See* Tr. 10/18/23, 37:3-19; see also 2022 Application, at 10, and Exhibit C of the 2022 Application, and DPP Recommendation, at 6; Commission's Draft FOF 92. These subsequent attempts to get BWS to reconsider its position regarding the No Pass Zone demonstrate ENV's concerted efforts to site a landfill before the December 31, 2023 deadline. Moreover, ENV continues to be assiduous with its investigation of the recommendations provided by the LAC's Final Report. The City has made contact with federal government agencies about the potential use of their parcels and evaluating the possibility of eminent domain to create a buffer area that complies with the restrictions of Act 72. *See* Tr. 10/18/23, 39:7-25. The City is also looking into the potential for modification the restrictions of Act 73 to examine what sites may become available is amended. *See* Tr. 10/18/23, 40:1-9. ENV's extension request is also supported by ENV's ongoing waste diversion efforts and investigation into alternative recycling efforts to further decrease the amount of waste that must be landfill. These efforts demonstrate that ENV is not being idle with respect to comprehensive waste stream management. Accordingly, Schnitzer urges that the Commission amend its Draft Order as follows:

Insert New FOF 98-99 (assuming renumbering based upon new FOFs discussed *supra*; *i.e.*, immediately after what is currently Draft FOF 94 of the Commission's Draft Order); *see also* SSHC's Proposed FOFs ("PFOFs") 106-107.

> **98.** If the City's requested extension is granted, it intends to use the remaining time to further evaluate and pursue other options for siting an alternative landfill outside of the No Pass Zone. *See* DPP Recommendation, at 6. As recommended by the LAC's Final Report, the City will: (1) seek a repeal or amendment to Act 73; (2) continue discussions with the U.S. military regarding the acquisition of a site outside the No Pass Zone; and (3) evaluate the feasibility of acquiring (by eminent domain if necessary) residential properties adjacent to potential landfill

sites to create sites that would comply with the one-half mile buffer required by Act 73. *See* Tr. 10/18/23, 15:17-25; *see also* DPP Recommendation, at 6.

99. The City is currently actively engaging in the recommendations identified by the LAC. *See* Tr. 10/18/23, 39:3-40:19. The City has made contact with federal governmental agencies about the potential to use their parcels and is evaluating the possibility of eminent domain to create a buffer area that complies with Act 73. *See* Tr. 10/18/23, 39:7-25. The City has also looked into the potential of modifying the restrictions of Act 73 to examine what sites may become available if Act 73 is amended. *See* Tr. 10/18/23, 40:1-9. However, the City is pursuing the other options first. *See* Tr. 10/18/23, 40:10-11, 49:21-50:1.

Insert New FOFs 100 – 109 (assuming renumbering based upon new FOFs discussed *supra*; *i.e.,* immediately after the proposed insertion of new FOF 98-99, which follows what is currently Draft FOF 94 of the Commission's Draft Order)*; see also* SSHC's PFOFs 108-117, addressing "Continued Waste Diversion Efforts and Landfill Operations."

100. The City has continued its efforts to use alternative technologies to provide a comprehensive waste stream management program, consistent with the 2019 LUC Decision. *See* 2022 Application, at 11. Over the years, the City has been able to divert more and more waste from the WGSL to H-Power. *See* 2022 Application, at 11.

101. Honolulu Program of Waste Energy Recovery ("H-Power") is a waste-to-energy facility constructed in 1990 that takes all municipal solid waste and reduces its volume by 90% in order to reduce the amount of volume and space need for landfilling. *See* Tr. 10/18/23, at 16:9-13. H-Power also serves to generate close to 10% of the energy needs of Oahu. *See* Tr. 10/18/23, at 16:14-16. However, H-Power's main function is volume reduction. *See* Tr. 10/18/23, at 16:16-18.

102. In the Calendar Year 2020, approximately 1,210,281 tons of waste was generated on Oahu. Of that amount, WGSL received 56,114 tons of MSW and 182,112 tons of ash and residue from H-Power. The landfill diversion rate for 2020 was 82.2%. *See* 2022 Application, at 12.

103. In the Calendar Year 2021, approximately 1,215,467 tons of waste was generated on Oahu. Of that amount, WGSL received 106,723 tons of MSW and 157,531 tons of ash and residue from H-Power. The landfill diversion rate for 2021 was 80%. *See* 2022 Application, at 12.

104. Based upon data collected as of the date of the 2022 Application, the City projects that the MSW diversion rate for 2022 will be approximately 83%. *See* 2022 Application, at 12.

105. In 2012, H-Power's capacity increased to 900,000 tons per year following the addition of a third boiler. The third boiler is a mass burn unit, which can process waste streams that previously required landfilling, including sewage sludge, bulky waste, and treated medical waste (except medical sharps). *See* 2022 Application, at 12.

106. In total, H-Power's refuse derived fuel boilers and mass burn unit process waste to reduce its volume by 90 percent, and as of 2021, approximately 750,000 tons per year of MSW and sludge are diverted from the WGSL. *See* 2022 Application, at 12.

107. H-Power has also begun to investigate the combustion of process residue and pursuing ash recycling in efforts to further decrease the amount of waste that must be landfilled. *See* 2022 Recommendation, at 13. With respect to ash recycling, the City has executed a contract for the processing and beneficial reuse of ash and is currently proceeding with the first phase of the project. *See* Recommendation, at 13. This ash recycling project may eventually come to encompass ASR processing. *Id.*

108. Notwithstanding the foregoing, there is still waste that H-Power cannot accept or byproduct that H-Power cannot dispose of. *See* Tr. 10/18/23, at 16:25-17:21. For instance, H-Power produces ash and ash residue that must be disposed of in a landfill. *See* Tr. 10/18/23, at 17:2-6, 17:25-18:7. Certain materials containing asbestos, ASR, and medical sharps, are also not permitted to be combusted at H-Power. *See* Tr. 10/18/23, at 17:6-12. Those materials must be disposed of at WGSL, as the only other landfill is a construction and demolition waste landfill which is not permitted to accept anything other than construction and demolition waste. *See* Tr. 10/18/23, at 17:6-24.

109. Accordingly, WGSL is critical and necessary to the operations of H-Power and the health and safety of the entire Oahu community. *See* Tr. 10/18/23, at 18:5-20, and 23:18-25.

Insert New Paragraph 114 (assuming renumbering based upon new FOFs discussed *supra*; *i.e.,* immediately after what is currently Draft FOF 98 of the Commission's Draft Order).

114. In addition to actively reducing waste volume that is directed to the WGSL, the City is currently actively engaging in the recommendations identified the LAC. The City has made contact with federal governmental agencies about the potential to use their parcels and is evaluating the possibility of eminent domain to create a buffer area that complies with Act 73. *See* Tr. 10/18/23, 39:7-25. The foregoing, along with ENV's continued dialogue with BWS following the LAC's

final decision, demonstrate that ENV has acted with diligence and an extension is reasonable and justified.

III. CONCLUSION

For the foregoing reasons, Schnitzer respectfully requests that the Planning Commission adopt its Proposed Decision and Order subject to the exceptions set forth above.

DATED: Honolulu, Hawai'i, March 27, 2024.

IAN L. SANDISON
JOYCE W.Y. TAM-SUGIYAMA
RIHUI YUAN
Attorneys for Intervenor
SCHNITZER STEEL HAWAII CORP.

BEFORE THE PLANNING COMMISSION
OF THE CITY AND COUNTY OF HONOLULU

STATE OF HAWAI'I

In the Matter of the Application of DEPARTMENT OF ENVIRONMENTAL SERVICES, CITY AND COUNTY OF HONOLULU Application to Modify SUP No. 2008/SUP-2 (SP09-403) by Modifying (1) Condition No. 1 of the Planning Commission's Findings of Fact, Conclusions of Law, and Decision and Order, dated June 10, 2019, and (2) Condition No. 5 of the LUC's Findings of Fact, Conclusions of Law, and Decision and Order Approving with Modifications the City and County of Honolulu Planning Commission's Recommendation to Approve Special Use Permit, certified on November 1, 2019	FILE NO. 2008/SUP-2 LUC DOCKET NO. SP09-403 DECLARATION OF JOYCE W. Y. TAM-SUGIYAMA; EXHIBITS "A" – "B"

DECLARATION OF JOYCE W. Y. TAM-SUGIYAMA

I, JOYCE W. Y. TAM-SUGIYAMA, do declare and aver as follows:

1. I am an attorney with the law firm of Watanabe Ing, LLP and am licensed to practice law, and am in good standing in all state and federal courts in the State of Hawai'i.

2. I make this declaration based on my personal knowledge, information, belief and my review of the records and files concerning this matter, which are kept and maintained by my firm in the ordinary course of its business. I am competent and qualified to testify to the matters set forth herein.

4. A true and correct copy of K264, the 2012 Report of the Mayor's Advisory Committee, is attached hereto as Exhibit "A".

5. A true and correct copy of Exhibit D to the 2022 Application, the Oahu Landfill Siting Study & Landfill Advisory Committee Recommendations, excluding appendices, is attached hereto as Exhibit "B".

I, JOYCE W. Y. TAM-SUGIYAMA, do declare under penalty of law that the foregoing is true and correct.

DATED: Honolulu, Hawai'i, March 27, 2024.

JOYCE W. Y. TAM-SUGIYAMA

Report of the Mayor's Advisory Committee on Landfill Site Selection (MACLSS)

City and County of Honolulu, Hawai'i

September 2012

Department of Environmental Services
Refuse Division
City and County of Honolulu

EXHIBIT A

Report of the Mayor's Advisory Committee on
Landfill Site Selection (MACLSS)
City and County of Honolulu

September 2012

The Mayor's Advisory Committee on Landfill Site Selection:

David Z. Arakawa, Esq.
Thomas E. Arizumi
John Goody
Joseph W. Lapilio, III
Tesha H. Mālama
Janice Marsters, Ph.D.
Richard Poirier
Chuck Prentiss, Ph.D.
George West

Department of Environmental Services
Refuse Division
City and County of Honolulu

Technical Consultants:
R. M. Towill Corporation
Resolutions Hawai'i
SMS Research and Marketing
Pacific Waste Consulting Group
Cultural Surveys Hawai'i, Inc.
AECOS Consultants, Inc.

Table of Contents

List of Tables

List of Figures
(See End of Sections)

Attachments

Section 1 – Executive Summary

1.1 Introduction

This report summarizes the efforts of the volunteer Mayor's Advisory Committee on Landfill Site Selection (Committee) to identify and rank potential landfill sites for consideration by the City and County of Honolulu (City). The guidance provided by the Committee will be used by the City as it moves forward with technical studies and analyses, including the preparation of an Environmental Impact Statement (EIS) for a new landfill site.

1.2 Need for a New Landfill Site

The provision of solid waste landfill capacity is a critical infrastructure element provided by the City to its citizens and is vital to the management of solid waste on O'ahu. A landfill is necessary for the disposal of non-combustible municipal solid waste (MSW), construction and demolition (C&D) waste, Honolulu Program of Waste Energy Recovery (H-POWER) related ash and residue, and other non-recyclable waste. A landfill is also necessary to provide a critical backup disposal site when H-POWER and other diversion facilities are unable to accept waste for processing (e.g., during periods of maintenance or repair).

The Mayor convened this Committee of volunteers pursuant to an amendment of the City's Special Use Permit granted by the State Land Use Commission (LUC) which extended the use of the Waimānalo Gulch Sanitary Landfill (WGSL) until July 2012. Condition No. 4 of the LUC decision required that the City begin to identify and develop one or more new landfill sites that shall either replace or supplement the existing WGSL.

In compliance with the LUC Condition No. 4, the City instructed the Committee that they were not to consider WGSL in their deliberations as the current WGSL could not supplement or replace itself. The City also related to the Committee that: (1) it is the City's intent to pursue the use of the WGSL until it reaches its full capacity; (2) that the sites the Committee will evaluate and rank will be considered for future use; and, (3) that the Committee's identification of landfill sites should include the provision for accepting MSW, C&D waste, and ash and residue from H-POWER.

1.3 Mayor's Landfill Site Selection Committee

The Mayor appointed a 12–member volunteer committee composed of citizens representing various communities and expertise on O'ahu. Three committee members left the Committee over the course of deliberations for personal reasons. The City decided to not replace the three members who resigned based on the number of meetings already held and the complexity of the issues covered. The final Committee of nine members provided experience and expertise from a broad range of backgrounds that included: public and community interests; State and City government; environmental and health sciences; legal and business professions; and others.

The Committee was directed by the City to undertake the following:

(1) Review a list of landfill sites identified by the City in prior studies and to select the appropriate potential sites that should be subject to further evaluation using the Committee's community-based criteria. The Committee was tasked with developing its criteria with the assistance of the Facilitator and Consultant team;

(2) Identify potential new landfill sites for consideration;

(3) Identify and develop community-based criteria that are considered most important from a community's perspective in the siting of a new landfill; and

(4) Produce a report on the results of its findings including a ranked list of sites for consideration by the City based on the application of the Committee's criteria. The

community-based nature of the criteria were those that the Committee felt would not receive the same level of attention and weight as they would in mandated technical evaluations such as cost analyses, topographic and geotechnical studies, historical and cultural sites assessments, and surveys of flora and fauna, among others that will be performed by the City in subsequent steps culminating in the preparation of an EIS.

The Committee deliberated over the course of 10 meetings between January 2011 and April 2012.

As a result of its deliberations the Committee decided to reconsider the initial list of alternative landfill sites provided by the City and requested that the consultants further investigate land uses and sites not previously considered. The outcome of this investigation is described below.

1.4 The Site Identification Process

The process of identifying landfill sites began with an inventory of approximately 43 potential landfill sites identified by the Department of Environmental Services (ENV) from the City's previous studies and investigations starting from approximately 1980. When the consultants began to evaluate these sites with exclusionary criteria such as runway airspace and others noted below it was clear there would be far fewer viable sites than suggested by the initial size of the list. The consultant discovered that many of the sites originally identified had been subsequently placed into residential development. Therefore, the majority of the 43 identified sites were no longer available for landfill use. During this period, the Committee was also asked to recommend potential new sites for consideration and inclusion in its report at this early stage of the process.

The evaluation of the remaining sites was subject to a two-step process. In the first step, the sites were evaluated against screening factors that would be used to identify sites for removal based on key attributes against which the site would no longer be considered viable. The screening factors that were used to evaluate the remaining sites included[1]:

- Protection of runway airspace
- Federal land ownership
- Conservation district designated land (any site with a Conservation district subzone other than the least restrictive General Subzone)
- Board of Water Supply (BWS) well capture zones
- Commission on Water Resource Management (CWRM) well sites
- Critical Habitats and Natural Area Reserve System (NARS) lands
- Impaired Water Bodies as designed by the Environmental Protection Agency (EPA) and Department of Health (DOH)
- Valued agricultural lands according to the Agricultural Lands of Importance to the State of Hawai'i (ALISH) and Land Study Bureau (LSB) classification systems
- Parcel contains at least one structure as noted on aerial maps (this was later removed)
- Sites located above residential subdivisions or developments (this was later removed)

[1] The screening factor, Sites located above residential subdivisions or developments was added after the Committee decided to redirect the effort to identify sites inside of the UIC/No Pass line. This screening factor was subsequently removed by the Committee during the process.

The second step involved the application of the Committee's community-based criteria. Before this step was taken the Committee noted a number of points including:

(1) The majority of the remaining sites evaluated are located outside of the Underground Injection Control (UIC)/No Pass line.

The Committee deliberated on this matter and decided it would be more encompassing to include for assessment potential landfill sites located within the UIC line and No Pass line. In its deliberations, the Committee understood City Council Resolution 03-09, Establishing A City Policy That Municipal Solid Waste Landfills Should Not Be Located Over The City's Underground Drinking Water Sources, which at that time was an important part of the City's practice to not site landfills within the UIC/No Pass line. However, the Committee also noted a landfill that is located outside an existing potable water well capture zone and that is properly designed, engineered, and operated in accordance with environmental regulatory controls and safeguards, should not adversely affect groundwater that serves a potable water system.

(2) Only one federal site, part of the Bellows Air Force Base (AFB), was identified[2].

The Committee deliberated on this matter with some committee members noting that in order to increase the number of potential sites, lands that are owned by the federal government, with the exception of lands that are known to be actively used by the military, should be included for consideration. The Committee's rationale for this inclusion was: (A) every option for the identification of potential sites should be considered. Without specifically requesting the use of federal land, there would be no way of verifying that such use would not be possible; and, (B) federal lands should still be explored because there are processes available through Congressional action that can make possible the use of non-active military lands.

(3) The City recommended that any site under consideration should be greater than 100 acres.

A 100-acre minimum site size was recommended to the Committee by the City and was originally agreed upon. However, after further deliberation the Committee felt that sites between 90 and 100 acres should also be considered to ensure that all locations that could be potentially usable are addressed. Potential sites of between 90 and 100 acres were thereafter included as a part of the site identification process.

The City considered the issues above involving the Committee's desire to include land within the UIC/No Pass line, federal lands, and the minimum site size, and determined that the Committee must be allowed to conduct its own deliberating process without undue influence.

The Committee also noted during its deliberations that the siting of a landfill is a difficult exercise and that effort should be taken to develop the most extensive list of sites possible within the various federal and state constraints. The Committee therefore expanded the list of sites that would be assessed recognizing that some of the screening factors such as those identified above should be reassessed.

This resulted in a major shift from an evaluation of the remaining sites previously identified to an evaluation of new potential landfill sites. The consultant team thereafter reevaluated the island of O'ahu utilizing a Geographic Information System (GIS) based approach. This resulted in the identification of new sites that were subjected to the same analyses as the original sites. In undertaking the GIS-based analysis the consultants noted the following:

[2] This site was later removed from consideration due to a response from the Marine Corps Base Hawai'i on February 9, 2011, indicating that the site was needed to support training requirements.

(1) A GIS-based analysis is not a substitute for a more formal evaluation of a landfill that would be performed by the City in an EIS. The undertaking of an EIS level of assessment and evaluation must be performed for the proper identification of any landfill site prior to it being developed; and

(2) A GIS-based analysis involves a desktop level of study[3]. Investigative fieldwork is not usually involved and was not performed in this instance. The analysis was based on the use of existing data available in the public domain (i.e., the State of Hawaii GIS Website and other public GIS sources), or was obtained by consulting directly with the agencies and parties with responsibility and knowledge in specific technical fields. These included the BWS, CWRM, and the DOH.

The GIS-based analysis evaluated land parcels on the island of O'ahu including locations within the UIC/No Pass line, federal lands, and sites both greater than 100 acres and between 90 and 100 acres in size. These groups were split into four analysis groups for discussion (See **Attachment B**). Approximately 465 potential sites were identified as follows:

- Group 1: 97 parcels of 100+ acres in size outside the UIC/No Pass line
- Group 2: 337 parcels of 100+ acres in size inside the UIC/No Pass line (not consistent with City policy)
- Group 3: 13 parcels of 90 to 100 acres in size outside the UIC Line and No Pass line
- Group 4: 18 parcels of 90 to 100 acres in size inside the UIC Line and No Pass line (not consistent with City policy)

After applying the screening factors described above to the 465 potential sites, 11 sites remained for further application of the Committee's community-based criteria as shown in **Table 1-1**:

Table 1-1 – List of Sites for Application of Community-Based Criteria

Site Name (Alphabetic Order)	Within UIC/ No Pass Line*	TMK[4]	Parcel Acreage	Land Ownership
Ameron Quarry	No	42015001	382	Private
Kāne'ohe by H-3	No	44012001	158	Private
Kapa'a Quarry Road	No	44011003	258	Private
Ke'eau	Yes	83001013	634	Private
Upland Hawai'i Kai	No	39010047	97	Private
Upland Kahuku 1	Yes	56008002	1,621	Federal
Upland Kahuku 2	Yes	57002001	1,529	Federal
Upland Lā'ie	Yes	55007001	2,231	Private
Upland Nānākuli 1[5]	Yes	85006011	882	Private
Upland Pupukea 1	Yes	61006001	2,177	Private
Upland Pupukea 2	Yes	61007001	1,672	Private

*Sites that intersect the UIC/No Pass Line are considered within the UIC/No Pass Line.

[3] A desktop study means that basic research will be performed using only existing data sources supplemented by consultation with experts in technical fields as applicable to the nature of the study. Fieldwork including the use of site surveys is not performed.

[4] The identities of the sites were not disclosed to the Committee members until after the application of the Committee's community-based criteria weights.

[5] At least one Committee member noted that the location of this site is in Wai'anae.

1.5 The Process of Applying the Committee's Community-Based Criteria

The Committee developed landfill siting criteria to supplement those mandated by state and federal government agencies. This enabled the comparison of key community-based considerations for a new landfill that were important to the Committee (e.g., proximity to residences, groundwater protection, and travel distances, etc.).

The Committee's criteria consisting of specific factors important to communities were applied to each of the sites by the consultant team. Working with the consultant team, the Committee arrived at a consensus as to how each of the community criteria was to be measured and evaluated. The Facilitator worked with the Committee to develop a series of weights that reflected the relative importance of each of the 19 criteria. Weight values were assigned to make it clear which criteria were more important than others from 1 to 19. The 19 community-based criteria and their scaled weights are shown in **Table 1-2**:

Table 1-2 – Community-Based Criteria and Weighting

No.	Criterion Name	Weights
1	Landfill Capacity	2.50
2	Location Relative to Educational Institutions, Health Care Facilities, or Parks and Recreation Facilities	9.85
3	Location Relative to Residential Concentrations	10.00
4	Location Relative to Visitor Accommodations	4.00
5	Location Relative to Local or Visitor Commercial Facilities	4.00
6	Effect on Established Public View Planes	2.50
7	Wind Direction Relative to Landfill Site	4.00
8	Effect on Local Roads and Traffic in Residential Neighborhoods	9.55
9	Wear and Tear on Highways and Roadways Caused by Landfill Related Traffic	1.00
10	Location Relative to Identified Community Disamenities	9.25
11	Location Relative to H-POWER	8.65
12	Effect of Precipitation on Landfill Operations	9.25
13	Landfill Development, Operation and Closure Cost	7.00
14	Land Use Displacement Cost	2.50
15	Potential for Solid Waste-Related Land Uses	1.00
16	Location Relative to Wetlands and Natural Area Reserve System Land	4.00
17	Location Relative to Listed Threatened and Endangered Species	2.50
18	Location of Surface Water Resources	8.95
19	Location of Archaeological and Culturally Significant Resources	1.00

A "dual blind" process was followed in which only the Facilitator knew both the location of the potential landfill sites and the results of the Committee's criteria weighting. Specifically:

The consultants only knew (1) the locations of the potential landfill sites under examination and (2) the raw scores that would be assigned to the criteria. The Committee did not.

The Committee knew the weights assigned to the 19 criteria they developed and did not know the locations of the landfill sites the weights would be applied.

On Friday, April 20, 2012, the Committee and the consultant team met to disclose the information each of them had known but purposefully had not shared. The intent was to preserve the integrity of the landfill siting analysis by keeping the results from being unduly influenced by issues or concerns regarding a landfill sited in a particular community (i.e., Not In My Back Yard (NIMBY) influences).

During the process of applying the criterion weights at the Committee's meeting of April 20th, an error was made. As a result of the error, the Preliminary Site Scores produced and released at the

meeting were incorrect. QA/QC procedures conducted over the weekend discovered the error and steps were taken to inform the Committee and the City and to convene a press conference to inform the public. The data error was corrected, and, at the City's request, all data in the Site Evaluation System were re-verified. On Wednesday, April 25, a corrected set of Final Site Scores was issued. The correct Final Site Scores is presented in the next section of this Report.

1.6 Committee Findings and Recommendations

The ranking of potential landfill sites identified through the Committee's process is listed below. The site locations are provided in **Figure 6-1** of this report.

Table 1-3 – Final List of Ranked Sites

Rank	Site Name (Ranked Order)	Within UIC/ No Pass Line	TMK	Parcel Acreage	Estimated Capacity (Yrs.)	Land Ownership
1	Upland Kahuku 2	Yes	57002001	1,529	>30	Federal
2	Upland Kahuku 1	Yes	56008002	1,621	25-30	Federal
3	Upland Pupukea 2	Yes	61007001	1,672	25-30	Private
4	Upland Pupukea 1	Yes	61006001	2,177	25-30	Private
5	Ameron Quarry	No	42015001	382	>30	Private
6	Upland Nānākuli 1[6]	Yes	85006011	882	>30	Private
7	Upland Lā'ie	Yes	55007001	2,231	20-25	Private
8	Ke'eau	Yes	83001013	634	25-30	Private
9	Kāne'ohe by H-3	No	44012001	158	15-20	Private
10	Upland Hawai'i Kai	No	39010047	97	10-15	Private
11	Kapa'a Quarry Road	No	44011003	258	15-20	Private

The Committee offers the following findings and recommendations to its list of ranked sites:

(1) The sites identified through this process include alternative landfill sites within the UIC line/No Pass line. The Committee recognizes its identification of potential landfill sites does not conform to existing City policy as expressed in Council Resolution 03-09. However, the Committee notes the following points:

- It chose to proceed in this manner as a result of careful consideration realizing the acute shortage of remaining land on O'ahu that is available for landfilling;
- A landfill that is located outside an existing potable water well capture zone and that is properly designed, engineered, and operated in accordance with environmental regulatory controls and safeguards should not adversely affect groundwater that serves a potable water system. Alternative landfill sites should therefore be investigated in locations not previously considered by the City; and,
- The list of original sites the Committee was asked to consider needed to be expanded on the basis that, without a change in how landfill siting is considered, the City would continue to be limited to the same list of alternative locations previously identified.

(2) The Committee also believed since land available for a landfill is limited on O'ahu, that they should direct the Consultant to look at federal lands not known to be in active military use. These sites were added to the analysis.

(3) The Committee's process involved the identification of alternative landfill sites by the Consultant using a GIS-based system supplemented by interviews with regulatory agencies. This desktop level of study was conducted making every effort to use or obtain current

[6] At least one Committee member noted that the location of this site is in Wai'anae.

information. However, the ranking of potential landfill sites and the findings and recommendations of this report should not be misconstrued as the final analysis that should be performed. The City must exercise due diligence by verifying the Committee's work and findings by conducting further studies as would customarily be performed in technical studies and analyses, including the preparation of an EIS for a new landfill site.

1.7 Other Recommendations

The Committee notes that it decided to expand the list of potential sites to those located within the UIC line/No Pass line as established by the DOH and BWS. The addition of these sites resulted in multiple ranked lists and included those that meet City Council Policy and those that do not, and those that meet the 100 acre minimum and those between 90 to 100 acres in size.

The Committee strongly recommends the City move aggressively to develop alternative technologies to landfilling, and continue to strengthen its waste stream diversion and recycling efforts.

The Committee also recommends that in planning, designing and selecting an operator for the next landfill site, that the City adopt a philosophy that everything that goes into the landfill may be of value and could provide a potential revenue stream for the City and operator in the future. It is also strongly recommend that this thinking be applied to the existing site with the current operator. This would require the operator to adequately map where things are disposed of such that if value can be derived from items in the future, they can be recovered.

The Committee feels that whatever site is ultimately chosen the City must consider "Host Community Benefits." The details of a benefits package should be negotiated with the affected community.

1.8 Committee Minority Report

One Committee member filed a Minority Report which was understood as the desire to modify the measurement of Criterion 8, Effect on Local Roads and Traffic in Residential Neighborhoods, to include the total distances refuse vehicles must travel to a landfill instead of limiting the analysis to the effect on local roads within residential neighborhoods.

It is recommended that this analysis be performed as the City proceeds with its next steps toward the technical evaluation of the alternative sites. The key findings of the Committee including revisiting the purpose and intent of Criterion 8, should therefore be performed as a verification step, with the results incorporated into the final decision making process.

1.9 Concluding Remark

With these findings and recommendations, the Committee anticipates the City will move forward with technical studies and analyses, including an EIS, to evaluate in detail the benefits and constraints of each site to determine the preferred alternative for a new landfill capable of serving all the communities of O'ahu.

Section 2 – Introduction

2.1 Acknowledgement of Mayor

The Mayor's Advisory Committee on Landfill Site Selection (Committee) expresses thanks to Mayor Peter Carlisle for his support and for allowing this Committee to perform the difficult task of identifying potential new landfill sites not previously considered. This Committee further objectively evaluated and ranked alternative landfill sites based on the application of criteria it developed from a community-based perspective understanding that while the selection of a landfill will serve and benefit all the communities of O'ahu, that no community desires a landfill in their back yard.

The Committee appreciates the Mayor's selection of members from the community with experience and expertise from a broad range of backgrounds. The skill sets represented by this Committee are from state and city government, and the private sector, representing disciplines that range from the environmental and health sciences; the legal, regulatory, and policy aspects of land use planning; business professions; and government and community-based groups and organizations.

The Committee believes this diversity of backgrounds and skills combined to provide an understanding of landfill planning that is an improvement over a committee comprised of only technical or only community-based experts. The Committee achieved a balance between the two and provided thoughtful points of view that are a part of this Report.

The Committee looks forward to the City's next steps in performing its due diligence to validate the pertinent information as used herein to identify potential new landfill sites, and using the results of the Committee's community-based criteria as a part of the City's site selection process for a new landfill.

2.2 Need for a New Landfill Site

The provision of solid waste landfill capacity is a critical infrastructure element provided by the City to its citizens and is vital to the management of solid waste on O'ahu. A landfill is necessary for the disposal of non-combustible municipal solid waste (MSW), construction and demolition (C&D) waste, Honolulu Program of Waste Energy Recovery (H-POWER) related ash and residue, and other non-recyclable waste. Although the City will continue to develop and advance waste recycling and reduction to reduce the need for a landfill, all alternative processes involve the generation of waste by-products that cannot be further reused, recycled, or otherwise combusted. For these forms of waste, a solid waste landfill remains at this time the most viable alternative for the handling of refuse that is available to the City.

A landfill is also necessary to provide a critical backup disposal site when H-POWER and other diversion facilities are unable to accept waste for processing such as during periods of maintenance or repair.

This volunteer Committee was convened by the Mayor pursuant to an amendment of the City's Special Use Permit granted by the State Land Use Commission (LUC) which extended the use of the Waimānalo Gulch Sanitary Landfill (WGSL) until July 2012. Condition No. 4 of the LUC decision required that the City begin to identify and develop one or more new landfill sites that shall either replace or supplement the existing WGSL.

The City instructed the Committee, in compliance with LUC Condition No. 4, that they were not to consider WGSL in their deliberations as the current WGSL could not supplement or replace itself. The City related to the Committee: (1) the Committee's identification of landfill sites should include the provision for accepting MSW, C&D waste, and ash and residue from H-POWER; (2) the City's intention is to utilize WGSL until its full capacity is reached. An

important reason for this is that the City's considers land to be a precious resource. Should a landfill site not be utilized to its full potential and capacity, it would represent an inefficient use of the land and public treasury, since it would prematurely require the use of a new landfill site and involve major new capital expenditures for development; and (3) the sites the Committee will evaluate and rank will considered for future use by the City as it proceeds with its site selection and EIS process.

2.3 Advisory Committee's Instructions

The Committee was directed to provide recommendations to the City by undertaking the following:

(1) Review a list of landfill sites identified by the City in prior studies and select the appropriate potential site or sites that should be subject to further evaluation using the Committee's community-based criteria.

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

(2) Identify potential new landfill sites that should be further considered for the disposal of non-combustible MSW, C&D waste, and H-POWER related ash and residue;

(3) Identify and develop community-based criteria that are considered most important from a community's perspective in the siting of a new landfill; and

(4) Produce a report on the results of its findings including a ranked list of sites for consideration by the City based on the application of the community-based criteria.

The community-based nature of the criteria are those that the Committee felt might not receive the same level of attention and weight as they might in mandated technical evaluations such as topographic, geotechnical, and engineering studies, cost analyses, historical and cultural site assessments, and surveys of flora and fauna, among others that will be performed by the City in subsequent steps culminating in the preparation of an EIS.

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

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

2.4 Members of the Mayor's Advisory Committee

The Mayor appointed a 12–member volunteer committee composed of citizens representing various communities and expertise on O'ahu. The intent in selecting the members of the Committee was twofold:

(1) The first intent was to select individuals with a background in community involvement and who could bring to the table an understanding of issues and concerns that would be most important from a community's point of view.

(2) The second intent was to ensure that the majority of the Committee's members could understand the technical issues and complexities involved in the siting of a new landfill, including but not limited to environmental and legal issues. It was noted that the overall makeup of a previous committee had been lacking in this kind of experience based on the need for a technical support committee to assist them with their deliberations. The present Committee is designed to balance community and technical needs.

During the Committee's deliberations three committee members resigned for personal reasons. The City decided to not replace these members based on the number of meetings already held and the complexity of the issues covered. This resulted in a final Committee comprised of nine members.

All Committee members selected to serve possess experience and expertise from a broad range of backgrounds that included public and community interests; State and City government; environmental and health sciences; legal and business professions; and others.

Members of the Mayor's Advisory Committee on Landfill Site Selection:

David Z. Arakawa, Esq. – Executive Director, Land Use Research Foundation, and former City Prosecutor, City and County of Honolulu

Thomas E. Arizumi – Former Division Head, Environmental Management Division, State Department of Health

John Goody – Former Urban Planner, Belt Collins Hawai'i, Ltd., and Colonel, U. S. Marine Corps

Joseph W. Lapilio, III – Principal, Naki' I Ku and Community Consultant

Tesha H. Mālama – Kalaeloa Director of Planning, Hawai'i Community Development Authority

Janice Marsters, Ph.D. – Senior Environmental Scientist, Kennedy Jencks

Richard Poirier – Former Planning Program Manager, Office of State Planning, Office of the Governor, and State Department of Business, Economic Development & Tourism

Chuck Prentiss, Ph.D. – Former Executive Secretary, Honolulu Planning Commission, City and County of Honolulu

George West – Former Executive, Ameron Hawai'i

The City and the Committee acknowledge the service of the former members who were unable to complete their term:

Bruce Anderson, Ph.D. – Former Director, State Department of Health

David Cooper, Ph.D. – President and CEO, The Hāna Group

John DeSoto – Former Honolulu City Councilman

Section 3 – Committee Purpose and Process

3.1 Purpose of Committee

The purpose of this Committee is to provide a Report to the City identifying a list of ranked potential landfill sites for further evaluation as the City moves forward with the preparation of an EIS for its next landfill site. Consideration for the use of WGSL, as noted, is not a part of the Committee's charge because it is the City's intention to pursue the use of the WGSL until it reaches full capacity. The EIS process will include further technical studies and evaluations that will support the City's identification of its preferred alternative landfill site.

The Committee is asked to consider single, solid waste landfill sites that can accept three principal refuse streams: MSW, C&D waste, and H-POWER related ash & residue. The use of separate landfills for certain types of solid waste are not considered viable because of: (a) economies of scale that can be achieved from a single facility to handle all three waste streams; (b) the potential for significantly greater environmental impacts if multiple sites are used to handle separate waste streams; and (c) significant costs associated with developing a site for each waste stream.

The Committee's identification of ranked landfill sites is based on the use of community-based criteria developed by this Committee. The results of this process are documented in this Report and will facilitate the accomplishment of Condition No. 4 of the approved State Special Use Permit, requiring the City to begin to identify and develop one or more new landfill sites that shall either replace or supplement the existing WGSL.

3.2 Major Policy Constraints Considered by the Committee

In addition to the requirements of State Special Use Permit, Condition No. 4, the Committee evaluated existing land use policies to identify constraints to its deliberations. These included:

(1) Resolution 03-09, FD 1, Establishing a City Policy That Municipal Solid Waste Landfills Should Not be Located Over the City's Underground Drinking Water Sources. Adopted by Honolulu City Council, April 16, 2003. (See **Attachment A**)

This policy applies to the use of the Underground Injection Control (UIC) Line to protect O'ahu's groundwater by precluding the siting of landfills mauka of the line. This policy is implemented by the State of Hawai'i Department of Health (DOH) in order to safeguard potable groundwater from subsurface wastewater disposal.

(2) The Groundwater Protection Zone (GPZ) or No Pass Line identified by the BWS, City & County of Honolulu, is also referenced in Resolution 03-09, FD1, and is similar to the UIC Line. The No Pass Line is similar in that the purpose of the line is to prevent and thereby preclude the potential for sources of contamination from entering O'ahu's groundwater supply. In the instance of the No Pass Line, the policy includes existing well sites and well capture zones[1], and aquifer systems for general drinking water supply protection.

The rationale for the inclusion of the UIC and No Pass Line where landfills should not be sited is based on the generation of landfill associated leachate. The operation of an engineered landfill includes the use of a liner system that is designed to handle surface rainfall allowing only a small portion to percolate through the landfill liner membrane. The water that percolates through the landfill seeps to a sump designed at the base of the liner system. The water collected at the sump is referred to as leachate. The level and chemical makeup of the leachate is monitored by the landfill operator and as required, is removed for processing and/or disposal.

[1] A Well Capture Zone is used to demarcate the immediate area surrounding a well site where potential pollution producing activities such as operating a landfill, should not be located.

While Resolution 03-09, FD 1, is intended to reduce potentially contaminating activities from landfills within the UIC and No Pass Line, there are some slight differences in geographic coverage. In general, however, both lines are within close proximity to one another and intersect in most instances.

The Committee considered Resolution 03-09, FD 1, and the UIC and No Pass Line at length during the course of its deliberations and believes that with proper engineering and design, that a landfill can be safely constructed and operated mauka of the UIC and No Pass Line.

3.3 Overview of the Committee's Process

The process utilized by the Committee was initially intended to follow a timeframe that included approximately seven meetings over an approximately six month period comprised of the following:

(1) Meeting No. 1
- Introduction and description of objectives, ground rules and administration
- Defining solid waste and description of City's Solid Waste Management System

(2) Meeting No. 2
- Site visit to WGSL, H-POWER, and other solid waste facilities
- Relationship of facilities to the City's Solid Waste Management System

(3) Meeting No. 3
- Review landfill engineering necessary to the siting of a landfill: Present siting requirements from Federal, State, and City & County of Honolulu
- Previous alternative landfill sites considered by the City
- Request Committee's identification of additional sites for consideration and obtain Committee's preliminary siting criteria

(4) Meeting No. 4
- Request additional community-based siting criteria from Committee
- Consultant's description of process for developing measurable criteria to score and rank landfill sites

(5) Meeting No. 5
- Review alternative LF sites under consideration and apply RCRA Subtitle D and State/City & County of Honolulu siting criteria. Provide results to Committee.
- Distribute Draft Landfill Siting Evaluation Sheets to Committee and review landfill evaluation process. Review how data is measured and scored in the data sheets. Revise as required based on Committee's input.
- Discuss and obtain Committee's weighting of the criteria

(6) Meeting No. 6
- Present results of the analysis
- Reveal sites selected by the Committee and discuss
- Discuss content of the Report to the Mayor with Committee
- Consultant directed to prepare the Committee's Draft Report to the Mayor.

(7) Meeting No. 7
- Discuss Draft Report to the Mayor with Committee. Revise as required and prepare Final Report.
- Submit the Committee's Report to the Mayor and conclude the Committee's role.

The process was modified by the Committee in order to expand the evaluation of potential landfill sites and to allow the Consultant Team sufficient time to complete the additional research and data collection that was requested. This resulted in the Committee deliberating and convening

10 meetings between January 2011 and April 2012. A record of the Committee's meetings is in **Attachment B**.

It is important to note that although the process was modified the general steps required to complete the evaluation had not changed. A summary of these steps included:

(1) Identify potential landfill sites for further study, including potential new sites not previously considered. The product is a list of potential landfill sites for further evaluation.

(2) Apply preliminary siting criteria based on federal and state regulatory requirements, and other preliminary siting criteria identified by the Committee in order to filter the list of sites to those that would be evaluated using the Committee's community-based criteria. The product is a list of sites remaining after the application of the preliminary siting criteria.

(3) Develop community-based criteria and a scoring and weighting system to rank the sites. The products of the scoring system included: the community-based criteria and method for scoring each of the criteria (performed by Consultant); and a series of weights to reflect the relative importance of each criterion relative to other criterion (performed by the Committee and Facilitator).

(4) Perform research and data collection on each potential landfill site and assign scores to each of the criterion. The product will be the community-based criteria scores for each potential landfill site that is evaluated.

(5) Apply the criteria weights to arrive at the final site scores and document the Committee's recommendations including minority reports that can be prepared by any of the Committee members for inclusion in its Final Report.

Section 4 – Identification of Potential Landfill Sites

4.1 Introduction

This section describes the Committee's identification of potential landfill sites for further study, including potential new sites not previously considered.

4.2 Prior Landfill Siting Studies

The identification of sites selected for evaluation is based on prior studies commissioned by the City. ENV and the Consultant assembled the list of potential sites for evaluation by the Committee from the following City sources:

(1) Inventory of Potential Sanitary and Demolition Landfill Sites, August 1977.

(2) Supplement to Inventory of Potential Sanitary and Demolition Landfill Sites, November 1979.

(3) Revised Environmental Impact Statement for Leeward Sanitary Landfill at Waimanalo Gulch Site and Ohikilolo Site, 1984.

(4) Final Supplemental Environmental Impact Statement for the Waimānalo Gulch Sanitary Landfill Expansion, 2002.

(5) Final Environmental Impact Statement for the Waimānalo Gulch Sanitary Landfill Lateral Expansion, 2008.

4.3 Sites Preliminarily Identified for Evaluation

The list of sites identified for evaluation included 43 locations distributed throughout the island of O'ahu. These sites are identified in **Table 4-1** and shown in **Figure 4-1**.

Table 4-1 – Initial List of Potential Landfill Sites on O'ahu

No.	Site Name	Tax Map Key	Size
1	Auloa	4-2-14: por 001	55
2	Ameron Quarry	4-2-15: 001	391
3	Barbers Point	9-1-16: 018, portion 001	15
4	Bellows	4-1-15: portion 001	173
5	Diamond Head Crater	3-1-42: portion 006	115
6	'Ewa No. 1	9-1-17	-
7	'Ewa No. 2	9-1-10	-
8	Hālawa A	9-9-10: 008, 009, portion 010 & 026	40
9	Hālawa B	9-9-10: 027, portion 010	60
10	He'eia Kai	4-6	-
11	He'eia Uka	4-6-14: 001	163
12	Honouliuli	9-1-17: portion 004	22
13	Ka'a'awa	5-1	150
14	Kaena	6-9-01: portion 003, 033 & 034	40
15	Kahalu'u	4-7	-
16	Kahe	9-2-03: portion 027	200
17	Kalāheo (landfill reuse)	4-2-15: portion 001 & 006	134
18	Kaloi	9-2-02: portion 1; 9-2-3: portion 002; 9-2-04: portion 005	400
19	Kapa'a No. 1	4-4-14: portion 002	60
20	Kaukonahua	7-1	34

No.	Site Name	Tax Map Key	Size
21	Ke'eke'e	6-9-01: portion 003 & 004, 6-9-03: portion 002	40
22	Koko Crater	3-9-12: portion 001	140
23	Kunia A	9-4-04: portion 004	150
24	Kunia B	9-4-03: portion 019	190
25	Mā'ili	8-7-10: portion 003	200
26	Makaiwa	9-2-03: portion 002	338
27	Makakilo Quarry	9-2-03: 082	175
28	Makua	8-1-01, 8-2-01	600
29	Mililani	9-5	34
30	Nānākuli A	8-7-09: 001 & 003 and 8-7-21: 026	179
31	Nānākuli B	8-7-09: portions 001 & 007	432
32	Ohikilolo	8-3-01: 013	706
33	Olomana	4-2	-
34	Poamoho	7-1	5
35	Punalu'u	5-3	200
36	Sand Island	1-5-41	150
37	Waiahole	4-8	60
38	Wai'anae Expansion	8-5-03 and 06	140
39	Waihe'e	4-7	61
40	Waikane	4-8	200
41	Waimānalo North	4-1-08: 013	171
42	Waimānalo South	4-1	355
43	Waipi'o	9-3-02	60

The Committee was asked to review the sites and to recommend potential new sites to add to the list. Initially, there were no new sites recommended by the Committee.

A two-step process was used to evaluate the sites. In the first step, the sites were evaluated against screening factors that would be used to identify sites for removal based on exclusionary criteria against which the site would no longer be considered viable. The screening factors were defined as those that would immediately remove a potential site from further consideration because of an exclusionary environmental feature of the site given its location.

When the Consultants began to evaluate the sites with the exclusionary criteria noted below, it was clear there would be far fewer viable sites than suggested by the initial size of the list. The Consultant indicated that many of the sites originally identified had been subsequently placed into residential and related development. Therefore, the majority of the 43 identified sites were no longer available for landfill use.

The screening factors used to preliminarily evaluate the sites included the following[1]:

- Protection of runway airspace – This is based on the Resource Conservation Recovery Act (RCRA), Subtitle D[2]. (See **Figure 4-2**)

[1] The screening factor, Sites located above residential subdivisions or developments was added after the Committee decided to redirect the effort to identify sites inside of the UIC/No Pass line. This screening factor was subsequently removed by the Committee during the process.

[2] 40 Code of Federal Regulations (CFR), Part 258, governing the development, operation and closure of landfills. This regulation is designed to ensure protection against bird-aircraft strike hazards within 10,000 feet of the end of any airport runway used by turbojet aircraft.

- Federal land ownership – This is based on the City's past experience with the difficulty of acquiring Federal land for its facilities including the rejection of prior requests for the use of land for landfilling. (See **Figure 4-3**)
- State Conservation District designated land (any site with a Conservation District subzone other than the least restrictive General Subzone) – This is based on the potential for use of land within the General Subzone based on the presence of certain existing industrial facilities such as the Ameron Quarry. The subzones considered to be non-viable included protective, limited, resource, general and special. Omitting the special subzone, the four subzones are arranged in a hierarchy of environmental sensitivity, ranging from the most environmentally sensitive (protective) to the least sensitive (general). The special subzone is applied in special cases specifically to allow a unique land use on a specific site. Each subzone has a unique set of identified land uses.[3] (See **Figure 4-4**)
- Board of Water Supply (BWS) well capture zones[4] (CZ) – This is based on the delineation of BWS wells used for domestic water supply and the CZ area surrounding wells that could be susceptible to contamination from sources such as MSW landfills[5]. The areas utilized included the 2 and 10 year CZs representing the period of time that would elapse from when a hazardous constituent was detected in the CZ to when it would begin to appear in the well water. Wells developed by BWS after 2004, when the Hawai'i Source Water Assessment Program Report was completed, were developed with the assistance of the BWS to develop planning bubbles to represent the CZs. (See **Figure 4-5**)
- Commission on Water Resource Management (CWRM) well sites – This is based on the identified wells under management of the CWRM. All well locations and a 1,000 foot buffer where utilized to define the area subject to protection[6]. (See **Figure 4-5**)
- Critical Habitats and Natural Area Reserve System (NARS) lands – This includes designated critical habitats identified by the U. S. Fish and Wildlife Service, and NARS lands designated by the State Department of Land and Natural Resources (DLNR). In addition, certain species such as *Elepaio*, are sensitive to a phenomenon called habitat fragmentation. Habitat corridors were developed using riparian stream data to allow for the movement of this species from one habitat area to another. An approximate buffer of 100 meters was used and lands intersecting the buffers were utilized. (See **Figure 4-6**)
- Impaired Water Bodies – This includes streams and other water bodies as designed by the Environmental Protection Agency (EPA) and Department of Health (DOH) (See **Figure 4-5**)
- Valued agricultural lands according to the Agricultural Lands of Importance to the State of Hawai'i (ALISH) (See **Figure 4-7**) and Land Study Bureau (LSB) (See **Figure 4-8**) classification systems – This includes highly rated agricultural lands as designated under both systems. Lands classified as Prime, Unique, or Other Important Agricultural Lands under the ALISH or classified as A or B under the LSB were included as a screen.

[3] http://hawaii.gov/dlnr/occl/frequently-asked-questions-1.
[4] Information on detailed locations of well capture zones are considered confidential by the State Department of Health but were obtained for use by the Department of Environmental Services during the analytical phase of the project. Disclosure of the specific well capture zone boundaries were therefore not disclosed to the Committee members.
[5] Hawai'i Source Water Assessment Program Report (SWAP), 2004.
[6] Based on discussion with W. Roy Hardy, P.E., Chief, Regulation Branch, CWRM.

- Parcel contains at least one structure as noted on aerial maps – This was removed by the Committee based on the difficulty of determining the specific use of structures as identified using aerial maps and web-based imagery from Google Maps and Geographic Information System sources. In many cases the structures could not be defined as to uses, e.g., dwellings or sheds.
- Sites located above residential subdivisions or developments – This was removed by the Committee on the basis that a properly engineered landfill could be designed to remove the potential for adverse effects to downstream developments.

The second step was to develop and apply the Committee's community-based criteria to evaluate the sites. However, before this step was taken the Committee noted a number of points that included:

(1) The majority of the sites evaluated are located outside of the Underground Injection Control (UIC)/No Pass line. (See **Figure 4-9** and **Figure 4-10**)

The Committee deliberated on this matter and decided it would be more encompassing to include for assessment potential landfill sites located within the UIC line and No Pass line. In its deliberations, the Committee understood City Council Resolution 03-09, Establishing A City Policy That Municipal Solid Waste Landfills Should Not Be Located Over The City's Underground Drinking Water Sources, which at the time of its adoption in the 1990s, was an important part of the City's practice to not site landfills within the UIC/No Pass line. However, the Committee noted that a landfill that is located outside an existing potable water well capture zone and that is properly designed, engineered, and operated in accordance with environmental regulatory controls and safeguards, should not adversely affect groundwater that serves a potable water system.

(2) Only one federal site, part of the Bellows Air Force Base (AFB), was identified[7].

The Committee deliberated on this matter with some committee members noting that in order to increase the number of potential sites, lands that are owned by the federal government, with the exception of lands that are known to be actively used by the military, should be included for consideration. The Committee's rationale for this inclusion was: (a) every option for the identification of potential sites should be made. Without specifically requesting the use of federal land, there would be no way of verifying that such use would not be possible; and, (b) federal lands should still be explored because there are processes available through Congressional action that can make possible the use of non-active military lands.

(3) The City recommended that any site under consideration should be greater than 100 acres.

A 100-acre minimum site size was recommended to the Committee by the City and was originally agreed upon. However, after discussion and further consideration the Committee felt that sites between 90 and 100 acres should also be considered to ensure that all locations that could be potentially usable are addressed.

The City considered the Committee's desire to include land within the UIC/No Pass line, federal lands, and landfill sites of between 90 and 100-acres, which would be less than the City's preferred 100-acre or greater landfill site size. The City determined that the Committee must be allowed to conduct its own deliberating process without undue influence from the City and thereafter allowed the Committee's process to continue.

The Committee also noted during this discussion that the siting of a landfill is a difficult exercise and that effort should be taken to develop the most extensive list of potential sites possible within

[7] This site was later removed from consideration due to a response from the Marine Corps Base Hawai'i on February 9, 2011, indicating that the site was needed to support military training requirements.

the various constraints of federal and state regulations. The Committee thereafter asked that the Consultants expand the list of potential site for evaluation recognizing that some of the screening factors identified above would be reassessed.

4.4 Geographic Information System (GIS) Based Evaluation of Potential Sites

The Consultants recommended the use of a GIS-based evaluation system based on the capacity to evaluate the entirety of the island of O'ahu using readily available information resources maintained by State of Hawai'i and City and County of Honolulu government agencies.

This recommendation, however, does involve a major difference in methodology between how the City's list of potential landfill sites was developed, and identifying new sites using a GIS-based analysis:

(1) The City's list of potential landfill sites was developed from studies undertaken over the course of several years, and reflected the then existing development and land use information that was available. A GIS-based analysis would have more current data, including the location of existing development and environmental features. Further, although the GIS-based approach would include more current data, some of the information from the City's prior studies was obtained from field work; a level of investigation that could not be accomplished given the time and resources available to the Committee and Consultants.

The Consultants note that while field work would not be applied as a part of the GIS analysis, the City would in the future undertake technical and other studies to support a future EIS for the next landfill site. Ultimately, the selection of the preferred landfill site would therefore be subject to the necessary and required level of study and analysis to support a well-considered site.

(2) Although there were initially a number of sites identified in the City's list, all of the areas previously evaluated should be subject to re-evaluation using GIS and the Committee's screening factors. This would be a reasonable and key means of ensuring that the use of the screening factors, developed in discussions with the Committee, would be consistently applied to all of the sites under evaluation, i.e., sites 100-acres or more, and sites of between 90 and 100-acres.

The Consultants thereafter proceeded with the re-evaluation of the island of O'ahu based on the issues above, to expand the list of potential sites. The following modifications were made to the list of screening factors identified above:

- Land within the UIC/No Pass Line – This constraint, as previously applied to exclude potential landfill sites within the UIC/No Pass Line, was now removed. All parcels within the UIC/No Pass Line would be subject to evaluation.
- Area – This constraint, as previously applied, requiring that potential landfill sites should be 100 acres or more in size, was now removed. The area of the parcels subject to evaluation would include sites 100-acres or more in size, and sites of between 90 and 100-acres.

  It is noted that this would include a recalculation of the area after application of the other GIS-based screening factors to ascertain the land area available. As an example, if a parcel initially had 98 acres and was partially affected by Conservation District land other than in the General Subzone, with the result that only 89 acres remained, the site would be considered non-viable. However, if a site had 90 or more acres remaining it would be considered viable for further analysis.
- Federal Land – Parcels owned by the federal government, as previously evaluated, will be considered for further evaluation if the lands are not known to be used for active military operations.

- Landfill Site Life of Less Than 15 Years – This was the final screening factor applied and represents the minimum period of time the City considers a landfill to be viable for development. Measurement of this variable is complex and includes many factors such as topography, area, drainage, and site configuration. If a site was determined to have less than 15 years of useful life, it was screened from further analysis.

4.5 Constraints Associated with Use of GIS

This Report of the Committee differs from prior studies evaluating alternative sites for a new landfill in its use of a GIS-based analysis representing the first known attempt to holistically analyze the entire island of O'ahu to identify land suitable for landfilling. The use of a GIS-based system, however, should be used with the following understanding:

(1) A GIS-based analysis is not a substitute for a more formal evaluation of a landfill that would be performed by the City in an EIS. The undertaking of an EIS level of assessment and evaluation must be performed for the proper identification of any landfill site prior to it being developed; and

(2) A GIS-based analysis involves a desktop level of study meaning that basic research will be performed using only existing data sources supplemented by consultation with experts in other technical fields as applicable to the nature of the study. Fieldwork including site surveys and detailed investigations are not usually performed.

Existing available GIS-based data collected for this project were obtained from the public domain from the State of Hawai'i GIS Website, City and County of Honolulu, and other public GIS sources. Specific types of additional data that required consulting directly with government agencies included:

- Honolulu Board of Water Supply – Collection of data for well locations and well capture zones
- Commission on Water Resource Management – Collection of data for well locations and the establishment of an acceptable buffer zone surrounding the wells
- State Department of Health, Safe Drinking Water and Groundwater Protection – Collection of data and interpretation of state law concerning groundwater protection

4.6 Results of the GIS-Based Analysis

The GIS-based analysis evaluated land parcels on the island of O'ahu including locations within the UIC/No Pass line, federal lands, and sites both greater than 100 acres and between 90 and 100 acres in size. These parcels were split into four analysis groups for discussion. (See **Figure 4-11**) Approximately 465 potential sites were identified as follows:

	Site Acreage	
UIC/No Pass Zone	100+	90-100
Inside	337	18
Outside	97	13

- Group 1: 97 parcels of 100+ acres in size outside the UIC/No Pass line
- Group 2: 337 parcels of 100+ acres in size inside the UIC/No Pass line (not consistent with City policy)
- Group 3: 13 parcels of 90 to 100 acres in size outside the UIC Line and No Pass line
- Group 4: 18 parcels of 90 to 100 acres in size inside the UIC Line and No Pass line (not consistent with City policy)

After applying the Committee's screening factors, a list of 11 sites were identified for application of the Committee's community-based criteria, as referenced in **Table 4-2**. The locations of these sites are shown

in **Figure 6-1**, and detail is provided in **Attachment C**, showing the parcels comprising each of the groups 1 through 4.

Table 4-2 – List of Sites for Application of Community-Based Criteria

	Site Name (Alphabetic Order)	Within UIC/ No Pass Line*	TMK[8]	Parcel Acreage	Land Ownership
1.	Ameron Quarry	No	42015001	382	Private
2.	Kāne'ohe by H-3	No	44012001	158	Private
3.	Kapa'a Quarry Road	No	44011003	258	Private
4.	Ke'eau	Yes	83001013	634	Private
5.	Upland Hawai'i Kai	No	39010047	97	Private
6.	Upland Kahuku 1	Yes	56008002	1,621	Federal
7.	Upland Kahuku 2	Yes	57002001	1,529	Federal
8.	Upland Lā'ie	Yes	55007001	2,231	Private
9.	Upland Nānākuli 1[9]	Yes	85006011	882	Private
10.	Upland Pupukea 1	Yes	61006001	2,177	Private
11.	Upland Pupukea 2	Yes	61007001	1,672	Private

*Sites that intersect the UIC/No Pass Line are considered within the UIC/No Pass Line.

[8] The identities of the sites were not disclosed to the Committee members until after the application of the Committee's community-based criteria weights.

[9] At least one Committee member noted that the location of this site is in Wai'anae.

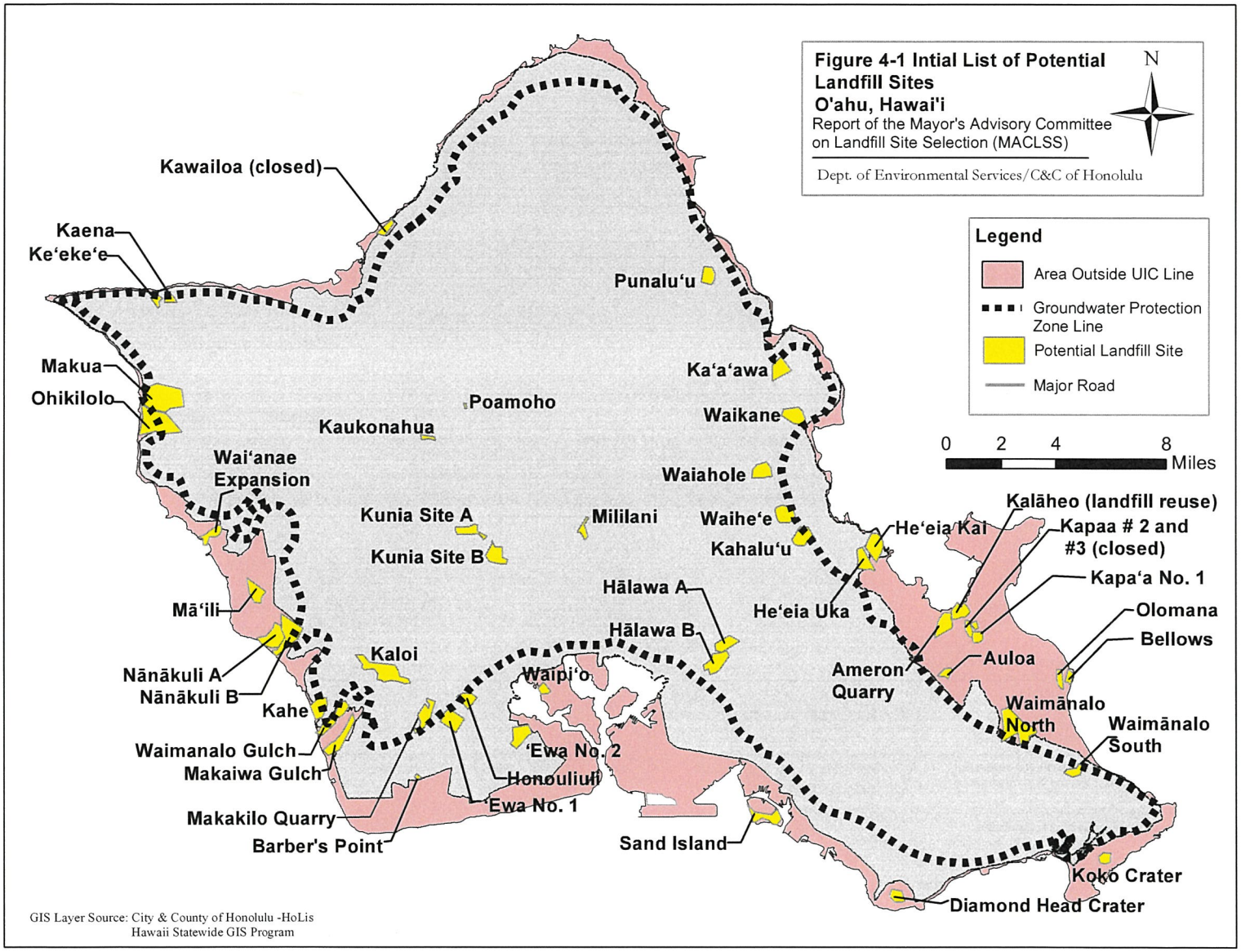


Figure 4-1 Intial List of Potential Landfill Sites
O'ahu, Hawai'i
Report of the Mayor's Advisory Committee on Landfill Site Selection (MACLSS)
Dept. of Environmental Services/C&C of Honolulu
N
Legend
Area Outside UIC Line
Groundwater Protection Zone Line
Potential Landfill Site
Major Road
0 2 4 8 Miles
Kawailoa (closed)
Kaena
Ke'eke'e
Punalu'u
Makua
Ohikilolo
Ka'a'awa
Poamoho
Waikane
Kaukonahua
Wai'anae Expansion
Waiahole
Kunia Site A
Mililani
Waihe'e
Kalāheo (landfill reuse)
He'eia Kai
Kapaa # 2 and #3 (closed)
Kunia Site B
Kahalu'u
Kapa'a No. 1
Hālawa A
He'eia Uka
Olomana
Mā'ili
Hālawa B
Bellows
Kaloi
Auloa
Nānākuli A
Waipi'o
Ameron Quarry
Nānākuli B
Waimānalo North
Kahe
Waimānalo South
'Ewa No. 2
Waimanalo Gulch
Makaiwa Gulch
Honouliuli
Ewa No. 1
Makakilo Quarry
Barber's Point
Sand Island
Koko Crater
Diamond Head Crater
GIS Layer Source: City & County of Honolulu -HoLis
Hawaii Statewide GIS Program

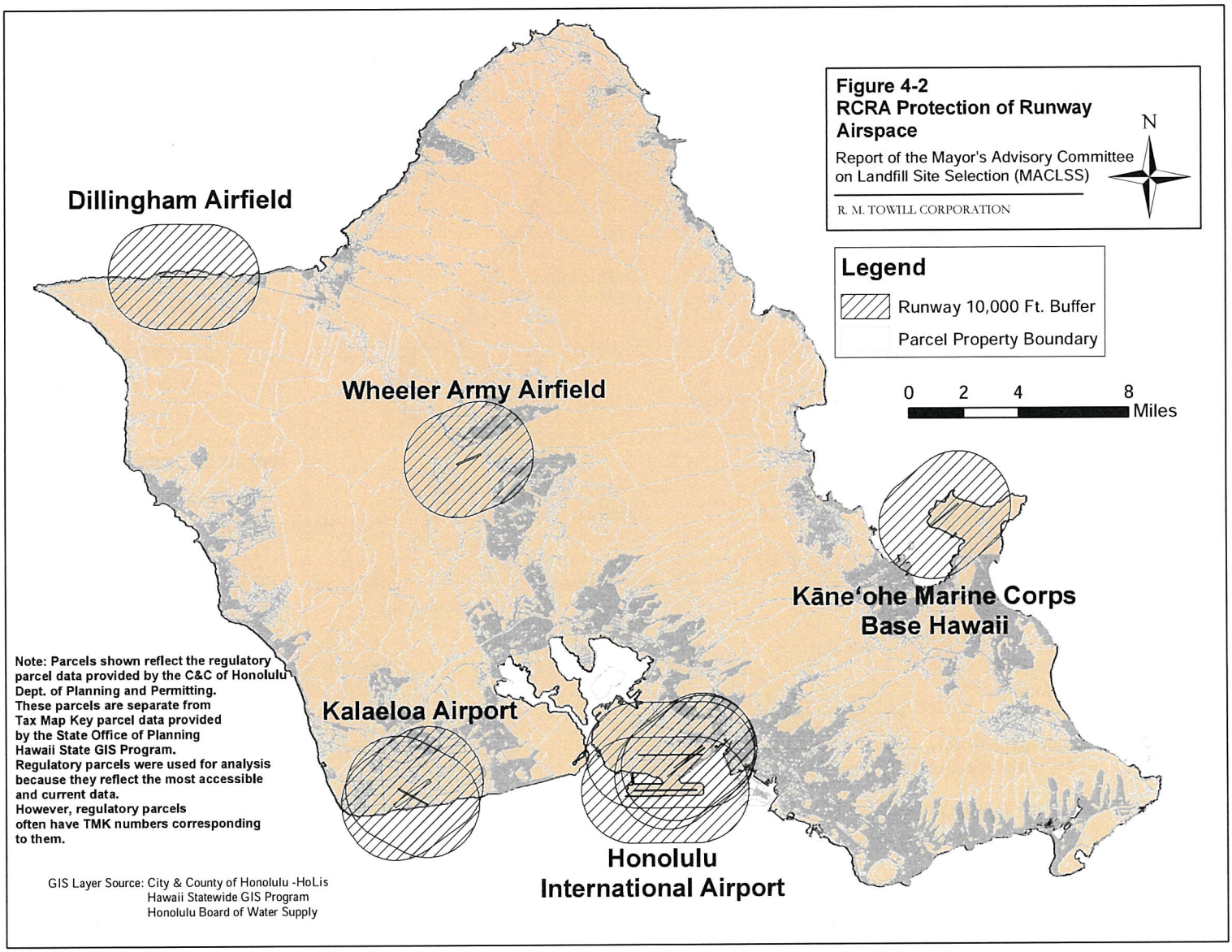
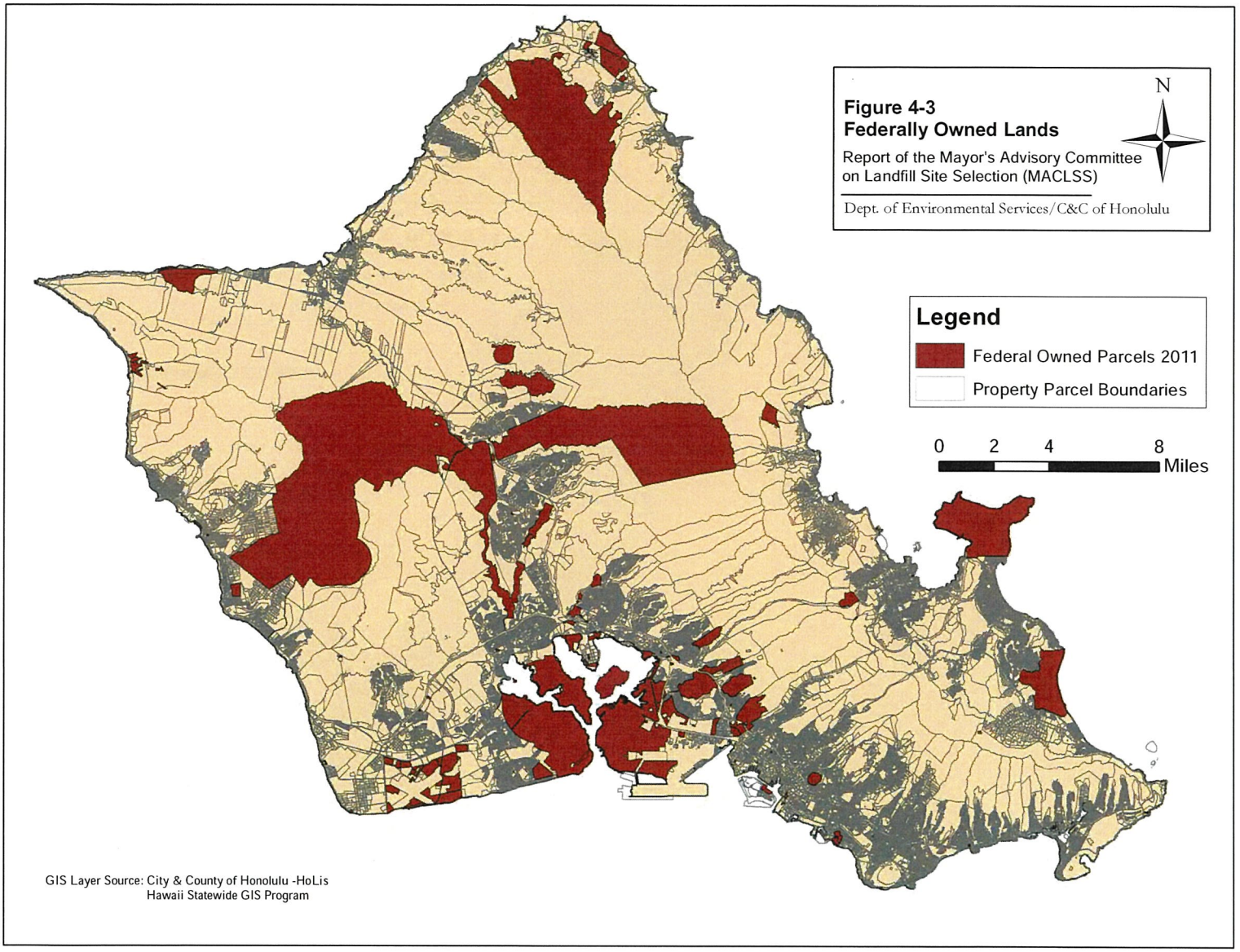


Figure 4-2
RCRA Protection of Runway Airspace
Report of the Mayor's Advisory Committee on Landfill Site Selection (MACLSS)
R. M. TOWILL CORPORATION
N
Legend
Runway 10,000 Ft. Buffer
Parcel Property Boundary
0 2 4 8
Miles
Dillingham Airfield
Wheeler Army Airfield
Kāne'ohe Marine Corps Base Hawaii
Kalaeloa Airport
Honolulu International Airport
Note: Parcels shown reflect the regulatory parcel data provided by the C&C of Honolulu Dept. of Planning and Permitting. These parcels are separate from Tax Map Key parcel data provided by the State Office of Planning Hawaii State GIS Program. Regulatory parcels were used for analysis because they reflect the most accessible and current data. However, regulatory parcels often have TMK numbers corresponding to them.
GIS Layer Source: City & County of Honolulu -HoLis
Hawaii Statewide GIS Program
Honolulu Board of Water Supply


N
Figure 4-3
Federally Owned Lands
Report of the Mayor's Advisory Committee on Landfill Site Selection (MACLSS)
Dept. of Environmental Services/C&C of Honolulu
Legend
Federal Owned Parcels 2011
Property Parcel Boundaries
0 2 4 8
Miles
GIS Layer Source: City & County of Honolulu -HoLis
Hawaii Statewide GIS Program

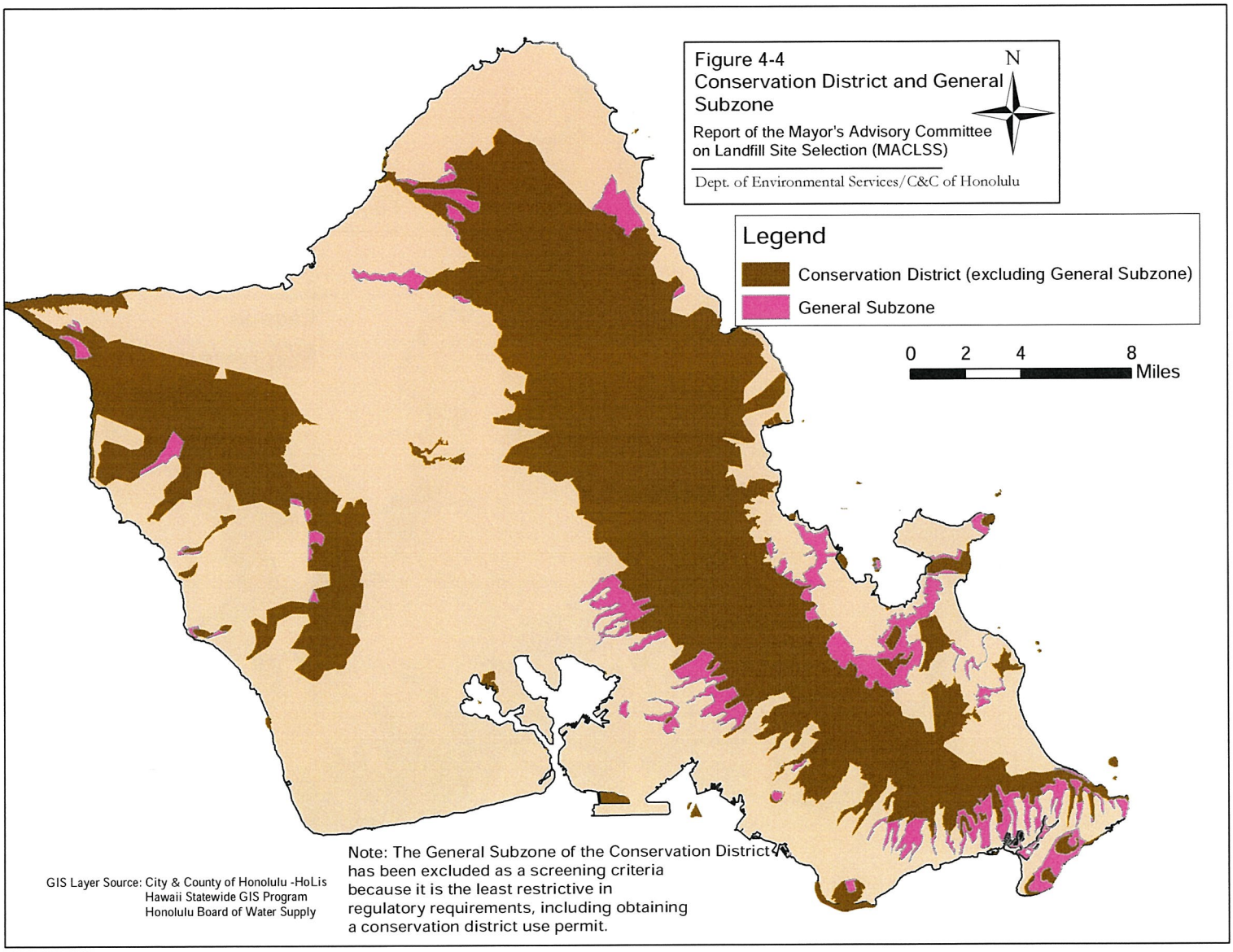


Figure 4-4
Conservation District and General Subzone
Report of the Mayor's Advisory Committee on Landfill Site Selection (MACLSS)
Dept. of Environmental Services/C&C of Honolulu
N
Legend
Conservation District (excluding General Subzone)
General Subzone
0 2 4 8
Miles
GIS Layer Source: City & County of Honolulu -HoLis
Hawaii Statewide GIS Program
Honolulu Board of Water Supply
Note: The General Subzone of the Conservation District has been excluded as a screening criteria because it is the least restrictive in regulatory requirements, including obtaining a conservation district use permit.

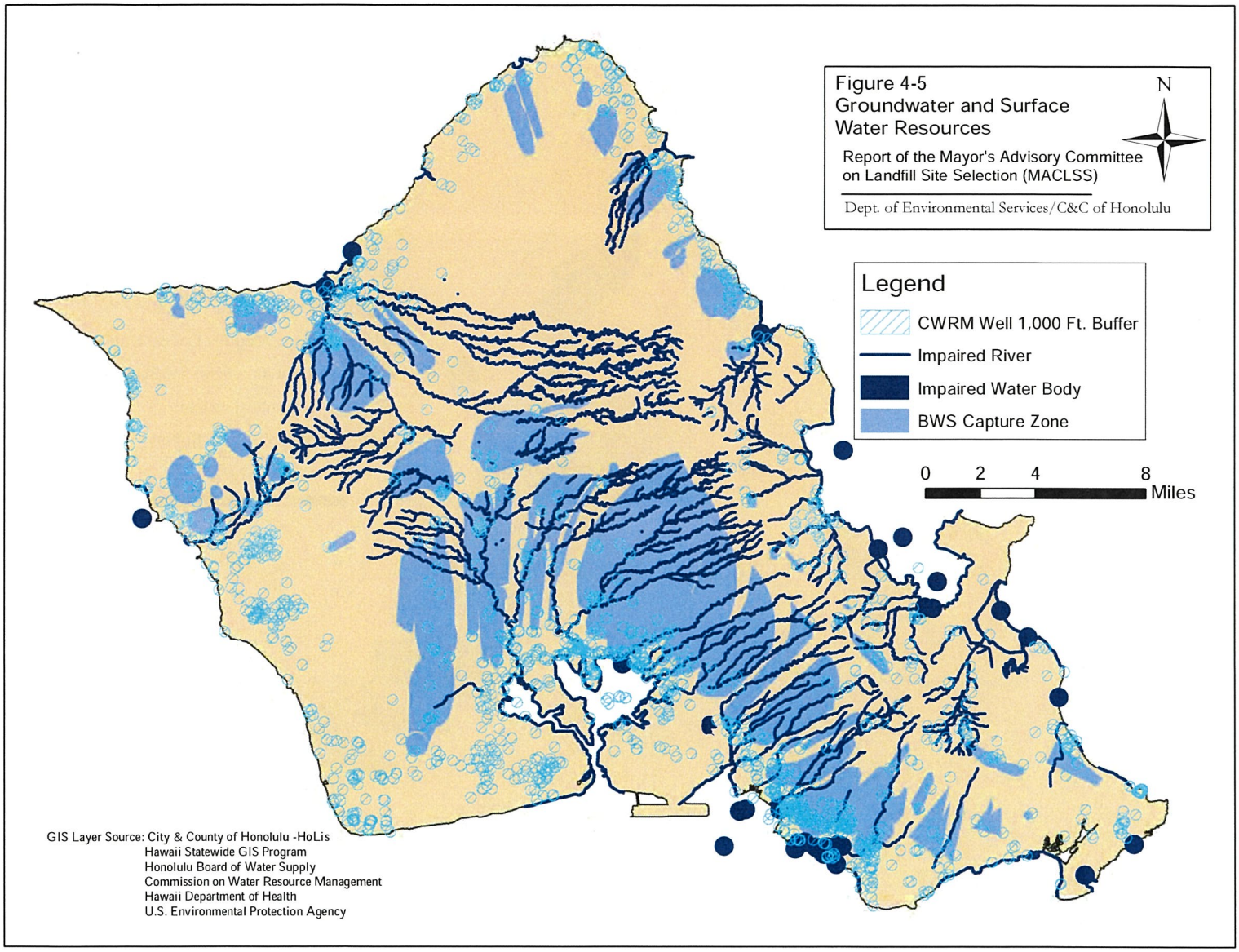


Figure 4-5
Groundwater and Surface Water Resources
Report of the Mayor's Advisory Committee on Landfill Site Selection (MACLSS)
Dept. of Environmental Services/C&C of Honolulu
N
Legend
CWRM Well 1,000 Ft. Buffer
Impaired River
Impaired Water Body
BWS Capture Zone
0 2 4 8
Miles
GIS Layer Source: City & County of Honolulu -HoLis
Hawaii Statewide GIS Program
Honolulu Board of Water Supply
Commission on Water Resource Management
Hawaii Department of Health
U.S. Environmental Protection Agency

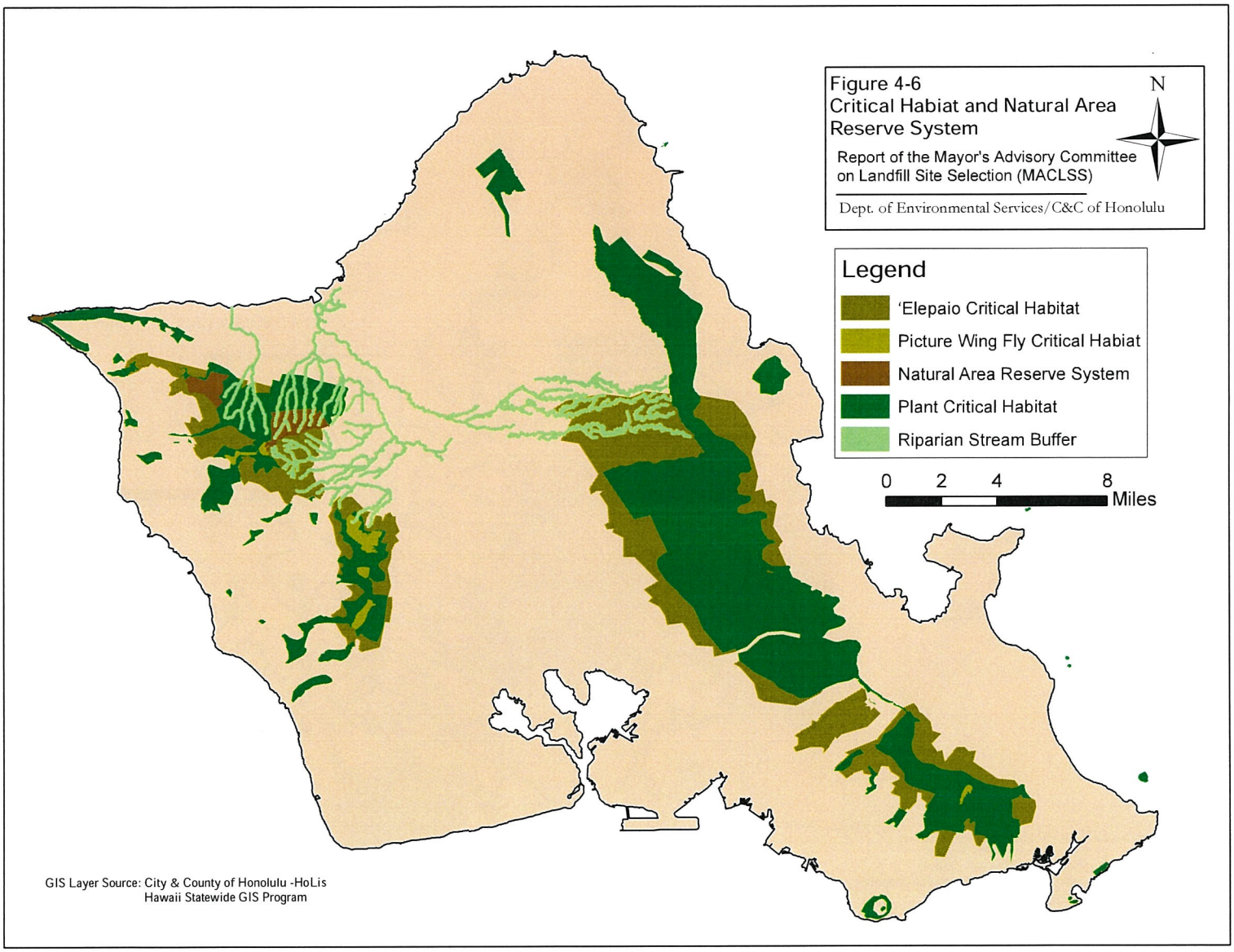


Figure 4-6
Critical Habiat and Natural Area Reserve System
Report of the Mayor's Advisory Committee on Landfill Site Selection (MACLSS)
Dept. of Environmental Services/C&C of Honolulu
N
Legend
'Elepaio Critical Habitat
Picture Wing Fly Critical Habiat
Natural Area Reserve System
Plant Critical Habitat
Riparian Stream Buffer
0 2 4 8
Miles
GIS Layer Source: City & County of Honolulu -HoLis
Hawaii Statewide GIS Program

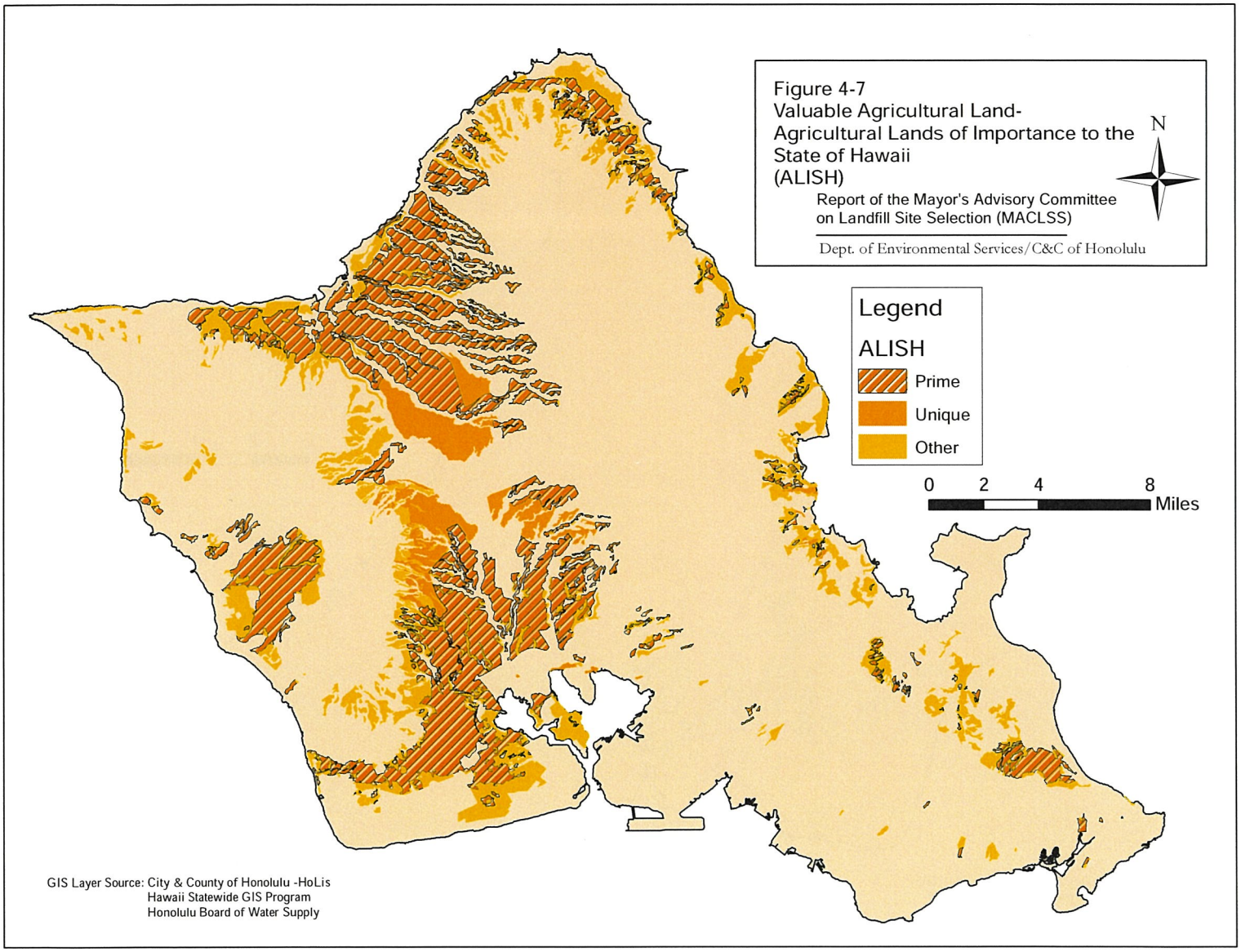


Figure 4-7
Valuable Agricultural Land-
Agricultural Lands of Importance to the State of Hawaii
(ALISH)
Report of the Mayor's Advisory Committee on Landfill Site Selection (MACLSS)
Dept. of Environmental Services/C&C of Honolulu
N
Legend
ALISH
Prime
Unique
Other
0 2 4 8
Miles
GIS Layer Source: City & County of Honolulu -HoLis
Hawaii Statewide GIS Program
Honolulu Board of Water Supply

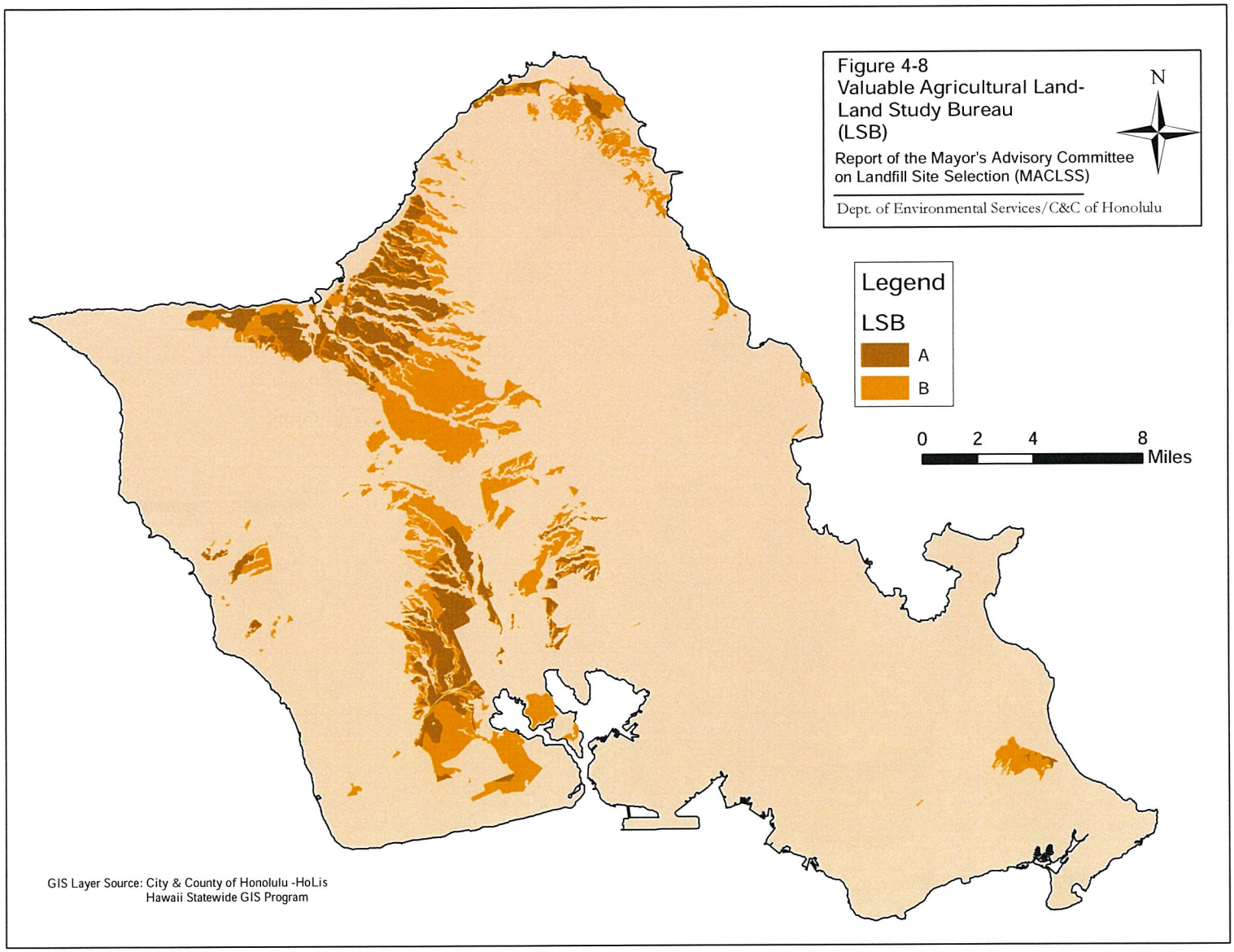


Figure 4-8
Valuable Agricultural Land-
Land Study Bureau
(LSB)
Report of the Mayor's Advisory Committee
on Landfill Site Selection (MACLSS)
Dept. of Environmental Services/C&C of Honolulu
N
Legend
LSB
A
B
0 2 4 8
Miles
GIS Layer Source: City & County of Honolulu -HoLis
Hawaii Statewide GIS Program

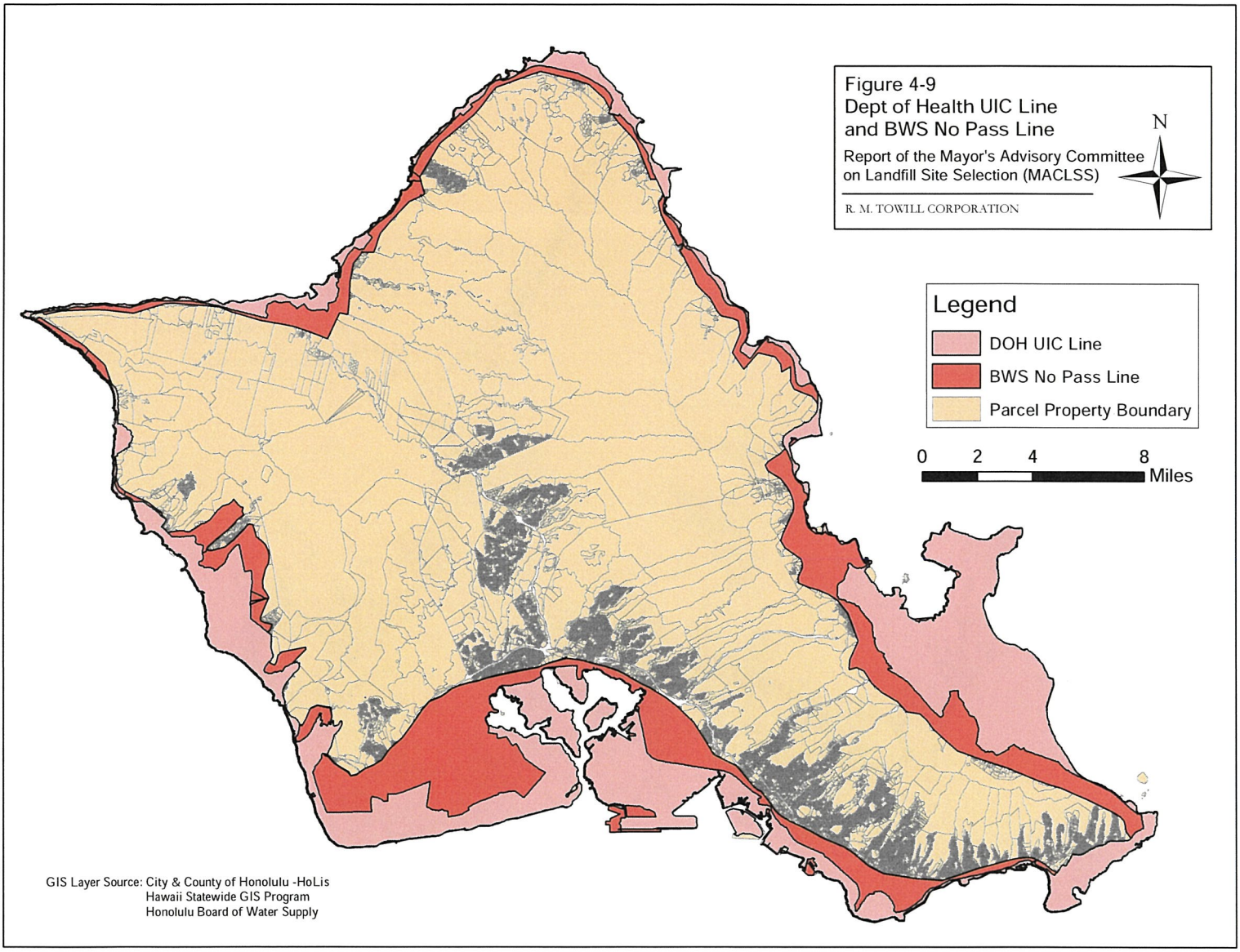
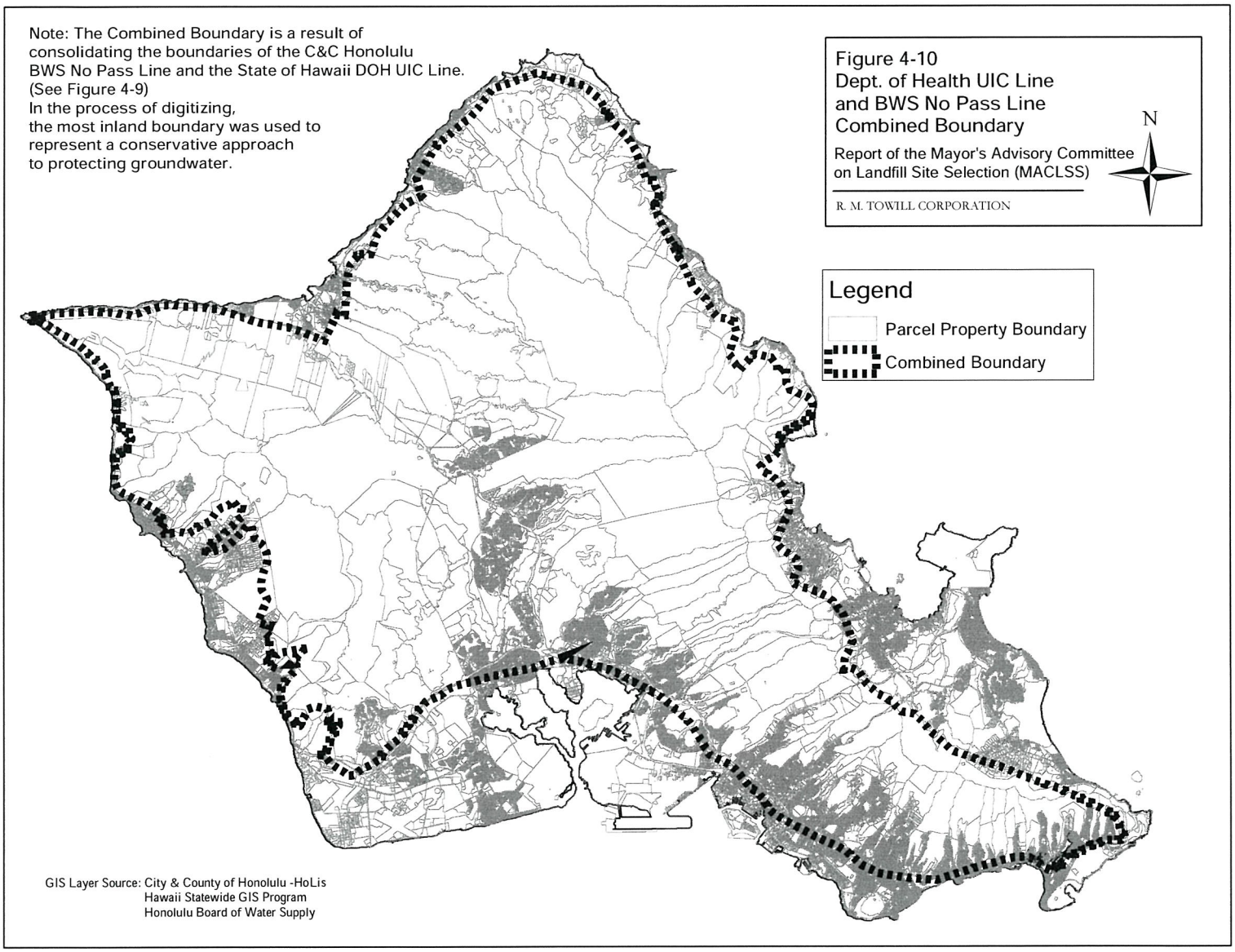
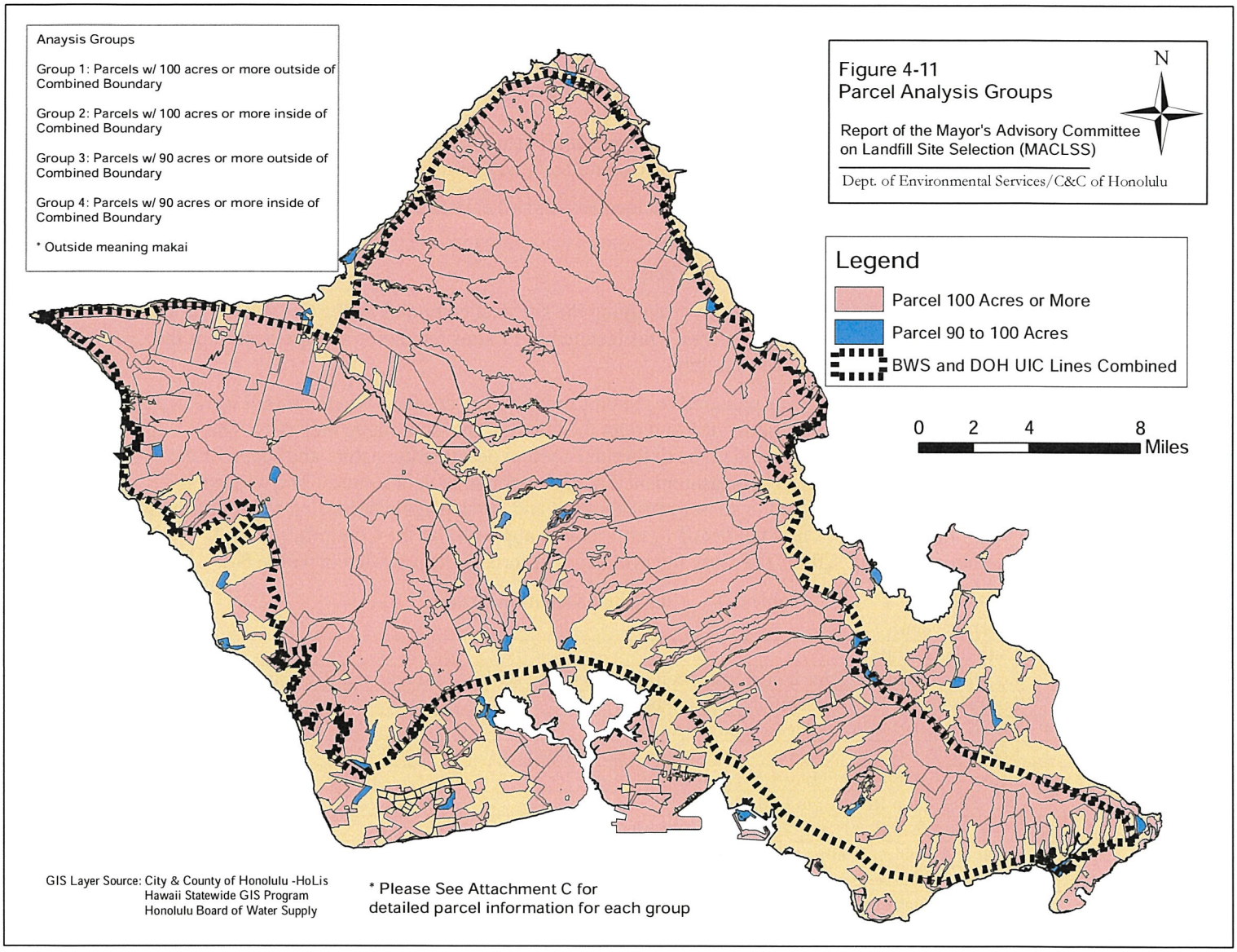


Figure 4-9
Dept of Health UIC Line
and BWS No Pass Line
Report of the Mayor's Advisory Committee
on Landfill Site Selection (MACLSS)
R. M. TOWILL CORPORATION
N
Legend
DOH UIC Line
BWS No Pass Line
Parcel Property Boundary
0 2 4 8
Miles
GIS Layer Source: City & County of Honolulu -HoLis
Hawaii Statewide GIS Program
Honolulu Board of Water Supply


Note: The Combined Boundary is a result of consolidating the boundaries of the C&C Honolulu BWS No Pass Line and the State of Hawaii DOH UIC Line. (See Figure 4-9)
In the process of digitizing, the most inland boundary was used to represent a conservative approach to protecting groundwater.
Figure 4-10
Dept. of Health UIC Line and BWS No Pass Line Combined Boundary
Report of the Mayor's Advisory Committee on Landfill Site Selection (MACLSS)
R. M. TOWILL CORPORATION
N
Legend
Parcel Property Boundary
Combined Boundary
GIS Layer Source: City & County of Honolulu -HoLis
Hawaii Statewide GIS Program
Honolulu Board of Water Supply


Anaysis Groups
Group 1: Parcels w/ 100 acres or more outside of Combined Boundary
Group 2: Parcels w/ 100 acres or more inside of Combined Boundary
Group 3: Parcels w/ 90 acres or more outside of Combined Boundary
Group 4: Parcels w/ 90 acres or more inside of Combined Boundary
* Outside meaning makai
Figure 4-11
Parcel Analysis Groups
Report of the Mayor's Advisory Committee on Landfill Site Selection (MACLSS)
Dept. of Environmental Services/C&C of Honolulu
N
Legend
Parcel 100 Acres or More
Parcel 90 to 100 Acres
BWS and DOH UIC Lines Combined
0 2 4 8
Miles
GIS Layer Source: City & County of Honolulu -HoLis
Hawaii Statewide GIS Program
Honolulu Board of Water Supply
* Please See Attachment C for detailed parcel information for each group

Section 5 – The Committee's Community-Based Siting Criteria

5.1 Introduction

This section describes the design and implementation of the system used by the Committee to evaluate the list of potential landfill sites.

5.2 Methodology

The site evaluation system was developed in four steps:

(1) Developing the Committee's community-based siting criteria
(2) Developing the evaluation system
(3) Research and data collection to gather and enter data for each potential landfill site
(4) Development and application of the Committee's weighting for each criteria

Several of these steps were started simultaneously and all elements were coordinated to complete the evaluation.

5.2.1 Community-Based Site Evaluation Criteria

The Committee initiated its work by examining the site data compiled by the Consultants from the GIS-based site evaluation process. This resulted in 11 sites remaining for application of the Committee's community-based criteria.

An initial list of criteria was prepared based on Committee discussions where criteria were added, eliminated, combined, and reworded to reflect the intent of the Committee members. The Consultants revised and expanded the definitions used to describe the nature and scope of the criteria, added procedures for measurement, and noted potential data sources. The revised and enhanced list was discussed in subsequent meetings and revised again according to input from the Committee members. The final list of 19 criteria was approved by the Committee at its 5th meeting on May 12, 2012. The final site evaluation criteria list is provided in **Table 5-1**.

Table 5-1 – Final Site Evaluation Criteria

No.	Criterion Name
1	Landfill Capacity
2	Location Relative to Educational Institutions, Health Care Facilities, or Parks and Recreation Facilities
3	Location Relative to Residential Concentrations
4	Location Relative to Visitor Accommodations
5	Location Relative to Local or Visitor Commercial Facilities
6	Effect on Established Public View Planes
7	Wind Direction Relative to Landfill Site
8	Effect on Local Roads and Traffic in Residential Neighborhoods
9	Wear and Tear on Highways and Roadways Caused by Landfill Related Traffic
10	Location Relative to Identified Community Disamenities
11	Location Relative to H-POWER
12	Effect of Precipitation on Landfill Operations
13	Landfill Development, Operation and Closure Cost
14	Land Use Displacement Cost
15	Potential for Solid Waste-Related Land Uses
16	Location Relative to Wetlands and Natural Area Reserve System Land
17	Location Relative to Listed Threatened and Endangered Species
18	Location of Surface Water Resources
19	Location of Archaeological and Culturally Significant Resources

5.2.2 Landfill Site Evaluation System

The Committee's deliberations included directing the selection of a set of potential landfill sites, defining a set of evaluation criteria, and establishing criterion weights for use in the evaluation process. The Consultants gathered the data to measure the criteria for each site. The landfill site evaluation system brought together information on the potential sites, the evaluation criteria, criterion weights, and data, to generate a set of site scores that could be used to rank potential sites for a new O`ahu landfill.

The landfill site evaluation system consisted of a linked set of Microsoft Excel worksheets including: Data Sheets for each site; a Scoring Sheet to collect and score the data; and, a Ranking Sheet to display and rank sites according to the scores received for each of the sites.

Data Sheets

Data sheets were designed as shown in **Table 5-2**. One sheet was developed for each of the 19 criteria and included the data for each of the 11 sites identified by the Committee. All data sheets had the same format and included the following sections:

Definition: The title of the criterion and its meaning.

Rationale: The reason for including the criterion in the site evaluation system.

Measurement: The procedures used in the data collection, any transformations used, and a statement of the direction of measurement. Measurement direction assigned the lowest score to the criterion value that was least suited as a landfill site and the highest score to the value best suited for a landfill site. An example of how criteria were analyzed with existing data sources is shown in **Figure 5-1**.

Data Source: The documents or location of data used.

Data and Measurement Issues: Any problems encountered in data collection or caveats with respect to the quality or suitability of the data.

Calculation Detail: A table of data for each of the 11 sites. For each site the tables listed the site number and name, scoring details, the raw score, and scaled score. Summary data across all sits included the unit of measurement (miles, dollars, tons, etc.), the data range, a direction code (0 for low-to-high, 1 for high-to-low),the maximum value taken for any site, and notes.

The raw scores varied greatly for each criterion. Some, criterion such as #9, Wear and Tear on Highways and Roadways Caused by Landfill Related Traffic and #14, Displacement Cost had values measured in the hundreds of thousands, or hundreds of millions of dollars. Other criterion such as #3, Location relative to Residential Concentrations or #16, Location relative to Wetlands and Natural Area Reserve System Land, were measured in fractions of a mile. Ranges varied widely as well. Criterion #14, Displacement Cost ranged from zero to 509 million dollars and #5, Location Relative to Visitor Accommodations, ranged in value from 0.02 to 1.99.

These wide ranging values would act as self-weighting factors when the items are combined to form a site score, which in effect would defeat the purpose of the Committee's criterion weights. Therefore, each of the criterion raw scores was transformed to a scaled score with the same metric. Scaled scores ranged from 1 (least suited for a landfill site) to 10 (best suited for a landfill site). All other scores were scaled proportionally according to their raw data value. This procedure preserved the raw score ranking in the scaled score. Tied raw scores were tied in the scaled score and scaled scores were rounded to integers from 1 to 10.

Table 5-2 – Facsimile Data Sheet

Criterion 1: Landfill Capacity

Criterion Definition
Landfill capacity is the volume required to fill the landfill site at the future projected fill rates.

Rationale
A landfill site with a longer capacity is preferred over a site with less capacity. A minimum capacity of 15 years was established by the MACLS with input from ENV. It was decided that 15 years was the minimum life needed to justify the cost of acquiring, permitting, and constructing a new landfill. All of the sites evaluated during this project have estimated capacities greater than 15 years.

Measurement
Measurement was carried out in six steps: (1) a temporary site footprint was established at each site; (2) the usable landfill area was calculated as the total area of the footprint minus the area needed for landfill support facilities and other solid-waste related activities; (3) the total volume in cubic yards was estimated from the area of the top and bottom surfaces of the landfill and the distance between the surfaces; (4) the available volume of MSW that can be placed in the site was estimated as total volume minus the volume of soil and other materials needed for the liner, leachate, and gas controls, and for daily, intermediate, and final cover; (5) the available volume was converted to tons of MSW and H–POWER ash using the compacting factors that are being achieved at the WGSL; and (6) the capacity in tons was converted to capacity in years by estimating the amount of ash and MSW to be produced each year until the landfill capacity is reached. Capacity in years for each site (raw data) was then transformed to a ten-point scale with endpoints defined as shown below.

Point Value	Measure Assigned
1	The site with the least capacity needed to fill the landfill site.
10	The site with the greatest capacity needed to fill the landfill site.

Data Source
Honolulu Land Information System

Data and Measurement Issues
The landfill volume estimate is based on desktop review of the site so the volume should be expected to be refined with more detailed engineering.

Calculation Detail

Site Num.	Site Name	TMK	Landfill Capacity		
			Detail	Raw Score	Scaled Score
1	Site 1	00000001		00000001	#
2	Site 2	00000002		00000002	#
3	Site 3	00000003		00000003	#
4	Site 4	00000004		00000004	#
5	Site 5	00000005		00000005	#
6	Site 6	00000006		00000006	#
Raw score data is measured in:			Cubic Yards	Range:	-
Scale direction: 1 = normal scaled score; 0 = inverted scale score			0	Maximum:	-

Note: Normal scaled score is used when the raw data and the scaled score have the same direction, low to high. The higher score is preferred and thus the highest score is set at 10 and lowest score is set at 1. In cases where the lower score is preferred, the scale is inverted, i.e., the highest raw score is set at 1 and the lowest raw score is set at 10.

As an example, scaled scores for Criterion #2, Location Relative to Educational Institutions, Health Care Facilities, or Parks and Recreation Facilities were assigned as follows:

> The Upland Kahuku 2 site had the greatest raw score distance of 2.18 miles and was assigned the highest scaled score, 10.
>
> The Ameron Quarry site had the smallest distance of 0.2 miles and was assigned the lowest scaled score, 1.
>
> The Upland Nānākuli 1 site had a distance of 1.45 miles. For a raw score scale from .02 miles to 2.18 miles the proportionate equivalent on a ten-point scale is 6.7 rounded to 7.0.

The contents of the data sheets, including the scoring algorithm, were developed prior to submitting the sheets to the Committee for their review. They were delivered without data or site identification as shown in **Table 5-2**.

The data sheets for the 19 criteria for each of the eleven alternative landfill sites are presented in **Attachment D** of this report. The data sheets explain for each site the methodologies employed and the databases and other sources utilized as well as a summary of the raw and scaled scores for each criterion.

The scoring system presented in this report has the following characteristics:

- All raw scores are based on the most recent data available.
- Raw scores are based on objective data to the extent practicable.
- No scaled scores included the use of zeros.
- All criteria have scaled scores ranging from 1 to 10, with 1 indicating the least desirable site and 10 indicating the most desirable site, with reference to each respective criterion.

The choice of a single 1-10 scale for all criteria made the Committee's criteria weighting more meaningful, and the overall scoring more arithmetically robust. The use of a uniform scaled score range preserves the community value judgments inherent in the criteria weighting.

Scoring Sheet

A Scoring Sheet was prepared to record the individual criterion data and calculate the weighted combined scores for each site. The worksheet columns contain the site number and name, the combined score, and data for each of the 19 site selection evaluation criteria. Four sections of rows are used to gather the raw scores, scaled scores, criterion weights, and weighted scaled scores. Each section include all of the 11 sites.

Scoring Sheet cells are linked to corresponding cells in the data sheets. Raw and scaled score values are automatically transferred to the scoring sheet as they are entered or changed in the data sheets. Weighted scaled scores are the product of the scaled score and the criterion weight as was assigned by the Committee. Prior to the final calculation of scores, criterion weights were assigned a temporary value of one, making the weighted scaled scores equal to the scaled scores. The Committee was not allowed to review the scoring sheet during their deliberations because it contained the site list and the raw data. This is consistent with the intent of the dual blind process where the Committee members would not be allowed to know the locations of the sites until after the final scores are assigned.

The weighted criterion score for each site was calculated as the product of its criterion point value and the associated weight. The 19 weighted criterion scores for each site were then summed to calculate the Total Site Score. With the current scaled score ranges the total site scores have a minimum possible value of 19 (i.e., if all the criterion scaled scores for the site were 1) and a maximum possible value of 190 (if all the criterion scaled scores for the site were 10).

Ranking Sheet

The Ranking Sheet is a collection of the combined weighted scaled scores from the Scoring Sheet displayed on a single page. It was designed to simplify the presentation of detailed data in the scoring sheet and to allow sorting of the sites according to their final combined scores.

5.2.3 Data Gathering and Entry

When the format for the data sheets was completed and the sites subject to evaluation using the community-based criteria were identified, the project team began entering data to the datasheets. The work was completed by the Consultants, R. M. Towill Corporation, Pacific Waste Consulting Group, SMS Research & Marketing Services, Cultural Surveys Hawai'i, and AECOS Consultants, Inc.

A first step was to identify the TMK parcels on which the sites were located and to establish a landfill footprint for the site within the parcels. This exercise was necessary to estimate distances, establish roadways used for ingress and egress from and to the sites, and to estimate development costs, as required by the landfill site evaluation criteria.

The data was collected according to the procedures and from the sources noted in the data sheets. In a few cases, data were not available in the form specified in the data sheets and measurement procedures were modified to accomplish the task. All modifications or changes are noted in the data sheets.

The collected data were entered to the datasheets and automatically transferred to the Scoring Sheet. The final versions of the data sheets are provided in **Attachment C**.

5.2.4 Weighting Evaluation Scores

The landfill site evaluation system was designed and ready for use by the end of March 2012. The criterion weights were developed by the Committee in a separate process which was kept confidential from the Consultants in accordance with the dual blind procedure.

At a meeting of the Committee on Friday, April 20, 2012, the Committee's criterion weights were unveiled. The weights ranged from zero through six, with some criterion assigned fractional values. In order to simplify the system and to expand the distances between the weights, the weights were rescaled to a range from 1 to 10. The results of this process are shown in **Table 5-3**.

Table 5-3: Raw and Rescaled Criterion Weights

Site Selection Criterion		Weights	
No.	Criterion Name	Raw	Scaled
1	Landfill Capacity	1.0	2.50
2	Location Relative to Educational Institutions, Health Care Facilities, or Parks and Recreation Facilities	5.9	9.85
3	Location Relative to Residential Concentrations	6.0	10.00
4	Location Relative to Visitor Accommodations	2.0	4.00
5	Location Relative to Local or Visitor Commercial Facilities	2.0	4.00
6	Effect on Established Public View Planes	1.0	2.50
7	Wind Direction Relative to Landfill Site	2.0	4.00
8	Effect on Local Roads and Traffic in Residential Neighborhoods	5.7	9.55
9	Wear and Tear on Highways and Roadways Caused by Landfill Related Traffic	0.0	1.00
10	Location Relative to Identified Community Disamenities	5.5	9.25
11	Location Relative to H-POWER	5.1	8.65
12	Effect of Precipitation on Landfill Operations	5.5	9.25
13	Landfill Development, Operation and Closure Cost	4.0	7.00
14	Displacement Cost	1.0	2.50
15	Potential for Solid Waste-Related Land Uses	0.0	1.00

Site Selection Criterion		Weights	
No.	Criterion Name	Raw	Scaled
16	Location Relative to Wetlands and Natural Area Reserve System Land	2.0	4.00
17	Location Relative to Listed Threatened and Endangered Species	1.0	2.50
18	Surface Water Resources	5.3	8.95
19	Archaeological and Culturally Significant Resources	0.0	1.00

The Consultants entered the rescaled criterion weights to the Scoring Sheet. As the rescaled weights were entered the weighted scaled scores were automatically recalculated to reflect the Committee's assigned criterion values. The Preliminary Site Scores were automatically summed and collected in the Ranking Sheet. The Consultants sorted the results and presented the preliminary scores to the Committee at the meeting.

During the process of applying the criteria weights, a real time error occurred and on Wednesday, April 25th, the Committee members were notified and a press conference held to present to the news media and public the following:

(1) On Friday, April 20th during a meeting of the Committee a real time calculation of the ranking of potential landfill sites using the Committee's community criteria weights was performed. The result was a preliminary ranked list of potential landfill sites. As a normal part of Quality Assurance/Quality Control (QA/QC) procedures, the preliminary results underwent data review and evaluation over the course of that weekend.

(2) On Sunday, April 22nd, a data error was discovered. The error took place during an approximately 15 - 20 minute break when adjustments to the equations evaluating the data were being performed. Thus, the data error occurred in *real time*.

(3) On Monday, April 23rd, the City was informed of the error and advised that steps were being taken to verify the source of the error and that a new ranked list of sites would result. The City asked that a re-verification step be taken and to be notified when this was completed.

(4) By Tuesday, April 24th, the City was informed that the re-verification step was completed and the Committee members and press would be contacted regarding the corrected results.

Emphasized during the press conference of April 25 were two important points:

(1) The error occurred in real time and during the course of the Committee's meeting. This error was a data error only and does not affect the integrity of the Committee's process which has been carefully followed to date; and

(2) The work of the Committee is an important first step in evaluating sites using criteria intended to reflect the community's priorities in the siting of a landfill. The City's next steps will include the evaluation of sites with technical studies and analyses including the preparation of an EIS.

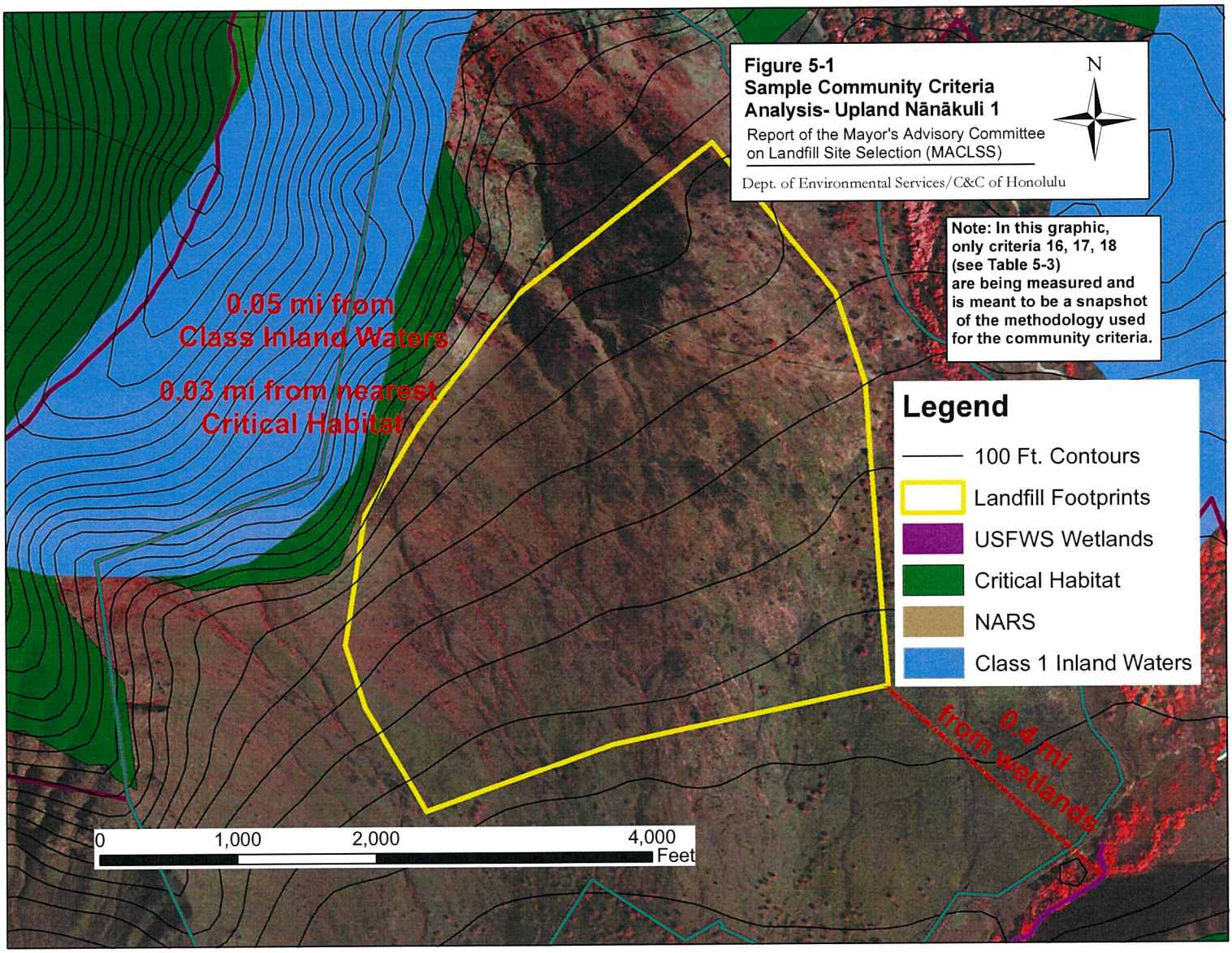


Figure 5-1
Sample Community Criteria
Analysis- Upland Nānākuli 1
Report of the Mayor's Advisory Committee
on Landfill Site Selection (MACLSS)
Dept. of Environmental Services/C&C of Honolulu
N
Note: In this graphic,
only criteria 16, 17, 18
(see Table 5-3)
are being measured and
is meant to be a snapshot
of the methodology used
for the community criteria.
0.05 mi from
Class Inland Waters
0.03 mi from nearest
Critical Habitat
Legend
100 Ft. Contours
Landfill Footprints
USFWS Wetlands
Critical Habitat
NARS
Class 1 Inland Waters
0.4 mi
from wetlands
0
1,000
2,000
4,000
Feet

Section 6 – Results of Site Ranking and Committee Recommendations

6.1 Results of the Scoring Process

The final scoring data – raw and scaled criterion scores and weights for 11 sites and 19 site evaluation criteria are provided in **Table 6-1**. Summary scores are shown at the bottom of the table.

The possible summary scores for the system range from 101.5 to 1,015.0. The actual summary scores ranged from a low of 437.0 for the Kapa'a Quarry Road site to a high of 716.0 for the Upland Kahuku 2 site.

6.2 Site Ranking

The Landfill Site Evaluation System automatically transferred the Total Scores to the Ranking Sheet. The scores were transferred in order by site number and then sorted from the highest to the lowest value of the total scores for each potential landfill site. The results of the ranking are shown in **Table 6-2**.

The ranking and scores in Table 6-2 represent the ranked list of sites which was the desired outcome of the Committee's work. For each of the 11 sites identified by the Committee, data were applied according to each of the 19 site evaluation criteria they defined and was multiplied by the criterion weights they generated to calculate the final site score. The location of the scored sites are shown in **Figure 6-1**.

The ranked list of sites reflects community concerns that were identified and considered by the Committee. Although the Committee considered issues that would also concern site civil engineering, finance, geology and hydrogeology, and other disciplines that would be required for the technical evaluation of a municipal sanitary landfill, their work was not intended to replace or supersede such studies. Their work is intended to reflect public and community concerns and provides a set of sites ranked according to their suitability as determined by that concern. Many other studies and considerable additional work will be applied by the City prior to the selection of its final landfill site.

6.3 Committee Recommendations

(1) The sites identified through this process include seven out of 11 alternative landfill sites located within the UIC line/No Pass line (see **Table 1-3**). The Committee recognizes that these seven potential landfill sites do not conform to existing City policy as expressed in Council Resolution 03-09. However, the Committee notes the following points:

- It chose to continue with an evaluation of an expanded list of new landfill sites only after careful consideration. The Committee had extensive deliberation on the content of Resolution 03-09 and the difficulty of identifying a new landfill site on O'ahu given the acute shortage of remaining land that is available for landfilling, i.e., the City engaged in prior efforts that identified several potential landfill sites that over time were being slowly but systematically reduced in number with new land use and economic development.
- A landfill that is properly designed, engineered, and operated in accordance with environmental regulatory controls and safeguards should not adversely affect groundwater. Alternative landfill sites should therefore be investigated in locations not previously considered by the City, such as within the UIC and No Pass line; and,

Table 6-1 – Community-Based Siting Criteria and Weighting Factors

	Criterion	Weight	Ameron Quarry		Upland Lā'ie		Upland Pupukea 1		Upland Pupukea 2		Kea'au		Upland Nānākuli	
			Scaled Score	Weighted Score	Scaled Score	Weighted Score	Scaled Score	Weighted Score	Scaled Score	Weighted Score	Scaled Score	Weighted Score	Scaled Score	Weighted Score
1	Landfill Capacity	2.50	5	2	5	2	5	2	5	2	5	2	25	10
2	Location Relative to Educational Institutions, Health Care Facilities, or Parks and Recreation Facilities	9.85	10	1	20	2	69	7	69	7	30	3	69	7
3	Location Relative to Residential Concentrations	10.00	20	2	20	2	40	4	40	4	20	2	20	2
4	Location Relative to Visitor Accommodations	4.00	4	1	16	4	4	1	24	6	4	1	4	1
5	Location Relative to Local or Visitor Commercial Facilities	4.00	8	2	4	1	4	1	28	7	4	1	28	7
6	Effect on Established Public View Planes	2.50	25	10	20	8	25	10	25	10	20	8	3	1
7	Wind Direction Relative to Landfill Site	4.00	32	8	32	8	32	8	40	10	8	2	8	2
8	Effect on Local Roads and Traffic in Residential Neighborhoods	9.55	96	10	86	9	96	10	96	10	96	10	10	1
9	Wear and Tear on Hwys and Roadways caused by Landfill Related Traffic	1.00	10	10	9	9	8	8	1	1	10	10	10	10
10	Location Relative to Identified Community Disamenities	9.25	37	4	93	10	93	10	93	10	93	10	93	10
11	Location Relative to H-POWER	8.65	52	6	9	1	43	5	43	5	78	9	87	10
12	Effect of Precipitation on Landfill Operations	9.25	74	8	93	10	74	8	74	8	37	4	46	5
13	Landfill Development, Operation and Closure Cost	7.00	56	8	49	7	49	7	49	7	42	6	70	10
14	Displacement Cost	2.50	3	1	25	10	25	10	25	10	25	10	25	10
15	Potential for Solid Waste-Related Land Uses	1.00	5	5	4	4	1	1	1	1	6	6	10	10
16	Location Relative to Wetlands and Natural Area Reserve System (NARS)	4.00	32	8	4	1	4	1	4	1	8	2	40	10
17	Location Relative to Listed Threatened and Endangered Species	2.50	13	5	5	2	8	3	10	4	3	1	3	1
18	Surface Water Resources	8.95	90	10	72	8	27	3	45	5	36	4	9	1
19	Archaeological and Culturally Significant Resources	1.00	10	10	1	1	10	10	10	10	10	10	10	10
	Site MACLSS Score			**111**		**99**		**109**		**118**		**101**		**118**

Table 6-1 – Community-Based Siting Criteria and Weighting Factors (Continued)

	Criterion	Weight	Upland Hawaii Kai		Kapa'a Quarry Road		Kāne'ohe by H3		Upland Kahuku 1		Upland Kahuku 2	
			Scaled Score	Weighted Score	Scaled Score	Weighted Score	Scaled Score	Weighted Score	Scaled Score	Weighted Score	Scaled Score	Weighted Score
1	Landfill Capacity	2.50	3	1	3	1	3	1	5	2	13	5
2	Location Relative to Educational Institutions, Health Care Facilities, or Parks and Recreation Facilities	9.85	20	2	10	1	10	1	79	8	99	10
3	Location Relative to Residential Concentrations	10.00	30	3	10	1	10	1	90	9	100	10
4	Location Relative to Visitor Accommodations	4.00	4	1	4	1	4	1	4	1	40	10
5	Location Relative to Local or Visitor Commercial Facilities	4.00	4	1	8	2	4	1	40	10	32	8
6	Effect on Established Public View Planes	2.50	13	5	8	3	15	6	25	10	13	5
7	Wind Direction Relative to Landfill Site	4.00	4	1	32	8	32	8	24	6	8	2
8	Effect on Local Roads and Traffic in Residential Neighborhoods	9.55	96	10	86	9	96	10	38	4	48	5
9	Wear and Tear on Hwys and Roadways caused by Landfill Related Traffic	1.00	10	10	9	9	9	9	7	7	7	7
10	Location Relative to Identified Community Disamenities	9.25	93	10	9	1	93	10	93	10	93	10
11	Location Relative to H-POWER	8.65	35	4	52	6	52	6	17	2	17	2
12	Effect of Precipitation on Landfill Operations	9.25	9	1	56	6	56	6	93	10	83	9
13	Landfill Development, Operation and Closure Cost	7.00	7	1	35	5	35	5	0	7	56	8
14	Displacement Cost	2.50	25	10	25	10	25	10	25	10	25	10
15	Potential for Solid Waste-Related Land Uses	1.00	1	1	7	7	1	1	8	8	6	6
16	Location Relative to Wetlands and Natural Area Reserve System (NARS)	4.00	24	6	32	8	28	7	4	1	4	1
17	Location Relative to Listed Threatened and Endangered Species	2.50	10	4	25	10	23	9	15	6	10	4
18	Surface Water Resources	8.95	45	5	18	2	9	1	81	9	63	7
19	Archaeological and Culturally Significant Resources	1.00	10	10	10	10	10	10	1	1	1	1
	Site MACLSS Score			**86**		**100**		**103**		**121**		**120**

- The list of original sites the Committee was asked to consider needed to be expanded on the basis that, without a change in how landfill siting is considered, the City would continue to be limited to the same list of alternative locations previously identified.

Table 6-2 – Site Rankings

Rank Order	Potential Landfill Site Number and Name	Score
1st	11. Upland Kahuku 2	716
2nd	10. Upland Kahuku 1	697
3rd	4. Upland Pupukea 2	681
4th	3. Upland Pupukea 1	616
5th	1. Ameron Quarry	580
6th	6. Upland Nānākuli 1	568
7th	2. Upland Lā'ie	565
8th	5. Kea'au	533
9th	9. Kāne'ohe by H3	512
10th	7. Upland Hawai'i Kai	440
11th	8. Kapa'a Quarry Road	437

(2) The Committee believes that since land available for a landfill is limited on O'ahu, that they should direct the Consultant to look at federal lands not known to be in active military use. These sites were added to the analysis.

(3) The Committee's process involved the identification of alternative landfill sites by the Consultant using a GIS-based system supplemented by interviews with regulatory agencies. This desktop level of study was therefore undertaken making every effort to utilize or obtain current information. Accordingly, the ranking of potential landfill sites presented herein and the findings and recommendations of this report should not be misconstrued as the final level of analysis that should be performed. The City must exercise due diligence by verifying the Committee's work and findings through the conduct of further studies as would customarily be performed in technical studies and analyses, including the preparation of an EIS, for a new landfill site.

6.4 Other Recommendations

The Committee during its deliberations, as previously indicated, decided to expand the list of potential sites to those located within the UIC line/No Pass line as established by the DOH and BWS. The addition of sites resulted in multiple ranked lists and included those that meet City Council Policy and those that do not, and those that meet the 100 acre minimum and those between 90 to 100 acres in size.

The Committee strongly recommends that the City move aggressively to develop alternative technologies to landfilling, and continue to strengthen its waste stream diversion and recycling efforts.

In planning, designing and choosing an operator for the next landfill site, the Committee recommends the City adopt a philosophy that everything that goes into the landfill may be of value and could provide a potential revenue stream for the operator and the City in the future. It is also strongly recommend that this thinking be applied to the existing site with the current operator. This would require the operator to adequately map where things are disposed of such that if value can be derived from items in the future, they can be recovered.

The Committee feels that whatever site is ultimately chosen the City must consider "Host Community Benefits." The details of a benefits package should be negotiated with the affected community.

6.5 Committee Minority Report

A Minority Report was filed by one member of the Committee. The content is provided in its entirety:

MINORITY REPORT
MAYOR'S ADVISORY COMMITTEE ON LANDFILL SITE SELECTION
DISSENTING ON TECHNICAL BASIS OF THE FINDINGS

May 4, 2012

The set of preferred sites generated by the MACLSS process does not accurately reflect the weighted criteria developed and approved by the committee. The problem is that the metric of an important criterion approved by the committee fails to properly measure the criterion of concern, as the committee-approved measurement fails to take into account state highways that travel through residential neighborhoods when calculating the score for the criterion. This omission needs to be corrected for the stated intent of the criterion to be accurately reflected in the prioritized list of sites. Of the 19 site selection criteria, #8, "Effect on Local Roads and Traffic in Residential Neighborhoods", was given the third highest criterion weighting, but the quantification of the characteristic upon which the weighting factor was applied excluded many miles of roads through residential areas. This lack of properly accounting for distance through residential areas has thwarted an honest comparison among sites and warped the outcome of an otherwise reasonable process. It can and should be corrected in considering the output of the committee.

The MACLSS has been meeting for over a year to consider criteria of importance in finding a suitable site for a new landfill, and to apply relative weights to those criteria. These deliberations were performed without reference to site identification to avoid the "not in my backyard" problem that besets the issue. Each candidate site, of which there were numerous throughout the island, was assigned a unique numerical attribute for each criterion by virtue of a related physical characteristic; these were developed and applied by the consultant team to score the site for that criterion relative to other sites. When the final criteria weightings were applied to these scorings at the April 20th meeting, the results were disclosed to the consultant team, public and MACLSS at the same time. Unfortunately, upon further examination an error in applying the weightings in real time was revealed, and a revised set of recommended sites was supplied to the committee and published on April 25th.

The revised site rankings were astounding, and seem to defy common sense. Measured from H-power, the source of over 2/3 of the waste to be deposited, the length of routes through residential neighborhoods appear to be maximized, rather than minimized. Criterion #8 was deemed by the committee third most important among 19 criteria, the intent of which was characterized by the following statement: "A potential landfill site that causes less traffic through residential neighborhoods is preferred over sites that generate larger amounts of traffic (longer trips) passing residential homes (houses passed)". The committee's approved measure, by excluding travel distance through residential areas along state numbered roadways, fails to account for many miles of hauling-distance through residential areas.

Why would such sites be preferred, that require daily hauling in excess of 60 truck loads (at 20 tons / load) over 44 miles, 14 miles of which is along a two lane road lined with residences and small businesses, and famous both for beautiful beaches and traffic congestion? The answer is that in applying the criterion measure for 'effects on roads and traffic in residential areas', these

14 miles of roadway were not counted because they are on a state, rather than a city road. I can assure you that residents living along a numbered state roadway of two lanes and 30 mph speed limit feel no differently about large trucks and traffic going through their neighborhood than do residents along a city owned two-lane road with a 30 mph speed limit. Both should be counted. In fairly and accurately characterizing sites for this criterion, the measurement algorithm needs to be changed to include all such roads other than freeways:

- *From the present method of quantifying "miles of roadway between the landfill site and the point at which refuse trucks leave state numbered roadway weighted by number of residential parcels along the road"*
- *To "the miles of roadways other than interstate or limited access freeways through or adjacent to residential, commercial and mixed use zoned districts that trucks must travel between the landfill site and point of origin".*

To put these neglected impacts in perspective, consider some facts and numbers from the 2008 EIS for Waimanalo Gulch Sanitary Landfill Lateral Expansion EIS. It should be noted that "Location Relative to H-Power" was a separate criterion explicitly considered by the committee (Criterion #11) weighted as 8th most important, and was measured as distance in miles regardless of type roads traveled.

Sources and Amount of Waste to the Landfill CY 2006

SOURCE	***CONTENT***	***ANNUAL TONS OF MATERIAL***	***TRUCK LOADS DAILY***[1]
H-power	*Ash*	*167,000*	*32*
H-power	*Diverted*	*154,000*	*30*
Transfer stations and convenience centers	*Non-combustible and other waste*	*184,000*	*35*
TOTAL:	*All Landfill Waste*	*505,000*	*97*

[1] *Estimated at 20 tons per load, annual loads equally distributed over 260 working days per year*

In the year 2019, by which time the third H-power unit is expected to be on line, it is projected that ash will constitute 250,000 tons a year, with diverted and non-combustible waste of 170,000 tons. This is the daily equivalent of 48 and 33 loads respectively.

Where would these loads have to travel?

Today, they are carried from H-power to Waimanalo Gulch Sanitary Landfill, a journey of approximately 6 miles. For H-power alone that is 372 truck miles daily, primarily along industrial roads or a 4-lane freeway.

To Kahuku, trucks from H-power would travel 44 miles, 14 of which would be along Kamehameha Highway, from Haleiwa to Kahuku, after passing through or around the town of Wahiawa. This is equivalent to 2,728 truck miles daily, of which over 868 truck miles would be on two-lane, primarily residential and mixed-use roadways. By 2019, this will increase to 3,564 truck miles daily. This is for travel one way; the trucks must also return, doubling the impact.

Kapa'a Transfer Station is the source of roughly 31,000 tons annually of non-combustible waste. The roughly 6 trucks daily from this site would travel 30 miles to Kahuku primarily along Kamehameha Highway, of which 26 miles would be on two-lane roads through primarily residential areas of Kaneohe, Kahaluu, Kaawa, Punaluu, Hauula, and Laie. This is equivalent to an additional 156 truck miles hauled on two lane roads through residential areas. One way.

In essence, by the inequitable application of Criterion #8, it is proposed that the travel miles through residential areas hauling waste ash, diverted and non-combustible solid waste, wastewater treatment sludge, and other products for disposal be increased from current levels

by a multiple of nearly 8 (775% by total truck miles). Although this measure was approved by the committee, I do not believe that it is true to the stated intent of the criterion.

It is too late now to return to the committee for reconsideration of such issues. However, in considering the output of the committee, the manner in which Criterion #8 was applied needs to be taken into account. The methodology did not accurately characterize miles of roads through residential areas along which waste trucks would have to proceed to reach the identified sites. This flaw can be corrected, and should be before considering any prioritization of sites identified by this process.

The contents of this minority report are my own opinions and do not represent the findings of the committee.

Respectfully submitted,
John B. Goody
Member of the MACLSS

The content of the minority report is understood as the desire to modify the measurement of Criterion 8, Effect on Local Roads and Traffic in Residential Neighborhoods, to include the total distances involved instead of limiting the analysis to the effect on local roads within residential neighborhoods.

It is recommended that this analysis be performed as the City proceeds with its next steps toward the technical evaluation of the alternative sites. The key findings of the Committee including revisiting the purpose and intent of Criterion 8, should therefore be performed as a verification step, with the results incorporated into the final decision making process.

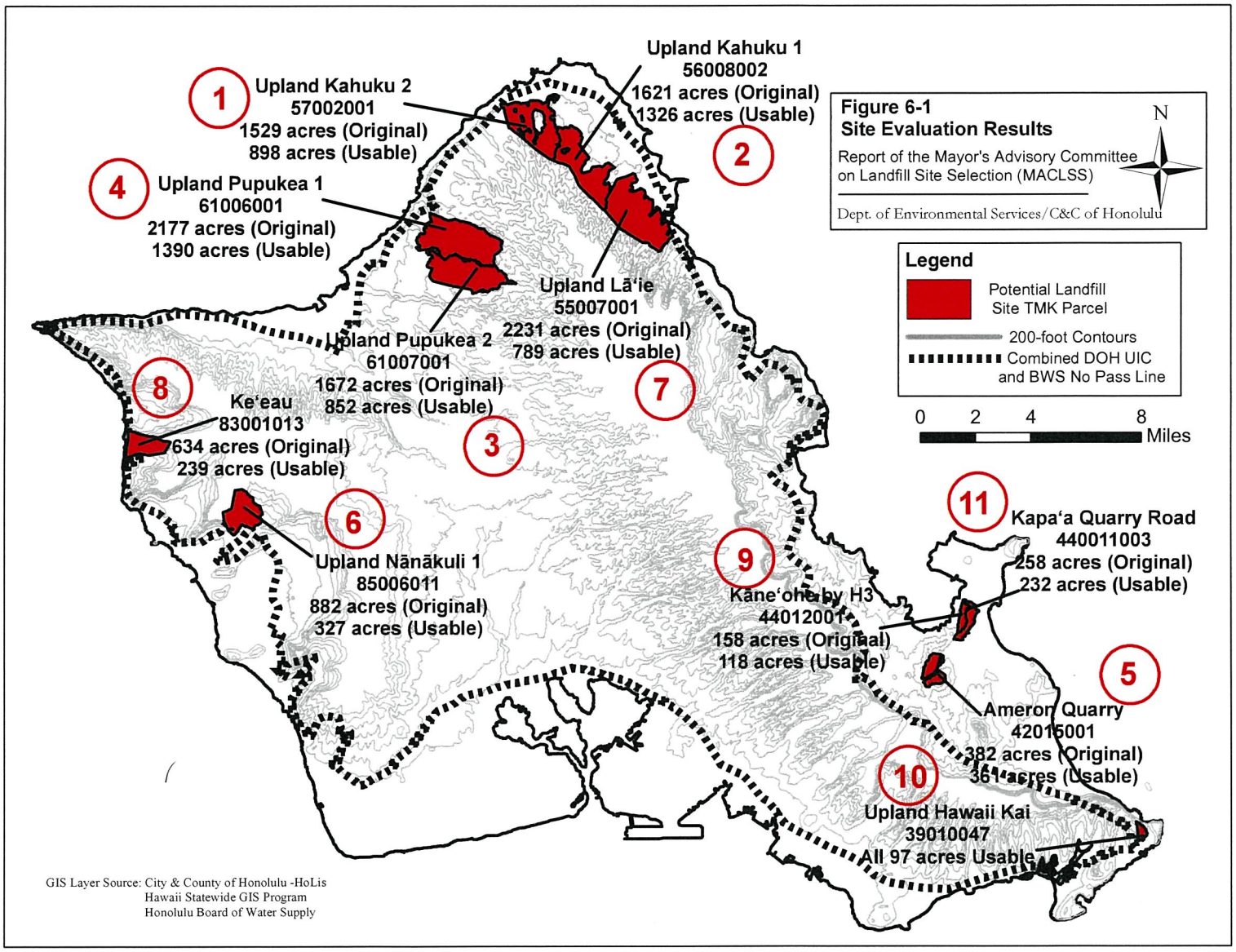


Figure 6-1
Site Evaluation Results
Report of the Mayor's Advisory Committee on Landfill Site Selection (MACLSS)
Dept. of Environmental Services/C&C of Honolulu
N
Legend
Potential Landfill Site TMK Parcel
200-foot Contours
Combined DOH UIC and BWS No Pass Line
0 2 4 8
Miles
1
Upland Kahuku 2
57002001
1529 acres (Original)
898 acres (Usable)
2
Upland Kahuku 1
56008002
1621 acres (Original)
1326 acres (Usable)
3
4
Upland Pupukea 1
61006001
2177 acres (Original)
1390 acres (Usable)
Upland Pupukea 2
61007001
1672 acres (Original)
852 acres (Usable)
Upland Lā'ie
55007001
2231 acres (Original)
789 acres (Usable)
7
8
Ke'eau
83001013
634 acres (Original)
239 acres (Usable)
6
Upland Nānākuli 1
85006011
882 acres (Original)
327 acres (Usable)
9
Kāne'ohe by H3
44012001
158 acres (Original)
118 acres (Usable)
10
Upland Hawaii Kai
39010047
All 97 acres Usable
11
Kapa'a Quarry Road
440011003
258 acres (Original)
232 acres (Usable)
5
Ameron Quarry
42015001
382 acres (Original)
361 acres (Usable)
GIS Layer Source: City & County of Honolulu -HoLis
Hawaii Statewide GIS Program
Honolulu Board of Water Supply

O‘ahu Landfill Siting Study & Landfill Advisory Committee Recommendations

Final Report

City and County of Honolulu, Hawai‘i

June 2022

Department of Environmental Services
Refuse Division
City and County of Honolulu

EXHIBIT B

This page is intentionally left blank.

O'ahu Landfill Siting Study & Landfill Advisory Committee Recommendations
Final Report
City and County of Honolulu

June 2022

The Mayor's Landfill Advisory Committee (LAC):
Steven Chang
Suzanne Jones
Ken Kawahara
Emmett Kinney
Brennon Morioka
James Nakatani
Cynthia Rezentes
Trisha Kehaulani Watson

Department of Environmental Services
Refuse Division
City and County of Honolulu

Technical Consultants:
HDR Engineering, Inc.
Wilson Okamoto Corporation

Meeting Facilitator:
The Limtiaco Consulting Group

This page is intentionally left blank.

TABLE OF CONTENTS

TABLES

FIGURES

Appendices

This page is intentionally left blank.

1 Executive Summary

1.1 Introduction

The City and County of Honolulu (City), Department of Environmental Services (ENV), is conducting a landfill siting study on the island of O'ahu as an initial step in replacing the existing Waimānalo Gulch Sanitary Landfill (WGSL), based on conditions added to the Special Use Permit (SUP) SP09-403 for extending the time of operation for WGSL by the State of Hawai'i Land Use Commission (LUC) on November 1, 2019, as follows:

Condition No. 1 – "The WGSL shall close by no later than March 2, 2028. The WGSL shall not accept any form of waste after March 2, 2028."

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

With the pending closure of the WGSL, it has become essential for the City to plan for sufficient future landfill capacity for continued management of municipal solid waste (MSW) diverted from H-POWER, ash and residue byproducts from H-POWER, and other special waste, non-recyclable waste, and disaster debris beyond 2028. Additionally, to compensate for the impending closure of PVT Landfill, the only construction and demolition landfill on O'ahu, the next City landfill must be planned to incorporate the addition of that waste stream.

This report documents the process of and includes recommendations from the Landfill Advisory Committee (LAC) appointed by the Mayor to assist in development of the landfill siting study. The LAC evaluated and scored potential new landfill sites. The O'ahu Landfill Siting Study & Landfill Advisory Committee Recommendations Report (report) is the initial step in identifying potential new landfill sites on O'ahu and allows ENV to prepare technical studies and analyses in support of future design and permitting efforts.

1.2 Role of the Landfill Advisory Committee

The Mayor appointed a nine-member LAC for the purpose of providing a representative community voice in assisting the City in completion of the landfill siting study (note: one member later resigned due to scheduling conflicts). The LAC assisted, in an advisory role, in evaluating, scoring, and ranking potential landfill sites under consideration with the understanding that the final determination on a final landfill site location will rest with the City.

LAC members attended a series of eight public meetings between October 2021 and June 2022 to help develop processes to evaluate and score potential landfill sites.

The meetings were conducted by City staff and the City's consultants to present information and answer questions, but they did not actively participate in the site evaluation or scoring process. The LAC process was conducted in compliance with the Sunshine Law. See Section 3 for discussion of the LAC's role and appointment, and overview of the LAC process.

1.3 Site Identification Process Overview

In 1991, the United States Environmental Protection Agency set forth regulations governing the design and operation of MSW landfills under the Resource Conservation and Recovery Act (RCRA). These regulations deal with MSW and are referred to as RCRA Subtitle D regulations.

The State of Hawai'i Department of Health Hawai'i Administrative Rules, which incorporated the RCRA Subtitle D regulations and additional state-specific requirements, includes restrictions on new MSW landfill locations that are specific to wetlands, floodplains, airport safety, fault areas, seismic impact zones, unstable areas, and tsunami zones; these restrictions are detailed in Section 4.1. In addition, state legislation was adopted through passage of State House Bill 2386 (Act 73) in September 2020, prohibiting location of a waste disposal facility in a conservation district and within one-half mile of residences, schools, and hospitals.

ENV established conceptual grading design criteria to evaluate potential site locations as discussed in Section 4, of which a minimum 20-year life cycle was of most importance.

1.3.1 GIS-Based Evaluation

ENV used a Geographical Information System (GIS)-based desktop-level evaluation of the island of O'ahu using readily available State of Hawai'i, City and County government agency data supplemented by consultation with technical experts. The GIS based approach is discussed in detail in Section 4.3.

1.3.2 Review of Previous Siting Studies

Individual base layers were developed in the GIS model using the regulatory restrictions discussed in Section 4.3.1. The 43 preliminary and 11 final potential landfill sites from the *2012 Report of the Mayor's Advisory Committee on Landfill Site Selection* (2012 MACLSS) and *2017 Assessment of Municipal Solid Waste Handling Requirements for the Island of Oahu* studies were added to the GIS model and compared against the regulatory restrictions. The majority of the previous study sites were eliminated as potential sites.

1.3.3 Development of Areas/Sites for Evaluation

ENV initially identified 12 areas that appeared to meet the regulatory restrictions using the GIS model. After additional review, eight of those areas were eliminated

and, from within the four remaining areas, six potential landfill sites meeting the minimum required waste disposal capacity were identified for evaluation by the LAC.

1.4 Site Evaluation and Recommendations

A methodology was developed to evaluate the six potential landfill sites using the following four steps:

- Develop objective and subjective evaluation criteria.
- Develop weighting, rating, scoring, and ranking method.
- Research and collect data to develop potential landfill site technical support information for rating and scoring.
- Apply weights, ratings, scoring, and final site rankings.

1.4.1 Evaluation Criteria Process

ENV used the 2012 MACLSS study as a basis to develop a draft list of site evaluation criteria for discussion with the LAC. ENV incorporated the LAC's comments, particularly their concerns related to protecting O'ahu's drinking water resources following the Board of Water Supply's presentation, into a revised final list of evaluation criteria consisting of 9 objective criteria and 8 subjective criteria, which are discussed in Section 5.2. The LAC scored and ranked the sites using the methodology described in Section 5.3.

1.4.2 Site Scoring and Ranking

The final site scoring and ranking was presented to the LAC in April 2022 for discussion. The final site rankings and total scores are shown in Table 1.1, and the LAC's observations and recommendations from that discussion are presented in Section 6.3.

Table 1.1 Final Site Scoring and Ranking

Rank	Area, Site	Location	Score
1	Area 6, Site 1	Wahiawā near Kunia Road	4,200
2	Area 7, Site 1	Kapolei/Waipahu near Kunia Road	4,061
3	Area 3, Site 1	Wahiawā	3,841
4	Area 3, Site 2	Wahiawā	3,685
5	Area 3, Site 3	Wahiawā	3,634
6	Area 2, Site 1	Hale'iwa near Kawailoa Road	3,596

Note: The LAC ranked the sites but generally agreed that landfills should not be developed over drinking water resources.

1.4.3 LAC Recommendations

Evaluating and scoring potential landfill sites is an extremely challenging undertaking, especially in consideration of the fact that all proposed sites are in or near culturally, ecologically and/or environmentally sensitive areas, including the Board of Water Supply No Pass Zone. All LAC members expressed concerns related to the location of the proposed sites in the No Pass Zone and, consequently, the potential implications for O'ahu's drinking water resources. The LAC approved a motion not recommending any of the final landfill sites due to their location within the No Pass Zone and made additional recommendations for the City as follows:

- Explore amending Act 73 to allow more suitable sites outside of the No Pass Zone.
- Request more time from the LUC to explore amending Act 73, and thoroughly evaluate federal owned and leased land, and eminent domain options for parcels outside the No Pass Zone.

LAC members' concerns and objections related to the proposed landfill sites are captured in Section 6.3, individual member statements are provided in Appendix A, and meeting minutes are provided in Appendix B.

City administration will carefully evaluate the information, findings and opinions contained in the report as it proceeds with naming a new landfill site, pursuant to the 2019 Hawaii State Land Use Commission decision and order.

2 Introduction

This O'ahu Landfill Siting Study & Landfill Advisory Committee Recommendations Report (report) documents the activities of the City and County of Honolulu (City), Department of Environmental Services (ENV), in conducting a landfill siting study on the island of O'ahu and recommendations by the Landfill Advisory Committee (LAC) that evaluated, scored, and ranked potential new landfill sites. The LAC was appointed by the Mayor of the City for the purpose of providing a representative community voice to assist the City in completing the landfill siting study. The siting study is intended to be the initial step in identifying potential new landfill sites on O'ahu and to allow the ENV to move forward with technical studies and analyses in support of the design and permitting efforts, including the preparation of an environmental impact statement (EIS).

2.1 Need for a New Landfill Site

A municipal solid waste (MSW) landfill is an integral component of the City's solid waste management system and is a vital element for responsible management of MSW generated on O'ahu. Providing for and preserving future sufficient landfill capacity is necessary for the disposal of non-combustible MSW, construction and demolition (C&D) waste, Honolulu Program of Waste Energy Recovery (H-POWER)-related ash and residue, and other non-recyclable waste generated on O'ahu. A landfill provides a critical backup disposal site when H-POWER and other diversion facilities are unable to accept waste for processing (e.g., during periods of maintenance or repair). With the pending closure of the privately owned PVT Integrated Solid Waste Management Facility (PVT C&D Landfill), a City owned landfill becomes a critical component for the City's *Disaster Debris Management Plan*. Although the City will continue to develop and advance waste recycling and source reduction alternatives to reduce the need for a landfill, at present there are no alternative processes that do not generate waste by-products that cannot be further reused, recycled, or otherwise combusted. An MSW and ash monofill landfill remains, at this time, the most viable alternative for handling of refuse and by-products by the City and the residents it serves.

2.2 History and Lead Up to the LAC

ENV has completed several past landfill siting and environmental studies that led up to the permitting the Waimānalo Gulch Sanitary Landfill (WGSL) in the 1980s. Primary studies completed are listed below:

- *Inventory of Potential Sanitary and Demolition Landfill Sites,* August 1977.
- *Supplement to Inventory of Potential Sanitary and Demolition Landfill Sites,* November 1979.

- *Revised Environmental Impact Statement for Leeward Sanitary Landfill at Waimānalo Gulch Site and Ohikilolo Site*, 1984.
- *Final Supplemental Environmental Impact Statement for the Waimānalo Gulch Sanitary Landfill Expansion*, 2002.
- *Final Environmental Impact Statement for the Waimānalo Gulch Sanitary Landfill Lateral Expansion*, 2008.

In permitting WGSL, ENV was required under Hawai'i Administrative Rules (HAR) to obtain a Special Use Permit (SUP) from the State of Hawai'i Land Use Commission (LUC). HAR require an SUP to operate a landfill on Agricultural-zoned land. ENV operated WGSL under SUP No. 86/SUP-5 and SUP No. 2008/SUP-2 up until October 2009, whereupon the LUC granted the ENV SUP No. SP09-403 on October 22, 2009, authorizing a 92.5-acre lateral expansion and an extension of time to operate WGSL until July 31, 2012.

Condition No. 4 of SUP No. P09-403 required ENV to identify and develop one or more new landfill sites that shall either replace or supplement the existing WGSL on or before November 1, 2010. H-POWER ash and residue could continue to be accepted at WGSL beyond July 2012. The July 2012 date had been established by the LUC based on the estimated remaining MSW volume capacity at the WGSL and anticipated closure in 2012. In 2012, ENV completed the following site selection study to identify and rank potential landfill sites for consideration by the City in response to Condition No. 4:

- *Report of the Mayor's Advisory Committee on Landfill Site Selection (MACLSS)*, September 2012.

During the 2012 MACLSS process, ENV was instructed by the Mayor that the Committee was not to consider WGSL in their deliberations, as the current WGSL could not supplement or replace itself. ENV presented the Committee with the following instructions:

- The MACLSS's identification of landfill sites should include the provision for accepting MSW, C&D waste, and ash and residue from H-POWER.
- The City's intention is to utilize WGSL until its full capacity is reached. An important reason for this is that the City considers land a precious resource. Should a landfill site not be utilized to its full potential and capacity, it would represent an inefficient use of the land and public treasury since it would prematurely require the use of a new landfill site and involve new, major capital expenditures for development.
- The sites the Committee will evaluate and rank will be considered for future use by the City as it proceeds with its site selection and EIS process once the WGSL waste capacity is reached.

The 2012 MACLSS identified 11 potential landfill sites that were ranked based on community criteria developed by the Committee and ENV.

In 2017, ENV completed a study to assess the City's solid waste management system, materials requiring landfill disposal, the remaining lifespan of WGSL, and the year the City should begin development of a future MSW landfill. The study, listed below, also reviewed the 11 sites identified by the 2012 MACLSS selection study and examined them based on a technical and logistical review:

- *Assessment of Municipal Solid Waste Handling Requirements for the Island of Oahu*, November 2017.

The 2017 Assessment concluded that based on current waste projections, the WGSL would have capacity until 2038, and assuming a conservative timeline of 10 years to develop a new landfill, it was recommended to begin the siting process for a new landfill in 2028. It was also recommended that during the period between 2028 and 2037, the City should reanalyze the sites ranked in the report and investigate potential new landfill sites; conduct the site selection; undertake land acquisition (e.g., negotiation, condemnation, purchase); obtain environmental permits, land use permits, and operating permits; and conduct site planning, design, engineering, and construction.

Upon the granting of SUP SP09-403 on October 22, 2009, several appeals were filed by intervenors between 2009 and 2019 to inhibit the expansion and extension of time for WGSL. Additionally, over that period, ENV filed applications to extend or remove the July 2014 date requiring WGSL to cease accepting waste and close. The 2017 Assessment had shown that the remaining waste capacity of WGSL was estimated to extend well beyond 2014 due to the expansion of the H-POWER facility in 2012 and recycling efforts implemented by the City which significantly reduced the MSW volume being landfilled. After several hearings, the LUC granted revised conditions to SUP SP09-403 on November 1, 2019, that authorized an extension of time for WGSL to cease accepting waste and close. The revised conditions superseded the existing conditions of SUP SP09-403 while still allowing the 92.5-acre lateral expansion. Significant changes to conditions in revised SUP SP09-403 that "led up" to the appointment of the LAC and completion of this study are as follows:

Condition No. 1 – "The WGSL shall close by no later than March 2, 2028. The WGSL shall not accept any form of waste after March 2, 2028."

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

Copies of the documents listed in this section can be obtained at the ENV Refuse Division website: https://www.honolulu.gov/opala/newlandfill.html.

This page is intentionally left blank.

3 Landfill Advisory Committee

As discussed in Section 2, the LAC was appointed by the Mayor for the purpose of providing a representative community voice in assisting the City in completion of the landfill siting study. This section further describes the LAC's role, appointment, and overview of the LAC process.

3.1 LAC Role

The members of the LAC were asked to assist in evaluating and scoring potential landfill sites under consideration by the City. The LAC was tasked with this undertaking with the understanding that its role is advisory and that the final determination on landfill site location will rest with the City. After the LAC completes its assignment, the committee will conclude. The City will then make its determination and begin the planning, permitting, and development process for a new landfill, which will involve preparation of an EIS and implementation of local community outreach programs.

LAC members were asked to attend scheduled meetings, review information, ask questions, and assist the City's technical consultants in the processes developed for evaluating and scoring a list of potential landfill sites. LAC members were asked to participate with an open mind and raise questions and concerns with the intent of working through any issues in a productive and respectful manner. As LAC members representing the residents of O'ahu, their participation was critical to ensure that the landfill site selection process is transparent and instill confidence in the results. It was discussed with the LAC that in order to maintain neutrality during the process, City staff would not actively participate in the site evaluation or scoring process, but would be present at LAC meetings only to assist the City's technical consultants in presenting information for discussion and answering questions from LAC members or the public.

3.2 Appointment of the LAC

After starting with a list of over 30 candidates and careful consideration of their backgrounds, availability, and potential willingness to serve, ENV prepared a list of 11 individuals approved by the Mayor to serve on the LAC. The individuals represented a wide range of professional backgrounds and community involvement, including government, University of Hawai'i affiliation, neighborhood boards, and industrial, construction, engineering, cultural, environmental, and other businesses. The intent was to select individuals within the community who could offer an understanding of issues and concerns from the community's point of view and whose voices would

add significant value to the LAC to ensure that the site selection process produced the best result for the residents of O'ahu.

ENV sent a letter to each of the 11 individuals informing them that they were selected as possible member candidates and inviting them to attend a planned Virtual Pre-LAC Meeting where detailed information about their involvement in the advisory committee and an overview of the site selection process would be shared. The meeting was held on August 30, 2021. Information presented and provided at the meeting is provided in Appendix A.

Following the meeting, the 11 individuals were contacted by ENV to confirm their desire to be members of the LAC. Nine of the contacted individuals confirmed their desire to be members, with one of those members resigning from the committee halfway through the process due to schedule conflicts. The final eight individuals who participated during the entire LAC process are listed in Table 3.1.

Table 3.1 LAC Members

Member	Industry Affiliation
Steven Chang	Environmental Regulation
Suzanne Jones	Solid Waste/Recycling
Ken Kawahara	Professional Engineer/Civil Engineering
Trisha Kehaulani Watson	Environmental Justice/Cultural Resources
Emmett Kinney	General Contracting
Brennon Morioka	Professional Engineer/Civil Engineering
James Nakatani	Agribusiness Development
Cynthia Rezentes	Classical Electrical Engineering/Community Advocate

3.3 Overview of the LAC Process

The process utilized by the LAC was established by the City to follow a timeframe that included a pre-committee meeting and eight LAC meetings over a 9-month period. Meeting dates and topics discussed by the LAC are outlined in Table 3.2.

Table 3.2 Landfill Advisory LAC Meeting Summary

Meeting Number	Meeting Date	Meeting Topics
Pre-Committee Meeting	August 30, 2021	• Mayor and ENV Director welcome • Introduction of Project Team – ENV, Refuse Division, and Consultants • ENV Presentation – Introduction of LAC member expectations • ENV Presentation – Landfill history • ENV Presentation – Purpose of the LAC • ENV Presentation – Expectations of committee members & proposed meeting schedule/platform
1	October 4, 2021	• Introduction of LAC members and Project Team • ENV Presentation – LAC purpose, expectations, meeting process, role of the LAC, and anticipated LAC meeting schedule • City Department of Corporate Counsel Presentation – Sunshine Law • ENV Presentation – Overview of Existing Solid Waste Program • ENV Presentation – Regulatory Requirements for New Landfill Design and Operation • Discussion on Limited Meeting Requirements for Site Tours
2	October 25, 2021	• ENV Presentation and Adoption – LAC Rules • ENV Presentation and Approval – Limited Meeting #3 Site Tours
3	November 3, 2021 (Limited Meeting)	• Tour of PVT C&D Landfill, Waimānalo Gulch Sanitary Landfill, and H-POWER
4	December 14, 2021	• ENV Presentation – LAC Meeting #3 Recap • ENV Presentation – Results of Resident Landfill Survey • BWS Presentation – O'ahu's Groundwater Aquifer and Siting a New Landfill • ENV Presentation – Groundwater Protection

Table 3.3 Landfill Advisory LAC Meeting Summary Cont.

Meeting Number	Meeting Date	Meeting Topics
		• Measures for Municipal Solid Waste Landfills ENV Presentation – Site Evaluation Criteria
5	February 7, 2022	• Introduction of the New Director of the Department of Environmental Services • BWS Presentation – Board of Water Supply • ENV Presentation and Approval – Final Site Evaluation Criteria • ENV Presentation –Evaluation Scoring Methodology
6	March 7, 2022	• ENV Presentation – Landfill Location and Drinking Water Protection • ENV Presentation – Potential Landfill Sites • ENV Presentation – Subjective Evaluation and Scoring Methodology
7	April 4, 2022	• ENV Presentation – Objective Criteria Evaluation • ENV Presentation – Site Scores and Rankings • ENV Presentation ENV Presentation – Contents of the LAC Report • ENV Presentation – Potential Benefits for Landfill Host Community
8	June 6, 2022	• Draft Report Revisions and Potential Community Benefits • Conclusions

All meetings were conducted remotely using interactive conference technology except Meeting 7, which was held in person at Kapolei Hale, and Meeting 8, which was conducted both in person at Kapolei Hale and remotely using interactive conference technology. Remote virtual meetings were conducted pursuant to Governor David Y. Ige's Emergency Proclamations Related to the COVID-19 Response, issued and updated at various times during the LAC meeting schedule. Remote meetings using interactive conference technology were conducted to allow

LAC and public participation in a manner consistent with safe practices and social distancing requirements.

All LAC meetings were conducted in compliance with the Sunshine Law, which is Hawai'i's open meeting law as outlined in Hawai'i Revised Statutes (HRS), Part 1, Chapter 92 Public Agency Meetings and Records. The intent of the Sunshine Law is to establish policy that allows discussions, deliberations, decisions, and actions of governmental agencies to be conducted as openly as possible to public scrutiny and participation. The Sunshine Law was applicable to the LAC process because the LAC was an advisory body to the Mayor. The LAC received training on the Sunshine Law at LAC Meeting 1 from the City's Department of Corporate Counsel.

The LAC conducted one "Limited Meeting" in compliance with the Sunshine Law coordinated by ENV for three refuse facility tours on November 3, 2021. The on-site Limited Meeting was approved by the LAC due to health and safety requirements necessary to tour the facilities that would make it impracticable for the public to attend because of the practices and social distancing requirements of the COVID-19 Emergency Proclamations. Site tours were conducted at H-POWER, PVT C&D Landfill, and WGSL facilities.

In addition to complying with Sunshine Law requirements, LAC Rules were adopted by the LAC at Meeting 2 on October 25, 2021. The intent of the LAC Rules was to outline the framework under which the meetings will be conducted and the member participation and responsibilities that will allow the LAC to complete their assigned tasks.

The LAC Rules included the following items:

- Authority and Membership
- Purpose and Objective
- Quorum and Voting
- Meetings
- Agenda
- Public Testimony
- Correspondence
- Action by LAC
- Minutes
- Evaluation and Scoring of Landfill Sites
- Conflicts of Interest
- Amendment of Rules
- Effective Date

LAC meeting agendas, minutes, written public comment, and presentation materials are provided in Appendix B. LAC rules are provided in Appendix B-2.

3.4 Public Outreach and Incorporation into the LAC Process

The City informed O'ahu's residents about the landfill siting process and educated them about on-island solid waste management through multiple means. The City also encouraged residents to get involved in the process. A description of each of the various efforts follows.

3.4.1 Dedicated Webpage

The "New Landfill Siting" webpage was created on ENV's Refuse Division website during the early stages of the landfill siting process in Summer 2021. The page included information about the siting process, LAC members, and LAC meetings along with downloadable copies of the meeting materials. In addition, the page detailed the restrictions to the landfill siting process and included a link to an interactive map that overlaid the restrictions for an easy-to-use visual guide. An email address (newlandfill@honolulu.gov) was provided on the webpage for visitors to send any comments or questions to City staff involved with the project. Any comments from the public were shared with the LAC, when applicable. Questions received were presented on the Questions and Answers section of the site along with responses and related information. ENV staff updated the webpage as comments were received and as LAC meetings occurred. The webpage can we found at https://www.honolulu.gov/opala/newlandfill.html.

3.4.2 C&C of Honolulu ENV Refuse Division Resident Landfill Survey

The "C&C of Honolulu ENV Refuse Division Resident Landfill Survey" was formed to bring awareness to the public about the landfill siting process. The tool was also used to determine O'ahu residents' knowledge of the current solid waste program and to obtain input for consideration during the siting process. The survey utilized a user-friendly, online format for ease of dissemination and was promoted through the ENV Refuse Division website, advertisement posters displayed at City facilities, advertisements on the Department of Transportation Services' TheBus, Refuse Division social media platforms, and announcements at early LAC meetings. The survey was launched in August 2021 and was closed in January 2022. It received 561 responses and the results of the survey were presented in LAC Meeting 4. As an additional incentive for residents to complete the survey, ENV worked with the Honolulu Zoo to grant a one-year membership to an individual survey-taker by way of a randomized raffle.

3.4.3 Bus Advertisement Posters

ENV utilized the Department of Transportation Services' TheBus advertising agreement to display advertisement posters spreading awareness about the landfill siting process and to encouraging riders to participate in the "C&C of Honolulu ENV Refuse Division Resident Landfill Survey." The posters were displayed for a month, through October 2021, in 540 buses encompassing 100 bus routes that covered streets from Mākaha to Makapu'u and Waikīkī to Turtle Bay. According to TheBus' contracted advertisement agency, annual ridership is approximately 70 million, which averages to almost 6 million per month. The advertisement poster is provided in Appendix C.

3.4.4 Advertisement Posters at City Halls and Satellite City Halls

Advertisement posters were displayed at City facilities with high public foot traffic. These facilities included: Fasi Municipal Building, Honolulu Hale, Kapālama Driver Licensing Center, Kapālama Hale, Kapolei Driver Licensing Center, Kapolei Hale, Ko'olau Driver Licensing Center, Pearl City Commercial Driver Licensing Center, Wahiawā Driver Licensing Center, and Wai'anae Driver Licensing Center. The posters were intended to spread awareness about the landfill siting process and to encourage residents to participate in the "C&C of Honolulu ENV Refuse Division Resident Landfill Survey." They were displayed throughout the duration of the survey. The advertisement poster is provided in Appendix C.

3.4.5 Social Media

Social Media outlets were important tools that allowed ENV to engage with a large number of residents in a quick time frame for minimal to no cost. In addition, it allowed residents who are interested in solid waste issues to contact ENV easily and interact with ongoing topics.

ENV used Facebook, Twitter, and YouTube platforms to inform and educate followers about the landfill siting process and the current solid waste management program on O'ahu. There have been 59 posts, and outreach by this method will continue for the foreseeable future. Posts were created by ENV staff and were published on Facebook and Twitter routinely to maintain a steady source of information and updates. LAC meeting recordings were uploaded to YouTube for viewing. To further ENV's outreach, a Facebook post related to the "C&C of Honolulu ENV Refuse Division Resident Landfill Survey" was boosted to reach an extended audience. By boosting the post, it was made visible to Facebook users on O'ahu beyond those who already follow the Refuse Division page. The boosted post received 11,000 impressions, reached 5,100 people, and had 300 engagements. The boosted Facebook post is provided in Appendix C. ENV's Refuse Division

Facebook page is @HNL.Opala, and the ENV department-wide Twitter profile is @HNL_ENV.

3.4.6 Neighborhood Board Meetings

Messages with important updates on the LAC process were presented by the mayor's representatives at neighborhood board meetings.

3.4.7 Press releases

Four press releases were initiated for key points in the project. These included the announcement of the formation of the LAC, the release of the survey, a survey reminder and extension, and the announcement of the *Insights on PBS Hawai'i* broadcast (see Section 3.4.10).

3.4.8 City Council Presentations

A presentation regarding compliance with Act 73 and the remaining areas eligible for siting a landfill was provided to the City Council Joint Committee on Zoning and Planning and Transportation, Sustainability and Health on April 27, 2021, and another presentation on the formation of the LAC and updating the status of the landfill siting process was provided to the full City Council on August 26, 2021.

3.4.9 Council Member/State Representative/Senate Messages

Twenty different emails were sent to City Council, State Representative, and State Senators' offices to let them know about various updates to the landfill siting process, including topics such as announcement of the LAC, LAC meeting agendas and recordings, survey invitations, and the *Insights on PBS Hawai'i* broadcast (see Section 3.4.10).

3.4.10 Cable Broadcast Interview

In April 2022, *Insights on PBS Hawai'i* aired a special titled, "In Search for a New Landfill on O'ahu" that included ENV Director Roger Babcock, Jr. Ph.D., P.E. as one of the panelists to discuss the landfill siting process from the City's standpoint. ENV collaborated with *Empowered Hawai'i* for the "Earth Day: Trash to Treasure" episode in April 2022. The episode discussed the importance of reducing waste and recycling to prevent material ending up at the landfill.

3.4.11 Public Presentations

ENV Refuse Division, Recycling Branch and H-POWER conducted 28 educational presentations regarding refuse and recycling, including ties to the landfill, at schools and community group meetings from January 2021 through June 2022.

3.4.12 Tradeshow Event

Between January 2021 and June 2022, the ENV Refuse Division, Recycling Branch attended one tradeshow event to interest and educate the public about the Refuse Division's work.

3.4.13 Tours at Refuse Facilities

Between January 2021 and June 2022, the ENV Refuse Division, Recycling Branch and H-POWER hosted 20 tours at H-POWER, the landfill, and other Refuse facilities.

This page is intentionally left blank.

4 Identification of Potential Landfill Sites

4.1 Restrictions and Parameters for Landfill Siting

4.1.1 Federal and State Solid Waste Management Rules

In 1991, under the federal Resource Conservation and Recovery Act (RCRA), the United States (U.S.) Environmental Protection Agency (EPA) promulgated regulations governing the design and operation of MSW landfills. These regulations pertained to RCRA Subtitle D, which deals with MSW, and are commonly referred to as Subtitle D regulations.

In January 1994, the State of Hawai'i Department of Health (DOH) adopted HAR, Title 11, Chapter 11, Solid Waste Management Control. These state rules incorporated the federal Subtitle D regulation requirements and additional state-specific requirements. As with the federal regulations, the Hawai'i rules include restrictions regarding new MSW landfill locations. These restrictions are summarized in Table 4.1. One listed siting restriction - Airport Safety - requires a specific setback distance, and one additional siting restriction - Tidal Wave (Tsunami) Zones - is exclusionary; both were applied directly in this siting study. The remaining restrictions are specific to the technical characteristics (e.g., geology, hydrogeology, seismic) of the site location. Until further technical analyses and field investigations can be completed for a selected site location, technical assumptions are made to determine whether these restrictions are met or if engineering measures can be incorporated in the design that meet the restrictions.

Table 4.1 Federal and State Landfill Site Analysis Restrictions

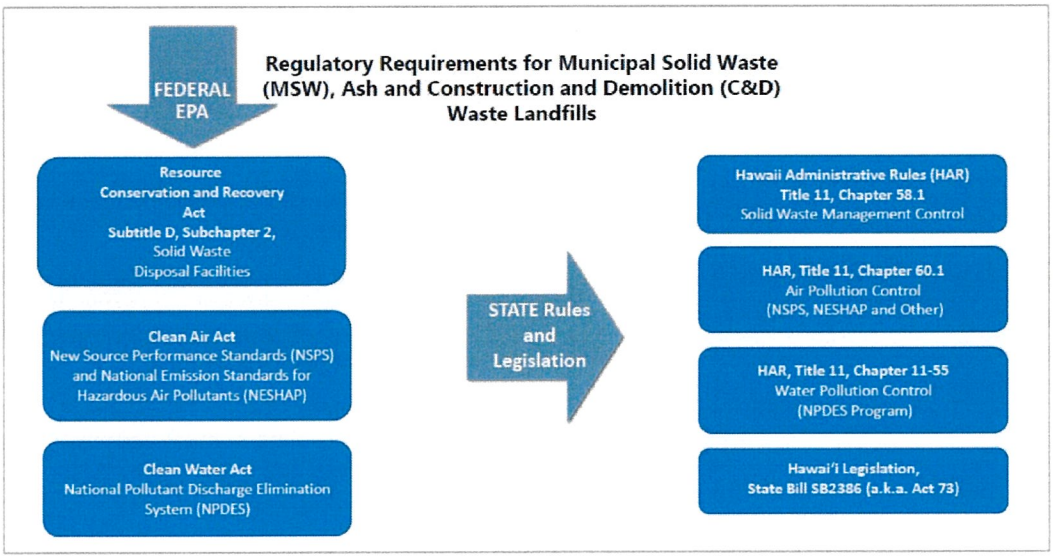
Restriction	Definition
Wetlands	Must not be located in wetlands or must demonstrate that the landfill will not cause violations to applicable state and federal water standards, including the Clean Water and Endangered Species Acts.
Floodplains	Must not be located in a 100-year floodplain or must demonstrate that the landfill will not restrict the flow of a 100-year flood, reduce the floodplain's temporary water storage capacity, or result in MSW washout.
Airport Safety	Must meet 10,000-foot setback requirements from airport runways used by turbojets or must demonstrate that the landfill will not pose a bird hazard to aircraft.

Table 4.1 Federal and State Landfill Site Analysis Restrictions Cont.

Restriction	Definition
Fault Areas	Must not be located within 200 feet of a fault that has had displacement in Holocene time or must demonstrate that an alternative setback distance will maintain the landfill's structural integrity.
Seismic Impact Zones	Must not be located in seismic impact zones or must demonstrate that all liners, leachate collection systems, surface water controls, and other systems are designed to resist maximum horizontal accelerations.
Unstable Areas	Must not be located in an unstable area or must demonstrate that engineering measures have been incorporated in the design that will maintain the landfill's structural integrity.
Tidal Wave (Tsunami Zones)	Must not be located in a possible tsunami or extreme tsunami inundation area.

In addition to the federal and state-adopted Subtitle D rules, state legislation was adopted through passage of State House Bill (SB)2386 in September 2020. This bill, now known as Act 73, prohibits a waste disposal facility from being located in a conservation district and within one-half mile of residences, schools, and hospitals. Similar to the Airport Safety restriction described Table 4.1, setback distance requirements in Act 73 were applied directly in the siting evaluation. Figure 4.1 illustrates the federal and state regulations and rules related to solid waste management.

Figure 4.1 Federal and State Solid Waste Management Rules



4.1.2 City Ordinances and Resolutions

City ordinances are laws, or decrees, enacted by the City Council that typically regulate specific activities, whereas resolutions express the City Council's opinion or the City's policy on an issue or subject. Resolutions can also request an action by the City Administration or state government and, unlike ordinances, are not considered laws.

The City adopted Council Resolution 03-09, FD1, in April 2003, which established policy that MSW landfills should not be located anywhere above the DOH's Underground Injection Control (UIC) line, within the Board of Water Supply's (BWS) groundwater protection zone (No Pass Zone), or over any of the City's underground drinking water sources. In response to the City resolution, the BWS included the following definition of the No Pass Zone in their Rules and Regulations:

- No Pass Zone means areas in which the installation of waste disposal facilities, which may contaminate groundwater resources used or expected to be used for domestic water supplies, shall be prohibited.

The DOH UIC line per HAR, Title 11, Chapter 23, is defined as:

- UIC line or "the line" means the line on the DOH UIC maps that separates, in plain view, exempted aquifers and an underground drinking water source.

There are no City-adopted ordinances related to siting of MSW landfills on O'ahu.

4.1.3 Planning Horizon and Landfill Sizing

In managing a community solid waste management system, it is important to evaluate and develop a planning horizon, particularly for feasible and cost-effective options for MSW disposal. Section 2.1 describes, in more detail, why this step is crucial for the City. ENV established the goal early in the planning process to site a new landfill with a minimum life cycle of 20 years due to the time and effort required to complete the full siting, permitting, design, and development processes.

Estimating the minimum disposal capacity for 20 years required projecting future volumes of MSW, H-POWER ash and residue, asbestos, and C&D waste over the entire 20-year period. Additionally, current waste densities (airspace utilization factors) for the WGSL were used, and various recycling rates for C&D waste were assumed for the estimate. Current and projected waste volumes and population data were obtained from the City's *2019 Integrated Solid Waste Management Plan* (ISWMP) and estimated for the period 2028 through 2048. The period start date represents the date when a new landfill is fully operational. The volume estimates presented in Table 4.2 show that approximately 21.5 million cubic yards (mcy) of waste disposal capacity is needed for a minimum 20-year site life at a 25 percent recycling rate (75 percent disposal column).

Table 4.2 20 Year Waste Disposal Volume Estimates

TOTAL ASSUMED DISPOSAL VOLUMES (TNS)						C&D DISPOSAL (% & TNS)			
Year	MSW/Ash/Residue	MSW	Ash	Residue	Asbestos	C&D 100%	C&D 75%	C&D 50%	C&D 25%
2028	287,500	67,083	172,500	47,917	5,000	338,835	254,126	169,417	63,531
2029	293,250	68,425	175,950	48,875	5,000	345,611	259,208	172,806	64,802
2030	299,115	69,794	179,469	49,853	5,000	352,523	264,393	176,262	66,098
2031	305,097	71,189	183,058	50,850	5,000	359,574	269,680	179,787	67,420
2032	311,199	72,613	186,720	51,867	5,000	366,765	275,074	183,383	68,769
2033	317,423	74,065	190,454	52,904	5,000	374,101	280,576	187,050	70,144
2034	323,772	75,547	194,263	53,962	5,000	381,583	286,187	190,791	71,547
2035	330,247	77,058	198,148	55,041	5,000	389,214	291,911	194,607	72,978
2036	336,852	78,599	202,111	56,142	5,000	396,999	297,749	198,499	74,437
2037	343,589	80,171	206,153	57,265	5,000	404,939	303,704	202,469	75,926
2038	350,461	81,774	210,277	58,410	5,000	413,037	309,778	206,519	77,445
2039	357,470	83,410	214,482	59,578	5,000	421,298	315,974	210,649	78,993
2040	364,620	85,078	218,772	60,770	5,000	429,724	322,293	214,862	80,573
2041	371,912	86,779	223,147	61,985	5,000	438,319	328,739	219,159	82,185
2042	379,350	88,515	227,610	63,225	5,000	447,085	335,314	223,543	83,828
2043	386,937	90,285	232,162	64,490	5,000	456,027	342,020	228,013	85,505
2044	394,676	92,091	236,806	65,779	5,000	465,147	348,860	232,574	87,215
2045	402,569	93,933	241,542	67,095	5,000	474,450	355,838	237,225	88,959
2046	410,621	95,812	246,372	68,437	5,000	483,939	362,954	241,970	90,739
2047	418,833	97,728	251,300	69,806	5,000	493,618	370,213	246,809	92,553
2048	427,210	99,682	256,326	71,202	5,000	503,490	377,618	251,745	94,404
Total (20 YR TNS)	7,412,704	1,729,631	4,447,622	1,235,451	105,000	8,736,279	6,552,210	4,368,140	1,638,052
Total (20 YR CYS)	8,276,766	2,162,039	4,360,414	1,544,313	210,000	17,472,559	13,104,419	8,736,279	3,276,105
			Total Including C&D (20 YR TNS)			16,148,983	13,964,913	11,780,843	9,050,756
			Total Including C&D (20 YR CYS)			25,749,324	21,591,185	17,013,045	11,552,871

1. Total assumed volumes at year 2028 are average 2020 volumes received at WGSL and reported PVT C&D volumes (inflated 2% annually to 2048 volumes).
2. MSW/Ash/Residual and C&D annual increase assumed at 2% (2019 ISWMP).
3. Density/airspace utilization factors (AUF) (tons/cy) from WGSL 2019 Annual Operating Report.
   a. MSW and Residue = 0.80 TNS/CY
   b. Ash and Asbestos = 1.02 TNS/CY
   c. Asbestos = 0.50 TNS/CY
4. Airspace utilization factors (AUF) (tons/cy) from example mainland C&D facilities.
   a. C&D = 0.50 TNS/CY

Although C&D waste recycling rates typically range between 50 percent and 75 percent nationally, ENV assumed a more conservative rate of 25 percent because of the uncertainty in PVT C&D Landfill's scheduled closure and the need to identify, fund, and develop C&D waste recycling programs that will achieve a higher recycling and diversion rate.

4.2 Prior Landfill Siting Studies

Prior landfill siting studies completed by the City and relevant to this study are the 2012 MACLSS and 2017 Assessment studies described in Section 2.3. The approach to this siting study utilized general information presented in the prior studies. This includes the evaluation of the 43 preliminary sites listed in the 2012 MACLSS study and the 11 proposed final sites listed in both the 2012 MACLSS and 2017 Assessment studies for conformance with Act 73. The evaluation's results are described in Section 4.3. The screening criteria and approach in ranking and scoring the landfill sites in the 2012 MACLSS study were also reviewed and were considered applicable for this study.

4.3 Geographic Information System Based Evaluation

This section describes ENV's methodology in using a Geographical Information System (GIS) based evaluation approach for this study. ENV selected the use of a GIS-based approach due to the capacity to evaluate the entirety of the island of O'ahu using readily available information resources maintained by the State of Hawai'i, City, and County government agencies. However, the GIS-based system was selected with the following understandings:

- A GIS-based analysis is not a substitute for a more formal evaluation of a landfill site, which would be performed by the City in an EIS. An EIS level of assessment and evaluation must be performed for the proper identification of any landfill site prior to it being developed.
- A GIS-based analysis involves a desktop level of study, meaning basic research will be performed using only existing data sources supplemented by consultation with experts in other technical fields, as applicable, to the nature of the study. Fieldwork, including site surveys and detailed investigations, are not usually performed.

GIS-based evaluation of the final ranked and scored landfill sites is described in the following sections.

4.3.1 Step 1 - Review of Previous Siting Studies

Individual base layers were developed in the GIS model for four restrictions (two setback and two exclusionary types):

- Act 73 – One-half mile setback from residences, schools, and hospitals.

- Airport Safety – 10,000-foot setback from airport runways used by turbojet aircraft.
- Tidal Wave (Tsunami Zones) – Not located within a tsunami or extreme tsunami zone.
- BWS No Pass Zone – Not located within the BWS No Pass Zone.

ENV consulted the City Department of Planning and Permitting (DPP) requesting feedback for parcels that were not listed as residential-zoned but did show assessed building values with residential classifications in the real property records maintained by the City Department of Budget and Fiscal Services, Real Property Assessment Division. ENV requested confirmation from DPP whether legally permitted residences were located on certain parcels and, if so, the one-half mile residential setback was updated accordingly in the GIS base layer.

The 43 preliminary and 11 final potential landfill sites described in Section 4.2 were added as base layers in the GIS model and compared with the four regulatory restrictions. The majority, if not all, of the sites were eliminated as potential landfill sites due to one or more of the listed restrictions. These sites are shown in Figures 4.2 and 4.3.

4.3.2 Step 2 – Development of Final Four Areas

Using information developed in Step 1 and shown in Figures 4.2 and 4.3, ENV established twelve unrestricted areas to further evaluate as the next step. The twelve areas are shown in Figure 4.4. After further review, ENV eliminated eight of the areas for the following reasons:

- Federal parcels in Area 1 were eliminated due to ongoing military activities and other structures present on the parcel that would make the siting process very difficult, if not unattainable. ENV also understands that the purchase and/or use of federal property would require U.S. Congressional approval, which they believed would likely hinder the ability to meet the 2028 deadline imposed by the LUC.
- ENV continued consideration of federally owned Area 10 because ENV had operated the Waipahu Ash Landfill on the parcel through the late 1980s. ENV anticipated siting a new landfill in the Area could be less onerous than other federal parcels due to past ash landfilling activities that occurred on the parcel and current, active lease agreements with the U.S. Government for the parcel. However, ENV consulted with DOH to confirm if the extreme tsunami zone would restrict the siting of a landfill in the area. DOH informed the ENV that the extreme tsunami zone boundary shown would be enforced in the State permitting process. ENV eliminated Area 10 from further consideration due to the position taken by DOH and the remaining unrestricted area would not accommodate a landfill meeting the minimum disposal capacity.

Figure 4.2 43 Potential Landfill Sites (2012 MACLLS Study)

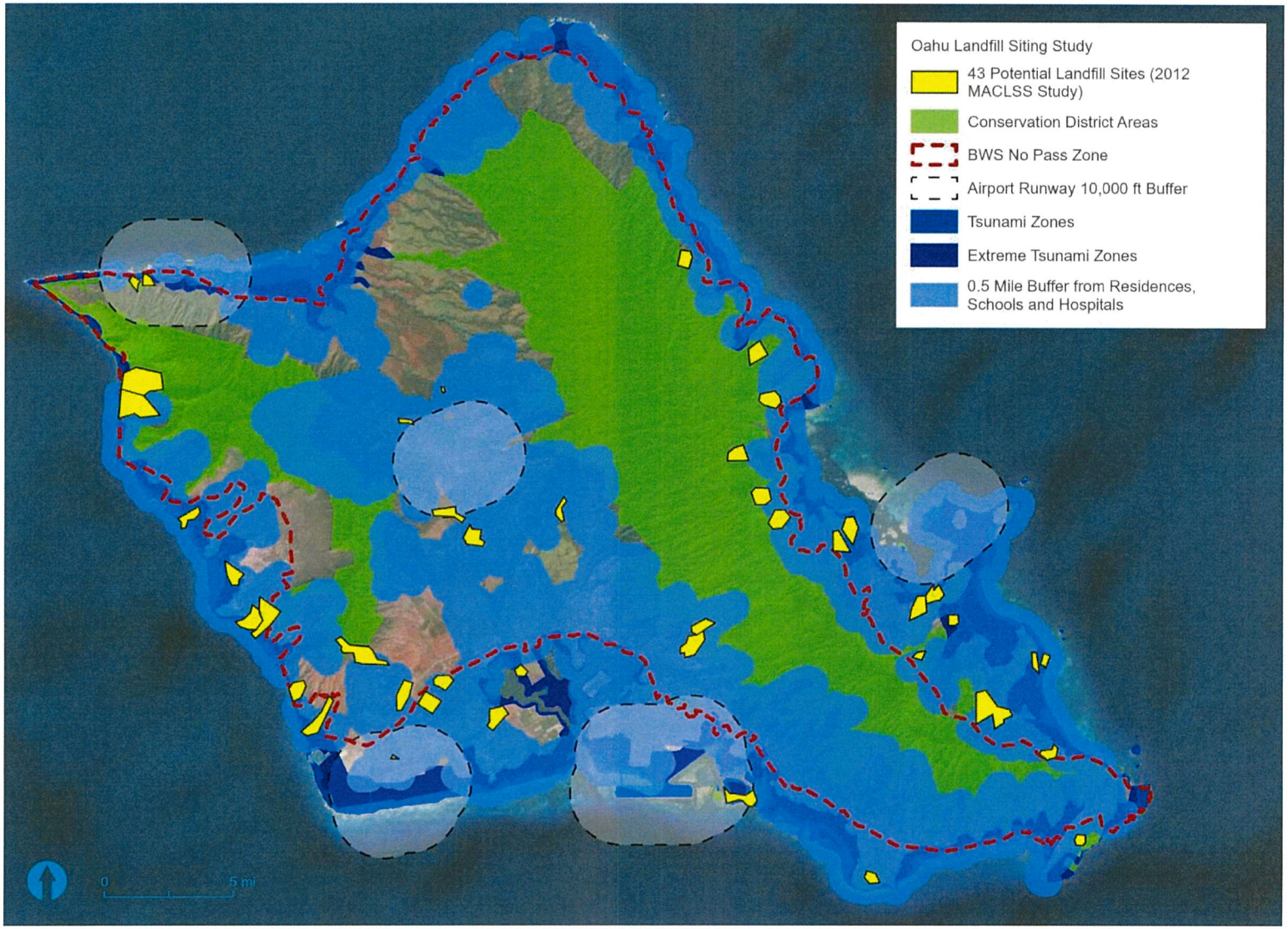


Figure 4.3 11 Final Landfill Sites (2012 MACLSS and 2017 Assessment Studies)

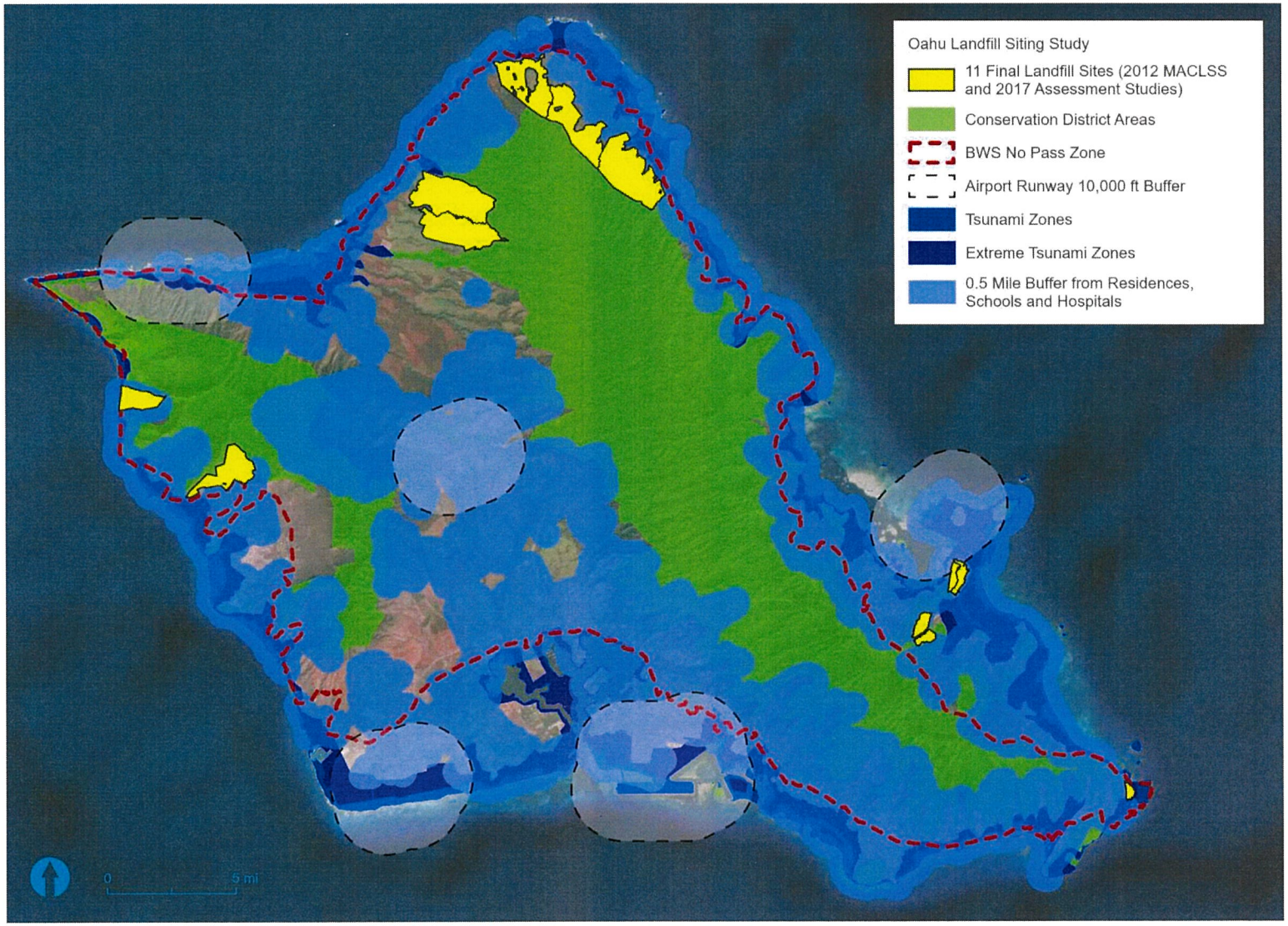
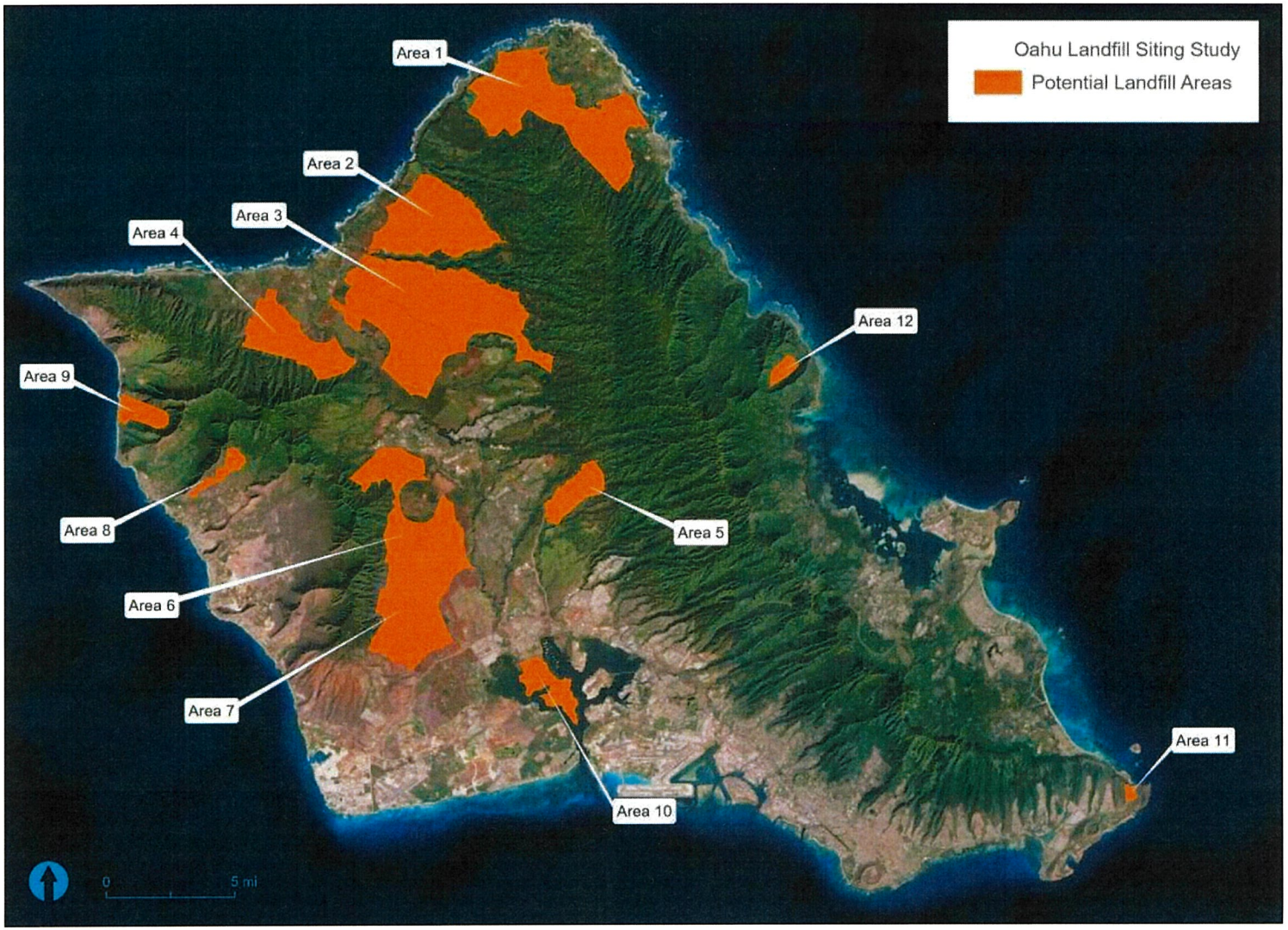


Figure 4.4 12 Areas for Potential Landfill Sites



- ENV eliminated all parcels that have a permitted residential structure in accordance with Act 73. ENV did not consider property condemnation to acquire and eliminate the residential structures. This decision eliminated Areas 9 and 12, and parcels in Areas 3, 4, and 7.
- ENV evaluated areas for access issues (e.g., limited or no access to available land); terrain issues (e.g., steep slopes); and planned, permitted, and existing developments that would make developing a parcel economically impractical. This effort eliminated Areas 8 and 11, and parcels in Areas 4, 5, and 6.

After eliminating the areas described above, the final four areas shown in Figure 4.5 became ENV's focus in completing the remaining steps for the study.

4.3.3 Step 3 - Landfill Site Locations and Conceptual Grading

During Step 3, ENV evaluated parcels in the final four areas to determine where potential landfill sites could be located that would meet the minimum waste disposal capacity described in Section 4.1.3. ENV established the following landfill design parameters to assist in evaluating landfill sites in the areas:

- 3:1 side slopes with 15-foot wide benches at 30-foot vertical intervals.
- 100-foot maximum height.
- 5 percent minimum sloped top area.
- 150-acre waste disposal footprint.
- 20-foot average excavation across entire footprint.
- Maintain one-half mile setback distance from residences.

The combined footprint area (plan view of disposal boundary), height, and other listed design parameters generally allow a minimum waste disposal capacity of 21.5 mcy, if located on flatter parcels. The parameters were adjusted, as necessary, to accommodate variations in terrain and for canyon type fills to achieve the minimum disposal capacity. A conceptual grading plan example is shown in Figure 4.6.

The evaluation and conceptual grading effort resulted in ENV selecting six potential landfill site locations, which are identified by area and site number. The final landfill sites selected by ENV and presented to LAC for scoring and final ranking are listed below and shown in Figures 4.7 through 4.12:

- Area 2, Site 1
- Area 3, Site 1
- Area 3, Site 2
- Area 3, Site 3
- Area 6, Site 1
- Area 7, Site 1

Figure 4.5 Final Four Areas for Potential Landfill Sites

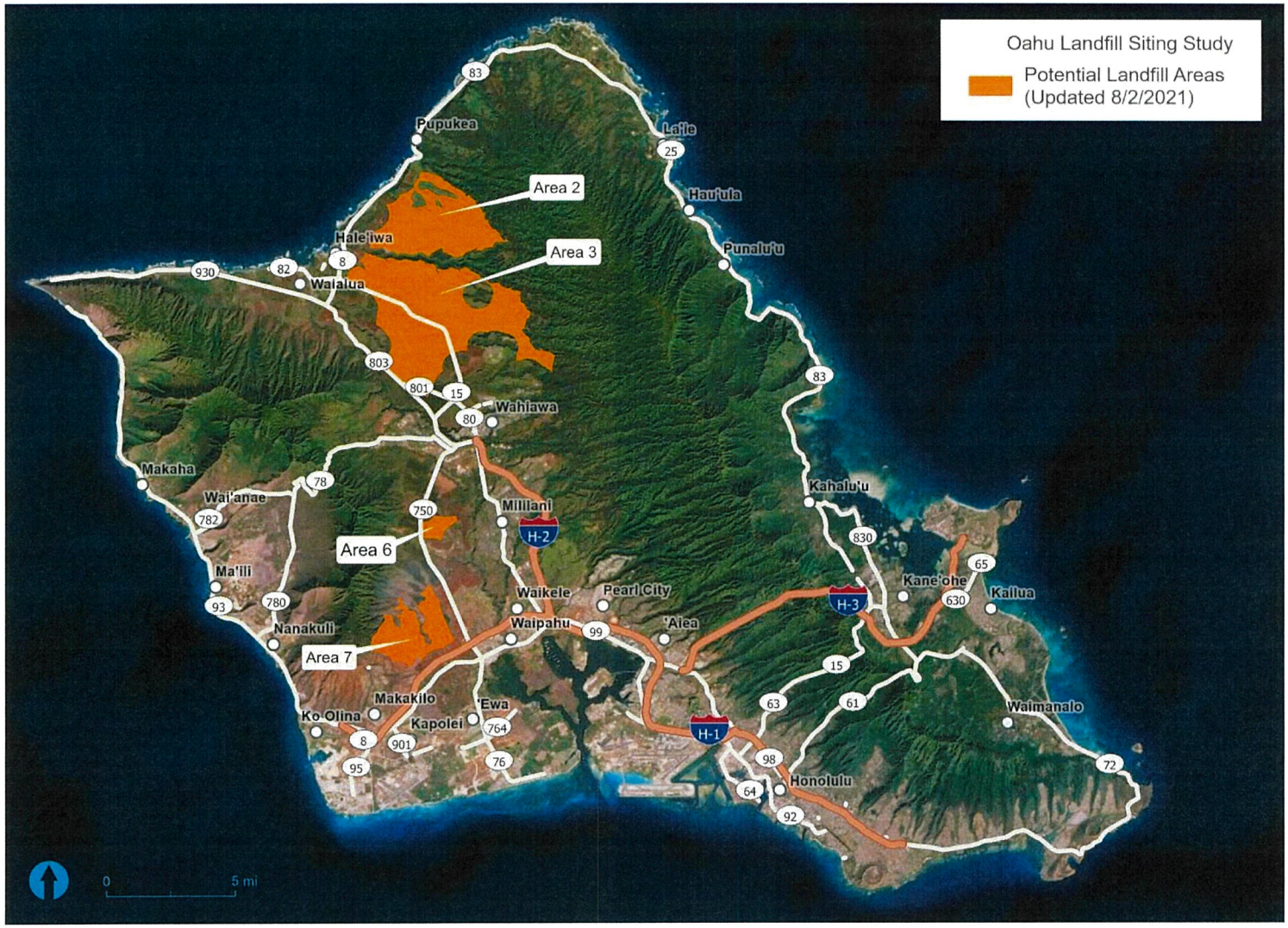


Figure 4.6 Conceptual Grading Plan Example

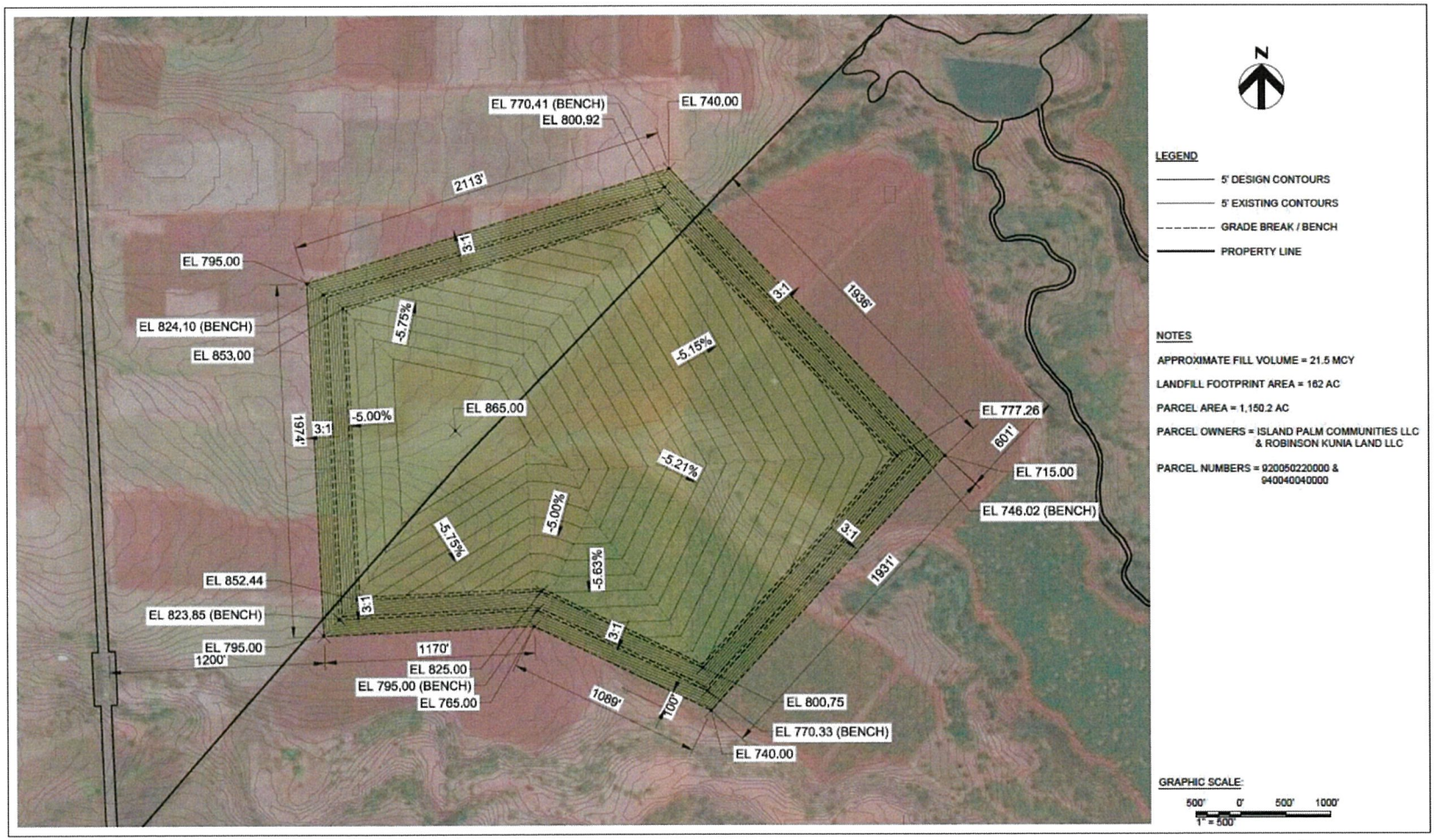


Figure 4.7 Overview of Potential Landfill Sites

Figure 4.8 Overview of Potential Landfill Sites with Restrictions

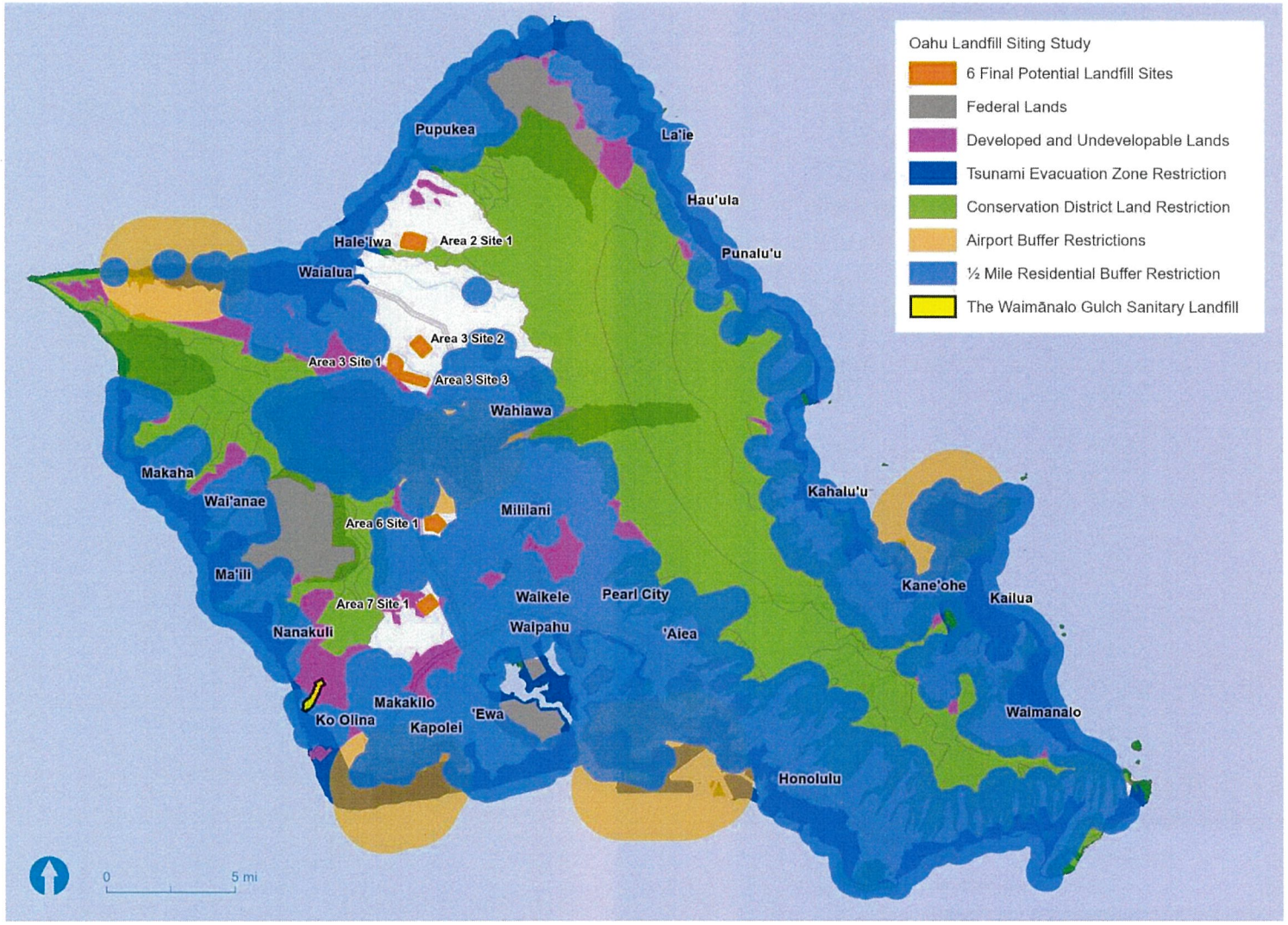


Figure 4.9 Location of Area 2, Site 1

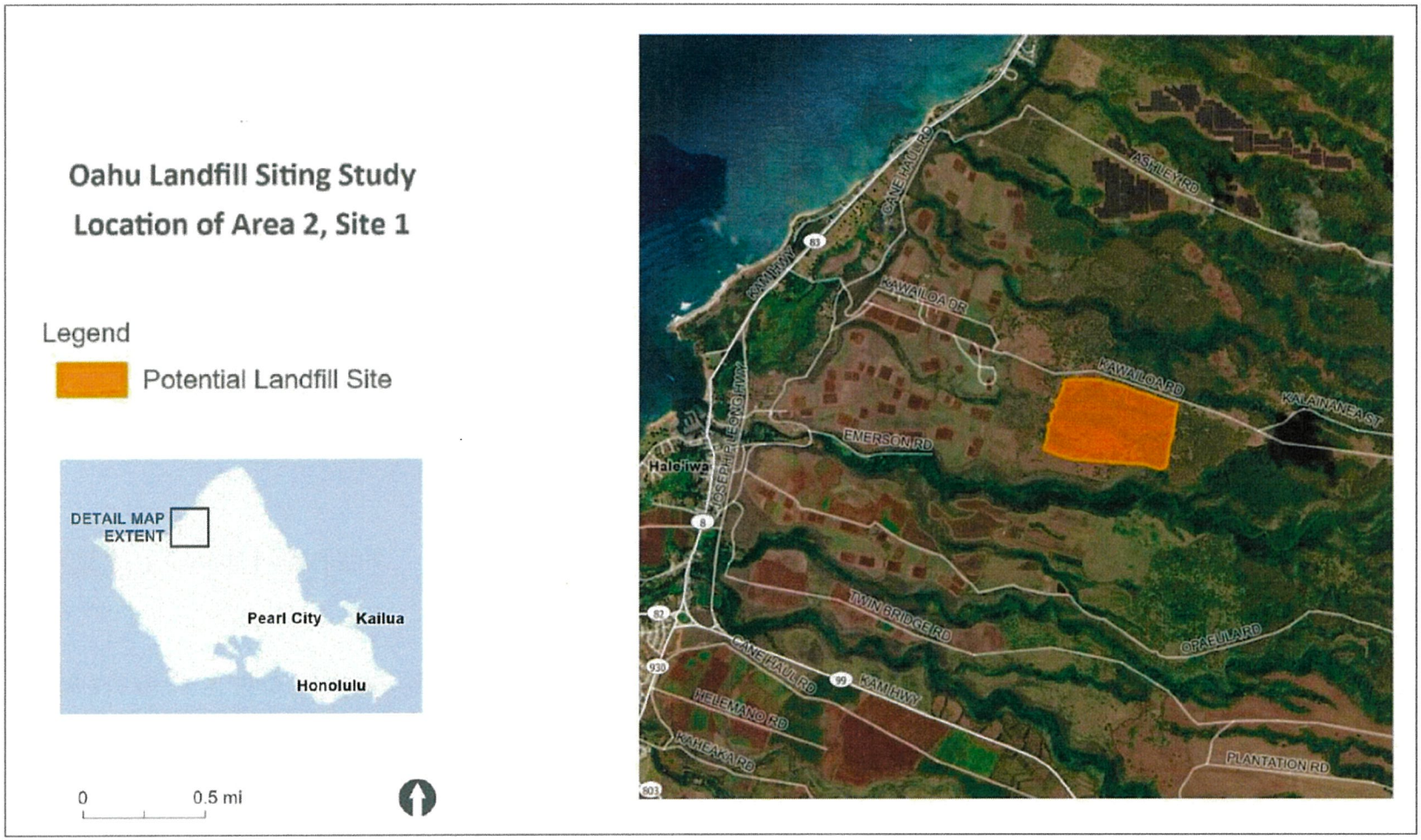


Figure 4.10 Locations of Area 3, Sites 1 through 3

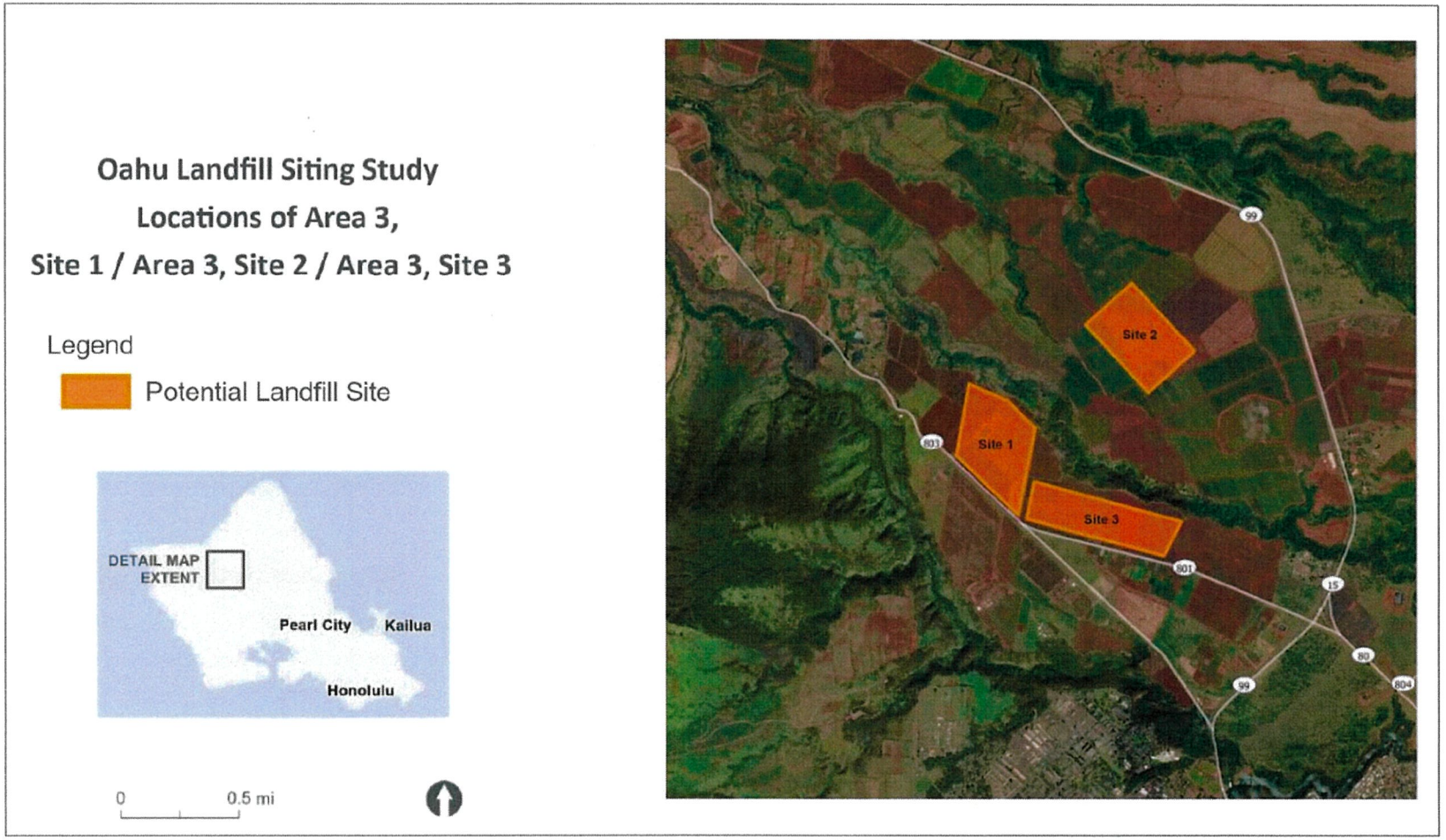


Figure 4.11 Location of Area 6, Site 1

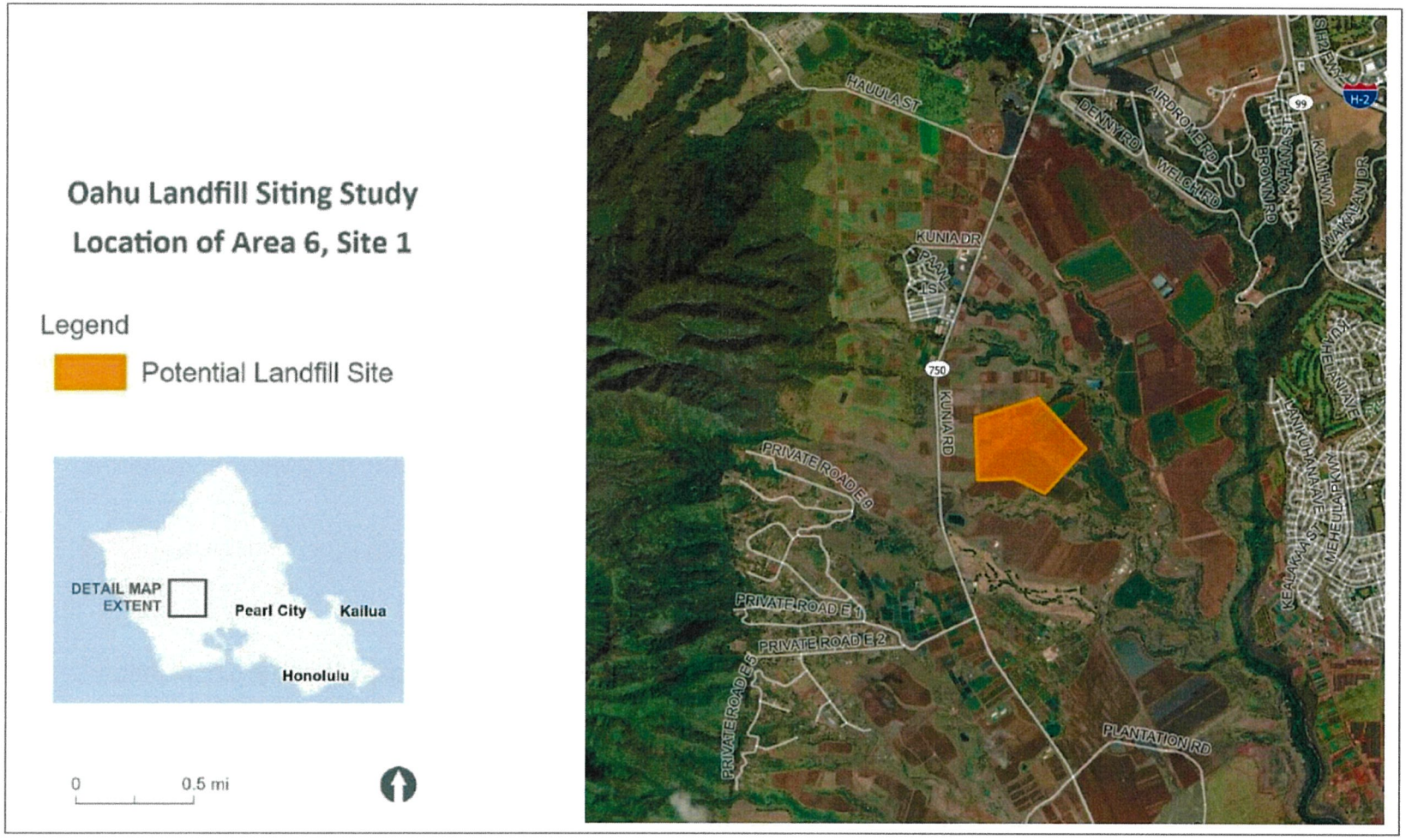
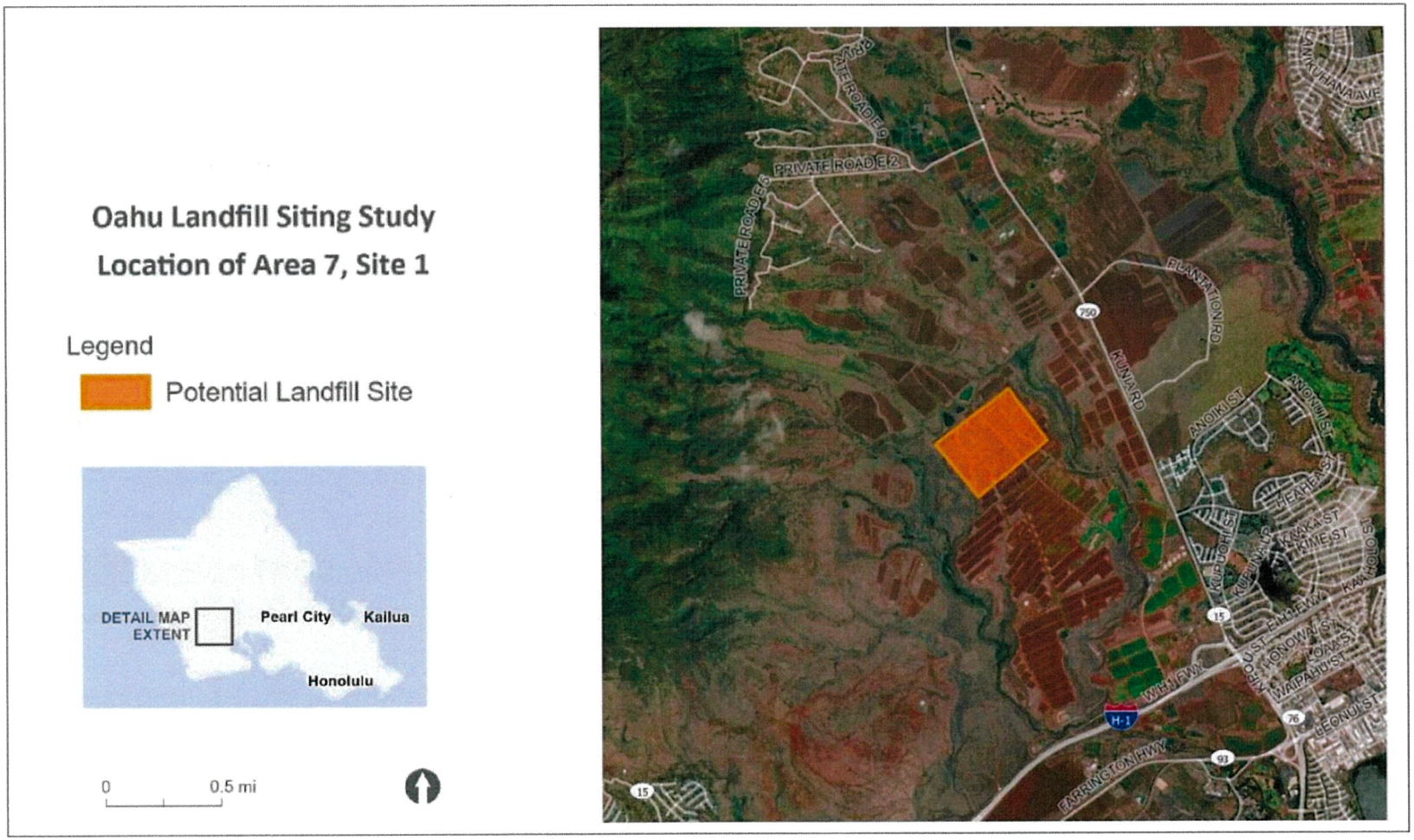


Figure 4.12 Location of Area 7, Site 1



5 Site Scoring Methodology

5.1 Site Evaluation Method

The landfill site evaluation methodology was developed in four steps:

- Developing the objective and subjective evaluation criteria to be weighted, rated, scored, and used in the site ranking.
- Developing the weighting, rating, scoring, and ranking method.
- Researching and collecting data to develop potential landfill site technical support information for reference in rating and site scoring.
- Applying LAC's weights, ratings, scoring, and final site ranking.

Several of these steps were started simultaneously, and all steps coordinated to complete the evaluation and final site scoring process. The following sections provide more detailed information on the site evaluation methodology and scoring process presented to the LAC in Meetings 4, 5, and 6. Final scoring results and site rankings are provided in Section 6.

5.2 Site Evaluation Criteria

ENV used the 2012 MACLSS study as a basis to develop the site evaluation criteria for this study. ENV reviewed the 19 final evaluation criteria in the 2012 MACLSS study and eliminated all inapplicable criteria (e.g., location relative to residential concentrations) or revised the criteria to align with this study approach (e.g., combined location relative to wetlands, location relative to surface water resources). A draft list of evaluation criteria, divided into objective and subjective categories, was prepared containing 11 and 8 initial criteria in each category, respectively.

The draft list of objective and subjective evaluation criteria and definitions were presented to the LAC for discussion in Meeting 4. ENV incorporated the LAC's comments from Meeting 4 and presented a revised final list of evaluation criteria, with descriptions and explanations, to the LAC in Meeting 5 February 7, 2022. The final list consisted of 9 objective criteria and 8 subjective criteria, which are summarized in Tables 5.1 and 5.2. Definitions presented at Meeting 4 are listed below:

- Objective Criteria – Criteria based on unbiased, quantifiable facts and observations that are not influenced by personal feelings, perceptions, or desires.
- Subjective Criteria – Criteria based on personal opinions, experiences, knowledge, interpretations, assumptions, points of view, emotions, and judgement.

Table 5.1 Objective Site Evaluation Criteria Description and Explanation		
Criteria	**Description**	**Explanation**
1. Landfill Capacity	Total amount of waste that can be placed in the landfill	The City and County of Honolulu (CCH), Department of Environmental Services (ENV) intends to develop a new landfill with a minimum 20-year site life, which equates to an estimated 21.5 mcy of disposal capacity. This estimated disposal capacity is based on standard assumptions, including projected waste generation and recycling rates, waste compaction densities, and the estimated closure date of the PVT C&D Landfill. A larger landfill would typically require more land and capital costs; however, due to the lengthy permitting and development timeline for a new landfill (roughly 10 years), the anticipated high cost associated with siting and development, as well as an increasingly limited amount of land available for landfills, among several other factors, it is impractical to design a landfill with a lifespan of less than 20 years.
2. Land Acquisition, Landfill Development, and Roadway Improvement and Infrastructure Costs	Cost to acquire land, develop the landfill site, and complete all required roadway and infrastructure improvements to support the landfill	ENV anticipates that developing a new landfill will require a significant financial investment by CCH. Total development cost estimates will be completed for each landfill site, including acquisition, design, permitting, and construction costs, as well as required ancillary infrastructure improvements in the vicinity of the site to support heavy truck traffic. Differences in development cost estimates for each site reflects variations in site conditions and locations.
3. Time to Acquire Land and Develop Landfill	Time to complete the land acquisition process and develop the landfill site for waste acceptance	The land acquisition process will need to be completed either through condemnation, direct purchase, or a long-term lease. The time it will take to acquire and develop each site will be estimated by ENV and its consultants. Development planning and design is closely tied to the land acquisition method and timeline. When acquiring and developing the landfill site, ENV will strive to create scheduling efficiencies to reduce the project timeline to the greatest extent possible. The current landfill is mandated to stop accepting waste on March 2, 2028.
4. Location Relative to H-POWER	Driving distance to/from H-POWER	The location of the new landfill directly affects ENV's operational and contractual costs, including the costs to transport waste, ash, and residue from H-POWER. If the landfill is more than 12 miles from H-POWER, by contract, ENV incurs additional ash and residue hauling fees.

Table 5.1 Objective Site Evaluation Criteria Description and Explanation Cont.		
Criteria	**Description**	**Explanation**
		Additionally, the further away the landfill is from population centers, transportation of waste to the landfill when necessary will be more costly.
5. Effect on Traffic and Roadway System	The landfill's effect on traffic and the roadway system	ENV anticipates increased traffic and roadway system impacts in the vicinity of the new landfill site, as well as between the new landfill site and H-POWER. The extent of roadway system impacts is commensurate with the driving distances between H-POWER and the landfill. Additionally, increased waste hauler traffic could impact local traffic and roadway systems. Actual impacts would be addressed during the EIS process.
6. Effect of Precipitation on Landfill Operations	Effect of precipitation on operation of the landfill	The amount of precipitation a landfill site receives directly impacts landfilling operations and costs, and could increase environmental and human health risks. The more precipitation a landfill site receives, the greater the likelihood of challenging operational conditions and environmental effects related to stormwater runoff and leachate management.
7. Location with Regard to Important Agricultural Lands (IAL) of the Hawai'i LUC	Location of the landfill site within or outside of IAL designated by the Hawai'i LUC	A landfill site located in IAL areas will limit the use of that land for agricultural purposes. Additionally, due to restrictive land use requirements, permitting and developing a landfill site may become more challenging the closer that site is to IAL.
8. Location with Regard to the BWS Supply No Pass Zone	Location of the landfill site within or outside of the No Pass Zone established by BWS	The No Pass Zone is defined as "areas in which the installation of waste disposal facilities, which may contaminate groundwater resources used or expected to be used for domestic water supplies, shall be prohibited".
9. Municipal Water Wells within 1,000 feet	Municipal water wells within a 1,000-foot buffer zone	Standard solid waste industry practice is not to site a landfill in close proximity to a municipal or community water well. The U.S. EPA does not regulate set-back requirements; however, many states have established their own minimum requirements. The Hawai'i Wellhead Protection Program requires a minimum 1,000-foot setback from potential contaminating activities, such as a landfill site.

Table 5.2 Subjective Site Evaluation Criteria Description and Explanation		
Criteria[1]	**Description**	**Explanation**
10. Significance of Land Use Displacement	Significance of existing land use displacement	Land use information identified through review of various Hawai'i and CCH department records for the landfill site is provided for reference and consideration.
11. Significance of Proximity to Ecologically Important Areas	Significance of the direct and indirect effects to identified ecologically important areas within a one-half-mile buffer zone	A list of ecologically important areas, as identified through review of various federal agency and Hawai'i department records, within a one-half-mile buffer zone of the landfill site is provided for reference and consideration.
12. Significance of Proximity to Nearby Surface Water	Significance of the direct and indirect effects to identified surface water bodies within a one-half-mile buffer zone	A list of surface water bodies, as identified through review of various federal agency and Hawai'i department records, within a one-half-mile buffer of the landfill site is provided for reference and consideration.
13. Significance of Proximity to Nearby Archaeological and Cultural Resources	Significance of the direct and indirect effects to identified archaeological and cultural resources within a one-half-mile buffer zone	A list of archaeological and cultural resources, as identified through review of State of Hawai'i Department of Land and Natural Resources, State Historic Preservation Division records, within the landfill site boundary and within one-half-mile buffer of the site is provided for reference and consideration.
14. Significance of Proximity to Nearby Parks and Recreation Facilities	Significance of the direct and indirect effects to identified parks and recreation facilities within a one-half-mile buffer zone	A list of parks and recreation facilities, as identified through review of various federal agency and Hawai'i and CCH department records, within a one-half-mile buffer zone of the landfill site is provided for reference and consideration.
15. Significance of Proximity to Nearby Public Commercial Facilities	Significance of the direct and indirect effects to identified public use commercial facilities within a one-half-mile buffer zone	A list of public use commercial facilities, as identified through review of CCH Department of Planning and Permitting records, within a one-half-mile buffer zone of the landfill site is provided for reference and consideration.

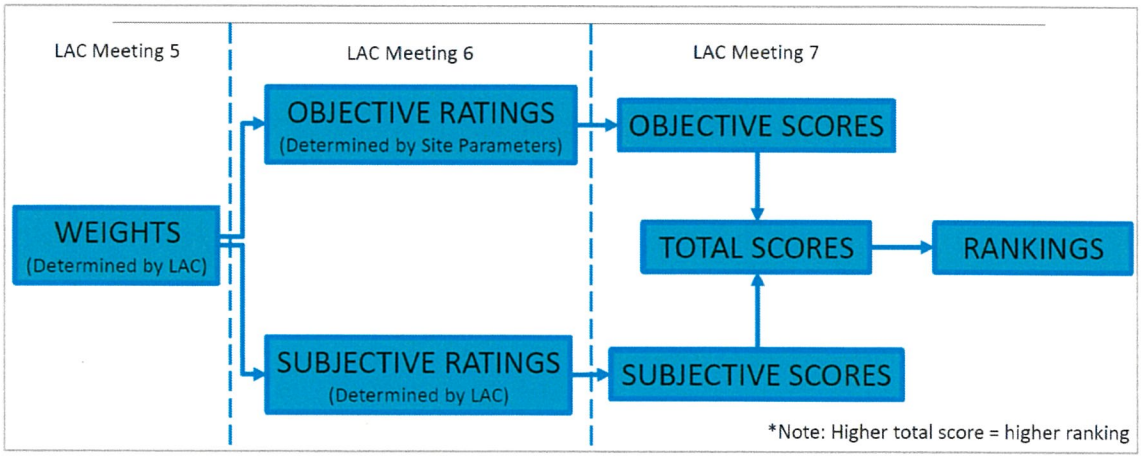
Table 5.2 Subjective Site Evaluation Criteria Description and Explanation Cont.		
Criteria[1]	Description	Explanation
16. Environmental Justice: Significance of Location Relative to Identified Community Disamenities	Significance of the landfill site location relative to identified community disamenities	A list of operational community disamenities, including landfills, power plants, wastewater treatment plants, and petroleum refineries, on O'ahu, as identified through review of various federal agency and Hawai'i and CCH department records, is provided for reference and consideration.
17. Significance of Effect on Established Public View Planes	Significance of effect on established public view planes for local communities	A list of communities where public view planes could potentially be affected from development of the landfill site is provided for reference and consideration.

1. Subjective criteria numbering sequential from Table 5.1.

5.3 Site Scoring Methodology

A multi-criteria decision-making analysis (MCDA) method was used to score and rank the final sites listed in Section 4.3.3. The MCDA method is amenable when decisions by a group involves ranking or choosing between alternatives. One variation of the MCDA method is to develop and apply weights and ratings to multiple criteria in scoring of alternatives. The weights and ratings reflect the relative importance of each member of the group in the decision-making process. Weighting and rating the evaluation criteria, described in Section 5.2, avoided the need for consensus among LAC members and allowed for an independent ranking of the final sites. The site scoring process using the MCDA method is described in the following sections and illustrated in Figure 5.1.

Figure 5.1 Site Scoring Process Flow Diagram



5.3.1 Evaluation Criteria Weighting

Evaluation criteria weighting involves assigning a numeric weight to each evaluation criteria. The composite average weights are then used with the criteria ratings to calculate a final score for each site. Each LAC member gives each evaluation criteria a weight value from 1 to 100, with weights being relative from one criterion to another to differentiate the importance of one criterion over another. As an example, if one LAC member determines that landfill capacity is the most important criteria, it would be assigned a weight of 100. If the same LAC member determines that the time to acquire land and develop the landfill is half as important as landfill capacity, that criteria would be assigned a value of 50. That LAC member could also determine the site's relative location to H-POWER is of no consequence and assign a value of 1. Weighting use in the scoring calculations is described in Section 5.4.3.

5.3.2 Evaluation Criteria Rating and Method

Criteria rating involves applying a numerical value in the scoring of each site to allow influence in the scoring process. The numerical value is based on the site's actual or judged performance in relationship to the criteria. Ratings developed in the site scoring are determined by actual site parameters for the objective criteria and by LAC member judgement for the subjective criteria, as shown on Figure 5.1.

The objective criteria ratings are determined by ENV because the site's performance on the criteria is measurable and not subject to LAC member judgement. Objective ratings are categorized by three different methods (or types) depending on the intended influence of the rating on the score: direct, inverse or binary. In this study, the resulting numerical rating value is zero to six for direct and inverse rating types, and zero or six if binary in nature. Figures 5.2 through 5.4 show examples of each objective criteria rating type.

Figure 5.2 Objective Rating – Direct Type Example

- Based on the favorability of a site relative to the most favorable site
- Higher number = more favorable
- Example 1: Landfill Capacity
  - Site 1: $50\ \text{M yd}^3\ \text{X}\ \frac{1}{50\ M\ yd^3}\ \text{X}\ 6 = 6$
  - Site 2: $25\ \text{M yd}^3\ \text{X}\ \frac{1}{50\ M\ yd^3}\ \text{X}\ 6 = 3$

Figure 5.3 Objective Rating – Inverse Type Example

- Based on the favorability of a site relative to the most favorable site
- Lower number is more favorable
- Example 2: Location Relative to H-POWER
  - Site 1: 20 mi $\frac{10\ mi}{20\ mi}$ X 6 = 3
  - Site 2: 10 mi $\frac{10\ mi}{10\ mi}$ X 6 = 6

Figure 5.4 Objective Rating – Binary Example

- Based on whether a site is "within or outside of"
- Higher number is more favorable
- Example 3: Location with regard to Important Agricultural Lands of the Hawai'i Land Use Commission
  - Site 1: Within IAL = 0
  - Site 2: Outside of IAL = 6

Subjective criteria ratings are determined by LAC because the site performance on the criteria is based on each LAC members judgment. Each LAC member applies a numerical value from zero to six to each criterion, which represents a members judgement of the significance of the effect each site has on the criteria being rated. All subjective ratings are categorized as reverse type, meaning the more significantly the criteria are rated by each LAC member the less favorable the site is in the final ranking. Figure 5.5 shows an example of reverse rating for subjective criteria.

Figure 5.5 Subjective Rating – Reverse Type Rating

- Lower number (less significant effect) is more favorable
- Applied rating is reverse of submitted rating
- Example:

  Significance of Proximity to Nearby Ecologically Important Areas (direct and indirect effects of the location of the landfill relative to ecologically important areas within one-half-mile, with 0 being no effect and 6 being extremely significant effect)

  - Site 1 Submitted Rating = 4, based on a significant effect to a bird sanctuary 0.1 miles away

    Applied Rating = $6 - 4 = 2$

5.4 Site Scoring Process

This section describes the scoring process completed by the LAC, which was based on the scoring methodology described in the previous sections. ENV provided examples and instructions on the overall scoring process during LAC Meetings 5 and 6. LAC members were provided prepared forms in Microsoft (MS) Forms during scoring, whereupon each LAC member could apply weights and ratings to the evaluation criteria anonymously. The weights and ratings provided by each LAC member were transferred into MS Excel scoring spreadsheets containing formulas to calculate the final scores described in the following sections.

5.4.1 Criteria Weights

ENV presented the methodology and instructions on how to weight each objective and subjective criteria to the LAC during Meeting 5. LAC members were provided a weight question form to record weights for each of the 17 evaluation criteria and a weight assistance form with descriptions of the criteria for reference. Weights were accepted frm LAC members until Februay 22, 2022. Criteria weighting results are provided in Section 6. Example forms provided to the LAC are provided in Appendix D.

5.4.2 Subjective Criteria Ratings

ENV presented the methodology for rating the subjective criteria during Meeting 5 and provided instructions to the LAC on how to rate the criteria during Meeting 6. LAC members were provided a rating assistance form, rating question form, and the technical support documents described in Section 5.6 for use in the criteria rating exercise. Ratings were accepted from LAC members until March 24, 2022. Criteria rating results are provided in Section 6.

5.4.3 Final Scoring

ENV presented the evaluation criteria weighting and rating scoring method to the LAC during Meeting 6. Criteria weights and subjective criteria ratings received from LAC members were inserted into the MS excel scoring spreadsheet and an average weight and rating calculated for each site. Objective criteria ratings calculated by ENV are added directly into the same spreadsheet and averaged. Figure 5.6 shows an example of the output data when the subjective criteria ratings are transferred from the rating question form provided to the LAC. Figure 5.7 shows an example of the reverse calculation using the average subjective criteria rating and the resulting value used in the final score calculation. Figure 5.8 shows final scoring calculation using the average weights and average reverse ratings. The reverse calculation is not performed on the objective criteria ratings.

Figure 5.6 Example Output Table of Criteria Rating (Site Averages)

LAC Member	Site 2.1	Site 3.1	Site 3.2	Site 3.3	Site 6.1	Site 7.1
1	0	0	0	0	0	4
2	1	0	0	0	0	0
3	1	2	6	6	4	2
4	3	2	2	2	2	1
5	0	2	3	4	5	6
6	3	1	1	1	1	2
7	4	3	3	3	3	4
8	2	5	5	5	5	6
Average Rating	**1.75**	**1.88**	**2.50**	**2.63**	**2.50**	**3.13**

Figure 5.7 Example of Reverse Calculation of Subjective Rating

Proximity to Nearby Ecologically Important Areas (½-mile from landfill site)

0 = no potential effects (a good thing)

6 = potential significant effects (a bad thing)

The rating must then be reversed to be applicable with the rest of the scoring.

Example: Site 2.1 Average Rating = 1.75 (minimal impact, mostly good)

Average Reversed Rating = 6 – 1.75 = 4.25

4.25 is entered into the scoring formula

Figure 5.8 Example Final Score Calculation for Sites by Criteria

Proximity to Nearby Ecologically Important Areas (½-mile from landfill site)

Average Weight x Average Reversed Rating (per Site) = Score

Average Weight	60.83					
	X					
	Site 2.1	Site 3.1	Site 3.2	Site 3.3	Site 6.1	Site 7.1
Ave. Reversed Rating	4.25	4.13	3.50	3.38	3.50	2.88
	=					
Score	258.53	250.92	212.91	205.30	212.91	174.89

5.5 Research and Data Collection

ENV performed technical research for all objective and subjective criteria for each site and provided technical support documents to the LAC for reference during subjective criteria rating. Technical support documents were also prepared and used by ENV to complete the objective criteria rating. ENV presented examples of subjective criteria support documents to the LAC in Meeting 6. Final technical support documents are provided Appendix E.

6 Results of Site Scoring and Ranking, and LAC Recommendations

Results of the final site scoring, rankings, and LAC recommendations are presented in this section. Scoring was performed according to the methodology described in Section 5, and results were presented to the LAC at Meeting 7.

6.1 Results of Site Scoring and Ranking

6.1.1 Criteria Weighting Results

Following Meeting 5, criteria weights were obtained from six out of eight LAC members. Average weights for the objective and subjective criteria are summarized in Tables 6.1 and 6.2.

Table 6.1 Average Criteria Weights – Objective Criteria

Criteria	Average Weight (1 to 100)
1. Landfill Capacity	86.7
2. Landfill Acquisition, Landfill Development, and Roadway Improvement/Infrastructure Costs	59.2
3. Time to Acquire Land and Develop Landfill	47.5
4. Location Relative to H-POWER	60.8
5. Effect on Traffic and Roadway System	68.3
6. Effect of Precipitation on Landfill Operations	71.7
7. Location with regard to Important Agricultural Lands (IAL) of the Hawaii LUC	61.7
8. Location with regard to the BWS No Pass Zone	91.7
9. Municipal Water Well within 1,000 feet	91.7

Table 6.2 Average Criteria Weights – Subjective Criteria	
Criteria	**Average Weight (1 to 100)**
10. Significance of Land Use Displacement/Beneficial Reuse	52.5
11. Significance of Proximity to Ecologically Important Areas	60.8
12. Significance of Proximity to Nearby Surface Water	59.2
13. Significance of Proximity to Nearby Archaeological & Cultural Resources	48.3
14. Significance of Proximity to Nearby Parks & Recreation Facilities	47.5
15. Significance of Proximity to Nearby Public Commercial Facilities	36.0
16. Significance of Location Relative to Identified Community Disamenities	52.5
17. Significance of Effect on Established Public View Planes	33.3

6.1.2 Criteria Ratings and Scoring Results

Final average ratings and site scores for objective and subjective criteria are summarized in Tables 6.3 through 6.6. LAC members as a whole submitted subjective criteria ratings.

Table 6.3 Final Average Ratings – Objective Criteria									
Site	**Criteria Number and Rating[1]**								
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
2.1	6	2.8	6	2.3	1.5	3.6	6	0	6
3.1	6	4.8	6	3.5	1.4	4.7	0	0	6
3.2	6	6	6	3.2	1.8	4.3	6	0	0
3.3	6	5.4	6	3.4	1.4	4.3	6	0	0
6.1	6	4.3	6	5.3	3.1	5.1	6	0	6
7.1	6	4.6	6	6	6	6	0	0	6

1. Refer to Tables 6.1 and 6.2 for criteria names.

Table 6.4 Final Site Scores – Objective Criteria

Site	Criteria Number and Scores									
	1	2	3	4	5	6	7	8	9	Objective Subtotal
2.1	520.0	162.6	285.0	141.6	103.7	259.5	370.0	0	550.0	2392.5
3.1	520.0	281.3	285.0	213.3	97.4	319.8	0	0	550.0	2281.4
3.2	520.0	355.0	285.0	193.7	119.4	308.1	370.0	0	0	2151.3
3.3	520.0	321.7	285.0	205.3	97.4	308.1	370.0	0	0	2107.5
6.1	520.0	256.6	285.0	322.0	210.0	365.6	370.0	0	550.0	2879.2
7.1	520.0	272.2	285.0	366.0	410.0	430.0	0	0	550.0	2832.3

Table 6.5 Final Average Ratings – Subjective Criteria

Site	Criteria Number and Rating							
	10	11	12	13	14	15	16	17
2.1	0.8	2.5	2.4	1.9	5.5	5.5	3.5	4.1
3.1	3.5	2.5	3.9	4.6	5.5	4.1	4.5	3.8
3.2	3.8	2.1	2.4	4.8	5.5	5.5	4.5	4.3
3.3	3.5	2.6	3.8	4.0	5.5	3.9	4.4	4.1
6.1	2.0	3.1	2.6	2.9	3.3	5.4	5.0	3.6
7.1	0.9	4.4	3.0	2.1	1.6	5.4	4.8	3.5

Table 6.6 Final Site Scores – Subjective Criteria

Site	Criteria Number and Scores								
	10	11	12	13	14	15	16	17	Subjective Subtotal
2.1	39.4	152.0	140.5	90.6	261.2	198.0	183.8	137.5	1203.0
3.1	183.8	152.0	229.3	223.5	261.2	148.5	236.3	125.0	1559.6
3.2	196.9	129.2	140.5	229.6	261.2	198.0	236.3	141.7	1533.4
3.3	183.8	159.7	221.9	193.3	261.2	139.5	229.7	137.5	1526.6
6.1	105.0	190.0	155.3	139.0	154.4	193.5	262.5	120.8	1320.6
7.1	45.9	266.1	177.5	102.7	77.2	193.5	249.4	116.7	1229.0

6.2 Site Ranking

Final site ranking and total scores are summarized in Table 6.7.

Table 6.7 Final Site Rankings and Total Scores

Rank	Area, Site	Location	Score
1	Area 6, Site 1	Wahiawa near Kunia Road	4,200
2	Area 7, Site 1	Kapolei/Waipahu near Kunia Road	4,061
3	Area 3, Site 1	Wahiawa	3,841
4	Area 3, Site 2	Wahiawa	3,685
5	Area 3, Site 3	Wahiawa	3,634
6	Area 2, Site 1	Haleiwa near Kawailoa Road	3,596

6.3 LAC Recommendations of Siting Results

Final site scoring and ranking was presented to the LAC in Meeting 7 as described in previous sections. During Meeting 7, LAC members were encouraged to openly discuss the site evaluation, scoring and ranking process, final site locations, and any other concerns or recommendations for inclusion in the final report. The following presents discussions and recommendations from the LAC as a whole. Appendix A includes written statements from LAC members who wished to provide further comment.

- The LAC observed that all final six landfill sites are located within the BWS No Pass Zone. During discussion, members were in majority agreement that the LAC does not recommend any of the final landfill sites due to their location within the BWS No Pass Zone. The LAC strongly felt that they could not support a landfill sited within the BWS No Pass Zone due to their convictions in ensuring preservation of groundwater resources on O'ahu.
- LAC discussed options that the City could consider in re-evaluating potential landfill sites outside of the BWS No Pass Zone. One recommended option included amending Act 73 to allow more geographic diversity in searching for additional sites. Potential amendment options discussed included reducing the one-half mile residential setback distance or removal of specific conservation subzones (e.g., General Subzone). The LAC expressed concerns that Act 73, along with time constraints placed upon the process by the LUC, may have limited the ability to perform a more extensive evaluation of sites outside the BWS No Pass Zone.
- LAC recommended additional evaluation of parcels below the BWS No

Pass Zone that may be more suitable for landfill siting through initiation of an eminent domain process (e.g., minimal residences on parcel). Acquiring a smaller number of residential properties to meet the requirements of Act 73 and remain outside the BWS No Pass Zone may be more conducive to preservation of groundwater and agricultural resources.

- LAC recommended further efforts by the City to encompass federal lands for siting a landfill, including state controlled lands with leases set to expire or underutilized by the federal government.

6.4 Community Benefits/Future Public Outreach

ENV included a landfill host community benefits (HCBs) presentation at the conclusion of Meeting 7. ENV explained the importance of HCBs as part of the overall process and requested LAC discussion and recommendation. Examples were presented of HCBs established for the WGSL, outer island landfills, U.S. EPA, and other governmental municipalities. The following recommendations were made by the LAC:

- LAC recommended that a HCBs package be established not only for the next community to host a landfill, but also include communities that have borne the burden of past O'ahu landfills.
- LAC recommended an advisory committee be established to assist in identification of host community concerns and the management of potential endowments. Community participation should play an important role in the process.

BEFORE THE PLANNING COMMISSION
OF THE CITY AND COUNTY OF HONOLULU

STATE OF HAWAI'I

In the Matter of the Application of DEPARTMENT OF ENVIRONMENTAL SERVICES, CITY AND COUNTY OF HONOLULU Application to Modify SUP No. 2008/SUP-2 (SP09-403) by Modifying (1) Condition No. 1 of the Planning Commission's Findings of Fact, Conclusions of Law, and Decision and Order, dated June 10, 2019, and (2) Condition No. 5 of the LUC's Findings of Fact, Conclusions of Law, and Decision and Order Approving with Modifications the City and County of Honolulu Planning Commission's Recommendation to Approve Special Use Permit, certified on November 1, 2019	FILE NO. 2008/SUP-2 LUC DOCKET NO. SP09-403 CERTIFICATE OF SERVICE

CERTIFICATE OF SERVICE

I hereby certify that a true and correct copy of the foregoing document was duly served upon the parties identified below on the date set forth below:

DEPARTMENT OF ENVIRONMENTAL SERVICES (via Certified Mail)
City and County of Honolulu
1000 Uluohia Street, Suite 308
Kapolei, Hawaii 96707

DEPARTMENT OF PLANNING AND PERMITTING (Hand Delivery)
City and County of Honolulu
650 South King Street, 7th Floor
Honolulu, Hawaii 96813

DANA M.O. VIOLA, , ESQ.
Corporation Counsel
KAMILLA C. K. CHAN, ESQ.
JEFFREY HU, ESQ.
Deputy Corporation Counsel
City and County of Honolulu
530 South King Street, Room 110
Honolulu, Hawaii 96813

(Hand Delivery)

Attorneys for Applicant
DEPARTMENT OF ENVIRONMENTAL SERVICES,
CITY AND COUNTY OF HONOLULU

CALVERT G. CHIPCHASE
CHRISTOPHER T. GOODIN
Cades Schutte LLP
Cades Schutte Building
1000 Bishop Street, Suite 1200
Honolulu, Hawaii 96813

(Hand Delivery)

Attorney for Intervenors
KO OLINA COMMUNITY ASSOCIATION and
MAILE SHIMABUKURO

RICHARD NAIWIEHA WURDEMAN, ESQ.
Attorney at Law, A Law Corporation
Pauahi Tower, Suite 720
1003 Bishop Street
Honolulu, HI 96813

(Hand Delivery)

Attorney for Intervenor
COLLEEN HANABUSA

ANNE LOPEZ, ESQ.
Attorney General
BRYAN C. YEE, ESQ.
Department of the Attorney General
425 Queen Street
Honolulu, HI 96813

(Hand Delivery)

Attorney for Intervenor
OFFICE OF PLANNING, STATE OF HAWAII

DATED: Honolulu, Hawai‘i, March 27, 2024.

IAN L. SANDISON
JOYCE W.Y. TAM-SUGIYAMA
RIHUI YUAN
Attorneys for Intervenor
SCHNITZER STEEL HAWAII CORP.