

DEPARTMENT OF PUBLIC WORKS

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DEREK S.K. KAWAKAMI, MAYOR
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February 13, 2024

Mary Alice Evans, Interim Director
Office of Planning and Sustainable Development
Environmental Review Program
235 South Beretania Street, Suite 702
Honolulu, Hawai'i 96813

Subject: Final Environmental Assessment and Finding of No Significant Impact (FONSI) for the Kekaha Municipal Landfill Phase II Vertical Expansion, Tax Map Key (TMK) 1-2-002:001 (portion) and TMK 1-2-002:009, Waimea District, Kaua'i, Hawai'i

Dear Ms. Evans,

With this letter, the County of Kaua'i Department of Public Works, Solid Waste Division (County), transmits the Final Environmental Assessment (FEA) and Finding of No Significant Impact (FONSI) for the proposed Kekaha Municipal Landfill Phase II Vertical Expansion project located in Kekaha, Kaua'i. The County has reviewed the comments received during the 30-day public comment period on the Draft EA which began on August 8, 2023. Based upon the analysis and findings presented in the FEA, the County has concluded that implementation of the Proposed Action is not expected to result in a significant adverse direct, indirect, or cumulative impact on the quality of the environment. As such, the County has issued a FONSI in accordance with HRS Chapter 343 and HAR § 11-200.1-13.

Please publish this notice in the next available edition of the Environmental Review Program (ERP) Environmental Notice. In addition to this letter, you will find the online ERP publication form has been submitted through the ERP website. The online submittal includes one electronic copy of the FEA-FONSI as an Adobe Acrobat PDF file and the Action Location Map as a shapefile. Should you have any questions, please contact us via email or mail:

Applicant: County of Kaua'i, Department of Public Works, Solid Waste Division
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Contact: Allison Fraley, AFraley@kauai.gov

Agent: Tetra Tech
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Contact: Leslie McClain, leslie.mcclain@tetrattech.com

Sincerely,

A blue ink signature of Troy Tanigawa, consisting of stylized cursive letters.

Troy Tanigawa
County Engineer, P.E.

From: webmaster@hawaii.gov
To: [DBEDT OPSD Environmental Review Program](#)
Subject: New online submission for The Environmental Notice
Date: Thursday, February 15, 2024 8:21:51 AM

Action Name

Kekaha Municipal Landfill Phase II Vertical Expansion

Type of Document/Determination

Final environmental assessment and finding of no significant impact (FEA-FONSI)

HRS §343-5(a) Trigger(s)

- (1) Propose the use of state or county lands or the use of state or county funds

Judicial district

Waimea, Kaua'i

Tax Map Key(s) (TMK(s))

TMK 1-2-002:001 (portion) and TMK 1-2-002:009

Action type

Agency

Other required permits and approvals

Solid Waste Management Permit Modification; Covered Source Permit Modification (Title V Air Permit); Hawai'i Revised Statutes (HRS) Chapter 6E Compliance (Historic Preservation Review); Federal Aviation Administration Notice of Proposed Construction or Alteration

Proposing/determining agency

County of Kaua'i Department of Public Works Solid Waste Division

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Was this submittal prepared by a consultant?

Yes

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Action summary

The County of Kaua'i, Department of Public Works, Solid Waste Division is proposing a vertical expansion of Phase II operations at the Kekaha Municipal Solid Waste Landfill (KLF) located in Kekaha, Kaua'i, Hawai'i (Proposed Action). The KLF encompasses approximately 98 acres of land within Tax Map Keys (TMK) 1-2-002:001 (por.) and 1-2-002:009, which is owned by the State of Hawai'i. The Proposed Action would provide additional air space volume for the placement of refuse while the siting, design, and construction of a new landfill facility or other long-term landfill capacity solutions are completed. The Proposed Action would extend Phase II operations upward from the currently permitted maximum elevation of 120 feet (ft) above mean sea level (amsl) to a maximum elevation of 171.5 ft amsl. This proposed vertical expansion would be within the existing permitted footprint of the Phase II landfill and would be constructed above the existing Subtitle D base liner.

Reasons supporting determination

Reasons supporting determination are provided in Section 5.1 Significance Criteria of the Final EA.

Attached documents (signed agency letter & EA/EIS)

- [KekahaVerticalExp_Final-EA-FONSI-Notice-Letter.pdf](#)
- [KLF-Phase-II-Vertical-Expansion_Final-EA_2-15-24.pdf](#)

Shapefile

- The location map for this Final EA is the same as the location map for the associated Draft EA.

Action location map

- [KekahaLandfillVerticalExpansion_20230724.zip](#)

Authorized individual

Leslie McClain

Authorization

- The above named authorized individual hereby certifies that he/she has the authority to make this submission.

FINAL ENVIRONMENTAL ASSESSMENT

Kekaha Municipal Landfill

Phase II Vertical Expansion

TMK:1-2-002:001(por.) and 1-2-002:009

Kekaha, Kauaʻi, Hawaiʻi

Prepared for

County of Kauaʻi
Department of Public Works
Solid Waste Division

Prepared by

Tetra Tech, Inc.

February 2024

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Project Summary

Project Name	Kekaha Municipal Landfill Phase II Vertical Expansion
Proposing Agency	County of Kaua'i Department of Public Works Solid Waste Division
Project Overview	Expand the Phase II landfill area vertically from the currently permitted maximum elevation of 120 feet above mean sea level to a maximum permitted elevation of 171.5 feet above mean sea level
Location	1.3 miles northwest of Kekaha Waimea District, Kaua'i
Tax Map Key	TMK 1-2-002:001 (portion) and TMK 1-2-002:009
Landowner	State of Hawai'i (Department of Land and Natural Resources) ¹
Project Area	Approximately 98 acres ²
State Land Use District	Agriculture
County Zoning	Agriculture (AG)
Development Plan (Land Use Classification)	West Kaua'i Community Plan (Agriculture; Landfill, Drop-off Recycling Center, Green Waste Diversion Site, Beverage Deposit Redemption Center)
Required Permits and Approvals	Solid Waste Management Permit Modification Covered Source Permit Modification (Title V Air Permit) Hawai'i Revised Statutes (HRS) Chapter 6E Compliance (Historic Preservation Review) Federal Aviation Administration Notice of Proposed Construction or Alteration
HRS Chapter 343 Trigger	Use of State of Hawai'i Lands and County of Kaua'i Funds
Determination	Finding of No Significant Impact (FONSI)
Contact Information	<p>Proposing Agency: County of Kaua'i Department of Public Works Solid Waste Division 4444 Rice Street Mo'ikeha Building, Suite 275 Līhu'e, HI 96766 Attn: Allison Fraley AFraley@kauai.gov</p> <p>Agent: Tetra Tech, Inc. 737 Bishop Street, Suite 2000 Honolulu, HI 96813 Attn: Leslie McClain leslie.mcclain@tetratech.com</p>
<p>NOTES:</p> <p>1. Executive Order 1558 (signed April 27, 1953), Executive Order 2872 (signed October 6, 1977), and Executive Order 3695 (signed December 2, 1996), place the control and management of the lands underlying the Kekaha Municipal Landfill to the County of Kaua'i.</p> <p>2. The Kekaha Municipal Landfill Facility encompasses approximately 98 acres. The Phase II permitted limit-of-waste footprint is approximately 44 acres. The limits of the proposed vertical expansion would be approximately 13 acres located within the Phase II permitted limit-of-waste footprint.</p>	

Table of Contents

1.	Introduction	1-1
1.1	Project Location.....	1-1
1.2	Background.....	1-1
1.2.1	Existing Kekaha Municipal Landfill Operations and Environmental Controls.....	1-2
1.2.2	History of Kekaha Municipal Landfill Expansions.....	1-5
1.2.3	History of Activities to Develop Long-term MSW Capacity Solutions.....	1-6
1.3	Purpose and Need	1-12
1.4	HRS Chapter 343 Compliance.....	1-12
2.	Project Description.....	2-1
2.1	Project Components.....	2-1
2.1.1	Vertical Landfill Expansion	2-1
2.1.2	Landfill Gas Collection and Control System	2-2
2.1.3	Stormwater Management.....	2-2
2.2	Construction Activities	2-2
2.3	Operations and Maintenance	2-3
2.4	Closure and Post-closure.....	2-3
2.5	Project Schedule and Cost.....	2-3
2.6	Alternatives to the Proposed Action	2-4
2.6.1	No Action Alternative.....	2-4
2.6.2	Alternatives Considered but not Carried Forward.....	2-4
3.	Affected Environment, Potential Impacts, and Mitigation Measures	3-11
3.1	Air Quality.....	3-12
3.1.1	Affected Environment.....	3-12
3.1.2	Potential Impacts and Mitigation Measures.....	3-14
3.2	Biological Resources.....	3-15
3.2.1	Affected Environment	3-15
3.2.2	Potential Impacts and Mitigation Measures.....	3-18
3.3	Climate	3-20
3.3.1	Affected Environment.....	3-20

3.3.2	Potential Impacts and Mitigation Measures.....	3-21
3.4	Cultural Resources.....	3-22
3.4.1	Affected Environment	3-22
3.4.2	Potential Impacts and Mitigation Measures.....	3-24
3.5	Geology, Topography, and Soils	3-26
3.5.1	Existing Conditions	3-26
3.5.2	Potential Impacts and Mitigation Measures.....	3-27
3.6	Hazardous Materials and Wastes.....	3-28
3.6.1	Affected Environment	3-28
3.6.2	Potential Impacts and Mitigation Measures.....	3-30
3.7	Historic and Archeological Resources	3-31
3.7.1	Affected Environment	3-31
3.7.2	Potential Impacts and Mitigation Measures.....	3-32
3.8	Land Use	3-33
3.8.1	Affected Environment	3-33
3.8.2	Potential Impacts and Mitigation Measures.....	3-34
3.9	Natural Hazards.....	3-35
3.9.1	Affected Environment	3-35
3.9.2	Potential Impacts and Mitigation Measures.....	3-40
3.10	Noise.....	3-41
3.10.1	Affected Environment	3-41
3.10.2	Potential Impacts and Mitigation Measures.....	3-43
3.11	Public Facilities and Services	3-44
3.11.1	Affected Environment	3-44
3.11.2	Potential Impacts and Mitigation Measures.....	3-45
3.12	Safety and Health	3-46
3.12.1	Affected Environment	3-46
3.12.2	Potential Impacts and Mitigation Measures.....	3-48
3.13	Socioeconomic Resources.....	3-49
3.13.1	Affected Environment	3-49
3.13.2	Potential Impacts and Mitigation Measures.....	3-51

3.14	Transportation and Traffic	3-52
3.14.1	Affected Environment	3-52
3.14.2	Potential Impacts and Mitigation Measures.....	3-53
3.15	Utility Infrastructure.....	3-54
3.15.1	Affected Environment	3-54
3.15.2	Potential Impacts and Mitigation Measures.....	3-55
3.16	Visual Resources.....	3-55
3.16.1	Affected Environment	3-55
3.16.2	Potential Impacts and Mitigation Measures.....	3-56
3.17	Water Resources	3-58
3.17.1	Existing Conditions	3-58
3.17.2	Potential Impacts and Mitigation Measures.....	3-61
3.18	Cumulative Impacts.....	3-62
3.18.1	Air Quality	3-64
3.18.2	Biological Resources.....	3-64
3.18.3	Climate	3-65
3.18.4	Cultural Resources	3-65
3.18.5	Geology, Topography, and Soils.....	3-65
3.18.6	Hazardous Materials and Hazardous Waste	3-65
3.18.7	Historic and Archeological Resources	3-66
3.18.8	Land Use.....	3-66
3.18.9	Natural Hazards.....	3-66
3.18.10	Noise	3-66
3.18.11	Public Facilities and Services	3-67
3.18.12	Safety and Health	3-67
3.18.13	Socioeconomics.....	3-67
3.18.14	Transportation and Traffic	3-67
3.18.15	Utility Infrastructure	3-68
3.18.16	Visual Resources	3-68
3.18.17	Water Resources	3-68
4.	Consistency with Plans, Policies and Controls	4-1

4.1	State of Hawai‘i	4-1
4.1.1	State Land Use Law (HRS Chapter 205).....	4-1
4.1.2	Coastal Zone Management Program (HRS Chapter 205A)	4-5
4.1.3	Hawai‘i State Planning Act (HRS Chapter 226).....	4-8
4.1.4	Hawai‘i State Environmental Policy (HRS Chapter 344).....	4-18
4.2	County of Kaua‘i	4-22
4.2.1	Kaua‘i General Plan	4-22
4.2.2	West Kaua‘i Community Plan.....	4-25
4.2.3	Comprehensive Zoning Ordinance (Kaua'i County Code Chapter 8)	4-28
5.	Summary of Findings and Anticipated Determination.....	5-1
5.1	Significance Criteria.....	5-1
5.2	Determination	5-6
6.	Coordination and Consultation	6-1
6.1	Agency Consultation and Community Outreach.....	6-1
6.2	HRS Chapter 343 Scoping and Public Review Process	6-2
6.2.1	Pre-Assessment Scoping	6-7
6.2.2	Public Review of Draft EA.....	6-8
7.	References.....	7-1

Tables

Table 1-1. Summary of Recent and Proposed Phase II Landfill Expansions	1-6
Table 1-2 Summary of Recent and Proposed Long-term Capacity Solutions	1-6
Table 1-3. Permits and Approvals for Implementation of the Proposed Action	1-13
Table 2-1. Estimated Additional Landfill Capacity from Proposed Action	2-1
Table 2-2. Proposed Action Implementation Schedule	2-3
Table 2-3. Summary of Alternatives Considered	2-4
Table 2-4. Implementation Schedule to Site, Permit, and Construct a New Landfill.....	2-5
Table 3-1. Hawai'i Maximum Permissible Sound Levels by Zoning District	3-42
Table 3-2. Demographic and Income Characteristics	3-50
Table 3-3. Existing Developments in the Region.....	3-62
Table 3-4. Planned Developments and Land Use Changes.....	3-62
Table 4-1. Proposed Action's Consistency with the Objective and Policies of the Hawai'i CZM Program	4-6
Table 4-2. Proposed Action's Consistency with the Objective and Policies of the Hawai'i State Planning Act	4-9
Table 4-3. Proposed Action's Consistency with the Priority Guidelines of the Hawai'i State Planning Act ..	4-15
Table 4-4. Proposed Action's Consistency with Hawai'i State Environmental Policy	4-18
Table 4-5. Proposed Action's Consistency with the Policies of the Kaua'i General Plan	4-22
Table 4-6. Proposed Action's Consistency with the Policies of the West Kaua'i Community Plan.....	4-26
Table 6-1. Summary of Agency Consultation and Community Outreach	6-1
Table 6-2. Agencies, Organizations and Individuals Involved in HRS Chapter 343 Pre-Assessment Consultation and Public Review Process.....	6-3

Figures

Figure 1-1. Project Location	1-15
Figure 1-2. Land Ownership and Users	1-16
Figure 2-1. Existing Conditions	2-7
Figure 2-2. Final Cover Plan.....	2-8
Figure 2-3. Landfill Cross-sections.....	2-9
Figure 2-4. Surface Water Management Plan.....	2-10
Figure 3-1. Location of the KLF within Waimea Ahupua'a	3-70
Figure 3-2. Previous Cultural Studies in the Vicinity of the KLF	3-71
Figure 3-3. Previous Archaeological Studies in the Vicinity of the KLF	3-72
Figure 3-4. Historic Properties in the Vicinity of the KLF	3-73
Figure 3-5. State Land Use Designations.....	3-74
Figure 3-6. County Zoning and Special Management Area	3-75
Figure 3-7. Coastal and Flood Hazards	3-76

Appendices

- A. Photo Log
- B. Pre-assessment Consultation
- C. Agency Correspondence
- D. Draft EA Comments and Responses
- E. Cultural Impact Assessment
- F. Public Meetings

Abbreviations and Acronyms

°F	Degrees Fahrenheit
§	Section
ACS	American Community Survey
ADC	Agribusiness Development Corporation
AECOM	AECOM Technical Services, Inc.
AIS	Archaeological Inventory Survey
amsl	Above Mean Sea Level
ASD	Alternative Source Demonstration
BLNR	Board of Land and Natural Resources
BMP	Best Management Practice
CCD	Census County Division
CCE	Community Criteria Evaluation
CDUP	Conservation District Use Permit
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CIA	Cultural Impact Assessment
County	County of Kauaʻi Department of Public Works Solid Waste Division
CSH	Cultural Surveys Hawaiʻi
CSP	Covered Source Permit (Title V Air Permit)
cy	Cubic Yard
CZM	Coastal Zone Management
CZO	comprehensive zoning ordinance
dB	Decibels
dBA	A-weighted Decibel
DHHL	Department of Hawaiian Homelands, State of Hawaiʻi
DLNR	State of Hawaiʻi Department of Land and Natural Resources
DOFAW	State of Hawaiʻi Division of Forestry and Wildlife
DPS	Distinct Population Segment
DPW	County of Kauaʻi Department of Public Works
EA	Environmental assessment
EIS	Environmental Impact Statement
EISPN	Environmental Impact Statement Preparation Notice
ESA	Endangered Species Act
EPA	U.S. Environmental Protection Agency
EPR	extended producer responsibility
ERP	Environmental Review Program
FAA	Federal Aviation Administration
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
FONSI	Finding of No Significant Impact
ft	Foot/Feet
GCCS	Gas Collection and Control System
HAR	Hawaiʻi Administrative Rules
HCB	Host Community Benefit
HDOH	State of Hawaiʻi Department of Health
HDOT	State of Hawaiʻi Department of Transportation

HDPE	High-Density Polyethylene
HEPA	Hawai'i Environmental Policy Act
HIEMA	Hawai'i Emergency Management Agency
HIOSH	Hawai'i Occupational Safety and Health Division
HRS	Hawai'i Revised Statutes
IAL	Important Agricultural Land
ISWMP	Integrated Solid Waste Management Plan
JfB	Jaucus Loamy Fine Sand
KCC	Kaua'i County Code
KLF	Kekaha Municipal Solid Waste Landfill
LCRS	Leachate collection and removal system
LSB	Land Study Bureau
LUC	State of Hawai'i Land Use Commission
MBTA	Migratory Bird Treaty Act
MPH	Miles Per Hour
MSW	Municipal Solid Waste
MW	Monitoring Well
NAAQS	National Ambient Air Quality Standards
NOAA	National Oceanographic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
PCB	Polychlorinated biphenyl
PGE	Pacific Geotechnical Engineers, Inc.
PMRF	Pacific Missile Range Facility - Barking Sands
Proposed Action/Project	Vertical expansion of Phase II of the Kekaha Municipal Solid Waste Landfill
RCRA	Resource Conservation and Recovery Act
ROI	Region of Influence
SHPD	State Historic Preservation Division
SHWB	Solid and Hazardous Waste Branch, State of Hawai'i Department of Health
SMA	Special Management Area
SPCC	Spill Prevention, Control, and Countermeasures
SSIs	statistically significant increases
SUP	Special Use Permit
SWMP	Solid Waste Management Permit
Tetra Tech	Tetra Tech, Inc.
TMK	Tax Map Key
TOC	Total organic carbon
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
WKCP	West Kaua'i Community Plan

1. Introduction

The County of Kauaʻi, Department of Public Works (DPW), Solid Waste Division (County/Applicant) is proposing a vertical expansion of Phase II at the Kekaha Municipal Solid Waste Landfill (KLF; Proposed Action/Project). The Proposed Action would provide additional air space volume for placement of refuse while the siting, designing, and construction phases for a new landfill facility or other long-term landfill capacity solutions are completed. The Proposed Action would extend Phase II upward from the currently permitted maximum elevation of 120 feet (ft) above mean sea level (amsl) to a new permitted maximum elevation of 171.5 ft amsl. This proposed vertical expansion would be within the existing permitted footprint of the Phase II landfill area and would be constructed above the existing Resource Conservation and Recovery Act (RCRA) Subtitle D base liner.

1.1 Project Location

KLF is located 1.3 miles northwest of the town of Kekaha on the southwest side of the Island of Kauaʻi (Figure 1-1). The KLF encompasses approximately 98 acres of land within Tax Map Keys (TMK) 1-2-002:001(por.) and 1-2-002:009, which are owned by the State of Hawaiʻi and administered by the Department of Land and Natural Resources (DLNR). Executive Order 1558 (signed April 27, 1953), Executive Order 2872 (signed October 6, 1977), and Executive Order 3695 (signed December 2, 1996) place the control and management of the lands underlying the KLF with the County of Kauaʻi.

The KLF is situated adjacent to Kaumualiʻi Highway (Highway 50) and approximately 1,700 ft from the shoreline of the Pacific Ocean. The KLF is located on the coastal Mānā Plain, which was historically used for agriculture and portions of which are still in active agricultural use. The primary land use in the vicinity of the KLF is agricultural and agriculture-related commercial activity, which takes place on lands to the west, north, and east of the KLF. Other land uses in the vicinity of the KLF include federal reserve lands (Pacific Missile Range Facility–Barking Sands [PMRF] and U.S. Lighthouse Service) to the south and west, land leased by the Hawaiʻi National Guard to the south, and a drag racing park (Kauaʻi Raceway Park) to the southeast (Figure 1-2).

1.2 Background

As detailed in the Kauaʻi Integrated Solid Waste Management Plan (ISWMP) update (Jacobs 2021), Kauaʻi County has an island-wide system of solid waste collection and disposal facilities that serve the general population including residential, commercial, and industrial sources. The two main components of the Kauaʻi solid waste management system are the KLF, the only permitted municipal solid waste (MSW) landfill on the Island of Kauaʻi, and the four refuse transfer stations located in Hanalei, Kapaʻa, Līhuʻe, and Hanapēpē. The County also provides recycling drop-off bins for residential use at eight locations across the island and has a voluntary green waste diversion program that allows residents to dispose of green waste free of charge at any of the four refuse transfer stations. Solid waste is collected,

sorted, and then transferred to the appropriate facility depending on whether it is recyclable material, green waste, or solid waste accepted for disposal in the KLF.

1.2.1 Existing Kekaha Municipal Landfill Operations and Environmental Controls

This section summarizes the existing operations and environmental controls at the KLF Phase II. KLF Phase II was designed and operates in accordance with applicable federal and state regulations (e.g., RCRA Subtitle D regulations and HAR § 11-58.1) and the requirements of KLF's Solid Waste Management Permit (SWMP) No. LF-0042-16 issued by the State of Hawai'i Department of Health (HDOH). The *Kekaha Municipal Solid Waste Landfill Operations Manual* (Geosyntec 2023a) contains the policies and procedures that govern operations at the KLF Phase II including the following Sections:

- Section 1, Part B: *Waste Acceptance/Hazardous Waste Exclusion Program* (prepared by Geosyntec Consultants, February 2023);
- Section 1, Part C: *Safety and Health Plan* (prepared by Geosyntec Consultants, February 2023);
- Section 1, Part D: *Emergency Action Plan* (prepared by Geosyntec Consultants, February 2023);
- Section 2: *Operations Plan* (prepared by Geosyntec Consultants, February 2023);
- Section 3: *Leachate Management Plan* (prepared by Geosyntec Consultants, February 2023);
- Section 4: *Surface Water Management Plan 2021-2022 Annual Update* (prepared by Geosyntec Consultants, February 2023);
- Section 4, Appendix D: *Spill Prevention, Control, and Countermeasures Plan* (prepared by Geosyntec Consultants, September 2022);
- Section 5: *Groundwater and Leachate Monitoring Plan* (prepared by Geosyntec Consultants, February 2023);
- Section 6: *Perimeter Gas Monitoring Plan* (prepared by Geosyntec Consultants, February 2023);
- Section 7: *Subsurface Landfill Gas Temperature Monitoring and Contingency Plan* (prepared by Geosyntec Consultants, March 2023); and
- Section 8: *Closure/Post-Closure Plan* (prepared by Geosyntec Consultants, February 2023).

1.2.1.1 Kekaha Municipal Landfill Operations

The KLF is comprised of two overlapping refuse fill areas identified as Phase I and Phase II (Figure 1-1). Phase I was an unlined MSW landfill that encompasses an area of 32.8 acres and began accepting solid waste in 1953 and was closed in October 1993. Phase I was succeeded by the Phase II operations in 1993. Phase II is an active, lined MSW landfill that began accepting solid waste on October 9, 1993. Phase II was constructed in accordance with RCRA Subtitle D criteria and Hawai'i Administrative Rules

(HAR) Section (§) 11-58.1, and currently receives all MSW¹ and construction/demolition debris generated on the island. The current permitted landfill area of Phase II is approximately 44 acres, which includes the original waste disposal area (31.2 acres) and two expansion areas, Cell 1 (6.3 acres) and Cell 2 (6.5 acres) (collectively referred to as Phase II). An office, scale house, public convenience center, leachate evaporation pond, stormwater infiltration basin, and maintenance shop are located along the northeastern property line of the facility along Kaumuali'i Highway (Figure 1-1). Photos of the existing KLF facilities are in Appendix A, Photos 1 through 5.

The KLF's current operating hours are 8:00 a.m. to 4:00 p.m., 7 days per week, approximately 352 days per year. The KLF Phase II receives approximately 230 tons of non-hazardous MSW per day. Phase II also receives certain special wastes that must be managed under special operating procedures for disposal including wastewater treatment sludge, septic tank and cesspool pumping, petroleum-contaminated soil, treated medical waste, dead animals, and asbestos-containing materials. The County maintains a *Waste Acceptance/Hazardous Waste Exclusion Program* to prevent the disposal of unacceptable waste at the landfill (Geosyntec 2023a).

The County employs approximately 24 full-time personnel to safely and efficiently manage the incoming waste volume at the KLF Phase II. Equipment used in landfill operations include compactors, bulldozers, dump trucks, front-end loaders, excavators, water trucks, tractors, and other auxiliary equipment. The staff and equipment at the KLF Phase II are adequate to handle the daily volume of waste accepted for disposal at the site, to provide support for routine and non-routine related tasks, and to conduct the ongoing excavation and construction activity needed for cell development and generation of cover soil (Geosyntec 2023a).

Scale house attendants and equipment operators monitor the incoming waste and divert unacceptable loads from disposal at the KLF. Once a waste load has been determined to be acceptable by the scale house attendant, it is weighed and the hauler proceeds to either the Material Drop-off Facility (i.e., residential self-haul) or the active disposal area (i.e., transfer trailers and commercial haul). Within the active disposal area, the "area fill" method of landfilling is used, which consists of spreading and compacting waste in horizontal layers ("lifts"), which form the waste cells. At the end of each working day, the exposed waste at the working face² is covered with cover soil or an HDOH-approved alternate daily cover. This cover helps to mitigate problems with odors, vectors, leachate, and windblown trash. Waste placement and compaction proceeds until final elevations and grades are achieved. During waste placement operations, the waste surface is graded to prevent surface water run-on and divert water runoff into the KLF stormwater drainage features.

¹ MSW is waste collected by the municipality (i.e., County of Kaua'i) from residential, commercial, industrial, and construction and demolition sources. MSW includes both organic wastes, such as paper, cardboard, food, yard trimmings, and plastics, and inorganic wastes such as metal and glass.

² The daily operation at a municipal solid waste landfill includes the tipping of waste into a specific area of the landfill, called the working face, followed by compaction or crushing of the waste and covering it with soil at day's end.

1.2.1.2 *Environmental Monitoring and Control Systems*

Existing environmental monitoring and control systems at the KLF Phase II include the following:

- **Liner and Leachate Collection and Removal System** – All disposal areas at the KLF Phase II are equipped with a bottom and side slope composite liner and leachate collection and removal system (LCRS)³. The base liner consists of several layers of geosynthetic clay and geomembrane liner (60-millimeter-thick high-density polyethylene [HDPE]) as detailed in the KLF SWMP. Above the base liner is a drainage layer containing perforated HDPE pipes. These pipes direct leachate into collection/extraction risers at the perimeter of the landfill unit. Leachate from these risers is then directed via a pump station (i.e., wet wells) to the lined leachate evaporation pond (Figure 1-1). Sensors detect leachate levels and automatically activate pumps when the leachate reaches a predetermined level. The approximately 2-acre leachate evaporation pond is lined to prevent infiltration of the water into the underlying soils. It has a maximum depth of 6 ft with an additional 2 ft of freeboard, and it was designed to completely evaporate all leachate collected from the landfill during a normal precipitation/evaporation year. Two floating aerators are used to accelerate evaporation. Leachate monitoring and sampling activities are conducted annually at the KLF Phase II in accordance with the KLF *Groundwater and Leachate Monitoring Plan* (Geosyntec 2023a).
- **Landfill Gas Collection and Control System and Perimeter Gas Monitoring** – KLF's existing landfill gas collection and control system (GCCS)⁴ consists of a collection network of HDPE pipes, gas collection devices (i.e., gas wells), and an enclosed landfill gas flare that is designed to minimize and control surface emissions. A perimeter landfill gas monitoring system is installed around the KLF to detect landfill gas migration. Twelve landfill gas probes are used to sample for methane, carbon dioxide, and oxygen. The gas probe network is monitored on a quarterly basis in accordance with facility's *Perimeter Gas Monitoring Plan* (Geosyntec 2023a).
- **Surface Water Management System** – Described in the KLF's *Surface Water Management Plan* (Geosyntec 2023a), stormwater is managed at KLF by controlled grading on the surface of the landfill and by maintaining an engineered system of drainage ditches, channels, pipes, and basins. The surface water system includes diversion berms located on the side slopes below the perimeter of the landfill top deck and along the perimeter road, which direct surface water to down drains. The down drains convey runoff to infiltration ditches around the perimeter of the landfill and to an existing, approximately 2.2-acre stormwater infiltration basin. The stormwater

³ Leachate is the liquid that can drain or "leach" from a landfill. Moisture within the landfill moves through the solid waste by gravity, collecting dissolved material along the way, and accumulates at a low point beneath the waste pile, but above the impermeable liner of the landfill. The LCRS collects leachate and retains it on-site in a lined leachate evaporation pond.

⁴ Landfill gas is produced when bacteria break down organic waste. Landfill gas is primarily made up of methane and carbon dioxide but may also be made up of small amounts of nitrogen, oxygen, ammonia, sulfides, hydrogen, and various other gases. The GCCS collects landfill gases from within the waste volume and safely combusts them in an enclosed landfill gas flare.

management system was designed to convey runoff from a 25-year, 24-hour storm, as required by the solid waste regulations (HAR § 11-58.1-15(g)). KLF's SWMP No. LF-0042-16 special condition E.5, requires annual updates to KLF *Surface Water Management Plan* be prepared and filed with HDOH by September 1 of each year. As part of the annual updates, KLF is required to report on its annual inspections of surface water management features and facilities, file updated topographic drawings and surface water drainage paths and conveyances, and drainage system modifications planned for the next year in response to waste filling.

- **Stormwater Pollution Management and Control System** – Stormwater runoff associated with industrial activities is regulated by the National Pollutant Discharge Elimination System (NPDES) General Permit (HAR § 11-55). Because there is no stormwater discharge point from the KLF Phase II, a request for NPDES exclusion was verbally granted by HDOH in July 2021⁵. In addition, the KLF Phase II implements a *Spill Prevention, Control, and Countermeasure Plan* (Geosyntec 2022a) to prevent releases of petroleum products used on-site and, if a release occurs, contaminants are not discharged into surface waters.
- **Groundwater Monitoring** – In accordance with HAR § 11-58.1-16, a groundwater monitoring program is in place at the KLF to monitor for impact to the groundwater from the landfill. The program includes a groundwater well network and sampling, monitoring, and analytical procedures. Groundwater from three Phase I and three Phase II groundwater monitoring wells (MW) is sampled on a quarterly basis to determine whether there are any landfill-related contaminants present in the groundwater. KLF Phase II groundwater and leachate monitoring activities are conducted pursuant to the KLF *Groundwater and Leachate Monitoring Plan* (Geosyntec 2023a).

1.2.2 History of Kekaha Municipal Landfill Expansions

The KLF Phase II was initially permitted for 31.2 acres and a maximum elevation of 37 ft amsl. The KLF Phase II was extended vertically in 1998 to a maximum elevation of 60 ft amsl (Belt Collins 1998), in 2004 to a maximum elevation of 85 ft amsl (Earth Tech and Wil Chee 2004), and in 2013 to a maximum elevation of 120 ft amsl (AECOM 2013a). The KLF was also permitted to extend laterally to expand the original limits of Phase II into Cells 1, 2, and 3 (AECOM 2007). Cell 1 added 6.3 acres to the permitted area of the Phase II operations and was brought online in 2010, and Cell 2 added an additional 6.5 acres and was brought online in 2020 (Figure 1-1). The County has not commenced Cell 3, but the cell design calls for construction of an engineered overliner over Phase I and landfill operations upon that overliner

⁵ A request for exclusion under the NPDES General Permit was submitted to the HDOH by the County of Kaua'i on September 7, 2007, and resubmitted on February 27, 2013. The request for exclusion was verbally granted by HDOH July 1, 2021 (D. Moises, HDOH, personal communication—email to COK, July 6, 2021).

(see Section 1.2.3.3). Based on current landfill waste mass density and daily waste disposal rates, the currently permitted Phase II landfill height of 120 ft is projected to reach capacity in June 2027⁶.

Table 1-1 summarizes the recent and proposed Phase II expansions, listed in order of implementation, with the subject of this EA shown in **bold font**.

Table 1-1. Summary of Recent and Proposed Phase II Landfill Expansions

Order	Expansion	Year Commenced Operations	Maximum Height (ft amsl)	Related Environmental Assessment
1	Phase II Vertical Expansion	1998	60	Belt Collins 1998
2	Phase II Vertical Expansion	2004	85	Earth Tech and Wil Chee Planning 2004
3	Phase II Lateral Expansion, Cell 1, 2, and 3	2010 and 2020 ¹	85	AECOM 2007
4	Phase II Vertical Expansion	2013	120	AECOM 2013a
5	Phase II Vertical Expansion	--	171.5	Ongoing
1. Cells 1 and 2 construction was completed in 2010 and 2020, respectively. Construction of Cell 3 has not commenced. AECOM = AECOM Technical Services, Inc.; amsl = above mean sea level; ft = feet				

1.2.3 History of Activities to Develop Long-term MSW Capacity Solutions

As stated in the Introduction, the Proposed Action would provide additional air space volume for placement of refuse while the siting, designing, and construction phases for a long-term landfill capacity solution is completed. The subsequent paragraphs and Table 1-2 provide a summary of activities conducted by the County to develop long-term MSW capacity solutions.

Table 1-2 Summary of Recent and Proposed Long-term Capacity Solutions

Long-term Capacity Solution	Status	Description	Implementation Timeline
Recycling and Waste Diversion	Active	The County manages several programs to reduce the volume of waste generated and to divert waste from landfills through reuse, recycling, and recovery (Jacobs 2021). The County continues to evaluate alternative solutions to landfilling. However, implementation of recycling and waste diversion programs cannot eliminate the need for landfill capacity.	1 to 2 years

⁶ The anticipated date of the currently permitted Phase II landfill reaching capacity was disclosed as October 2026 in the KLF Phase II Vertical Expansion Draft EA published on August 8, 2023. However, since the Draft EA was submitted for publication, the KLF 2023 Annual Operating Report (Geosyntec 2023d) was submitted to DOH. Based on the updated landfill waste mass density and daily waste disposal rates, Geosyntec updated the anticipated capacity reached date to June 2027.

Long-term Capacity Solution	Status	Description	Implementation Timeline
Siting a New Landfill Site	Active	The County previously sought to permit a new landfill elsewhere on Kaua'i and the best suitable location was found to have a fatal flaw. The County has identified another possible site and is in the early stages of planning and permitting for the new landfill.	10+ years
Phase II, Cell 3	Active	The County is seeking extension and/or renewal of Conservation District Use Permit (CDUP) KA-3625 to construct Cell 3. Cell 3 as currently permitted is to be constructed atop of Phase I and would cover Phase I and extend to meet the Phase II Vertical Expansion across the state conservation and agricultural districts.	6+ years

1.2.3.1 *Recycling and Waste Diversion*

As detailed in the Kaua'i ISWMP update (Jacobs 2021), a key component of the County's solid waste management system is source reduction and recycling. The County has implemented a variety of programs and services that promote source reduction. These include partnership with thrift stores, education, home and backyard composting, waste assessments, the Zero Waste Resolution, a plastic bag reduction ordinance, and the Pay As You Throw program⁷.

The County also manages several programs to divert waste from the landfill through reuse, recycling, and recovery of various types of waste. The County has a voluntary recycling program for residents and operates eight recycling drop-off sites in the County. The County also accepts green waste and specified recyclable materials from residents at the four refuse transfer stations free of charge. Accepted recyclable materials include cardboard, glass bottles and jars, aluminum and steel cans, plastic bottles and jars, mixed paper, tires, motor oil, scrap metal, appliances, motor oil filters, propane tanks, and green waste. Garden Isle Disposal also has a contract with the County to accept and process commercially generated recyclables at their facility. The County also participates in the state Deposit Beverage Container Program⁸; there are five privately operated certified redemption centers throughout the County to collect and recycle beverage containers. The privately operated Puhi Metals Recycling Center also accepts and recycles a variety of metal and electronic waste (eWaste) from the County, the general public, and commercial entities. The services are provided free of charge to residential users and for a fee to commercial users.

⁷ Residents pay a variable rate for refuse collection, which provides an economic incentive for reducing trash and increasing waste diversion and recycling.

⁸ Within the state, a 5-cent deposit per beverage container is charged for the purchase of specific glass, aluminum, and plastic containers defined under the law. A 1-cent non-refundable container fee is also assessed to support the costs of recycling and program administration.

The County currently diverts over 40% of the waste generated on island and is currently exploring further options to increase diversion efforts including food residual composting, construction and demolition recycling, and possibly curbside recycling (Jacobs 2021). The County is currently assessing the feasibility of a curbside recycling program as described in the ISWMP Section 4.4.1.2 (Jacobs 2021). The County also recently completed a feasibility study for alternative technologies to landfilling and will be entering into a two-stage Request for Proposals process to determine if there are viable bidders for an alternative system to manage waste and create energy. The County will also conduct a construction and demolition waste diversion pilot (A. Fraley, DPW, personal communication, March 12, 2023).

The County is also working at a state level to enact Extended Producer Responsibility (EPR) legislation that will require manufacturers to take financial responsibility for the end life of the products they produce (A. Boyd, DPW, personal communication, September 14, 2023). Currently, the County is focusing on EPR legislation concerning single use plastic packaging. Future EPR legislation will focus on solar photovoltaic panels, mattresses, and consumer electronics.

Further, the County provides grant opportunities to help with waste diversion. Currently, the County has two grants, one focusing on community-based food residual composting and the other working toward on-island plastic recycling (A. Boyd, DPW, personal communication, September 14, 2023). Food residuals contribute over 10% of waste going to our landfill every year and plastics over 11%. The County will continue to research options and educate residents to employ reduce and reuse practices.

Although the County continues to evaluate options to increase its landfill diversion rate, implementation of recycling and waste diversion programs cannot eliminate the need for landfill capacity.

1.2.3.2 *Siting a New Landfill Site*

The County has previously attempted to site a new MSW landfill at another location on the island and continues to investigate alternative landfill sites. The County began the landfill siting process in 2000, culminating in two reports: *Kaua'i Municipal Solid Waste Landfill Siting Study* (Earth Tech 2001) and *New Kaua'i Municipal Solid Waste Landfill, Kālepa Site Investigation* (Earth Tech 2002). Eight potential landfill sites were identified based on meeting established siting and environmental criteria (Kālepa, Kekaha Mauka, Kīpū, Kōloa, Kumukumu, Ma'alo, Pu'u o Papa'i, and 'Umi). The eight sites were then compared and ranked based on 19 environmental, technical, and social/cultural criteria.⁹ The totals for each site from the siting criteria were summed and the list of sites were ranked according to suitability for a landfill: 1st – Kekaha Mauka, 2nd - Kīpū, 3rd – Kālepa, 4th – Kumukumu; 5th - Pu'u o Papa'i, 6th - Ma'alo, 7th - Kōloa, and 8th - 'Umi.

In 2007, the County convened the Mayor's Advisory Committee on Landfill Site Selection which was tasked to develop and prioritize 26 community-based criteria and rank seven of the eight previously

⁹ A description of the siting criteria and evaluation completed in these reports is included in Section 3.2 Alternative Locations in the 2018 FEIS prepared for the "New Kaua'i Landfill" (R.M. Towill 2018).

identified landfill sites¹⁰. The criteria were weighted according to perceived importance and assigned a weight between 1 (least important) and 10 (most important)¹¹. The results of this siting study are summarized in the *Report of the Mayor's Advisory Committee on Landfill Site Selection* (R.M. Towill 2009). The rankings produced by the Mayor's Advisory Committee on Landfill Site Selection included the following: 1st – 'Umi, 2nd – Kekaha Mauka, 3rd – Kōloa, 4th – Kīpū; 5th - Pu'u o Papa'i, 6th - Ma'alo, 7th - Kālepa.

In 2012, the County reevaluated the suitability of the sites identified in the 2007 siting study using the community criteria evaluation (CCE) as well as state and other landfill criteria, preliminary engineering evaluations, planning-level cost estimates, existing (agricultural) land use, and landowner willingness (AECOM 2012). The results of this siting study identified Ma'alo, a 270-acre state owned parcel north of Līhu'e, as the preferred alternative. The basis for this decision was that it was the only site with a willing landowner, that allowed for the longest site life (estimated 264 years), was centrally located, had the least annual cost, and was the highest ranking on the CCE of the sites evaluated (AECOM 2012). As part of its commitment to reduce, reuse, and recycle and to maximize diversion of waste from the landfill, the County also conducted a feasibility study of a resource recovery park (AECOM 2013b). The intent of the County was to co-site the new MSW landfill and resource recovery park.

Subsequently, the County completed an engineering study and conceptual design for a new MSW landfill and resource recovery park at the Ma'alo site and initiated the environmental review process in accordance with Hawai'i Revised Statutes (HRS) Chapter 343 and HAR § 11-200.1. In October 2018, the Mayor's Office accepted the Final Environmental Impact Statement (EIS) for the project (R. M. Towill 2018). However, during the permitting process, the County had to abandon its plans to develop a new MSW landfill and resource recovery park at Ma'alo because the Federal Aviation Administration (FAA) and the State of Hawai'i Department of Transportation's (HDOT) Airports Division opposed the project due to the potential for the landfill to attract avian wildlife species (including the endangered nēnē or Hawaiian Goose) within five miles of the Līhu'e Airport and therefore increase potential for bird-strikes, and concern that the Līhu'e Airport is Kauai's primary public commercial airport which is busy with daily commercial flights and increase potential for bird-strikes would create dangerous conditions for aircraft. The record of the FAA and HDOT's written opposition of the Ma'alo site is included in the 2018 FEIS for the "New Kaua'i Landfill" (R.M. Towill 2018) specifically in Appendix H – Wildlife Management Plan and in Section 10.3.2 of the FEIS. These correspondences are summarized below:

- The County argued in a December 18, 2013 letter that prohibitions set forth in Title 49, United States Code, Section 44718(d) (which prohibits new landfill sites within 6 nautical miles of a public airport) do not apply to the Līhu'e airport and therefore does not apply to the proposed landfill at Ma'alo. In a February 26, 2014 letter, the FAA agreed that the referenced statute does not apply to the proposed landfill as Līhu'e airport primarily serves commercial air carrier

¹⁰ One site, Kumukumu, was removed from the evaluation due to an anticipated subdivision development within a major portion of the site at the time of the study.

¹¹ The criteria is listed in Table 3-3 of the 2018 FEIS prepared for the "New Kaua'i Landfill" (R.M. Towill 2018).

aircraft, rather than small general aviation airports where the statutes applies. However, the FAA also states in the 2014 letter that it maintains its opposition to landfill proposals to be built within 6 nautical miles of an airport noting that the proposed location is within three nautical miles of Līhu‘e airport. Furthermore, the FAA urged county and state officials to develop an effective wildlife mitigation plan if the County were to build the proposed Ma‘alo landfill. A copy of these letters are contained in “Attachment B Correspondence” of the Ma‘alo Landfill Project Wildlife Management Plan (AECOM 2017), included in Appendix H of the 2018 FEIS for the “New Kaua‘i Landfill” (R.M. Towill 2018).

- In an attempt to mitigate the FAA and HDOT’s concerns for wildlife hazards, the County developed a detailed Landfill Wildlife Hazard Assessment (LWHA) and Landfill Wildlife Management Plan (LWMP) (see Appendix G and Appendix H of the 2018 FEIS for the “New Kaua‘i Landfill”, R.M. Towill 2018). HDOT reviewed the draft LWMP and stated its opposition to the project in a March 2, 2017 letter from HDOT. A copy of this letter is included in “Attachment B Correspondence” of the Ma‘alo Landfill Project Wildlife Management Plan, included in Appendix H of the 2018 FEIS for the “New Kaua‘i Landfill” (R.M. Towill 2018).
- Ultimately the County was unable to reach a mitigated agreement with HDOT (see HDOT letter dated May 23 2018 on page 10-222 of the 2018 FEIS for the “New Kaua‘i Landfill”, R.M. Towill 2018) and permits were not attainable for the Ma‘alo site as HDOT opposed state authorizations and approvals for the proposed Ma‘alo site.

In summary, all eight original potential landfill sites evaluated in the 2001 to 2002, 2007, and 2012 siting studies are infeasible or problematic to develop. Three sites (Ma‘alo, Kālepa, and Kīpū in Līhu‘e) are problematic due to potential airport proximity concerns. In 2020, the Hawai‘i Legislature passed Act 73, which prohibits landfills within 0.5 mile of a residence, school, or hospital; this law excludes four additional sites from further consideration (Kumukumu in Anahola, Kōloa in south Kaua‘i, Pu‘u O Papa‘i in Hanapēpē, and ‘Umi in Kalāheo). The remaining site, Kekaha Mauka, is currently in active use by a state lessee and is no longer available to the County. Furthermore, due to the water contamination incident at the Red Hill Bulk Fuel Storage Facility in 2021, where fuel leaked in to the freshwater aquifer on Oahu, HDOH has concern for construction of new facilities that may impact water quality and in discussions with the HDOH, it was indicated that construction of a new landfill over freshwater aquifers would not be considered for permitting, further limiting options for new landfill sites (G. Haae, DOH, personal communication, May 24, 2022).

The County has identified another possible site and is in the early stages of assessing the site and planning for the new landfill.¹² Based on the County’s prior experience, permitting, design, and construction of a new landfill on Kaua‘i would take upwards of 10 years (See Section 2.6.2.1 for more information).

¹² The County is currently investigating the feasibility of siting a new landfill on a parcel owned by the Agriculture Development Corporation (ADC) that is also located in Kekaha (A. Fraley, DPW, personal communication, March 12, 2023).

1.2.3.3 *Phase II, Cell 3*

The County recently requested a time extension to Conservation District Use Permit (CDUP) KA-3625 to allow construction of Phase 2, Cell 3. The Cell 3 expansion was evaluated as part of the 2007 EA and FONSI for the KLF Phase II Lateral Expansion (AECOM 2007). Because a portion of the lateral expansion is within the state Conservation District, the County obtained CDUP No. KA-3625 for the construction of Cells 1, 2, and 3 in 2012. Cells 1 and 2 were then permitted by the HDOH and commenced operations in 2010 and 2020, respectively. The County determined that if the siting of a new landfill could be accomplished within the anticipated operational life of Cells 1 and 2, development of Cell 3 would not be necessary. However, as described in Section 1.2.3.2, to date the County has been unsuccessful in permitting a new landfill despite extensive efforts to do so.

As described in the 2007 EA (AECOM 2007) and permitted under CDUP KA-3625, the Cell 3 operations would install a new landfill liner system meeting regulatory standards over the Phase I operations and expand the landfill over Phase I to a maximum elevation of 85 ft amsl and extend to meet Phase II. The existing refuse in Phase I has been capped since 1995 which minimizes infiltration of precipitation into the underlying refuse. In addition, biodegradation processes and LFG extraction have been removing moisture from the refuse prism (i.e., moisture within the LFG that is extracted plus the LFG condensate that is pulled out) resulting in a relatively dry environment. Because there is relatively little moisture remaining in the refuse prism any settlement and associated reduction in pore space from the increased mass above would be unlikely to force liquids out of the refuse and into the ground water below. Installation of a composite liner system over the top and side slopes of Phase I would result in additional impermeable barriers that would help to prevent rainwater from entering the existing Phase I waste. Based on the currently available information and public concern regarding groundwater quality issues, the County would consult with HDOH on whether additional hydrogeological and groundwater quality studies would be needed to assess potential impacts of the Cell 3 expansion on groundwater and avoidance and minimization measures would be determined prior to commencing work on Phase II, Cell 3.

The County has also considered an option to mine and remove waste from Phase I, construct an engineered, liner system, and commence Cell 3 operations upon this liner. In 2021, the County retained Stantec Consulting Services, Inc., to complete a feasibility study of this mining option (Stantec 2021). The report concluded that the mining of Phase I was technically feasible pending consultation with regulatory agencies and the public. However, the County conducted further analysis of the Cell 3 “overliner” option versus the “mining” option in July 2023 (Tetra Tech 2023), and found that the mining option presents implementation risks including, but not limited to: 1) the need for space to sort and process the “mined” Phase I waste materials thus requiring significant coordination with the ongoing operations in the Phase II landfill area, 2) the need for significant soil importation to generate the required base grading, and 3) the potential for fugitive emissions of greenhouse gases and volatile organic compounds released during excavation within the refuse mass. Furthermore, the mining alternative will reduce the site life of Phase II by an unknown quantity based on the percentage of Phase

I materials that cannot be recovered or reused and the amount of waste that must be mined to prepare the base grades and bottom liner for the first cell.

In its December 7, 2023 board meeting, the Board of Land and Natural Resources (BLNR) considered and granted the County's request for time extension to complete construction of Cell 3 as permitted under CDUP No. KA-3625. The BLNR approved an August 24, 2031 construction completion date for Cell 3. In addition to obtaining the BLNR approval to extend the construction completion timeline, Phase II, Cell 3 lies within the Special Management Area (SMA) and, therefore, may require additional approvals, and at a minimum will need HDOH permits. At this time, the County estimates that it will take a minimum of six years to complete further analysis, develop final construction documents, obtain other required permits, procure, construct, and complete the Phase II, Cell 3 overliner expansion, and would take an additional one to two years (i.e. minimum of seven to eight years total) to complete a potential Phase II, Cell 3 mining expansion.

1.3 Purpose and Need

The purpose of the Proposed Action is to prolong the life of the KLF prior to exhausting the island's only permitted landfill airspace and to provide safe disposal capacity of MSW in Kaua'i County while a long-term MSW capacity solution can be identified. The need arises because the currently permitted KLF Phase II is projected to reach capacity in June 2027¹³. The County understands there is a critical need to identify a long-term MSW capacity solution for the Island of Kaua'i (see Section 1.2.3). However, the planning, permitting, and implementation of any potential long-term MSW capacity solution is anticipated to require more than 5 years (i.e., would occur after June 2027), at which time the Island of Kaua'i would be without a landfill for the safe disposal of MSW. The lack of a permitted MSW landfill would result in adverse effects on the environment and public health. The proposed vertical expansion of the Phase II landfill is expected to add an additional 2 to 4 years of capacity to the KLF, depending on future waste intake rates and potential waste diversion strategies, thus providing landfill capacity until a long-term MSW capacity solution can be implemented.

1.4 HRS Chapter 343 Compliance

Compliance with the Hawai'i Environmental Policy Act (HEPA) (HRS Chapter 343) environmental review is required for any agency action that includes one or more triggers identified in HRS § 343-5(a) and HAR § 11-200.1, which are the implementing rules for compliance with HRS Chapter 343. The Proposed

¹³ As noted in Section 1.2.3, the anticipated capacity reached date of the currently permitted Phase II landfill was disclosed as October 2026 in the KLF Phase II Vertical Expansion Draft EA published on August 8, 2023. However, since the Draft EA was published, the KLF 2023 Annual Operating Report (Geosyntec 2023d) was made available and based on the updated landfill waste mass density and daily waste disposal rates, Geosyntec updated the anticipated capacity reached date to June 2027. This slight increase in timeline to the anticipated capacity date does not change the Project's purpose and need which is to prolong the life of the KLF prior to exhausting the island's only permitted landfill airspace and to provide safe disposal capacity of MSW in Kaua'i County while a long-term MSW capacity solution can be identified.

Action includes use of state land and county funds, which triggers HEPA environmental review per § 343-5(a)(1).

In accordance with HAR § 11-200.1-18, the County conducted early consultation seeking the advice and input of the agencies having jurisdiction as well as citizen groups and individuals whom the Proposed Action may affect. Appendix B encloses a copy of the pre-assessment consultation distribution list and consultation letter, copies of all comment letters received during the pre-assessment consultation period, and the County’s responses to the substantive comment letters. Appendix C encloses other agency correspondence that informed the preparation of the Draft EA.

Based on the scope and scale of the Project and consistent with HAR § 11-200.1-14, the County determined an EA to be the appropriate level of environmental review. A Draft EA was prepared in compliance with HRS Chapter 343 and HAR § 11-200.1 and submitted to the Environmental Review Program (ERP) for publication in the August 8, 2023 edition of the *Environmental Notice*.

Comments received during the required 30-day public review period on the Draft EA were reviewed and incorporated into a Final EA, which was published in the February 23, 2024 edition of the *Environmental Notice*. Appendix D encloses a copy of the Draft EA notice letter, copies of all comment letters received during the 30-day Draft EA comment period, and the County’s responses to the substantive comments received. Based on its review of the Final EA and application of the significance criteria in HAR § 11-200.1-13, the County issued a “Finding of No Significant Impact” (FONSI).

In addition to the environmental disclosure requirements of HRS Chapter 343, the implementation of the Proposed Action would require coordination and consultation with the federal and state agencies for permits, clearances, or approvals as presented in Table 1-3 (see Appendix C and D for agency correspondence).

Table 1-3. Permits and Approvals for Implementation of the Proposed Action

Permit/Approval ¹	Description	Regulation(s)	Administrative Authority
Solid Waste Management Permit (SWMP)	Solid waste management activities at the Kekaha Municipal Solid Waste Landfill (KLF) are authorized under the SWMP No. LF-0042-16. The Proposed Action will require a modification to SWMP No. LF-0042-16.	Hawai‘i Revised Statutes (HRS) Chapter 342H; Hawai‘i Administrative Rules (HAR) Section (§) 11-58.1-04	Hawai‘i Department of Health (HDOH) Solid and Hazardous Waste Branch
Covered Source Permit (CSP) Modification ²	A CSP Permit (Title V Air Permit) is required to comply with the New Source Performance Standards found in 40 Code of Federal Regulations (CFR) Part 60, Subpart WWW. Covered sources include those sources that are major sources of air emissions and sources subject to a federal performance or control technology standard. The Proposed Action	40 CFR Part 60 HAR § 11-60.1-82	HDOH Clean Air Branch; U.S. Environmental Protection Agency

Permit/Approval ¹	Description	Regulation(s)	Administrative Authority
	will require a modification to CSP Permit No. 0802-01-C.		
Historic Preservation Review	State Historic Preservation Division (SHPD) review and concurrence required prior to any ground disturbing activities. SHPD concurs with the County's project effect determination of "No historic properties affected" for the Proposed Action (Appendix C).	HRS § 6E-8; HAR § 13-275	Hawai'i Department of Land and Natural Resource SHPD
Notice of Proposed Construction or Alteration	The Federal Aviation Administration (FAA) must be notified of any construction that may affect the National Airspace System under provisions of 14 CFR 77. A "Determination of No Hazard" is anticipated for the Proposed Action.	49 United States Code § 44718; 14 CFR Part 77	FAA
<p>1. The Kaua'i Planning Commission issued special use permit (SUP) SP-93-9, use permit U-93-56, and class IV zoning permit Z-IV-93-64 in 1993 to allow land classified in the county agricultural zone to be used for landfill purposes. As the KLF involved more than 15 acres of land, the SUP also required approval by the state Land Use Commission (LUC) (Petition Docket No. SP93-384). The County of Kaua'i Planning Department determined that the Proposed Action is permissible under the existing land use entitlements (K. Hull, County of Kaua'i Planning Department. personal communication – email to A. Fraley, June 15, 2023). No modification to the SUP, use permit, and class IV zoning permit is required.</p> <p>2. The County has submitted a permit renewal application to the HDOH in 2018. Pending permit approval, the KLF site is being operated under the existing air permit No. 0802-01-C.</p>			

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**Kekaha Landfill
Phase II Vertical
Expansion**

**Figure 1.1
Project Location**

KAUA'I COUNTY, HI

- Approximate Extent of the Proposed Vertical Expansion
- TMK Parcel Boundary
- Phase I Limit
- Phase II Limit
- Cell 1 Limit
- Cell 2 Limit



Reference Map



1:4,000

WGS 1984 UTM Zone 4N

0 0.13 0.25 Miles

NOT FOR CONSTRUCTION

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**Kekaha Landfill
Phase II Vertical
Expansion**

**Figure 1-2
Land Ownership
and User**

KAUAI COUNTY, HI

- Local Roads
ID, Owner ,User
- A, State of Hawaii (DLNR)
 - B, State of Hawaii (DLNR)
 - C, State of Hawaii (HDOA)
 - D, State of Hawaii (ADC)
 - E, State of Hawaii (HDOA)
 - F, U.S. Federal Government
 - G, U.S. Federal Government
 - H, State of Hawaii



Reference Map



Land Owner

User

A	State of Hawaii (DLNR)	County of Kauai
B	State of Hawaii (DLNR)	Hawaii National Guard
C	State of Hawaii (HDOA)	Syngenta Seed
D	State of Hawaii (ADC)	Various
E	State of Hawaii (HDOA)	Kekaha Agriculture Park
F	U.S. Federal Government	Department of Defense
G	U.S. Federal Government	U.S. Lighthouse Service
H	State of Hawaii	Kauai Raceway Park



1:12,000

WGS 1984 UTM Zone 4N



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2. Project Description

2.1 Project Components

The Proposed Action would extend the Phase II landfill height vertically from the currently permitted maximum height of 120 ft amsl to a maximum elevation of 171.5 ft amsl. The major components of the Proposed Action would be located entirely within the Phase II area (i.e., within TMK 4-1-2-002:001 [por.]) and include the features listed below.

2.1.1 Vertical Landfill Expansion

The proposed Phase II vertical expansion would extend the existing engineered waste disposal area upwards to a maximum height of 171.5 ft amsl, without altering the Phase II permitted limit-of-waste footprint of approximately 44 acres. The Phase II vertical expansion would make use of the existing Subtitle D base liner system and leachate collection system that underlie the Phase II landfill (See Section 1.2.1 for more information). The existing conditions, final cover grade, and landfill cross-sections are presented as Figure 2-1, Figure 2-2, and Figure 2-3, respectively.

The limits of the proposed vertical expansion would be approximately 13 acres. To address slope stability and stormwater management, the proposed vertical expansion would incorporate benches in the slope design (Figure 2-2). The existing all-weather access roads would be extended to access the upper reaches of the landfill area.

Airspace for the waste disposal area is gained from increasing the overall final cover height of Phase II from 120 ft amsl to 171.5 ft amsl. The proposed grading design of the final cover consists of a 3.5:1 (horizontal: vertical) side slope with a 3 percent top grade, similar to the design of the permitted Phase II final cover (Tetra Tech 2022, HDOH 2019). The estimated amount of gross airspace for the Phase II vertical expansion is approximately 405,300 cubic yards (cy) (Table 2-1).

Table 2-1. Estimated Additional Landfill Capacity from Proposed Action

Proposed Expansion Area	Additional Design Volume (cy)	Annual Tonnage (tons)	Annual in-place Waste (cy)	Estimated Additional Years of Capacity with Vertical Expansion
Phase II Vertical Expansion	405,300	82,000	124,200	3.2
<p>Assumptions:</p> <p>Design volume estimated as the volume between the proposed top of final cover surface (with the proposed vertical expansion) and the existing permitted top of final cover surface, minus the increased volume of final cover required due to the extended side slope lengths.</p> <p>Annual in-place waste volume estimated based on an assumed in-place waste density of 1,300 pounds of waste per cubic yard of waste volume.</p>				

2.1.2 Landfill Gas Collection and Control System

KFL's existing GCCS consists of a collection network of HDPE pipes, gas collection devices (i.e., gas wells), and an enclosed landfill gas flare that is designed to minimize and control emissions. Due to the additional waste tonnage to be accepted as a result of the Proposed Action, the total landfill gas generation rate and landfill gas collected in the GCCS would increase. Tetra Tech, Inc. (Tetra Tech), conducted an engineering analysis of the GCCS for the Proposed Action; the analysis concluded that the existing GCCS is adequately sized to accommodate the anticipated increase in landfill gas flow (Tetra Tech 2022).

Existing GCCS infrastructure located within the vertical expansion footprint would be impacted by the additional fill. To address this, two phases of improvements would maintain gas collection as the vertical expansion is constructed (Tetra Tech 2022). The first phase would occur prior to placement of fill and would include raising the existing vertical landfill gas extraction wells in areas where a relatively minimal amount of fill is anticipated and, where more significant amounts of fill are anticipated, relocating existing vertical landfill gas extraction wells to outside of the limits of the vertical expansion. The second phase would occur when the final fill limit is reached (or just before) and would include the addition of vertical landfill gas extraction wells and related lateral piping to provide landfill gas collection for new waste placed within the vertically expanded area. The proposed GCCS modifications would tie into the existing GCCS.

2.1.3 Stormwater Management

As described in Section 1.2.1.2, stormwater is currently managed at the KLF by controlled grading on the surface of the landfill and by maintaining an engineered system of diversion berms and benches which convey runoff to riprapped down drains (i.e., flumes). The down drains convey runoff to infiltration ditches around the perimeter of the landfill and to an existing stormwater infiltration basin. As shown in Figure 2-4, surface water drainage features would need to be modified slightly (i.e., extended upwards) to accommodate the increase in side slope lengths and corresponding runoff flow velocities due to the proposed vertical increase. The upper end of the down drains in each of the four existing drainage area affected by the vertical expansion (areas A, B, C, and F in Figure 2-4) will be extended upward as necessary and tied into the proposed diversion berms and benches from the proposed vertical expansion. The proposed surface water management system would tie into the existing permitted system at the limits of the vertical expansion. No changes to the existing perimeter infiltration ditches or stormwater infiltration basin are warranted or proposed.

2.2 Construction Activities

Once evaluated through the HRS Chapter 343 environmental review process and permitted by the HDOH, the vertical expansion could be implemented immediately to meet the anticipated demands. No construction is required to begin accepting waste within the Phase II footprint.

2.3 Operations and Maintenance

The KLF incorporates engineering and operational controls to minimize and avoid adverse impacts to the environment and public nuisances, including a waste acceptance and exclusion program, leachate management plan, groundwater and leachate monitoring, landfill gas monitoring plan, surface water management plan, access and traffic control, litter control, dust control, odor control, vector control, explosive gas control, spill prevention, control, and countermeasures (SPCC) plan, and emergency management procedures. These controls are detailed in the KLF's *Operations Manual* (Geosyntec 2023a), which would be amended to incorporate the Proposed Action, as necessary. The KLF would continue to implement these engineering and operational controls under the Proposed Action to minimize the operational impacts. No substantial changes to the KLF's operations are proposed.

2.4 Closure and Post-closure

The County is responsible for 30 years of post-closure care of the Phase II landfill in accordance with the KLF *Closure/Post-closure Plan* (Geosyntec 2023a). The post-closure maintenance and monitoring requirements are intended to ensure proper functioning of the landfill systems during the 30-year post-closure care period for the long-term protection of the environment and public health. Post-closure activities include monitoring and maintenance of the landfill final cover, stormwater management systems, landfill gas management, LCRS operation, and groundwater monitoring.

2.5 Project Schedule and Cost

As no construction is required to begin operating the vertical expansion, the Proposed Action can begin once all approvals are received. Depending on refuse inflow rates and other operational considerations, the County would begin to landfill within the expanded vertical area by 2026.

The vertical expansion would incur costs for preparation of the design, plans, EA, and permits to an amount of approximately \$825,000 (USD) (Table 2-2). The Project would be entirely funded by the County of Kaua'i.

Table 2-2. Proposed Action Implementation Schedule

Item	Anticipated Date of Completion
HEPA Environmental Assessment	January 2024
Final Operations Plan and Design	January 2024
HDOH Solid Waste Management Permit	October 2024
Begin Waste Placement in Phase II Vertical Expansion Volume	2025–2026
Total Time Duration	~ 2 years
HDOH = Hawai'i Department of Health; HEPA = Hawai'i Environmental Policy Act	

2.6 Alternatives to the Proposed Action

In addition to the Proposed Action, the no action alternative will be analyzed in this EA. Three other alternatives were considered but dismissed from further consideration. Although technically feasible, these three alternatives did not satisfy the purpose of and need for the action. The no action alternative and three alternatives considered, but not carried forward, are summarized below and in Table 2-3 and explained below.

Table 2-3. Summary of Alternatives Considered

Item	Estimated Implementation Timeline	Meets Purpose and Need? ¹
Proposed Action	2025/2026	Yes
No Action Alternative	N/A	No - Retained to Compare Baseline Conditions
Siting and Constructing a New Landfill Facility	2033	No - Dismissed
Off-island Disposal	2025/2026	No - Dismissed
Siting and Constructing Distributed Waste Disposal System throughout the County	2033	No – Dismissed
1. The purpose of the Proposed Action is to prolong the life of the Kekaha Municipal Solid Waste Landfill (KLF) prior to exhausting the island's only permitted landfill airspace and to provide safe disposal capacity of municipal solid waste (MSW) in Kaua'i County while a long-term MSW capacity solution can be identified. The need arises because the currently permitted KLF Phase II is projected to reach capacity in June 2027.		

2.6.1 No Action Alternative

Under the no action alternative, Phase II would not be vertically expanded, resulting in the closure of the landfill in 2027 when the currently permitted landfill capacity would be reached. The Island of Kaua'i would be left without a permitted facility for the safe disposal of MSW.

2.6.2 Alternatives Considered but not Carried Forward

Only the alternatives that were technically feasible and satisfied the purpose of and need for action were carried through the EA analysis. Other alternatives considered, but not carried forward, are summarized below.

2.6.2.1 *Siting and Constructing a New Landfill Facility*

As described in Section 1.2.3.1, the County has a long history of actions attempting to site and permit a new MSW landfill at another location on the island. While the County is currently working on the task of siting a new landfill facility on Kaua'i, this cannot be accomplished prior to 2027, when the KLF Phase II is projected to reach capacity. Siting a new landfill involves numerous steps and substantial time. An

implementation schedule presenting the steps and time required to site, permit, and construct a new landfill is presented in Table 2-4 below. These are estimated durations; actual durations may vary.

Table 2-4. Implementation Schedule to Site, Permit, and Construct a New Landfill

Item	Duration
Prepare Initial Site Report and Environmental Impact Statement	2 years
Acquire Land	2 years
Prepare Feasibility Report	1 year
Prepare Operations Plan and Design	1 year
Land Use Permit(s) (if required)	1 year
HDOH Permits	1 year
Award Construction Contract and Construct MSW Landfill	2 years
Total Time Duration	~ 10 years
HDOH = Hawai'i Department of Health; MSW = municipal solid waste	

With this implementation schedule, the County expects that a new landfill cannot reasonably be sited in less than 10 years. If there are significant regulatory, technical, or community issues to overcome, siting a new facility could take much longer (e.g., greater than 10 years). Because this alternative does not meet the Project purpose of providing permitted landfill airspace before the existing permitted landfill airspace is exhausted, it was not carried forward in this analysis. However, the County is still proceeding with plans to site a new landfill as part of its long-term planning objectives.

2.6.2.2 Off-island Disposal

MSW would be shipped from Kaua'i to off-island landfills or to H-POWER on O'ahu. Such a plan would require a transfer station and additional funds to support the transfer costs (i.e., inter-island shipping and off-island hauling). This alternative was considered in detail in the *Alternatives Analysis - Proposed New Kaua'i Landfill and Resource Recovery Park* (AECOM, et. al. 2017) conducted to evaluate potential alternatives to the proposed new Municipal Solid Waste Landfill (MSWLF) and Resource Recovery Park (RRP) on the island of Kaua'i. A copy of this analysis is included as Appendix I to the 2018 FEIS (R.M. Towill 2018). The *Alternatives Analysis* (AECOM, et. al. 2017) concluded that transshipment of MSW to H-POWER on O'ahu or to a U.S. mainland landfill would not avoid the need for on-island landfill capacity due to laws prohibiting certain MWS from transshipment to the mainland (i.e. MSW that has more than 3% yard, agricultural waste, industrial waste, infectious waste, loads of predominantly C&D waste, and hazardous waste). On-island landfill capacity would also be needed in the event of disasters (such as hurricane Iniki). Furthermore, continued waste acceptance at the receiving facility (whether H-POWER or on mainland) would be out of the County's control, could be interrupted by natural disasters, public policy decisions, or contract or labor issues, and therefore may not allow the County to continue to satisfy its mandate to manage Kaua'i's waste stream. For these reasons, the *Alternatives Analysis*

(AECOM, et. al. 2017) concluded that off-island disposal was not considered a viable alternative to a new MSW landfill on Kauai.

Although off-island disposal could be a temporary measure to extend the life of the KLF Phase II landfill, transshipment would be much more costly than on-island disposal, and the high cost associated with off-island disposal would raise waste disposal facility costs and fees and could result in widespread illegal disposal of MSW throughout rural Kaua'i. Transporting solid waste off-island would also proportionally increase the likelihood of accidental releases during transport. For these reasons, the off-island disposal alternative was considered to not meet the Project's purpose and need to provide safe disposal capacity of MSW in Kaua'i County.

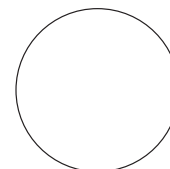
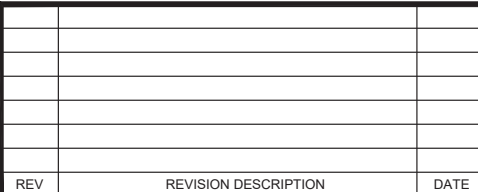
2.6.2.3 *Siting and Constructing Distributed Waste Disposal Facilities Throughout the County*

During review of the Draft EA, a comment letter was received from Nā Kia'i Kai, Kaunalewa and Earthjustice (see Appendix D). The comment letter noted that the Draft EA lacked consideration or assessment of distributing waste disposal throughout the island on an ahupua'a, moku, or other community-based level. It went on to note that before KLF was expanded to become the island's only landfill, waste disposal facilities were distributed throughout the island. The comment letter recommended that the County consider implementing a modernized system of distributed waste management, rather than forcing this one community to bear 100% of these burdens.

Regarding the comment suggesting the County consider and assess an alternative where waste disposal is distributed throughout the island, this alternative is not feasible as it would not meet the Project's purpose and need because it would not provide safe disposal capacity of MSW in Kaua'i County prior to 2027, when the KLF Phase II is projected to reach capacity. Any alternative landfill site, regardless of whether there are multiple sites throughout the island, would involve numerous steps and substantial time as described in Table 2-4. The County expects that a single new landfill or multiple new landfills cannot reasonably be sited in less than 10 years. If there are significant regulatory, technical, or community issues to overcome, siting a new facility could take much longer (e.g., greater than 10 years). Because this alternative does not meet the Project purpose of providing permitted landfill airspace before the existing permitted landfill airspace is exhausted, it was not carried forward in the Final EA analysis.



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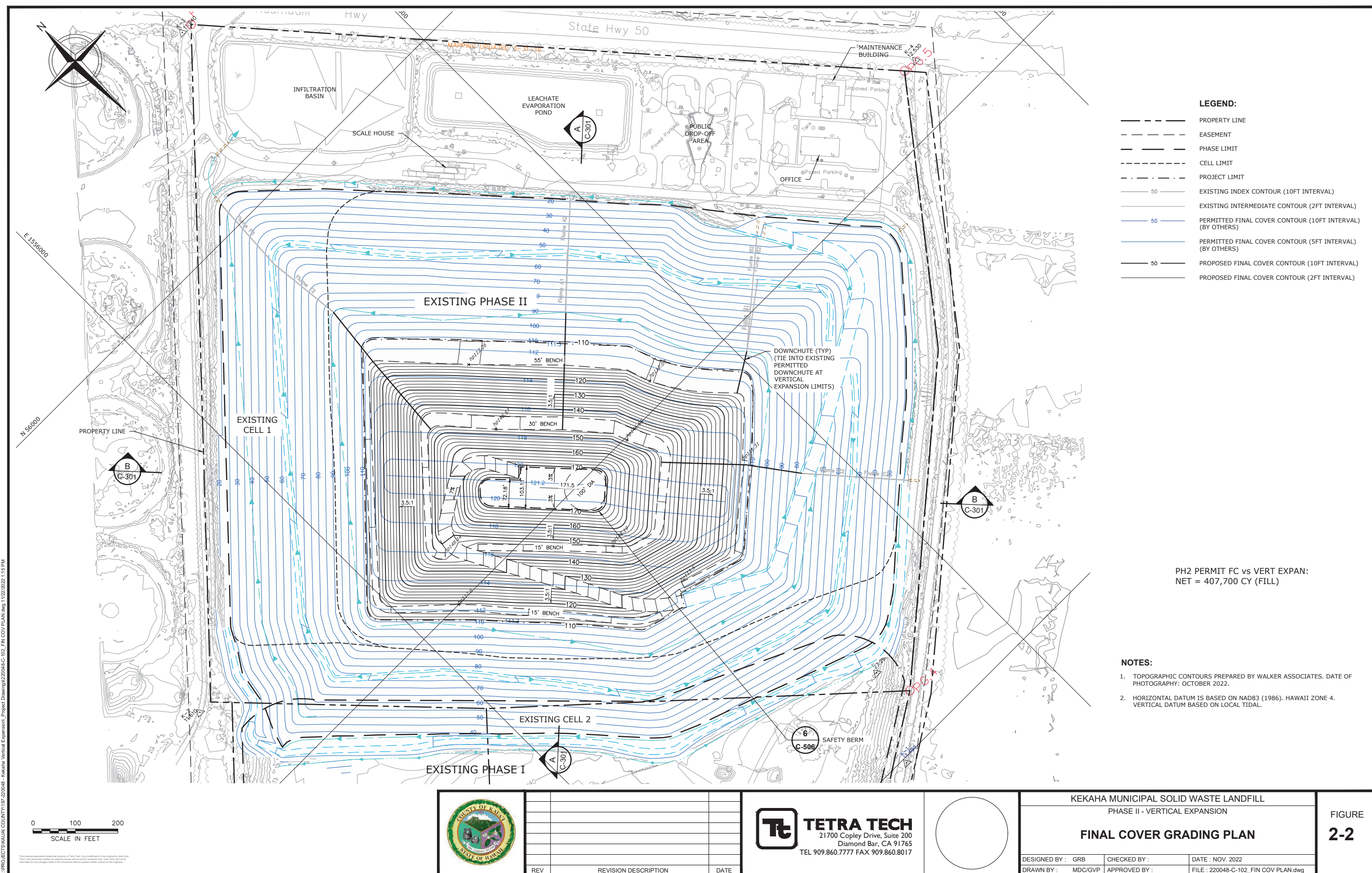
EXISTING CONDITIONS

FILE : 220048-C-100_EXIST COND PLAN.dwg

2-1

1. TOPOGRAPHIC CONTOURS PREPARED BY WALKER ASSOCIATES. DATE OF PHOTOGRAPHY: OCTOBER 2022
2. HORIZONTAL DATUM IS BASED ON NAD83 (1986). HAWAII ZONE 4. VERTICAL DATUM BASED ON LOCAL TIDAL.

NOT FOR CONSTRUCTION



3. Affected Environment, Potential Impacts, and Mitigation Measures

Section 3 describes the Proposed Action in the context of the affected environment, the potential effects of the Proposed Action on that environment, and mitigation measures associated with the Proposed Action and the no action alternative. This includes both the natural and anthropogenic elements of the environment, such as air quality, biological resources, climate, cultural resources, geology, topography, and soils, hazardous materials and hazardous waste, historic and archeological resources, land use, natural hazards, noise, public facilities and services, safety and health, socioeconomics, transportation and traffic, utility infrastructure, visual resources, and water resources. The region of influence (ROI) is defined for each resource area and determines the geographical area to be addressed as the affected environment. This information serves as a baseline from which to identify and evaluate potential environmental impacts that may result from the implementation of the Proposed Action or the no action alternative.

Each section also analyzes the potential impacts of the Proposed Action and the no action alternative. Effects from the Proposed Action may be adverse or beneficial, short- or long-term in duration, and include direct, indirect, and cumulative effects:

- Short-term versus long-term impacts: Indicates the impact duration. Short-term impacts may be related to a specific event (e.g., heavy rainfall) or phase of development (i.e., construction). Long-term impacts are generally associated with the operations phase, which, for the Proposed Action, begins with the acceptance of debris within the expanded Phase II landfill area and continues after closure of the Proposed Action.
- Direct versus indirect impacts: Direct impacts are “cause and effect” types of impacts and tend to be easier to observe or measure. A direct impact occurs at the same time and same place as the action. Indirect impacts (or secondary impacts) are caused by the action and are later in time or further removed in distance, but still reasonably foreseeable (HAR § 11-200-2).
- Cumulative Impacts: Cumulative impacts are impacts on the environment that result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions. Regardless of which agency or person undertakes the other actions. Cumulative impacts can result from individually minor, but collectively significant action taking place over a period of time (HAR § 11-200-2). Cumulative impacts are addressed in Section 3.18.

3.1 Air Quality

3.1.1 Affected Environment

The ROI for air quality is the KLF facility and downwind areas. Modeling of downwind areas was not completed as part of this assessment. However, areas downwind of the KLF would typically include places to the west or southwest. During Kona winds, downwind areas would be places to the north or east.

Ambient air quality, which refers to the purity of the general outdoor atmosphere, is regulated under the Clean Air Act and the U.S. Environmental Protection Agency (EPA) National Ambient Air Quality Standards (NAAQS) (40 Code of Federal Regulations [CFR] Part 50). The HDOH also regulates air quality and sets ambient air quality standards (HAR § 11-59-4) that are as strict as or, in some cases, stricter than the NAAQS. The State of Hawai'i has also established standards for fugitive dust emissions emanating from construction activities (HAR § 11-60.1-33). These standards prohibit any visible release of fugitive dust from construction sources without taking reasonable precautions.

The HDOH maintains air quality monitoring stations throughout the state to measure ambient air quality based on established federal and state standards. Seven parameters are regulated: carbon monoxide (CO), nitrogen dioxide (NO₂), particulate matter (PM_{2.5} and PM₁₀), ozone (O₃), sulfur dioxide (SO₂), lead (Pb), and hydrogen sulfide (H₂S). A summary of Hawai'i's air quality monitoring data is published annually (HDOH 2022). The closest air quality monitoring station to the KLF is the Niimalu Station, located on Hulemalu Road in Līhu'e, approximately 23 miles east of the KLF. This station monitors sulfur dioxide, nitrogen dioxide, and PM_{2.5} only. The nearest monitoring station for carbon monoxide, PM₁₀, ozone, and lead is at Kapolei on the Island of O'ahu; the only monitoring station for hydrogen sulfide is Leilani on the east coast of Hawai'i Island. In 2021, all areas in the State of Hawai'i met all federal and state ambient air quality standards (HDOH 2022).

In general, existing air quality in the vicinity of the KLF is good. Airborne emissions on the island are relatively low due to low levels of development and automobile emissions and prevailing trade winds that help disperse the accumulation of emissions. Sources of pollutant air emissions in the vicinity include vehicle exhaust from Kaunauli Highway/Hawai'i Route 50, dust from agricultural cultivation and construction, and occasional smoke from wildfires. Potential sources of air pollutants and emissions associated with KLF facility include diesel- and gasoline-powered equipment, motor vehicles and refuse transfer trucks, landfill gas, and fugitive dust. These sources are discussed in more detail below.

3.1.1.1 Vehicular Combustion

The existing KLF operations generate some emissions from vehicles and refuse trucks driving to and from the facility as well as diesel- and gasoline-powered equipment used in landfill operations (e.g., compactor, bulldozer, dump truck, front end loader, excavator, water truck, roll-off truck, and auxiliary equipment) (Geosyntec 2023a). All KLF vehicles and equipment are maintained in proper working order

and follow state and federal emission standards. Prevailing trade winds help disperse the accumulation of emissions from vehicles.

3.1.1.2 Fugitive Dust

Fugitive dust is currently managed by KLF personnel in accordance with the Dust Prevention Program described in the KLF *Operations Manual* (Geosyntec 2023a) and HAR § 11-60.1-33. Site operations personnel utilize a 4,000-gallon water truck to apply water to areas that may be potential dust problems, such as access roads, work areas, and stockpiles. The volume of water and frequency of spraying are increased as needed during particularly dry or windy conditions, or during times of increased truck traffic on site.

The following precautions and operations are implemented on site to prevent the discharge of visible fugitive dust beyond the site property boundary:

- The site's water truck is used during dry weather to spray water on access roads and other areas that might otherwise generate windblown dust. The volume of water and frequency of spraying is increased as needed during particularly dry and windy conditions.
- Grading and watering haul roads.
- Periodically applying a fine water spray to work areas throughout the day. More frequent applications of water are required during the windy season or when fugitive dust is observed migrating from these areas.
- Using sprayers on screening operations.
- Applying water on intermediate soil cover.

3.1.1.3 Landfill Gas

Landfill gas is generated from the decomposition of organic material and consists primarily of methane (CH₄) and carbon dioxide (CO₂), as well as lesser amounts of non-methane organic compounds. Although some landfill gases are odorless, other gases (such as hydrogen sulfide) cause odor (see below). As described in Section 1.2.1.2, KLF's existing GCCS collects landfill gas from within the waste volume and safely combusts it in an enclosed landfill gas flare. The landfill gas flare is designed to minimize and control emissions in accordance with KLF's CSP Permit No. 0802-01-C. In accordance with HAR § 11-60.1, the KLF reports the GCCS operational and monitoring data and CSP permit compliance tracking semi-annually. In the second half of 2022, the facility had two exceedances of surface concentration of methane and took immediate corrective action to bring that exceedance within compliance (Geosyntec 2023b). All other emissions were in compliance with KLF's CSP Permit No. 0802-01-C.

3.1.1.4 Odor Control

The odor control program at the KLF consists of identification and special handling of odorous wastes, application of daily and intermediate cover, and management of landfill gas (Geosyntec 2023a). Odorous

waste accepted at the KLF include sewage sludge and grits, dead animals, grease trap pumping waste, and food wastes. Wastes capable of creating off-site odor problems are identified at the scale house and immediately directed to the active landfill area to be buried and covered with non-odorous waste. Additionally, daily and intermediate cover soil is placed and compacted over the MSW and is an effective means of preventing odors from general solid waste landfilling activities. Regular inspection and maintenance of cover to eliminate cracks and fissures in cover soil is also conducted as an important element of odor control from solid waste after it is buried.

3.1.2 Potential Impacts and Mitigation Measures

3.1.2.1 *Proposed Action*

No construction is required to implement the Proposed Action. Therefore, no short-term, construction-related emission sources are anticipated.

As described in the subsequent paragraphs, no new emission sources or impacts to air quality resources are anticipated; rather, the Proposed Action would continue the existing impacts of KLF operations for an additional 2 to 4 years. Potential short- and long-term impacts of the Proposed Action on air quality are discussed below.

3.1.2.2 *Vehicular Combustion*

Daily emissions from vehicle traffic, refuse truck, and landfill equipment are anticipated to remain unchanged from current conditions because the number of daily trips to the landfill and the daily quantities of waste placed on the landfill would not change as a result of the Proposed Action. All KLF vehicles and equipment will continue to be maintained in proper working order and follow state and federal emission standards. Emissions from vehicular combustion would persist for an additional 2 to 4 years; however, due to the relatively small number of vehicles and equipment, and prevailing trade winds that help disperse the accumulation of emissions, emissions resulting from the Proposed Action are expected to be negligible.

3.1.2.3 *Fugitive Dust*

Fugitive dust generated from landfill activities would persist for an additional 2 to 4 years. KLF would continue to implement best management practices (BMP) to minimize fugitive dust generated during landfill operations (e.g., water truck used during dry weather). Fugitive dust emissions would be the same as existing conditions and are not anticipated to have a significant adverse effect on air quality.

3.1.2.4 *Landfill Gas*

Due to the additional waste tonnage to be accepted as a result of the Proposed Action, the total landfill gas generation rate and landfill gas collected in the GCCS would increase. Tetra Tech (2022) conducted an engineering analysis of the GCCS for the Proposed Action; the analysis concluded that the existing

GCCS is adequately sized to accommodate the increase in landfill gas flow. The GCCS collection infrastructure would extend into the new waste placed within the vertically expanded area and would tie into the existing GCCS. The GCCS is regulated by KLF's CSP Permit No. 0802-01-C, which would be modified for the Proposed Action. With the continued use of the GCCS, landfill gas emissions would not significantly differ from existing conditions and are not anticipated to have a significant adverse effect on air quality.

3.1.2.5 *Odor*

Odors would continue to occur as a result of the Proposed Action; however, odor would be mitigated using the existing odor control practices (e.g., immediate disposal and daily covering of refuse). Significant adverse impacts related to nuisance odors are not anticipated with the Proposed Action.

With implementation of the BMPs described in Section 3.1.1, such as dust control, minimizing the open face of the landfill, special handling of odorous wastes, application of daily cover, and maintaining vehicle and equipment in good working order, short- and long-term impacts to air quality will be less than significant.

3.1.2.6 *No Action Alternative*

Under the no action alternative, the Proposed Action would not occur. The KLF would close by mid 2027 and post-closure monitoring would take place for the 30-year period following closure. In the immediate vicinity of the KLF, emissions from vehicular traffic would be lower following closure as daily traffic would be reduced. Final cover and revegetation of the closed landfill would also reduce fugitive dust and landfill odors and landfill gas emissions would continue to be managed through the KLF's existing GCCS. However, without a permitted facility for the safe disposal of MSW, illegal dumping outside of the KLF would likely increase, resulting in increased levels of uncontrolled landfill gas emissions and odor.

3.2 Biological Resources

3.2.1 Affected Environment

The ROI for biological resources, including flora and fauna, is the KLF facility. Applicable regulations include the federal Endangered Species Act (ESA; 50 CFR § 17) and HRS Chapter 195D, both of which protect plant and animal species listed as endangered or threatened. In addition, the federal Migratory Bird Treaty Act (MBTA) provides certain protections for those migratory bird species identified as part of implementing treaty obligations.

Biological resources expected to occur in or transit the KLF, and potential impacts to those resources, are informed by previous surveys in the KLF facility and its vicinity, and various assessments for facility operations (DLNR 1982, R.M. Towhill 1983, Belt Collins 1998, AECOM 2013a, NAVFAC 2014, SWCA 2016). Plant and wildlife surveys conducted within the KLF site in 1982, prior to construction of the Phase II landfill, described the habitat at the site as highly modified and dominated by non-native plant

and animal species (DLNR 1982; Appendix C). No rare or state or federally listed plant or wildlife species were recorded at the site or as having the potential to occur. Since then, the KLF site has been subject to further disturbance as a result of construction and operation of the Phase II landfill and its associated infrastructure; thus, the already marginal habitat at the site for native flora and fauna noted in the 1982 surveys has been further modified. Despite this disturbance, several state and federally listed bird species have been recently recorded at the KLF and the vicinity. Additional details on plants and animals are discussed below.

3.2.1.1 Flora

The vegetation survey conducted prior to construction of the Phase II portion of the KLF facility characterized the vegetation as highly altered and dominated by non-native plant species (DLNR 1982, R.M. Towhill 1983). Dominant plant species recorded during the survey included the following non-native species: beach wiregrass (*Dactyloctenium aegyptium*), Bermuda grass (*Cynodon dactylon*), sandbur (*Cenchrus echinatus*), golden crown-beard (*Verbesina encelioides*), cocklebur (*Xanthium strumarium*), lantana (*Lantana camara*), Indian fleabane (*Pluchea indica*), klu (*Vachellia farnesiana*), koa haole (*Leucaena leucocephala* subsp. *leucocephala*), and kiawe (*Neltuma pallida*). No rare or listed native plants were recorded at the site and were considered highly unlikely to occur (DLNR 1982). Much of the vegetation previously documented was cleared during construction and operation of the KLF. The Proposed Action will occur within the footprint of the existing Phase II area, which has been functioning as a landfill since 1993. Therefore, any vegetation growth within the Phase II area is minimal and likely consists of weedy, low-growing, non-native species.

No critical habitat for plants has been designated by the U.S. Fish and Wildlife Service (USFWS) within the KLF site. The closest plant critical habitat are two units designated for the endangered grass, lau'ehu (*Panicum niihauense*), situated along the coastline approximately 1 mile to the west and south of KLF (USFWS 2023).

3.2.1.2 Fauna

Wildlife surveys conducted in 1982, prior to construction of the Phase II landfill, recorded only non-native bird and mammal species at the KLF site; no rare or listed wildlife species were observed (DLNR 1982, R.M. Towhill 1983). Suitable habitat for native wildlife has been reduced within the KLF and mostly removed within the Phase II area as a result of construction and operation. However, bi-monthly wildlife surveys conducted at KLF between August 2014 and August 2015 documented two listed bird species within the KLF site outside the Phase II area: the endangered Hawaiian stilt/a'eo (*Himantopus mexicanus knudseni*) and the federally threatened and state endangered Hawaiian goose/nēnē (*Branta sandwichensis*) (SWCA 2016). The endangered Hawaiian duck/koloa (*Anas wyvilliana*), Hawaiian common gallinule/'alae 'ula (*Gallinula galeata sandvicensis*), and Hawaiian coot/'alae ke'oke'o (*Fulica alai*) have also been recorded in the vicinity of the KLF (NAVFAC 2014). None of these listed birds appear to be attracted to any waste handling operations within the Phase II portion of KLF, but they may be occasionally attracted to the leachate evaporation pond and stormwater infiltration basin within the

KLF, as well as water features adjacent to (but not associated with) the KLF. Further details regarding the potential for listed wildlife to occur in or transit the KLF are provided below.

In addition, three native bird species protected by the MBTA have been observed within the KLF facility (outside of the Phase II area) and in the facility vicinity; these species are the black-crowned night heron/‘auku‘u (*Nycticorax nycticorax*), Pacific golden-plover/kolea (*Pluvialis fulva*), and Hawaiian short-eared owl/pueo (*Asio flammeus sandwichensis*) (NAVFAC 2014, SWCA 2016). Because the Project would take place within the footprint of the existing Phase II area, which has been functioning as a landfill since 1993, suitable habitat for native wildlife is minimal. No critical habitat for wildlife has been designated by the USFWS within the KLF site or the vicinity (USFWS 2023).

Listed Waterbirds

Hawai‘i’s four listed waterbird species occur in a variety of habitats, including ponds, artificial reservoirs, and irrigation ditches (USFWS 2011). Hawaiian stilts have been observed in the KLF’s leachate evaporation pond when water was present (SWCA 2016). The Hawaiian duck/koloa has also been observed in ponds and ditches in the immediate vicinity of the KLF. The listed Hawaiian common gallinule and Hawaiian coot have also been recorded in the vicinity (NAVFAC 2014) and have the potential fly over the KLF site in transit to areas of suitable habitat.

Hawaiian Goose/Nēnē

The Hawaiian goose is listed as threatened by the USFWS and endangered by the State of Hawai‘i Division of Forestry and Wildlife (DOFAW). It occurs in a variety of habitats, but has a preference for open areas, such as pastures and grasslands (USFWS 2004). Hawaiian geese have been observed at the KLF, particularly near green waste piles and vegetated areas in Phase I and at the stormwater basin and leachate evaporation pond (A. Fraley, DPW, personal communication, February 17, 2023). However, there is no indication that Hawaiian geese are attracted to the active area within the Phase II portion or other facilities at the KLF (SWCA 2016).

Listed Seabirds

Although the KLF site does not provide suitable nesting or foraging habitat for listed seabirds, the endangered Hawaiian petrel/‘ua‘u (*Pterodroma sandwichensis*), the threatened Newell’s shearwater/a‘o (*Puffinus newelli*), and the endangered Hawai‘i distinct population segment (DPS) band-rumped storm-petrel/‘akē‘akē (*Oceanodroma castro*), may fly over the KLF site in transit between the ocean and upland breeding sites during the breeding, nesting, and fledging seasons (March 1 to December 15). Listed seabirds also have the potential to be attracted to operational lights at night (USFWS 2017, 2021a, 2022a).

Hawaiian Hoary Bat

The endangered Hawaiian hoary bat/‘ōpe‘ape‘a (*Lasiurus semotus*) is known to occur in the vicinity (NAVFAC 2014) and may occasionally traverse the KLF. The Hawaiian hoary bat roosts in both native and

non-native trees over 15 ft tall and forages over a variety of habitats and elevational ranges (Bonaccorso et al. 2015, USFWS 2021b). Given the species' wide range of foraging habitat, it is possible that bats forage in or near the KLF. The USFWS and DOFAW recognize all woody vegetation greater than 15 ft tall as potential bat roosting habitat (DLNR 2015, USFWS 2022b). At KLF, the number of trees over 15 ft tall is limited; therefore, potential roosting habitat for the Hawaiian hoary bat is limited.

3.2.2 Potential Impacts and Mitigation Measures

3.2.2.1 *Proposed Action*

No construction is required to implement the Proposed Action. Therefore, no short-term, construction-related impacts to flora or fauna are anticipated. The Proposed Action would take place entirely within the existing Phase II footprint, which was highly modified as a result of construction and operation. No new areas will be disturbed as a result of the Proposed Action. As described in the subsequent paragraphs, no new impacts to biological resources are anticipated; rather, the Proposed Action would continue the existing impacts of KLF operations for an additional 2 to 4 years. Potential short- and long-term impacts of the Proposed Action on flora and fauna are described below.

Flora

No listed or rare plants are known to occur within the KLF, and previous surveys recorded a dominance of non-native plant species. Vegetation within the Phase II area has been highly modified by construction and operations and implementation of the Proposed Action will not result in a change in the type or level of impact to flora; therefore, any impacts to flora expected as a result of the Proposed Action would be very minimal.

Fauna

As described above, although the KLF site has been disturbed, listed waterbirds, the Hawaiian goose, listed seabirds, and the Hawaiian hoary bat could occur in or transit through the KLF (including the Phase II area). Potential short- and long-term direct and indirect impacts to these species and associated mitigation measures are described in the subsections below.

Listed Waterbirds: Although listed waterbirds may be attracted to occasional standing water in the leachate evaporation pond or stormwater infiltration basin located at the northeast boundary of the KLF site, these anthropogenic features are typically dry and, therefore, do not attract many waterbirds (SWCA 2016). Management of the leachate evaporation pond and stormwater infiltration basin will not change as a result of the Proposed Action. No standing water would be created from the Proposed Action. Vehicle strikes could also affect listed waterbirds should individuals land on or near roadways associated with KLF operations. The KLF maintains posted roadway speed limits at 15 miles per hour (mph) to prevent vehicle strikes to wildlife that may occur in or transit through the KLF facility. Thus, impacts to listed waterbirds will not change as a result of the Proposed Action.

Hawaiian Goose: Neither the Phase I portion of the KLF leachate evaporation pond nor the stormwater infiltration basin would be altered or disturbed as a result of the Proposed Action. In the unlikely event that a Hawaiian goose nest is discovered within the KLF property and within a 150-ft radius of the active landfill area of the Phase II landfill, the County will cease all work in the vicinity of the nest immediately and contact the USFWS for further guidance. Vehicle strikes could also affect Hawaiian goose should individuals land on or near roadways associated with KLF operations. The KLF maintains posted roadway speed limits at 15 mph to prevent vehicle strikes to wildlife that may occur in or transit through the KLF facility. Thus, impacts to the Hawaiian goose will not change as a result of the Proposed Action.

Listed Seabirds: Listed seabirds could be attracted to operational lighting at the KLF and vulnerable to disorientation and fallout as a result. Existing outdoor lighting at the KLF is limited to street lighting and outdoor lights placed above the maintenance shop, employee kitchen, employee restroom, and supervisor's doors. All outdoor lighting is fully shielded and directed downward. Normal operating hours are from 8:00 a.m. to 4:00 p.m. Lighting is generally only needed during early morning or early evening hours during the winter months, when daylight hours are reduced. Timers control outdoor lighting and automatically turn off outdoor lights after the facility has closed and site personnel have departed. The Project does not include plans to add or alter the existing outdoor lighting or change the current hours of operation. Thus, impacts to listed seabirds will not change as a result of the Proposed Action.

Hawaiian Hoary Bat: Impacts to the Hawaiian hoary bat could occur if any vegetation over 15 ft tall is removed during the bat birthing and pupping season (June 1 to September 15), or if barbed wire fences are erected. However, trees taller than 15 ft are limited in the KLF and no trees occur within the Phase II area of the facility. No barbed wire fences are planned to be erected as part of the Proposed Action. Thus, impacts to listed seabirds will not change as a result of the Proposed Action.

Minimization and avoidance measures to avoid and minimize impacts to listed wildlife species with the potential to occur in or transit the KLF would be implemented based on applicable Project-specific recommendations received from the USFWS (Appendix B) and DOFAW (Appendix D, Item 6), and would include such measures as avoiding creating areas with standing or open water; maintaining posted roadway speed limits at 15 mph to prevent vehicle strikes to wildlife that may occur in or transit through the KLF facility; stop work requirements if a listed species is observed inside or within a 150-ft radius of the active Phase II area; seasonal restrictions on removal of woody vegetation greater than 15 ft tall; and continued compliance with lighting standards based on the agency recommended measures currently being implemented at the KLF.

To address concerns regarding impacts to listed birds from nonnative predators such as cats and rodents, the County will continue to implement the KLF's Vector Control Plan (Section 6.6 of KLF's *Operations Plan*, Geosyntec 2023a) and operational controls to minimize predator presence at the KLF site in accordance with the operating criteria for MSW landfills as detailed in 40 CFR § 258.22 and HAR § 11-58.1-15(c). Vector control activities currently implemented at KLF includes:

- The placement of a minimum of six inches of daily cover or alternative daily cover on the MSW active working face and a minimum of 12 inches of intermediate cover on inactive portions of the KLF Phase II.
- KLF Phase II operators are trained annually to promote compliance awareness with operational practices such as proper depth and frequency of cover material placement on the landfill.
- Minimizing the size of the active working face is another method utilized at the KLF Phase II to reduce the likelihood of vectors feeding on MSW.
- Public health and vector control concerns are addressed at the KLF Phase II through the implementation of inspections and subsequent control and abatement activities. KLF Phase II personnel inspect the facility monthly for any signs of vectors or indications of vector attractants that may cause nuisance or disease. The integrity of the landfill cover material is also inspected as part of the KLF Phase II Vector Control Plan to verify that vectors are not an issue.
- If vectors are identified at the landfill, the County will develop and implement a specific plan to control or eradicate the on-site populations. Actions such as removal of cats and placement of bait stations for rodents may be activities incorporated into a specific control and eradication plan if one were identified to be necessary.

KLF Phase II is not experiencing any vector problems. With implementation of impact avoidance and minimization measures, the Proposed Action is expected to have less than significant adverse impacts to protected wildlife species.

Because no critical habitat for plants or wildlife has been designated by the USFWS in the KLF site or its immediate vicinity, no impacts to critical habitat are anticipated.

3.2.2.2 *No Action Alternative*

Under the no action alternative, the Phase II vertical expansion would not be implemented, and landfill operations would cease by mid 2027. Listed waterbirds, listed seabirds, Hawaiian goose, and Hawaiian hoary bat would continue to occur in and transit the KLF facility and could be impacted by KLF operations, closure activities, and post-closure monitoring. Thus, potential impacts to biological resources would continue to be less than significant with implementation of the no action alternative.

3.3 Climate

3.3.1 Affected Environment

The ROI for climate is the Island of Kauaʻi. The Hawaiian Islands have a tropical climate characterized by relatively mild temperatures and moderate humidity throughout the year (except at high elevations), persistent northeasterly trade winds, notable differences in rainfall across short distances, and infrequent severe storms. Two primary seasons are recognized: a summer (dry) season between May and September, which is typically warmer, drier, and northeasterly trade winds are prevalent, and a winter (wet) period between October and April, which is characterized by more frequent cloud cover

and rainfall as well as southerly and westerly winds (Giambelluca and Schroeder 1998). Due to the tempering influence of the surrounding Pacific Ocean and their low-latitude location, the Hawaiian Islands experience extremely small diurnal and seasonal variations in ambient temperature.

Local climate conditions in Hawai'i are influenced by its rugged mountainous topography and the persistent flow of the trade winds (Giambelluca and Schroeder 1998). The KLF is located on the leeward side of the island of Kaua'i. Mean annual rainfall in Kekaha is approximately 18.2 inches and range from less than 1 inch in the summer months to 2 to 3 inches in the winter (Giambelluca et al. 2014). In the vicinity of the KLF, moisture zones are described as ranging from arid near the coastline to very dry in the Mānā Plains (Price et al. 2012). The daytime temperatures average from the 70s to 80s in degrees Fahrenheit (°F) and nighttime temperatures in the upper 60s to 70s in °F. The prevailing wind direction is from the east at an average of 4 mph (Giambelluca et al. 2014).

Scientific evidence indicates an increase in global greenhouse gas emissions can cause climatic changes (IPCC 2022). The existing KLF contributes a minor amount of greenhouse gases to the environment in the form of exhaust from vehicles and refuse trucks traveling to and from the site, exhaust from equipment used in landfill operations, and controlled landfill gas emissions (see Section 3.1).

3.3.2 Potential Impacts and Mitigation Measures

3.3.2.1 *Proposed Action*

No construction is required to implement the Proposed Action. Therefore, no short-term, construction-related impacts to climate (including greenhouse gas emissions) are anticipated.

The Proposed Action is not anticipated to result in measurable short- or long-term impacts to climate or local climatic conditions (e.g., temperature, rainfall, wind). The Proposed Action would contribute a minor amount of greenhouse gasses to the environment from the use of vehicles and equipment during operations and controlled landfill gas emissions. However, emissions would occur at a low enough level that they are not expected to measurably contribute to regional or global greenhouse gas levels. All vehicles and equipment would be maintained in proper working order and in compliance with state and federal emission standards. Additionally, landfill gas generated from the decomposition of organic material would continue to be collected and safely combusted in an enclosed landfill gas flare in accordance with KLF's CSP Permit No. 0802-01-C, as modified.

3.3.2.2 *No Action Alternative*

Under the no action alternative, the Phase II vertical expansion would not occur. In the short term, the KLF would continue to operate and generate negligible amounts of greenhouse gas emissions from equipment and vehicle exhaust and controlled landfill gas emissions. In the long term, the KLF would reach capacity and close. There would be less exhaust from on-site equipment and vehicles and landfill gas would continue to be managed by the County for 30 years in accordance with its *Closure/Post-closure Plan* (Geosyntec 2023a). However, without a permitted facility for the safe disposal of MSW,

illegal dumping outside of the KLF would likely increase, resulting in increased levels of uncontrolled landfill gas emission. Overall, greenhouse gas emissions would be minimal and are not expected to measurably contribute to regional or global greenhouse gas levels under the no action alternative.

3.4 Cultural Resources

3.4.1 Affected Environment

The ROI for cultural resources is the KLF facility and Waimea Ahupuaʻa. On behalf of the County, Cultural Surveys Hawaiʻi (CSH) conducted a Cultural Impact Assessment (CIA) for the Proposed Action (Appendix E). The purpose of the CIA was to gather information on Hawaiʻi's cultural resources, practices, or beliefs that have occurred or still occur within the KLF site and the Waimea Ahupuaʻa. Cultural practices and cultural features may include traditional cultural properties and/or designated significant historic properties under Criterion "e" of HAR §13-275-6 and §13-284-6. Significance Criterion "e" refers to historic properties that "have an important value to the native Hawaiian people or to another ethnic group of the state due to associations with cultural practices once carried out, or still carried out, at the property or due to associations with traditional beliefs, events or oral accounts—these associations being important to the group's history and cultural identity" (HAR §13-275-6(b)(5) and §13-284-6(b)(5)).

The CIA contains information gathered from archival research and consultation, compiled in order to "analyze the impact of a proposed action on cultural practices and features associated with the project area" (Office of Environmental Quality Control 1997). As part of this information gathering, CSH contacted Hawaiian organizations, agencies, and community members as well as cultural and lineal descendants to identify individuals with cultural expertise and/or knowledge of the KLF and vicinity. Community outreach letters were sent to 61 individuals or groups; 14 responded, two provided written testimony, and one met with CSH for an in-depth interview. The results of the archival research and consultation are summarized below.

Waimea Ahupuaʻa is composed of several regions which are very different in climate and terrain (Figure 3-1). These differences dictated the kinds of resources that were available and how the ahupuaʻa was settled by pre-Contact Hawaiians. On the southwestern leeward coast, the broad, flat Mānā Plain stretches between the Waimea River delta and Polihale to the west. It is here that the villages of Kekaha, Pōkiʻi, Waiʻawa, and Mānā are located, backed on the mauka side by steep low cliffs and a series of small valleys and gulches. Just below, makai of the ridges and valleys, lies the Kekaha Ditch, which winds its way down from the Waimea River in the mountains. Between the villages were intermittent homes, with the Old and New Government roads to Mānā (now referred to as the Mānā Road) linking each community between Mānā and Kekaha. The KLF is located near the center of the Mānā Plain, makai of the Kekaha Ditch (Figure 3-1).

Traditional accounts of the Waimea Ahupuaʻa are told through Nā kaʻao a me nā Moʻolelo (Legends and Stories), Nā Wahi Pana (Storied Places), Oli (Chants), Nā Mele (Songs), and Nā ʻŌlelo Noʻeau (Proverbs). These oral accounts provide important insight into a specific geographical area. There are many legends

associated with the Waimea Ahupuaʻa, many of which relate to the Hawaiian gods, such as Pele and her siblings, and aliʻi (chiefly class), such as Olaʻa. Hawaiian legends concerning Waimea also focus on the engineering feats that made the agricultural abundance of the ahupuaʻa possible, such as the Kīkīola Ditch, also known as the “Menehune Ditch.” Waimea, Kauaʻi was also a site of great significance for poʻe kuhikuhi puʻuone (site experts) and poʻe kilo hoku holo moana (navigators) of the pre-contact time. Poʻe kilo hoku (astronomers) of Oʻahu and Kauaʻi also gathered in Waimea, Kauaʻi to make their observations.

By the time of western contact in 1778, the Waimea Ahupuaʻa had long been a focus of settlement, agriculture, and aliʻi residence on Kauaʻi. However, by the early 1800ʻs, the Hawaiian population was in significant decline. The people of the ahupuaʻa were struck in May 1826 by an influenza epidemic and a great flood that wreaked havoc upon taro loʻi and damaged structures built by the missionaries. In 1833, censuses taken by Protestant missionaries estimated a population of 3,883 persons within 6 miles of the Waimea station. Subsequent missionary station reports from Waimea recorded the continuing diminishment of the district’s population. In 1838 the total population was 3,272, in 1840 it was 2,819, and in 1841 it was 2,779. The Organic Acts of 1845 and 1846 initiated the process of the Māhele—the division of Hawaiian lands—that introduced private property into Hawaiian society. Over 150 kuleana awards were granted in Waimea; however, only three claims were made in and nearby Kekaha.

In 1850, Waimea was designated a government port, opening it to foreign commerce. At the time, Waimea was exporting a variety of agricultural goods and livestock. Rice cultivation by Chinese farmers began in Waimea Valley in the 1860s. At Waimea, as in other locales, groups of Chinese began leasing former taro lands for conversion to rice farming. Though rice continued to be grown at Waimea and Makaweli into the 1930s, many of the rice fields were being reclaimed for sugar planting.

During the last decade of the nineteenth century, the population of Waimea rebounded, growing from a total of 2,739 in 1890 to 4,595 in 1896, and 5,886 in 1900. That growth was spurred by the establishment of commercial sugarcane planting at Waimea. The Waimea Sugar Mill was founded in 1884 and the railroad line was built in about 1884, which was used to transport sugar from the mills to the pier at Waimea Landing. The fate of plantation agriculture in the arid zones of Waimea Ahupuaʻa hinged on water supply development in the twentieth century. Construction of the Kekaha Ditch from 1906 to 1907 brought water from the Waimea River to irrigate the sugar cane plantations. From 1923 to 1926, the construction of the Kokeʻe Ditch was undertaken by the Kekaha Sugar Company to further irrigate plantation lands. Kekaha Sugar Company continued to produce sugar until 2000. In 2003, land situated in Kekaha, Kauaʻi was transferred through executive order No. 4007 to the ADC for agricultural and related purposes.

As discussed in Section 3.7, CSH conducted a literature review of previous archaeological studies within and in the vicinity of the KLF and identified two historic properties within the KLF. These two 1950s historic properties were identified as an irrigation canal of mounded sand and a low, linear sand mound for irrigation control, both of which are no longer present (AECOM 2013). No traditional cultural

properties or designated significant historic properties under Hawai'i significance Criterion "e," were identified within the KLF site.

The CIA also reviewed previous cultural impact assessments conducted within the vicinity of the KLF (Figure 3-2). Previous CIA projects (Chiogioji et al. 2003, Mason 2007, Fernandes et al. 2010, Walden and Collins 2015) and a cultural study (Flores and Kaohi 1993) in close proximity to the KLF identified several traditional cultural practices in the region including: agricultural practices, marine resources, burial practices, gathering practices, hula, mele (songs), recreational activities, and wahi pana (storied places). A CIA was conducted in 2007 for the initial Kekaha Landfill Phase II Lateral Expansion; however, no report was produced. The EA report did state that no cultural practices were identified during consultation (Earth Tech 2007).

Based on the results of community consultation and background research conducted as part of the current CIA (Appendix E), CSH has identified the following cultural practices within Waimea Ahupua'a: fishing, farming (kalo [taro], rice, and sugarcane), limu (seaweed) gathering, hunting, salt production, canoe production, recreational activities, weaving practices, hula, mo'olelo (stories), wahi pana (storied places), mele (songs), and religious activities and burial practices. No ongoing cultural practices were identified within the KLF site during background research and community consultation. However, the KLF is in the general vicinity of ongoing cultural practices such as burial practices, fishing, and recreational activities.

3.4.2 Potential Impacts and Mitigation Measures

3.4.2.1 *Proposed Action*

No ongoing cultural practices were identified within the KLF during background research and community consultation for this CIA. Although the KLF is in the general vicinity of ongoing cultural practices such as burial practices, fishing, and recreational activities occurring in the Waimea Ahupua'a, no direct impacts to these cultural practices are anticipated. Consultation identified several concerns related to the environment and the broader community including the following: reduction of native bird habitats and food sources, alteration of the cultural landscape and impacts to the visual aesthetics of the area, and impacts to marine resources from the landfill. Each of these broader environmental concerns are discussed below.

- Reduction of native bird habitat and food sources: As the Proposed Action would occur within the footprint of the existing KLF Phase II site, no reduction of native bird habitats or food sources are anticipated, and Section 3.2.2 discusses the best management practices and mitigation measure that will be implemented to minimize and avoid direct impacts to native birds.
- Alteration to cultural landscape and impacts to visual aesthetics of the area: Visual resource impacts are discussed in Section 3.16.2 of the Draft and Final EA. Under the Proposed Action, the maximum height of the facility would increase by 51.5 ft, thus potentially increasing visibility

of the site from surrounding areas. The 51.5 foot increase to the maximum permitted height of the Phase II landfill (i.e. the Proposed Action) is not anticipated to cause a significant change in the existing view planes in the vicinity of the KLF and would not block scenic landforms, scenic view planes, or shoreline views, as defined in the Kaua'i County General Plan and therefore, the Proposed Action does not conflict with County policies for the protection of scenic resources. After the landfill is closed, the landfill surface would be covered with an engineered cap and soil and then planted with vegetation. Closure plans for the Proposed Action would include a landscaping and revegetation program for revegetation of the landfill base and slopes and landscaping at the site entrance to minimize visual impacts to the public. With implementation of the landscaping and revegetation measures described in the EA, no significant short- and long-term adverse impacts to visual resources are anticipated.

- Impacts to marine resources: The Proposed Action would not involve work within marine or coastal ecosystems. Stormwater would continue to be conveyed to the stormwater infiltration basin and the leachate collection and removal system, would collect and divert leachate into the lined leachate evaporation pond. The facility does not discharge water to off-site areas. Therefore, the Proposed Action would not adversely affect marine or coastal resources.

Based on the above considerations, the Proposed Action would have less than significant effect on cultural practices occurring in the general vicinity of the KLF site.

As no impacts to ongoing cultural practices were identified within the KLF site, no mitigation actions are necessary. There is no construction as part of the proposed action, meaning no native soil will be excavated and there will be no new disturbance. Therefore, inadvertent cultural finds are unlikely. However, CSH recommends landfill personnel should be informed of the possibility of inadvertent cultural finds, including human remains, and in the unlikely event that any potential historic properties are identified during landfill activities, all activities cease and the SHPD is notified. In addition, in the event of an inadvertent discovery of human remains, the completion of a burial treatment plan, in compliance with HAR §13-300 and HRS §6E-43, is recommended. In the event that iwi kūpuna and/or cultural finds are encountered during landfill operations, Project proponents should consult with cultural and lineal descendants of the area to develop a reinterment plan and a cultural preservation plan for proper cultural protocol, curation, and long-term maintenance. As detailed in the CIA, community participants also provided broad recommendations related to environmental stewardship and landfill management. These should be considered by the County as appropriate.

3.4.2.2 *No Action Alternative*

Under the no action alternative, the Phase II vertical expansion would not occur. As no impacts to ongoing cultural practices were identified within the KLF site, no impacts to cultural resources are anticipated with implementation of the no action alternative.

3.5 Geology, Topography, and Soils

3.5.1 Existing Conditions

The ROI for geology, topography, and soils is the KLF facility and Kekaha region. The existing geology, topography, and soils at the KLF and potential impacts to those resources are informed by previous geotechnical investigations conducted by Pacific Geotechnical Engineers, Inc. (PGE), in October 2008, August 2012, and August 2015 within the KLF site (PGE 2008, 2012, 2015), as well as an engineering analysis by Tetra Tech (2022).

3.5.1.1 *Geology*

The KLF is located within the Mānā coastal plain and is approximately 1,700 ft from the Pacific Ocean. The Mānā coastal plain lies at the foot of an ancient sea cliff composed of lava flows of the Waimea Canyon Volcanic series. It is mainly composed of thick deposits of alluvium composed of clay, silt, and other detritus derived from weathered basalt. Seaward portions of the plain are generally overlain by beach and dune deposits largely composed of sand-sized calcareous sediments. Lagoonal deposits composed of a mixture of calcareous and alluvial sediments are generally present in low-lying areas of the plain, just inland of the beach and dune deposits. As a result of agricultural development of the Mānā Plain, most of the lagoonal environments in the plain have been covered by fill (PGE 2008, 2012, 2015).

Based on geologic maps of Kauaʻi by Macdonald et al. (1983) and Sherrod et al. (2007), the KLF is located inland of a beach berm crest in an area composed of calcareous dune and older beach deposits. Development of the landfill has resulted in the widespread placement of fill over the sand deposits. The KLF is not located in an unstable area as defined under HAR § 11-58.1-13(f).

3.5.1.2 *Topography*

The arc-shaped Mānā Plain ranges in elevation from sea level to 50 ft amsl and is approximately 15 miles long and 2 miles wide. The elevation of the KLF site prior to construction was 10 to 11 ft amsl with a slope slightly southwest toward the coastline. Topography within the KLF has been significantly modified from the construction and operation of the existing KLF facility. Phase I landfill has an elevation of approximately 10 to 49 ft amsl. The base elevation of the KLF Phase II varies from approximately 7 to 12 ft amsl and has a maximum permitted height of 120 ft amsl (Tetra Tech 2022).

3.5.1.3 *Soils*

Soils underlying the KLF are classified by the U.S. Department of Agriculture Natural Resource Conservation Service as Jaucus loamy fine sand (JfB), 0 to 8 percent slopes (NRCS 2019). JfB soil is a calcareous soil that developed in wind and water deposited, calcareous sand derived from coral and marine shells. JfB soils is too permeable to allow for surface water ponding or runoff; as a result, the

potential for vertical migration of water is great, but erosion by surface water runoff is unlikely. Wind erosion is a severe hazard in the absence of vegetation (Foote 1972).

Soil borings and test pits conducted by PGE found that the predominant on-site foundation soils are poorly graded sands. Results of the percolation tests determined percolation rates of 2 to 6 minutes per inch (PGE 2008, 2012, 2015).

3.5.2 Potential Impacts and Mitigation Measures

3.5.2.1 *Proposed Action*

No construction is required to implement the Proposed Action. Therefore, no short-term, construction-related impacts to geology, topography, and soils will occur. Potential short- and long-term impacts to geology, topography, and soils expected from implementation of the Proposed Action are discussed below.

Geology and Soils

The Proposed Action would take place entirely within the footprint of the Phase II landfill; no new areas would be disturbed, and no geologic features would be altered. As described in Section 1.2.1.2, the existing LCRS and stormwater management system would prevent uncontrolled runoff and erosion that has the potential to alter the underlying geological conditions. Therefore, no new short- or long-term impacts to geological conditions are expected from the Proposed Action.

There is a potential for short- and long-term impacts to soils from contaminants present in the refuse. The existing LCRS would prevent contamination of soils beneath the landfill. Tetra Tech (2022) evaluated the existing LCRS beneath the Phase II landfill area and concluded that it is structurally capable and adequately sized for the additional load that would be created by the Proposed Action. Possible short- and long-term impacts during operations are from routine transport, use, storage, and disposal of hazardous materials and accidental spills and release of hazardous materials. However, industry-standard BMPs and facility specific plans minimize the potential for inadvertent releases and impacts to soils. See Section 3.6 for more information on hazardous materials and wastes.

Topography and Slope Stability

The Proposed Action would alter the topography within the Phase II area from the current maximum height of 120 ft amsl to 171.5 ft amsl by using the “area fill” method of landfilling, which consists of spreading and compacting waste in horizontal layers. The final shape of the vertically expanded Phase II landfill, after waste placement has ceased and final cover has been installed, would be similar to the Phase II landfill design currently permitted by the HDOH. Top slopes are designed to be sloped at 3 percent and the final cover side slopes sloped at a ratio of 3.5 horizontal to 1 vertical. The final geometry of the Proposed Action with a maximum elevation of 171.5 ft amsl was verified for slope stability (Tetra Tech 2022). The stability analysis looked at two different failure scenarios based on the geometry of the

facility, foundation soils, and waste mass. Based on the soil and waste mass properties, the proposed landfill expansion is expected to remain stable (Tetra Tech 2022). No significant short- or long-term impacts are anticipated.

3.5.2.2 *No Action Alternative*

Under the no action alternative, the Phase II vertical expansion would not occur. In the short term, the KLF would continue to operate and have potential short- and long-term impacts to soils from inadvertent releases of leachate and hazardous materials. In the long term, the KLF would reach capacity and close; leachate would continue to be managed by the County for 30 years in accordance with KLF's *Closure / Post-closure Plan* (Geosyntec 2023a). However, without a new landfill facility on Kaua'i to safely dispose of MWS, illegal dumping of waste around the island would likely increase, resulting in increased levels of soil contamination outside of the KLF area.

3.6 Hazardous Materials and Wastes

3.6.1 Affected Environment

The ROI for hazardous materials and hazardous wastes is the KLF facility. In general, hazardous material and wastes include substances that, because of their quantity, concentration, or physical, chemical, or toxic characteristics, may present an unreasonable risk to health, safety, and the environment when released.

There are no outstanding compliance issues related to hazardous materials or hazardous waste at the KLF. According to facility personnel, no major spill events have occurred in the past 5 years (K. Aki, DPW, personal communication, June 20, 2023). In addition, there are no identified Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) or RCRA sites within or immediately adjacent to the KLF.

3.6.1.1 *Hazardous Waste*

The KLF does not accept materials designated as hazardous waste under 40 CFR Part 261, polychlorinated biphenyl wastes as defined in 40 CFR Part 761, regulated hazardous waste as defined in HAR 11-261 through 268, radioactive materials, insecticides and poisons, untreated infectious waste, or explosive materials. In accordance with HAR § 11-58.1-65(b) and (c), scrap vehicles, tires, compressed gas tanks, vehicle batteries, and chlorofluorocarbon (i.e., freon)-containing appliances (e.g., white goods, such as refrigerators, freezers, and air conditioners) may not be disposed of at the KLF Phase II. Operating procedures currently in place to prevent, detect, and manage wastes not acceptable for disposal at the facility are outlined in the *Operations Manual* (Geosyntec 2023a). The Hazardous Waste Exclusion Program procedures include customer notification, scale house monitoring and inspection, random load checks, and landfill working face inspections. If hazardous wastes are discovered during inspections, KLF personnel will reject the load and document the incident in the Daily Logbook. If hazardous waste has been unloaded, KLF personnel will transport the waste to the temporary storage

area, and the waste will be identified, logged, placed in bins or separated onto pallets, labeled, and stored until a licensed contractor transports the waste off site for proper disposal, as required by federal and state regulations. (Geosyntec 2023a).

The KLF does accept a number of Special Wastes, including friable and non-friable (non-hazardous) asbestos waste, treated medical waste (sterilized or incinerated), contaminated materials (soils, debris, and other materials contaminated with petroleum or other chemical products), and polychlorinated biphenyl (PCB)-contaminated waste (verified as obtaining less than 50 parts per million PCBs) and dead animals and offal. Each special waste category is handled in accordance with the special waste handling and disposal procedures and regulated under the KLF's SWMP No. LF-0042-16.

The KLF Phase II is classified as a conditionally exempt, small-quantity generator of hazardous waste and is allowed to store such wastes indefinitely, provided they follow procedures required by 40 CFR § 261 (Geosyntec 2023a). Wastes that are generated on-site at the KLF include, but are not limited to, used filters, oils, solvents, and paints, spent lead acid batteries, empty paint, aerosol, and other containers, used tires, scrap metal, welding slag, and leachate. The KLF utilizes third-party contractors for transportation, recycling, and disposal of site-generated waste. Wastes are properly managed on-site according to applicable regulations until properly disposed.

3.6.1.2 *Hazardous Materials*

The KLF stores and uses petroleum products such as diesel fuel, lubricating oils, and waste oil. Routine handling of oil products occurs primarily at the maintenance shop area and areas over the landfill liner system (Geosyntec 2023a). Thus, the KLF has a low potential for spills of hazardous materials, but incidents are possible in the event of vehicle accidents, malfunctions, or operator error that could result in the discharge of coolant, fuel, or lubricants. The KLF maintains an SPCC Plan, as required by 40 CFR Part 112, to prevent and manage spills of oil and petroleum-based products in the event of a discharge (Geosyntec 2022a).

The facility also houses a 2,000-gallon diesel fuel aboveground storage tank. The double-walled diesel fuel tank is located in the equipment fueling area and includes a reinforced concrete secondary containment structure that can contain 100 percent of the tank's rated capacity (Geosyntec 2022a). In addition to this concrete structure, there is a tertiary containment system that consists of a low concrete dike built around the perimeter of the tank; this containment system is capable of holding 1,475 gallons. The entire fueling area is protected from accidental traffic collisions by high-visibility yellow traffic bollards spaced at approximately 6-ft intervals (Geosyntec 2022a).

One mobile refueling service truck is used for daily fueling and servicing of Landfill equipment (Geosyntec 2022a). When not in use, the mobile refueling service truck is maintained and parked near the Maintenance Building wash rack that is equipped with an oil water separator. A spill kit for minor spills is located on/near the mobile refueling service truck.

The maintenance shop area contains 55-gallon drums and other small containers holding various types of oils. All drums inside the shop are stored on spill containment pallets capable of containing the full

contents of a 55-gallon drum (Geosyntec 2022a). The maintenance building has an impervious concrete floor. The KLF maintains spill kits and absorbent materials in the maintenance shop.

Visual inspections occur at the KLF daily and consist of a complete walkthrough of the facility property to examine perimeter fences for unauthorized entry and locked gates, test leak alarms, and look for tank/piping damage or leakage, stained or discolored pavement, or excessive accumulation of water in the storm drain. Tanks are also inspected for signs of deterioration and discharges. The County performs monthly inspections for permit compliance. Records are maintained at the facility for 3 years.

3.6.2 Potential Impacts and Mitigation Measures

3.6.2.1 *Proposed Action*

Because no construction is required, no short-term construction-related impacts from hazardous materials and hazardous waste would occur.

As described in the subsequent paragraphs, no new impacts from hazardous materials and hazardous waste are anticipated; rather, the Proposed Action would continue the existing impacts of KLF operations for an additional 2 to 4 years. Potential short- and long-term impacts from hazardous materials and waste expected from implementation of the Proposed Action are discussed below.

Hazardous Waste

The types of waste materials accepted at the KLF would not change under the Proposed Action and current permitted procedures to prevent disposal of hazardous waste at the facility would be maintained. The small quantities of hazardous waste generated at the facility would be handled and stored in accordance with procedures required by 40 CFR § 261 (Geosyntec 2023a). With implementation of these operational controls and BMPs, potential short- and long-term impacts from hazardous wastes would be less than significant.

Hazardous Materials

Facility operational equipment and vehicles contain hazardous materials, such as diesel fuel, gasoline, oil, and hydraulic and brake fluids. Accidental discharge of these materials into the environment would be possible but is not anticipated. Potential releases from landfill operational equipment and refuse trucks would remain unchanged under the Proposed Action because the number of daily offloads to the landfill and the amounts of waste placed on the landfill are not expected to change significantly. Upon closure, this risk would be reduced as no refuse trucks and fewer equipment would be needed for post-closure monitoring. Continued adherence to the site-specific SPCC Plan (Geosyntec 2022a) greatly reduces the likelihood of significant impacts resulting from any spills. No significant short- or long-term impacts are anticipated.

Site-specific BMPs, including procedures for hazardous material storage, handling, and staging, spill prevention and response, waste disposal, and good housekeeping, are covered in the *Operations*

Manual (Geosyntec 2023a) and will continue to be implemented by the site operator. Existing spill control measures would continue and involve minimizing hazardous materials at the KLF, good housekeeping, and rapid spill response in the event of a release. Material management practices would be used to reduce the risk of spills or other accidental release of hazardous materials and substances into the environment.

3.6.2.2 No Action Alternative

Under the no action alternative, the Phase II vertical expansion would not occur, resulting in closure of the landfill by mid 2027 when the landfill is expected to reach capacity. No hazardous wastes are disposed of at the KLF under its current operations; this would remain unchanged with implementation of the no action alternative. Potential releases from landfill operational equipment and refuse trucks would continue during regular KLF operations and decrease during the post-closure monitoring. In sum, no significant adverse impacts related to hazardous materials or hazardous waste are anticipated with implementation of the no action alternative.

3.7 Historic and Archeological Resources

3.7.1 Affected Environment

The ROI for historic and archeological resources is the KLF facility. On behalf of the County, Cultural Surveys Hawai'i (CSH) conducted a literature review of previous archaeological studies within and in the vicinity of the KLF (Figure 3-3) and identified historic properties¹⁴ documented in the vicinity of the KLF (Figure 3-4). The results of this literature review are summarized in the State Historic Preservation Division (SHPD) consultation letter enclosed in Appendix C. Based on results from previous archaeological work in and in the vicinity of the KLF, the KLF does not contain significant archaeological features or historic properties.

Archaeological research of KLF and its surrounding area indicates the land was extensively used and much of the physical evidence of the traditional settlement pattern has been obliterated by commercial agriculture and other operations (Hammatt and Shideler 2011). The foothills and wetland areas of the Mānā Plain were extensively planted in sugar cane, gulches were impacted by livestock, and the beach areas have been disturbed by massive shoreline stabilization projects. Historical and archeological resources have also been disturbed by the development of the PMRF, Kaua'i Raceway Park, and the KLF.

Two archaeological surveys were conducted for the existing KLF site:

- Ching (1982) conducted an archaeological reconnaissance survey for the original Phase I landfill site in 1982 and determined no historic properties were present. At the time of the reconnaissance, part of the area was already utilized as a "sanitary landfill" and the other part

¹⁴ Pursuant to HRS § 6E-2: "*Historic properties' means any building, structure, object, district, area, or site, including heiau and underwater site, which is over fifty years old.*"

was used as a dump site for bagasse for Kekaha Plantation (Ching 1982). Prior to being a landfill and a dump site, the area was owned by Kekaha Plantation and utilized as pasture lands. Holding pens for cattle and horses were also once there. According to Ching (1982), the area had “been bulldozed countless of times.”

- In 1993, CSH (Folk and Hammatt 1993) conducted an archaeological inventory survey (AIS) with subsurface testing of 63.2 acres within TMK 1-2-002:009 prior to construction of the Phase II landfill. During the surface survey, an abandoned irrigation canal and a low, linear sand mound were observed (Folk and Hammatt 1993). Extensive subsurface testing was conducted throughout the Phase II area. A total of 55 backhoe test trenches were distributed, approximately 1 per acre, and excavated (Folk and Hammatt 1993). The typical profile revealed that the area, once a place of sand dunes, was modified by destroying the upper portions for plantation purposes. The linear mound and canal were excavated and revealed that stratigraphically, both features post-date the removal of the sand dunes. Oral resources, such as residents and plantation employees, revealed the features were constructed in the 1950s for experimental farming (Folk and Hammatt 1993).

As described in Section 1.2.2, Phase II was permitted for a vertical expansion in 2013. As part of that permitting process, the County requested the SHPD’s determination of “no historic properties affected.” The SHPD requested additional information (September 9, 2013; Log No. 2013.3334 and 2013.4258, Doc. No. 1309SL06) on two historic properties within Phase II area that were recorded (but not assigned site numbers) by the CSH during its 1993 AIS. These two 1950s historic properties were identified as an irrigation canal of mounded sand and a low, linear sand mound for irrigation control. In response to the SHPD’s request, AECOM Technical Services, Inc. (AECOM), on behalf of the County, conducted a document review and field inspection, which confirmed the two historic properties are no longer present (AECOM 2013). Based on this information, the SHPD determined that no historic properties would be affected because no historic properties exist within the Phase II area (October 11, 2013; Log No. 2013.5499; Doc. No. 1310SL09).

3.7.2 Potential Impacts and Mitigation Measures

3.7.2.1 *Proposed Action*

No construction is required to implement the Proposed Action. Therefore, no short-term, construction-related impacts to historic or archeological resources are anticipated.

The Proposed Action would remain within the existing footprint of Phase II, above the existing landfill, and would not involve excavation or any new ground disturbance. All operations would be conducted approximately 120 to 171.5 ft above native soils, such that any potential archaeological resources or historic properties cannot be disturbed. An AIS conducted in 1993 and subsequent investigation by AECOM (2013) found no evidence that archaeological resources or historic properties remain within the Phase II area (Appendix C) and none were encountered during previous site activities. In the highly unlikely event that historic or archaeological resources, including human skeletal remains, are

inadvertently discovered during site operation, the site operator would cease all intrusive activities and immediately notify the SHPD, Kauaʻi Section, prior to continuation of activities.

Based on findings from the previous AIS and that the Proposed Action does not involve construction and will not affect the original ground surface, SHPD concurs with the County’s project effect determination of “No historic properties affected” under HRS § 6E-8, HAR § 275(b), and HAR § 275-7 (Appendix C; SHPD Doc. No. 2305DB01).

3.7.2.2 *No Action Alternative*

Under the no action alternative, the Phase II vertical expansion would not be implemented. As the KLF does not contain significant archaeological features or historic properties, no potential short- or long-term impacts to historic and archeological resources are anticipated with implementation of the no action alternative.

3.8 Land Use

3.8.1 Affected Environment

The land use and ownership ROI is the KLF facility and adjacent properties.

3.8.1.1 *Land Ownership*

The KLF facility is located on land owned by the State of Hawaiʻi and administered by the DLNR (Figure 1-2). Executive Order 1558 (signed April 27, 1953), Executive Order 2872 (signed October 6, 1977), and Executive Order 3695 (signed December 2, 1996) place the control and management of the lands underlying the KLF with the County of Kauaʻi.

3.8.1.2 *Existing Land Uses*

The KLF site has been used as a landfill since the early 1950s. The KLF is located on the coastal Mānā Plain historically used for agriculture, portions of which are still in active agricultural use. The primary land use in the vicinity of the KLF is agricultural and agriculture-related commercial activity occurring to the north, northwest, and east of the KLF site. Other land uses in the vicinity of the KLF include federal reserve lands (PMRF and U.S. Lighthouse Service) to the south and west, land leased by the Hawaiʻi National Guard to the south, and a drag racing park (Kauaʻi Raceway Park) to the southeast (Figure 1-2). Photos of the surrounding land uses are provided in Appendix A, Photos 6 through 8.

3.8.1.3 *State and County Land Use Designations*

As shown in Figure 3-5, the Proposed Action will take place entirely within TMK 1-2-002:001(por.), which is within the state agriculture land use district.¹⁵ Uses within the agricultural land use district are subject to the requirements of HRS Chapter 205. Permissible uses within the state agricultural land use district are listed in HRS § 205-4.5. Landfills and solid waste management operations at landfills are not listed in this section; however, pursuant to HRS § 205-6, the county Planning Commission and state Land Use Commission (LUC)¹⁶ may permit certain unusual and reasonable uses, other than those for which the district is classified, through the issuance of a Special Use Permit (SUP). The Kauaʻi County Planning Commission issued SUP SP-93-9 to allow 63.18 acres of land within the state agricultural district to be used for landfill purposes (for KLF Phase II). Since KLF is over 15 acres, its SUP was also approved by the LUC (Petition Docket No. SP93-384).

As shown in Figure 3-6, the Proposed Action is also located within the Kauaʻi County agriculture district and is subject to the requirements of the Kauaʻi Comprehensive Zoning Ordinance (Kauaʻi County Code [KCC] Chapter 8). The Kauaʻi County Planning Commission issued use permit U-93-56 and class IV zoning permit Z-IV-93-64 in 1993 to allow for the construction and operation of the Phase II landfill within the county agriculture district.

No maximum landfill height, expiration date, or time limit for use was established in either the state or county use permits or county zoning permit. As discussed in Section 1.2.2, the Phase II landfill was vertically and horizontally expanded in 1998, 2004, 2010, 2013, and 2020. The prior vertical and horizontal expansions were determined to meet the conditions of the original permits and no permit modifications were required. The existing KLF operates in compliance with the SUP SP-93-9, use permit U-93-56, and class IV zoning permit Z-IV-93-64.

3.8.2 Potential Impacts and Mitigation Measures

3.8.2.1 *Proposed Action*

No construction is required to implement the Proposed Action. Therefore, no short-term, construction-related impacts are anticipated. Potential short- and long-term impacts land ownership and uses expected from implementation of the Proposed Action are discussed below.

Land Ownership

There would be no change to the land ownership with implementation of the Proposed Action.

¹⁵ The state land use district boundary line is located on the boundary of TMK (4) 1-2-002:009 and TMK (4) 1-2-002:001 (F. Talon, Land Use Commission, personal communication – telephone, April 3, 2023).

¹⁶ Per HRS § 205-6(d), special permits for land the area of which is greater than 15 acres or for lands designated as important agricultural lands shall be subject to approval by the LUC.

Existing and Future Land Uses

There would be no change to the existing land use at the KLF facility with implementation of the Proposed Action; the site would continue to be used as a solid waste management facility. The KLF would continue to implement engineering and operational controls to minimize and avoid adverse impacts to the environment and public nuisances. No substantial changes to KLF's operations are proposed. The continued use of the KLF facility would not affect or preclude the use of lands adjacent to or in the vicinity of the KLF.

State and County Land Use Designations

As described above, the Proposed Action is located within the state agriculture land use district and county agriculture district. The KLF currently operates under SUP SP-93-9, use permit U-93-56, and class IV zoning permit Z-IV-93-64, which allows for the construction and operation of the Phase II landfill. Based on consultation with Kaua'i County Planning Department, the Proposed Action is permissible under the existing land use entitlements (K. Hull, County of Kaua'i Planning Department. personal communication—email to A. Fraley, June 15, 2023). No modification to the SUP, use permit, and class IV zoning permit is required. No changes to the land use designations are warranted or proposed.

See Section 4 for more information on the consistency of the Proposed Action with land use plans and policies.

3.8.2.2 *No Action Alternative*

Under the no action alternative, land use at the KLF would change from an active landfill to a closed landfill by 2027, when the existing landfill is expected to reach capacity. No short- or long-term impacts to land ownership or land use are anticipated with implementation of the no action alternative.

3.9 Natural Hazards

3.9.1 Affected Environment

The ROI for natural hazards is the KLF facility. Natural hazards that may occur in and affect the KLF include floods, tsunamis, hurricanes, earthquakes, and sea level rise associated with anthropogenic climate change.

The KLF maintains an *Emergency Action Plan* (Geosyntec 2023a) that provides detailed procedures to be followed by site personnel in the event of an emergency. The *Emergency Action Plan* outlines chains of command and communication, response procedures, personnel evacuation procedures, and recovery activities. Specific procedures established for natural disasters are described in the subsequent paragraphs.

3.9.1.1 *Floods*

Flooding can occur from stream overflow, storm events, and coastal inundation (e.g., tsunamis, storm surge, large waves, sea-level rise). The KLF facility is situated within an area determined to be outside the 100-year and the 500-year floodplains per the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) flood zone designations (Figure 3-7; FEMA 2020). The KLF site is approximately 1,700 ft from the shoreline and is outside of the coastal high hazard areas (i.e., VE Zones), which have a 1 percent annual chance of experiencing a flood event with additional hazards due to storm-induced velocity wave action. No streams or surface water features occur within or in the immediate vicinity of the KLF site. Therefore, there is little risk to the KLF from flooding caused by stream overflow.

Excessive surface water from overland stormwater flow can cause flooding in poorly drained areas. However, the Kekaha region has low annual rainfall (See Section 3.1) and soils underlying the KLF are too permeable to allow for surface water ponding or runoff (See Section 3.4). As described in Section 1.2.1.2, stormwater within the landfill area is managed by controlled grading on the surface of the landfill and by maintaining an engineered system of drainage ditches, channels, pipes, and basins (Geosyntec 2023a). Runoff from other areas of the KLF facility (e.g., parking area, scale house, drop-off area, maintenance building) is diverted through site drainage features to either the infiltration basin or leachate evaporation lagoon. The stormwater management system was designed to convey runoff from a 25-year, 24-hour storm, as required by the solid waste regulations (HAR § 11-58.1-15(g)).

During routine landfill operations, site personnel conduct monthly inspections to monitor the integrity of the site's drainage systems (Geosyntec 2023a). Excessive silt in ditches and basins is removed and the condition of pipes and discharge structures from basins is verified. Prior to a forecasted storm, site personnel inspect all on-site drainage structures and verify these structures are in working condition (Geosyntec 2023a). With implementation of these procedures, the potential for flood-related damage is low.

3.9.1.2 *Tsunamis*

Tsunamis are a series of destructive ocean waves generated by seismic activity that could potentially affect shorelines. Tsunamis affecting Hawai'i are typically generated in the waters off South America, the U.S., Alaska, and Japan. Local tsunamis have also been generated by seismic activity on the Island of Hawai'i.

According to HAR § 11-58.1-13(g), new MSW landfills and lateral expansions¹⁷ cannot be located in possible tsunami inundation areas as "delineated in a report entitled, 'Hawai'i Tsunami Inundation Evacuation Map Project' by George D. Curtis, University of Hawai'i Joint Institute for Marine and Atmospheric Research dated April 19, 1991." The 1991 Curtis report does not include a tsunami inundation map for the Project vicinity, but indicates that inundation maps for Kaua'i were expected to

¹⁷ Although the KLF is an existing facility, a discussion of the tsunami inundation mapping is included in this EA.

be published shortly after the report, “in June, 1991” (Curtis 1991). The University of Hawai‘i’s School of Ocean and Earth Science and Technology and the Joint Institute for Marine and Atmospheric Research (the author of the 1991 Curtis report) indicated that the Kaua‘i Inundation Map was completed, but has since been lost (AECOM 2013a).

Because the 1991 Curtis report referenced by HAR § 11-58.1 did not map tsunami inundation zones in the Kekaha area, available information from other sources (i.e., Hawai‘i Emergency Management Agency [HIEMA], FEMA, and the National Oceanographic and Atmospheric Administration [NOAA]) was researched. The KLF is located in the designated tsunami evacuation zone (HIEMA 2023) and recent Kauai inundation map prepared for HIEMA shows flows depths ranging from 6.6 ft to 32.8 ft (2 to 10 meters) within the vicinity of the KLF (Cheung 2015¹⁸). FEMA’s most recent Flood Insurance Study includes tsunami flood hazard information for the County of Kaua‘i (FEMA 2020). The FEMA coastal flood zone and flooding limit (i.e., VE Zones) is located approximately 2,400 ft seaward from Phase II, near the large dune barrier that runs along the shoreline. A search of the NOAA tsunami run-up database returned tsunami run-up data for three events in Kekaha, approximately 1.2 miles southeast of the KLF. Run-up heights of 9.8, 6.9, and 6.6 ft. (3.0, 2.1, and 2.0 meters) were recorded for tsunamis in 1946, 1957, and 1960, respectively (NOAA 2022). The run-up height represents the maximum elevation the wave reaches at the maximum inundation. To date, the KLF facility has not sustained any tsunami-related damage (K. Aki, DPW, personal communication, June 20, 2023).

¹⁸ The HDOH plans to revise HAR §11-58.1-13(g) to reference the Cheung (2015) Hawai‘i tsunami mapping report (G. Haae, HDOH, personal communication – email, January 20, 2023).

3.9.1.3 *Hurricanes and Severe Storms*

The Hawaiian Islands are seasonally affected by Pacific tropical cyclones (e.g., hurricanes, tropical storms, and tropical depressions) from June to November as well as severe storms that can occur year-round. Tropical cyclones are rare and generally travel toward the islands from a southerly or southeasterly direction. These and other severe storms can bring damaging winds, heavy rainfall, and storm surges to the Hawaiian Islands. Since 1950, eight hurricanes have affected the Hawaiian Islands. Most notable, Hurricane Iniki in 1992 was the most destructive hurricane to strike Hawai'i in the twentieth century, with estimated peak winds over Kaua'i ranging between 130 and 160 mph (Tetra Tech 2021).

In accordance with the KLF *Emergency Action Plan* (Geosyntec 2023a), the following actions are taken to protect against excessive erosion, flooding, and wind damage before and during severe storms. Prior to a forecasted storm, site personnel inspect all on-site drainage structures and verify these structures are in working condition. Diversion berms are constructed around the current disposal area as needed to prevent run-on from entering the waste fill and to prevent runoff from the waste fill areas of the site. Interim cover is placed over exposed waste at the end of the working day prior to the forecasted beginning of a severe storm. At the discretion of site management, the site may be closed for business during storm periods. During any prolonged storm event involving extensive rain, facility personnel periodically inspect site drainage systems to correct or repair, as needed, any damages or with potential to cause damage to on-site or off-site facilities.

As the only permitted MWS landfill of the island, the KLF has historically and would continue to accept non-hazardous disaster debris. In 1992, the KLF received large quantities of disaster debris after Hurricane Iniki, which resulted in the landfill reaching capacity sooner than originally projected.

3.9.1.4 *Earthquakes*

Kaua'i is an older Hawaiian Island with dormant volcanic activity. It is not particularly prone to seismic activity and no large earthquakes are recorded on Kaua'i (Tetra Tech 2021). The KLF is not located in a seismic impact zone as defined under HAR § 11-58.1-13(e) and the Subtitle D regulations for MSW landfills (40 CFR Part 258.14). To date, the KLF facility has not sustained any earthquake-related damage (K. Aki, DPW, personal communication, June 20, 2023).

In the unlikely event of a significant earthquake, the KLF would immediately cease or limit landfill operations and, once safe to do so, will promptly conduct a visual survey of the site to identify any slope failures, downed power lines, gas and water leaks, tank leaks or spills, landfill gas collection system failures, or other conditions that could threaten employee or public safety (Geosyntec 2023a).

3.9.1.5 *Sea Level Rise*

Sea level rise increases the risks coastal communities face from coastal hazards (e.g., floods, storm surges, and coastal erosion). The Sea Level Rise Vulnerability and Adaptation Report prepared by the Hawai'i State Climate Commission (2022) provides a statewide assessment of Hawai'i's vulnerability to

sea level rise. In support of the Sea Level Rise Vulnerability and Adaptation Report, the State of Hawai'i Sea Level Rise Viewer also provides an interactive mapping tool of sea level rise exposure (Hawai'i Climate Change Mitigation and Adaptation Commission 2021).

As shown in Figure 3-7, the KLF is outside of the 3.2-ft sea level rise exposure area¹⁹ (Hawai'i Climate Change Mitigation and Adaptation Commission 2021). Although not predicted to affect the KLF, surrounding areas may be impacted, including a portion of the land adjacent to the southwestern boundary of Phase I. Additionally, a recent vulnerability assessment of west Kaua'i's coastline identifies expected impacts to community roadways from flooding associated with sea level rise and the potential loss of vehicular access to the landfill, but no direct effects to the landfill itself are anticipated (UH Sea Grant College Program 2020).

3.9.1.6 *Potential Climate Change Impact on Hazards*

The Multi-hazard Mitigation and Resilience Plan (Tetra Tech 2021) provides projections of future climate change for Kaua'i. A summary of how climate change is anticipated to effect natural hazards is provided below.

- *Floods:* Changing precipitation and runoff patterns will increase the uncertainty for flood management. Extreme climatic events will become more frequent, necessitating improvement in flood protection and emergency response. High frequency flood events (e.g., 10-year floods) in particular will likely increase with a changing climate. Additionally, rising sea levels, coupled with high water levels caused by tropical storms, will incrementally increase coastal flooding and erosion.
- *Tsunamis:* Sea level rise could cause oceanic waves and surge to reach farther inland and increase the risk that coastal communities would be exposed to a tsunami hazard.
- *Hurricanes:* Hawai'i is expected to see an increase in tropical cyclone events as the storm track may shift north toward the central north Pacific. The projected increases in sea level rise and temperatures also have the potential to increase risk of storm surge-related flooding along the coast.
- *Earthquakes:* The impacts of global climate change on Kaua'i's earthquake probability are unknown.
- *Sea level rise:* Sea level rise will exacerbate coastal inundation, erosion, and coastal hazards (e.g., more frequent high surf events and storm surge).

¹⁹ Modeling was conducted to determine the potential future exposure of each island to multiple coastal hazards as a result of sea level rise. The sea level rise exposure area models three chronic flooding hazards: passive flooding, annual high wave flooding, and coastal erosion (Hawai'i Climate Change Mitigation and Adaptation Commission 2021).

3.9.2 Potential Impacts and Mitigation Measures

3.9.2.1 Proposed Action

No construction is required to implement the Proposed Action. Therefore, no short-term, construction-related impacts are anticipated. Potential short- and long-term impacts to natural hazards expected from the implementation of the Proposed Action are discussed below.

Floods

The KLF is located outside of the 100-year and 500-year floodplains and is not expected to be subject to coastal storm surge. With the Proposed Action, surface water drainage features would need to be extended upwards to accommodate the increase in the landfill height and corresponding runoff flow velocities. The proposed surface water management system would tie into the existing permitted system at the limits of the vertical expansion. Tetra Tech (2022) conducted an engineering analysis of the surface water system for the Proposed Action; the analysis concluded that the existing drainage infrastructure is adequately sized to accommodate the anticipated increase in runoff flow.

As described in Section 3.9.1, the KLF's *Emergency Action Plan* provides detailed procedures to protect against excessive erosion and flooding (Geosyntec 2023a). The *Emergency Action Plan* would continue to be implemented with the Proposed Action. With implementation of these procedures, the Proposed Action is anticipated to have less than significant short- and long-term impacts from flooding.

Tsunamis

The Proposed Action would take place at elevations ranging from approximately 120 to 171.5 ft amsl, far above the projected and observed tsunami run-up heights. In the unlikely event that a destructive tsunami came ashore in the area of the KLF, the energy of any tsunami would be diminished when it encounters the coastal dune barrier prior to reaching the KLF. The proposed vertical expansion area as well as KLF's operational infrastructure would also be protected against tsunami wave action by the Phase I landfill feature. The potential for tsunami-related damage is low.

Hurricanes and Severe Storms

The KLF is seasonally affected by Pacific tropical cyclones (e.g., hurricanes, tropical storms, and tropical depressions) from June to November as well as severe storms that can occur year-round. High winds and flooding could adversely impact KLF infrastructure and buildings. However, as described in Section 3.9.1, the KLF's *Emergency Action Plan* (Geosyntec 2023a) provides detailed procedures to be implemented prior to, during, and after a large storm event or hurricane to prevent injuries and minimize property damage. The *Emergency Action Plan* would continue to be implemented with the Proposed Action. With implementation of these procedures, the Proposed Action is anticipated to have less than significant short- and long-term impacts from tropical cyclones and severe storms.

Earthquakes

The KLF is not located in a seismic impact zone as defined under HAR § 11-58.1-13(e) and the Subtitle D regulations for MSW landfills (40 CFR Part 258.14). Therefore, an evaluation of seismic loading effects on the stability of the Proposed Action is not required. Response procedures in the event of a significant earthquake are described in the KLF *Emergency Action Plan*, which would continue to be implemented with the Proposed Action. The potential for earthquake-related damage is low.

Sea Level Rise

The KLF is outside of the 3.2-ft sea level rise exposure area, which is predicted to be met or exceeded by year 2100 (Hawai'i Climate Change Mitigation and Adaptation Commission 2021). Therefore, the KLF is not expected to be impacted by sea level rise during the operational period of the Proposed Action (anticipated to be years 2027 to 2030) nor the 30-year period of post-closure care thereafter. The potential for adverse impacts from sea level rise is low.

Potential Climate Change Impact on Hazards

The Proposed Action is not expected to be impacted by climate-induced changes to natural hazards during the operational period of the Proposed Action (anticipated to be years 2027 to 2030). There is a potential for climate-induced changes to natural hazards over the 30-year period of post-closure care. Specifically, Hawai'i is expected to see an increase in tropical cyclone and extreme rainfall events. The KLF *Emergency Action Plan* (Geosyntec 2023a) would continue to be implemented during the 30-year period of post-closure care to minimize adverse impacts to employees and the larger community. The final cover and revegetation of the closed landfill would also protect the integrity of the landfill and prevent its contents from being exposed to outside forces. Therefore, the potential for adverse impacts from climate-induced changes to natural hazards is low.

3.9.2.2 *No Action Alternative*

Under the no action alternative, the Phase II landfill would not be vertically expanded and would close in June 2027 when it is expected to reach capacity. The KLF would continue to implement the facility's *Emergency Action Plan* during the remaining operational years as well as the 30-year post-closure period (Geosyntec 2023a). Under the no action alternative, the KLF would not be able to accept emergency disaster debris and the County would need to reassess the emergency debris management alternatives. No significant adverse impacts relative to natural hazards are anticipated with the no action alternative.

3.10 Noise

3.10.1 Affected Environment

The ROI for noise effects is the KLF facility and bordering areas. The State of Hawai'i regulates noise exposure in HRS Chapter 342F, *Noise Pollution*, HAR § 11-46, *Community Noise Control*, and HAR § 12-

60-50(c), *State Specific Standards for Occupational Noise Exposure*. “Noise” is defined as “any sound that may produce adverse physiological or psychological effects or interfere with individual or group activities, including but not limited to communication, work, rest, recreation and sleep.” Under certain conditions, noise can interfere with human activities at home or work and affect human health and well-being (HAR § 11-46.2). Noise level is measured in decibels (dB) and the relative loudness of sounds in the air as perceived by the human ear is measured in A-weighted decibels (dBA).

The HDOH regulates noise levels by imposing maximum allowable sound levels at property boundaries for various zoning districts (Table 3-1). These noise limits are absolute (i.e., not relative to ambient conditions), are prescribed by receiving zoning class and time period, and are enforceable at the facility property boundaries. Zoning districts are determined by ordinances adopted by the applicable local, county, or state government agencies.

Table 3-1. Hawai‘i Maximum Permissible Sound Levels by Zoning District

Receiving Zoning Class District	Maximum Permissible Sound Level (dBA)	
	Daytime (7:00 a.m. – 10:00 p.m.)	Nighttime (10:00 p.m. – 7:00 a.m.)
Class A Zoning districts include all areas equivalent to land zoned residential, conservation, preservation, public space, or similar type.	55	45
Class B Zoning districts include all areas equivalent to lands zoned for multi-family dwellings, apartment, business, commercial, hotel, resort, or similar type.	60	50
Class C Zoning districts include all areas equivalent to lands zoned agriculture, county, industrial, or similar type.	70	70
Source: HAR § 11-46, <i>Community Noise Control</i>		

Because the KLF is in the state and county agricultural district, the Class C limits are applicable. Properties bordering the KLF are comprised of agricultural lands, a National Guard Rifle Range, and a federal reserve (PMRF and U.S. Lighthouse Service). The nearest town of Kekaha is situated 1.3 miles to the southeast.

The maximum permissible sound level for Class C zoning districts is 70 dBA 24-hours per day (HAR § 11-46-4). Noise levels may exceed the prescribed limits up to 10 percent of the time within any 20-minute period. The maximum permissible sound level for impulsive noise is 10 dBA above the maximum permissible sound levels for the given receiving zoning class district. HAR § 11-46-5 provides further exemptions to these limits. Pursuant to HAR § 11-46-7 and HAR § 11-48-8, a permit or variance may be obtained for operation of an excessive noise source beyond the maximum permissible sound levels. Factors that are considered in granting of such permits and variances include whether the activity is in the public interest and whether the best available noise control technology is being employed.

HAR § 11-46-2 defines ambient or background noise as “the totality of sounds in a given place and time, independent of sound contribution of the specific source being measured.” There are several ambient sound sources in the KLF, including vehicles traveling along the highway, rain, wind blowing through low brush and grass, insects, birds, and mammals. Equipment utilized during normal landfill operations, including trucks, bulldozers, and compactors, could produce localized noise events of 100 dBA or higher at the site, with noise levels decreasing with distance from the KLF. Noise levels of power tools range from 74 to 116 dBA (NIOSH 2011). Typical heavy equipment noise levels at 50 ft from the noise source range between 75 and 94 dBA, including compactors and trucks (EPA 1971). Noise from operational activities decreases with increasing distance from the KLF, at a minimum of a 6-dB decrease each time the distance from the noise source is doubled (OSHA 2022b). The KLF implements operational noise reduction controls as detailed in the *Operations Manual* (Geosyntec 2023a). The KLF has received no community noise complaints (K. Aki, DPW, personal communication, June 20, 2023).

The Hawai‘i Occupational Safety and Health Division (HIOSH) has set the permissible occupational noise exposure at 90 dBA for a duration of 8 hours per day. Permissible noise exposures for shorter periods are higher, with a maximum exposure of 115 dBA permissible for a duration of 15 minutes or less (HAR § 12-8-2). If workers may experience noise exceeding HIOSH standards, appropriate administrative or engineering controls are implemented and hearing protection equipment, such as earplugs or safety earmuffs, are required (Geosyntec 2023a).

3.10.2 Potential Impacts and Mitigation Measures

3.10.2.1 Proposed Action

No construction is required to implement the Proposed Action. Therefore, no short-term, construction-related impacts are anticipated.

Potential short- and long-term impacts to noise from the operation of the Proposed Action would be associated with refuse trucks and landfill equipment. The daily operations of the landfill would not change with implementation of the Proposed Action; therefore, it is not anticipated that noise levels would change or significantly impact the surrounding area. Operational noise reduction controls contained in the *Operations Manual* would continue to be implemented under the Proposed Action (Geosyntec 2023a). The Proposed Action would continue to be conducted in accordance with State of Hawai‘i requirements set forth in HRS Chapter 342F, *Noise Pollution*, HAR § 11-46, *Community Noise Control*, and HAR § 12-60-50(c), *State Specific Standards for Occupational Noise Exposure*. Thus, the Proposed Action is not anticipated to create significant adverse impacts related to noise.

3.10.2.2 No Action Alternative

Under the no action alternative, the Phase II landfill would not be vertically expanded and would close in June 2027 when it is expected to reach capacity. There would be no immediate changes to the noise environment until such time that the landfill closed. Noise sources would be reduced with closure of

landfill operations. Thus, adverse noise impacts are anticipated to be minimal under the no action alternative.

3.11 Public Facilities and Services

3.11.1 Affected Environment

3.11.1.1 *Police, Medical, and Fire Protection Service*

The KLF *Emergency Action Plan* (Geosyntec 2023a) includes BMPs to prevent and respond to fires, medical emergencies, spills and releases, and other security threats. In the event of an emergency, the KLF will assess the situation and possible hazards that may result; order evacuations, medical care, and shutdowns (as necessary); notify adjacent property owners and/or tenants (as necessary); and coordinate with emergency response personnel. A 4,000-gallon water truck, loader, and bulldozer are available 24 hours per day to aid in firefighting. Fire extinguishers are provided in all buildings and site vehicles for use in extinguishing small fires. Additionally, maintenance (e.g., servicing, inspection, and repair) of mechanical, electrical, and fuel systems are conducted on a routine basis to decrease the risk of an emergency, including fire.

To date, emergency services have been available and adequate to accommodate the demand created by the operation of the KLF. In the last five years, emergency services responded to four calls from the facility, three surface fires and one medical emergency (K. Aki, DPW, personal communication, June 20, 2023). The nearest fire station is the Waimea Fire Station located at 9835 Kaumualii Highway, Waimea, Hawai'i 96796, approximately 5.3 miles southeast of the KLF. The nearest police station is located at 4564 Ola Road, Waimea, Hawai'i 96796, approximately 5.3 miles southeast of the KLF. Additional fire and police support is available from the Hanapepe Fire Station and Koloa Substation, located 11 miles and 19 miles southeast of the KLF, respectively. The West Kauai Medical Center, formerly known as the Kauai Veterans Memorial Hospital, is located at 4643 Waimea Canyon Drive, Waimea, Hawai'i 96796, approximately 5 miles southeast of the KLF. West Kauai Medical Center is a Critical Access Hospital with 25 acute care beds and a distinct 20-bed long-term care wing, with 24-hour emergency services (HHSC 2023).

3.11.1.2 *Educational Facilities*

There are no education facilities within or in the immediate vicinity of the KLF. The nearest education facilities are located approximately 2 miles southeast of the KLF in the nearby town of Kekaha. The Kekaha Elementary School (8140 Kekaha Road, Kekaha, Hawai'i 96752), St. Teresa Catholic School (8311 Kaumualii Highway, Kekaha, Hawai'i 96752), Kekaha Head Start (8563 Elepaio Road, Kekaha, Hawai'i 96752), Ke Kula Niihau O Kekaha PCS (8135 Kekaha Road, Kekaha, Hawai'i 96752) and Kula Aupuni Niihau A Kahalelani Aloha (KANAKA) Public Charter School (8315 Kekaha Road # K, Kekaha, Hawai'i 96752) are located in Kekaha.

3.11.1.3 *Recreational Facilities*

There are no recreational facilities or uses within the KLF site. Recreational facilities in the vicinity of the KLF include hiking trails, beaches, and historic sites. In the immediate vicinity of the KLF are Kokole Point and Kauai Raceway Park. The nearby Barking Sands Beach Park and Kekaha Beach Park offer many recreational activities including swimming, surfing, fishing, diving, and boating. North of the KLF, there are hiking trails within the Kakaha Game Management Area and Waimea Canyon State Park.

3.11.2 Potential Impacts and Mitigation Measures

3.11.2.1 *Proposed Action*

No construction is required to implement the Proposed Action. Therefore, no short-term, construction-related impacts are anticipated. Potential short- and long-term impacts to public facilities and services expected from implementation of the Proposed Action are discussed below.

Police, Medical, and Fire Protection Service

The Proposed Action is not anticipated to increase the demand on emergency services. The continued implementation of the *Injury and Illness Prevention Program* (Geosyntec 2023a) and observance of safe working practices are expected to substantially reduce the potential for serious accidents. The Proposed Action would continue to implement the emergency procedures detailed in the *Emergency Action Plan* (Geosyntec 2023a). In the event of an incident, fire, police, and emergency services would be available and expected to be adequate to accommodate the demand. With the implementation of safe working practices, impacts to public safety services from operation of the Proposed Action would be minimal.

Educational Facilities

As no educational facilities are in the vicinity of the KLF, no short- or long-term direct or indirect impacts to educational facilities are anticipated from the Proposed Action.

Recreational Facilities

No short- or long-term direct or indirect impacts to recreational resources are anticipated from the Proposed Action. Although the KLF would continue to be visible from recreational areas in the vicinity, no Project infrastructure would be placed within any existing recreation resource area or otherwise limit the use of recreational areas.

3.11.2.2 *No Action Alternative*

Under the no action alternative, the Phase II landfill would not be vertically expanded and would close in June 2027 when it is expected to reach capacity. There would be no immediate changes to the demand on public and emergency facilities or services until such time that the landfill closed. Demand on public and emergency facilities would likely be reduced with closure of landfill operations, as fewer employees,

trucks, and equipment would be employed during the 30-year post-closure period. Thus, no adverse impacts to public facilities or services are anticipated under the no action alternative.

3.12 Safety and Health

3.12.1 Affected Environment

The ROI for safety and health is the KLF facility. Specific safety and health concerns related to landfill operation include heavy equipment operation, vector control, flammable and combustible gas, landfill subsurface fire, and injuries (from heavy lifting; slips, trips, and falls; exposure to heat; and biological exposure [e.g., bites, stings, and allergens]). Health and safety related issues that are discussed in other sections of this EA include fugitive dust (Section 3.1), handling and storage of hazardous materials (Section 3.6), and occupational noise (Section 3.10).

The *Operations Manual* (Geosyntec 2023a) also details operating procedures to control risks related to heavy equipment operation, vectors, flammable and combustible gas, landfill subsurface fires, and injuries.

3.12.1.1 *Refuse Trucks and Heavy Equipment Operation*

Heavy equipment currently used at the KLF to handle waste and to transport and apply cover soil includes the following: compactor, bulldozer, dump truck, front end loader, excavator, water truck, roll-off truck, and auxiliary equipment (Geosyntec 2023a). The County provides training and implements strict enforcement of landfill safety rules to ensure the safety of customers and employees (Geosyntec 2023a). Access to the KLF is controlled by site perimeter chain link fencing and a gated entrance off Kaumuali'i Highway that is locked during non-operating hours. Access routes are clearly marked, and customers are directed by spotters or the bulldozer operator to specific locations for offloading. Signs, traffic barricades, cones, or traffic controllers direct traffic while inside the KLF. Seatbelts must be worn while driving in the KLF and an on-site speed limit of 15 mph is enforced. Truck and heavy equipment operators must maintain a safe distance between vehicles. While in the offloading area, only the driver and one helper may get out of the vehicle, and both must remain within 6 ft of their vehicle. Employees and all government and commercial drivers are required to wear a high-visibility safety vest/shirt and safety boots when outside their vehicle while in off-loading area, and hard hats are recommended.

3.12.1.2 *Vector Control*

Vectors are organisms, such as rodents, flies, mosquitoes, or other animals, capable of transmitting disease to humans. The *Vector Control Plan* (Geosyntec 2023a) for the KLF Phase II complies with the operating criteria for MSW landfills as detailed in 40 CFR § 258.22 and HAR § 11-58.1-15(c). Pursuant to HAR § 11-58.1-15(c), "Owners or operators of all MSWLF units must prevent or control on site populations of disease vectors using techniques appropriate for the protection of human health and the environment." Personnel at the KLF are trained to prevent, detect, and manage on-site populations of disease vectors (Geosyntec 2023a). This includes monthly inspections and subsequent control and

abatement activities, as needed, and minimizing the size of the active working face of the landfill to reduce the likelihood of vectors feeding on the waste materials. Additionally, a minimum of 6 inches of daily cover or alternative daily cover is placed on the active working face and a minimum of 12 inches of intermediate cover on inactive portions of the KLF Phase II to control vectors. Roll-off bins for residential drop-off are emptied regularly to prevent vector issues. The KLF has not received any vector complaints or violations (K. Aki, DPW, personal communication, June 20, 2023). If vectors are identified at the landfill, the County will develop and implement a specific plan to control or eradicate the on-site populations.

3.12.1.3 *Explosive Gas*

Methane gas is produced at landfills as a byproduct of the decomposition of organic components of solid waste materials. The KLF implements a *Perimeter Gas Monitoring Plan* (Geosyntec 2023a) to ensure compliance with RCRA Subtitle D regulations (40 CFR § 258.23), and HAR § 11-58.1-15(d), related to controlling explosive gases on-site. Monitoring is conducted quarterly using 12 permanent gas probes installed around the perimeter of the landfill to detect any LFG migration from the KLF. If methane levels within any probe are detected at or above 5 percent by volume, a response action is conducted to ensure worker safety and bring methane levels into compliance. Three building structures at KLF Phase II are also monitored quarterly: the main office, county office, and scale house. In the latter half of 2022, the facility had two exceedances of surface concentration of methane and took immediate corrective action to bring that exceedance within compliance (Geosyntec 2023b). All other emissions were in compliance with KLF's CSP Permit No. 0802-01-C.

3.12.1.4 *Landfill Fires*

Heat is generated by the rapid decomposition of waste, which may ignite subsurface fires in landfills in the presence of oxygen gas. Subsurface landfill fires can occur when smoldering waste is buried at the working face or when excess oxygen intrudes into the waste mass. Landfill fires are prevented by monitoring incoming waste load fires and by daily compaction and covering of the active disposal area, which minimize air space and limit the intrusion of oxygen and potential for ignition of subsurface fires.

Methods implemented by the KLF to extinguish a subsurface fire include:

- Cutting off the oxygen supply by smothering the fire with fine-grained soil and/or the use of plastic membranes; or
- Physically extinguishing the fire by excavating down to the fire, removing and putting out burning material, confirming that the burning material is extinguished, and placing waste back into the excavation area (Geosyntec 2023a).

Fire extinguishers are provided in all buildings and on-site vehicles for use in extinguishing small fires. The KLF *Emergency Action Plan* outlines procedures for responding to a larger fire, which includes evacuating buildings, proceeding to the designated evacuation area, and calling 911 to summon the local fire department to respond (Geosyntec 2023a).

3.12.1.5 Injury and Illness

KLF site personnel could be injured at work from heavy lifting; slips, trips, and falls; exposure to heat; and biological exposure (e.g., bites, stings, and allergens). The KLF has developed a comprehensive *Injury and Illness Prevention Program* (Geosyntec 2023a) to minimize the frequency and severity of employee accidents and comply with applicable health and safety laws and regulations. The program includes policies and procedures to eliminate physical hazards from the work environment, when possible, to identify, assess, and minimize workplace hazards that cannot be eliminated, train employees in safe work practices, and conduct monthly site safety inspections. The *Injury and Illness Prevention Program* also includes policies for enforcement of these procedures and reporting in the event of an injury or illness. BMPs to prevent injury and illness include, but are not limited to, keeping working areas clean and free from slip and trip hazards, ensuring adequate lighting and ventilation, maintaining fire aid and emergency wash stations in good working order, using personal prevention equipment, safety procedures for working with tools and equipment, and emergency response procedures. Between 2019 and 2022, the KLF has had two, minor work-related injuries (OSHA 2019; OSHA 2020; OSHA 2021; OSHA 2022a).

3.12.2 Potential Impacts and Mitigation Measures

3.12.2.1 Proposed Action

No construction is required to implement the Proposed Action. Therefore, no short-term, construction-related impacts are anticipated. In general, the Proposed Action would have positive impacts on public safety and health by allowing for the continued safe and proper disposal of MSW for the island of Kauaʻi. Potential short- and long-term impacts to public safety and health expected from the implementation of the Proposed Action are discussed below.

Refuse Trucks and Heavy Equipment Operation

With the Proposed Action, KLF operations would continue for an additional 2 to 4 years. The KLF would continue to accept refuse truck and use heavy equipment as part of daily landfill operations. The existing raining and landfill safety rules would be enforced to ensure the safety of customers and employees (Geosyntec 2023a). With implementation of the site safety rules, the Proposed Action is not anticipated to have significant short- or long-term impacts on public and employee safety from the operation of trucks and heavy equipment.

Vector Control

With the Proposed Action, vectors would continue to be avoided and minimized through BMPs and operational controls, as detailed in the KLF *Vector Control Plan* (Geosyntec 2023a). As the Proposed Action does not propose to modify KLF's existing operations or the types of waste accepted, potential impacts from vectors are anticipated to be the same as the existing facility. Short- and long-term impacts from vectors would be less than significant.

Explosive Gas

As described in Section 2.1, the additional waste tonnage to be accepted as a result of the Proposed Action would increase the total landfill gas generation rate and landfill gas collected in the GCCS. Tetra Tech (2022) conducted an engineering analysis of the GCCS for the Proposed Action; the analysis concluded that the existing GCCS is adequately sized to accommodate the anticipated increase in landfill gas flow. Two phases of improvements would maintain gas collection as the vertical expansion is constructed. The first phase would occur prior to placement of fill and includes raising or relocating the existing GCCS infrastructure within the footprint of the vertical expansion. The second phase would occur when nearing or at the final fill limit and include the addition of vertical landfill gas extraction wells and related lateral piping to provide landfill gas collection for new waste placed as part of the vertical expansion. With the proposed GCCS improvements and continued monitoring for explosive gases, short- and long-term impacts from explosive gas would be less than significant.

Landfill Fires

Current procedures to mitigate landfill fires would continue as part of the Proposed Action. No significant short- or long- term adverse impacts from landfill fires are anticipated with implementation of the Proposed Action.

Injury and Illness

Current procedures to mitigate safety and health concerns from injury and illness would continue as part of the Proposed Action. No significant short- or long- term adverse impacts to injury or illness are anticipated from implementation of the Proposed Action.

3.12.2.2 *No Action Alternative*

Under the no action alternative, the Phase II landfill would not be vertically expanded and would close in June 2027 when it is expected to reach capacity. The no action alternative would result in the closure of the KLF facility prior to a new facility being sited and operational and would leave residents of Kauaʻi without a safe option for disposing of MSW. Illegal dumping could ensue and would potentially result in significant adverse impacts to public safety and health.

3.13 Socioeconomic Resources

3.13.1 Affected Environment

The ROI for population and demographic is the Kekaha-Waimea Census County Division (CCD), within which the KLF is situated, and represents the population residing in the vicinity of the Proposed Action. The ROI for direct, indirect, and induced economic benefits of the KLF is the Island of Kauaʻi.

3.13.1.1 Population and Demographics

The demographics and income characteristics of the Kekaha-Waimea CCD are summarized in this section along with data for the entirety of County of Kauaʻi for comparison. Population, ethnicity, income, and poverty status data from the recently released 2017 to 2021 American Community Survey (ACS) are summarized in Table 3-2 (U.S. Census Bureau 2022).

As shown in Table 3-2, the estimated population of the Kekaha-Waimea CCD is 5,971 people compared to Kauaʻi County, which is 73,928 people. The population within the Kekaha-Waimea CCD relative to Kauaʻi County overall consists of a larger Native Hawaiian and Other Pacific Islander population at 15.8 percent compared to 9.7 percent, respectively, and a smaller White population at 18.4 percent compared to 31.4 percent, respectively. The median household income (\$81,953) and per capita income (\$32,232) within the Kekaha-Waimea CCD are somewhat lower than Kauaʻi County overall, at \$86,287 and \$35,351, respectively. The percentage of families and individuals below the poverty level are higher in the Kekaha-Waimea CCD compared to the County of Kauaʻi (U.S. Census Bureau 2022).

Table 3-2. Demographic and Income Characteristics

Characteristic	County of Kauaʻi		Kekaha-Waimea CCD	
	Number	Percentage	Number	Percentage
Population	73,928		5,971	
Ethnicity				
Asian	21,012	28.4	1,757	29.4
Native Hawaiian and Other Pacific Islander	7,227	9.7	942	15.8
White	23,204	31.4	1,096	18.4
Black or African American	376	0.5	24	0.4
American Indian or Alaska Native	287	0.4	25	0.4
More than one ethnic group	20,008	27.1	2,055	34.4
Other Ethnicity	1,094	1.5	72	1.2
Income (USD)				
Median Household Income	\$86,287		\$81,953	
Per Capita Income	\$35,351		\$32,232	
Poverty Status in 2020				
Families below Poverty Level	NA	7.5	NA	11
Individuals below Poverty Level	NA	9.1	NA	10.8
CCD = Census County Division. Source: U.S. Census Bureau 2022.				

3.13.1.2 *Economic Contribution of the KLF*

The KLF has direct, indirect, and induced economic benefits to the Kauaʻi economy. Direct effects represent actual and estimated employee compensation and other expenditures of KLF as well as the economic value of services from KLF operations. The KLF also provides direct benefits to community of Kekaha through the host community benefits (HCB) fund (see below). KLF has provided employment opportunities in the region since 1953. In 2023, the KLF employed 24 full-time employees and provided approximately \$1.4 million in wages, plus a fringe benefit rate of over 80%. The KLF also produced direct economic benefits from receiving approximately 90,000 tons of solid waste from July 1, 2021, through June 30, 2022 (Geosyntec 2022b). Approximately 40 percent of the waste received was diverted from the landfill through source reduction, reuse, composting, and recycling. The KLF also had indirect economic effects from purchasing goods and services from other local industries in the Kauaʻi County economy, including equipment, professional and technical services, and supplies. Induced effects reflect changes in local spending that were generated from income changes in directly and indirectly affected industry sectors. As the only permitted MSW landfill for the island of Kauaʻi, the KLF has induced impacts on all major industries of the Kauaʻi economy, including, but not limited to, construction, tourism, service and retail, and agriculture.

3.13.1.3 *Host Community Benefits*

The Kekaha HCB Fund was founded in 2008 to “balance the need for safe disposal of solid waste with the sacrifices borne by the host community” (Kekaha HCB 2023). The HCB fund started with \$650,000 in 2008. Since then, the amount allocated annually has varied from \$1 per ton to over \$3 per ton and is determined by the Kauaʻi County Council. Between 2012 and 2022, the Citizens Advisory Committee, who manages the distribution of HCB funds, has approved 97 different projects valued at over \$2.9 million (Kekaha HCB 2023). Projects funded by the HCB fund directly benefit the Kekaha Community and include community improvements, economic revitalization, and various environmental sustainability, educational, cultural, art, and health and wellness programs.

3.13.2 Potential Impacts and Mitigation Measures

3.13.2.1 *Proposed Action*

No construction is required to implement the Proposed Action. Therefore, no short-term, construction-related impacts are anticipated. Potential short- and long-term impacts to socioeconomic resources expected from the implementation of the Proposed Action are discussed below.

Population and Demographics

The Proposed Action is not anticipated to have significant short- or long-term impacts on the Kekaha Region’s population trends or distribution, household demographics, or housing.

Economic Contribution of the KLF

The Proposed Action would allow for continued safe and proper disposal of MSW on the island of Kauaʻi for several more years while a long-term waste capacity solution is implemented. During the extended operational lifespan of the facility, the KLF would continue to contribute direct, indirect, and induced economic benefits to the Kauaʻi economy. The KLF would provide employment and wages to 24 full-time employees and contribute to the economy by providing waste diversion and disposal services, purchasing goods and services from other local industries, and generating indirect and induced benefits to the construction, tourism, service and retail, and agriculture industries. Overall, the Proposed Action is anticipated to have a beneficial impact on the Kauaʻi economy.

Host Community Benefits

While the Proposed Action is not anticipated to impact the amount allocated annually; the continued operation of the KLF for an additional 2 to 4 years would extend the period that the Kekaha community receives HCB funds. The Proposed Action would not affect the Citizens Advisory Committee's authority to distribute HCB funds.

3.13.2.2 *No Action Alternative*

Under the no action alternative, the Phase II landfill would not be vertically expanded and would close in June 2027 when it is expected to reach capacity. Demographics, employment, or income within the ROI would not be significantly impacted under the no action alternative. However, the no action alternative could result in closure of the KLF before a new landfill facility has been sited and is operational, which could result in significant increases in waste disposal costs, exacerbated illegal dumping, and negative effects on the County's economy.

3.14 Transportation and Traffic

3.14.1 Affected Environment

The ROI for transportation is the KLF facility, adjacent roadways, and PMRF Barking Sands Airport. The Proposed Action is not anticipated to impact harbors or public transportation; therefore, these topics are not addressed in this EA.

3.14.1.1 *Roadways and Traffic*

The KLF is accessed via Kaumualiʻi Highway/Hawaiʻi Route 50, which is owned and maintained by the HDOT Highways Division. The average annual daily traffic count for Kaumualiʻi Highway near the KLF is approximately 3,300 vehicles per day (AECOM 2013a). The KLF accepts, on average, approximately 33 commercial loads and 97 non-commercial loads per day, which includes loads consisting of both recyclable and non-recyclable material (A. Fraley, DPW, personal communication, July 18, 2023). Therefore, on average, landfill-related traffic accounts for approximately 4 percent of the traffic volume

on Kaumuali'i Highway in the vicinity of the KLF. Traffic volumes at the landfill are generally highest on Saturdays when the facility is open to receive beverage containers under the HI-5 program.

3.14.1.2 Airports

The PMRF Barking Sands Airport is approximately 3 miles northwest of the KLF. Due to the facility's proximity to the airport, the FAA and PMRF have evaluated the KLF multiple times in the last 10 to 15 years with no concerns noted (B. Stevenson, U.S. Navy; Appendix B). The existing Phase II landfill does not pose an obstruction risk to aircraft utilizing the PMRF Barking Sands Airport (AECOM 2013a).

3.14.2 Potential Impacts and Mitigation Measures

3.14.2.1 Proposed Action

No construction is required to implement the Proposed Action. Therefore, no short-term, construction-related impacts are anticipated. Potential short- and long-term impacts to transportation and traffic expected from the implementation of the Proposed Action are discussed below.

Roadways and Traffic

As described above, the KLF accounts for a small percentage of the overall traffic volume on Kaumuali'i Highway in the vicinity of the KLF. The Proposed Action would not change the quantity of waste received nor the number of commercial and non-commercial loads accepted at the facility. Therefore, there would not be any significant changes to landfill-related traffic on Kaumuali'i Highway and no significant adverse impacts to roadways or traffic are anticipated from implementation of the Proposed Action.

Airports

The Proposed Action would increase the maximum elevation of the Phase II landfill to 171.5 ft amsl. Given the proximity of the KLF to the PMRF Barking Sands Airport and in accordance with CRF 77.9²⁰, the County will notify and consult with the FAA and PMRF to evaluate the potential impacts of the landfill on aircraft utilizing the airfield (FAA 2023). The FAA requires submission of an FAA Form 7460-1 (Notice of Proposed Construction or Alteration) to the FAA to initiate an Obstacle Evaluation. The form submission will result in the FAA working with other federal entities and the PMRF to conduct a review and determine possible risks to aircrafts and evaluate other concerns, including Bird Animal Strike Hazard, Hazard of Electronic Radiation, Radiation Hazard, and visibility risks, among others. The final action will result in a Letter of Determination by the FAA on whether the raise in elevation raises an acceptable, or unacceptable, risk. As the landfill elevation has been raised multiple times in the last 10 to 15 years with no concerns noted from the FAA, PMRF, or other entities, an FAA determination letter of "no hazard to

²⁰ Pursuant to the Notice of Criteria Tool, the landfill (21°59'6.24"N; 159°45'52.83"W) would exceed an instrument approach area by approximately 52 ft and aeronautical study is needed to determine if it will exceed a standard of Subpart C of 14 CFR Part 77.

air navigation” is anticipated. Therefore, the Proposed Action is not anticipated to have short- or long-term adverse impacts on airports.

3.14.2.2 No Action Alternative

Under the no action alternative, the Phase II landfill would not be vertically expanded and would close in June 2027 when it is expected to reach capacity. Refuse truck traffic to the KLF would cease upon closure of the KLF, resulting in a decrease in traffic to the facility. As the KLF does not contribute significantly to traffic on Kaumuali'i Highway, the no action alternative is anticipated to have less than significant impacts to roadways and traffic. The closed KLF facility would have no impact on air navigation at the PMRF Barking Sands Airport.

3.15 Utility Infrastructure

3.15.1 Affected Environment

The ROI for utilities and infrastructure is the KLF facility. This section includes information on infrastructure related to electrical power, telecommunications, potable and non-potable water, wastewater systems, drainage, and solid waste disposal.

Electricity for on-site use is supplied by Kaua'i Island Utility Cooperative. A 105-kilowatt, diesel-powered, emergency standby generator automatically operates when normal power is interrupted.

Telephone service to the KLF is provided by Hawaiian telecom via non-fiber optic telephone landlines. The KLF has limited internet bandwidth via DSL landline service; fiber optic service is anticipated to be installed at the landfill within one year.

Potable water supplied to the office, scale house, and maintenance shop is obtained from the County water system serving the town of Kekaha, and then piped into the facility via a U.S. Navy owned water main that serves federal reserve lands. In accordance with the "Three Party Service Agreement" executed in 1994 between the DPW, PMRF, and County of Kaua'i Department of Water, water use from the existing landfill water meter is limited to 31,000 gallons per month (COK DPW 1994).

Non-potable water for dust control and fire protection is obtained from a former Kekaha Sugar Company irrigation ditch and transported to the site using a 4,000-gallon capacity water truck.

Wastewater from the office and maintenance shop is handled by an on-site septic system. Other wastewater, such as wash down water from the maintenance shop, is treated via an oil and water separator system.

As described in the KLF's *Surface Water Management Plan* (Geosyntec 2023a) and Section 1.2.1.2 above, stormwater is managed at KLF by controlled grading on the surface of the landfill and by maintaining an engineered system of drainage ditches, channels, pipes, and basins. The facility does not discharge water to off-site areas or into the municipal drainage system.

Solid waste generated on-site is either recycled or deposited in the active cell of the Phase II landfill. The KLF maintains a *Litter Control Plan* (Geosyntec 2023a). The KLF Phase II uses various strategies to confine litter to the landfill working face area, to prevent on-site litter accumulation, and to prevent litter from leaving the landfill premises. Windblown litter is controlled through proper management of the landfill working face, the use of portable litter fences, and utilizing staff to pick up litter. Daily inspections and litter cleanup activities are conducted around the site and in front of the landfill along the Kaumuali'i Highway. Landfill employees clean and pick up litter within adjacent properties, as needed, once landowner permission is obtained. The KLF enacts supplementary measures to control or clean-up excessive litter at the KLF when winds are above normal. The trucks that haul the MSW to the landfill are also monitored on a routine basis to ensure they are not contributing to litter along the truck haul routes and, if they were determined to be, corrective actions are implemented immediately.

3.15.2 Potential Impacts and Mitigation Measures

3.15.2.1 *Proposed Action*

No construction is required to implement the Proposed Action. Therefore, no short-term, construction-related impacts are anticipated.

The Proposed Action would not increase the daily load on utility infrastructure and services over existing levels, although use of public utilities would continue for up to an additional estimated 2 to 4 years. The current KLF utility requirements do not exceed the existing capacity and no adverse impacts to utilities are anticipated from implementation of the Proposed Action.

The Proposed Action would increase the capacity of Phase II, resulting in a positive impact for solid waste infrastructure for the Island of Kaua'i. The KLF would continue to implement the *Litter Control Plan* (Geosyntec 2023a) to prevent a litter nuisance.

3.15.2.2 *No Action Alternative*

Under the no action alternative, the Phase II landfill would not be vertically expanded and would close in June 2027 when it is expected to reach capacity. However, the no action alternative could result in closure of the KLF before a new landfill facility has been sited and is operational, which could result in significant increases in waste disposal costs and exacerbated illegal dumping. Therefore, adverse impacts to the island's solid waste infrastructure would occur under the no action alternative.

3.16 Visual Resources

3.16.1 Affected Environment

The ROI for visual resources includes scenic vistas and view planes in the vicinity of the KLF identified in county or state plans or studies as well as view planes along Kaumuali'i Highway and mauka to makai view planes from the KLF facility. Visual resources refer to both natural and built features visible on the

landscape that impart visually aesthetic qualities to a natural, rural, or urban environment. Visual resources are evaluated to determine whether the Proposed Action and no action alternative would be congruent with the existing landscape and development plans for the area.

HAR § 11.200.1-13 requires applicants to identify potential adverse impacts on scenic vistas and view planes as identified in county or state plans or studies. While no specific scenic resources or corridors are identified at or in the vicinity of the KLF in either the Kaua'i County General Plan (County of Kaua'i 2018) or the West Kaua'i Community Plan (County of Kaua'i 2020), both plans include policies to preserve scenic and public views. Section 3, subsection VII, of the Kaua'i General Plan directs the County to preserve scenic resources and public views in developing public facilities and in administering land use regulations. Specifically, the County is directed to: (1) preserve public views that exhibit a high degree of intactness or vividness; (2) preserve the scenic qualities of mountains, hills, and other elevated landforms; and (3) preserve the scenic qualities of lowland and open space features, such as the shoreline. The Heritage Resource Maps in the Kaua'i General Plan and Natural Landscape Maps in the West Kaua'i Community Plan depict scenic roadway corridors; no scenic corridors are identified in the Kekaha Region on either map.

Public views of the KLF are primarily from Kaumuali'i Highway where the Phase II landfill, with a currently permitted height of 120 ft amsl, is partially visible along portions of the highway where the line-of-sight is not blocked by vegetation (primarily along the highway northwest of the KLM while trees along the highway southeast of the KLM create a vegetative visual buffer). The Phase 1 portion of KLF is makai of the Phase II landfill and has an elevation of approximately 10 to 40 ft amsl and is not visible from the highway as it is blocked by the Phase II landfill. Views of the KLF from Kaumuali'i Highway are presented in Appendix A, Photos 9 through 15.

The line of sight to the KLF from the nearby shoreline is largely obstructed by coastal dunes and an earthen berm associated with the National Guard Rifle Range; the KLF Phase I is not visible from the shoreline while the KLF Phase II is partially visible from the shoreline area southeast of the landfill near the Kaua'i Raceway Park. Views of the KLF from the shoreline are presented in Appendix A, Photos 16 through 17.

Where visible, the Phase II landfill has the appearance of an earthen mound. Phase II is covered daily with landfill cover and is partially vegetated; the earth-tone daily landfill color is generally consistent in color with the surrounding agricultural areas.

3.16.2 Potential Impacts and Mitigation Measures

3.16.2.1 *Proposed Action*

No construction is required to implement the Proposed Action. Therefore, no short-term, construction-related impacts are anticipated. Potential short- and long-term impacts to visual resources expected from the implementation of the Proposed Action are discussed below.

The County proposes to vertically expand Phase II by 51.5 ft to a maximum height of 171.5 ft amsl. The Phase II landfill is currently permitted to receive waste up to 120 ft amsl and is currently in active use for landfilling operations. During operations, the Proposed Action would look substantially the same as existing landfill operations. Only one landfill cell would be open and operational at a time and debris would be spread, compacted, and covered each night with daily cover. Under the Proposed Action, the Phase II landfill would continue to appear as an earthen mound.

The line-of-sight to Phase II is currently partially visible from both the northwest bound (i.e., PMRF bound) and southeast bound (i.e., Kekaha bound) direction of Kaumuali'i Highway and from the shoreline southeast of the landfill (Appendix A, Photos 9 – 12, 14, and 17). The shoreline is currently not visible from Kaumuali'i Highway in the vicinity of the KLF due to intervening vegetation and the highway's distance from the shoreline. The maximum height of the facility would increase by 51.5 ft with the Proposed Action, thus potentially increasing visibility of the site from surrounding areas. As described above, no scenic resources or corridors have been identified at or in the vicinity of the KLF in either the Kaua'i County General Plan (County of Kaua'i 2018) or the West Kaua'i Community Plan (County of Kaua'i 2020). The existing KLF is not within a view plane that exhibits a high degree of intactness and does not block scenic landforms, scenic view planes, or shoreline views, as defined in the Kaua'i County General Plan. The 51.5 foot increase to the maximum permitted height of the Phase II landfill (i.e. the Proposed Action) is not anticipated to cause a significant change in the existing view planes in the vicinity of the KLF and would not block scenic landforms, scenic view planes, or shoreline views, as defined in the Kaua'i County General Plan and therefore, the Proposed Action does not conflict with County policies for the protection of scenic resources.

After the landfill is closed, the landfill surface would be covered with an engineered cap and soil and then planted with vegetation. Closure plans for the Proposed Action would include a landscaping and revegetation program for revegetation of the landfill base and slopes and landscaping at the site entrance to minimize visual impacts to the public. The top of the landfill would likely be vegetated primarily with native grasses due to shallow soils. Random groups of shrubs and low trees may be planted on the landfill slopes, where the soil depth would be greater and where taller plants may be used without penetrating the engineered cap. A variety of native trees and shrubs could be selected, with an understory of native species. Varying plant heights on the landfill top and side slopes and planting with native species would serve to break up the engineered topography of the landfill final cover grade and provide for a more natural appearance. Plant densities, depth of planting, and species composition for landscaping at the site entrance would be adapted to ensure adequate screening and consistency of plantings with the surrounding environment and to select against significant maintenance requirements. With implementation of the landscaping and revegetation measures described above, no significant short- and long-term adverse impacts to visual resources are anticipated.

3.16.2.2 *No Action Alternative*

Under the no action alternative, the Phase II landfill would not be vertically expanded and would close in June 2027 when it is expected to reach capacity. There would be no change to the visual quality of the KLF. Therefore, no impacts to visual resources are anticipated under the no action alternative.

3.17 Water Resources

3.17.1 Existing Conditions

The ROI for water resources includes the KLF facility, the underlying aquifer, and the Pacific Ocean downgradient of the KLF facility. Water resources include surface water and groundwater. Surface water refers to water bodies on the surface, such as wetlands, lakes, reservoirs, streams, springs, and the ocean. Groundwater refers to water resources that occur beneath the surface, such as water stored in deep reservoirs called aquifers. Federal and local regulations applicable to water resources include the Clean Water Act (33 United States Code § 1251 et seq. 1972), the Coastal Zone Management Act of 1972, and the State Water Code (HRS Chapter 174C).

3.17.1.1 *Surface Water*

The KLF is within the Hoesa watershed (CWRM 2008). No surface water features (including wetlands, streams, ditches) are identified by the National Wetlands Inventory, National Hydrography Dataset, or by the State of Hawai'i Division of Aquatic Resources within the KLF site. Wetlands and ponds are identified adjacent to the KLF north of Kaumuali'i Highway and within the PMRF. The Pacific Ocean is approximately 2,800 ft makai of the Phase II area.

Several anthropogenic features within the KLF occasionally have temporary surface water: the stormwater infiltration basin, leachate evaporation pond, and infiltration ditches. As described in the KLF's *Surface Water Management Plan* (Geosyntec 2023a) and Section 1.2.1.2 above, stormwater is managed at KLF by controlled grading on the surface of the landfill and by maintaining an engineered system of drainage ditches, channels, pipes, and basins. Runoff from the top of the Phase I and Phase II flows radially off the landfill. Runoff in Phase I is collected at a series of inlet pipe drains located around the perimeter of the landfill. These drains discharge to an infiltration ditch that surrounds Phase I. Runoff from Phase II flows into diversion berms located on the side slopes below the perimeter of the landfill top deck and along the perimeter road, which direct surface water to down drains. The down drains convey runoff to infiltration ditches around the perimeter of the landfill. Runoff then infiltrates, evaporates, or flows to the 2.2-acre stormwater infiltration basin. The stormwater management system was designed to convey runoff from a 25-year, 24-hour storm, as required by the solid waste regulations (HAR § 11-58.1-15(g)). Runoff from paved areas, including employee parking and the public material drop-off area, sheet flows to vegetated areas and/or the infiltration ditches along the perimeter and access road, where it infiltrates, evaporates, and/or flows to the stormwater infiltration basin. Stormwater immediately adjacent to the north side of maintenance building sheet flows to the wash

rack, which gets periodically pumped and conveyed to the leachate evaporation lagoon for on-site treatment (K. Aki, DPW, personal communication, June 20, 2023). The facility does not discharge water to off-site areas.

Also described in Section 1.2.1.2 above, the LCRS collects leachate and directs it via a pump station to the lined leachate evaporation pond (Figure 1-1). The approximately 2-acre leachate evaporation pond is lined to prevent infiltration of the water into the underlying soils. It has a maximum depth of 6 ft with an additional 2 ft of freeboard, and it was designed to completely evaporate all leachate collected from the landfill during a normal precipitation/evaporation year. Two floating aerators are used to accelerate evaporation.

3.17.1.2 *Groundwater*

The KLF is located within the Kekaha Aquifer System (HDOH 2011). The Kahaha- Mānā coastal plain is underlain by two aquifers: a coastal plain aquifer within the near-surface sedimentary (caprock) deposits and a deep aquifer within the underlying fractured basalt (Geosyntec 2023a). The basaltic aquifer occurs within lava flows of the Nāpali Formation. The U.S. Geological Survey (USGS) estimates this aquifer has generally high hydraulic conductivity, approximately 400 ft per day. Saturated sediments of the caprock formation (the caprock aquifer) overlie the basaltic aquifer and limit the seaward discharge of groundwater from the deeper aquifer. Groundwater flows from the higher elevations to the northeast, through the Nāpali basalts, and into the sedimentary coastal plain aquifer. According to the USGS, the average hydraulic conductivity of the coastal plain aquifer is approximately 0.12 ft per day (Geosyntec 2023a).

Recharge to the uppermost water bearing zone of the coastal plain aquifer underlying the KLF occurs in the upland areas northeast of the facility. Groundwater flows from the higher elevations to the northeast, through the Napali basalts, into the sedimentary coastal plain aquifer flows and discharges to the Pacific Ocean. Total dissolved solids concentrations increase significantly from inland (mauka) areas to seaward (makai) areas as the groundwater flows through the coastal sediments and mixes with sea water. However, the results of an April 1994 tidal study indicate that tidal effects do not significantly influence the prevailing groundwater flow direction within the coastal plain aquifer at the site (Geosyntec 2023a).

The water table level in the site area is controlled by pumping stations in the area operated and maintained by the Agribusiness Development Corporation (ADC) and the Kekaha Agricultural Association, in coordination with the U.S. Navy. The groundwater management system controls flooding and facilitates cultivation of the lower elevations on the Mānā Plain (Geosyntec 2023a).

Shallow groundwater underlying the KLF is encountered within the coastal plain aquifer at approximately 4 to 5 ft amsl. Monitoring data suggests groundwater generally flows southwest towards the Pacific Ocean, with a hydraulic gradient of approximately 0.0005 ft per ft; however, groundwater flow at the site can periodically shift more than 90 degrees toward the north and more than 60 degrees toward the south relative to the typical west-southwest flow direction, and the gradient sometimes

becomes essentially flat (Geosyntec 2023a). Periodic shifts in the groundwater flow may be influenced by variations in pumping rates for the groundwater management system wells and other production wells near the site (A. Miller, Geosyntec Consultants, Inc., personal communication – email to A. Fraley, July 24, 2023). Groundwater underneath the KLF is brackish; therefore, it is not suitable for current or future use as irrigation water or as a potable water supply.

In accordance with HAR § 11-58.1, the HDOH *State of Hawai'i Landfill Groundwater Monitoring Guidance Document*, and Federal Subtitle D regulations (40 CFR Part 258), groundwater monitoring is regularly conducted at the KLF pursuant to its *Groundwater and Leachate Monitoring Plan* (Geosyntec 2023a). Groundwater monitoring at the KLF Phase II site began in 1994. The purpose of the monitoring is to detect and evaluate potential changes to groundwater in the area of the landfill to evaluate if past and/or present municipal solid waste disposal operations have impacted groundwater quality within the coastal plain aquifer beneath the KLF. The monitoring program includes a groundwater well network and sampling, monitoring, and analytical procedures. Currently, groundwater is sampled on a quarterly basis from six groundwater monitoring wells (Geosyntec 2023a). The County is planning to install two upgradient monitoring wells north of the highway and one downgradient well on the Kaua'i Raceway Park property to provide background data. As required by KLF's SWMP, leachate samples are also collected on a routine basis (from Wet Well-1 and Wet Well-2 since 1994 and from Wet Well-3 since 2010) and the results compared to the groundwater monitoring data (Geosyntec 2023a). The leachate data is used to characterize the potential contaminant source (i.e., the landfill waste materials) and evaluate the suitability of site-specific groundwater monitoring parameters.

Groundwater monitoring has identified several statistically significant increases (SSIs) of monitored parameters, including ammonia as nitrogen (N), arsenic (As), calcium (Ca), potassium (K), and total organic carbon (TOC) (Geosyntec 2023c). Alternative source demonstration (ASD) reports have indicated that the elevated levels may be due to sources other than the landfill including fertilizer application on agricultural land upgradient of the KLF, biodegradation of organic material prior to construction of Phase II, the unlined Phase I site, and impacts from the adjacent aquaculture facility (Geosyntec 2023c). Naturally occurring arsenic in the volcanic soils was also cited as a possible source (Geosyntec 2023c).

The HDOH, Solid and Hazardous Waste Branch (SHWB), in a letter dated 22 May 2014, responded to the previously mentioned ASDs with the following acceptance of ASD findings:

- The ammonia as N SSIs is not related to Phase II landfill releases, but due to fertilizer compounds associated with upgradient agricultural activities and biodegradation of organic fill materials.
- The TOC SSIs are likely from the Phase I landfill. SHWB noted that the Phase I wells identified TOC at significantly greater concentrations and earlier than the detection of TOC in well MWII-6.
- SHWB agreed that the calcium and potassium SSIs observed at MWII-7 are not related to Phase II landfill releases but are associated with impacts from the adjacent Aquaculture Facility (Geosyntec 2023c).

The County is currently working with the HDOH to conduct the following: approve an updated monitoring plan; install new monitoring wells; further investigate arsenic in groundwater and background values for detection monitoring parameters; and reevaluate intra-well statistics.

3.17.2 Potential Impacts and Mitigation Measures

3.17.2.1 *Proposed Action*

Surface Water

No naturally occurring surface waters would be impacted by the Proposed Action. Stormwater is currently managed as described in the *Surface Water Management Plan* (Geosyntec 2023a) and described in Section 3.17.1 above. Surface water drainage features within the KLF will be modified slightly (i.e., continued upwards as the expansions are filled in) to accommodate the increase in side slope lengths due to the proposed vertical increase. Tetra Tech (2022) conducted an engineering analysis of the stormwater management system and concluded that it is adequately sized to accommodate the anticipated increase in stormwater flow and velocities from the Proposed Action. Therefore, no significant impacts to surface water resources are anticipated with implementation of the Proposed Action.

Groundwater

The Proposed Action would expand the Phase II landfill above the existing RCRA Subtitle D base liner and LCRS. An engineering analysis of the LCRS piping in the center of the Phase II area confirmed that the piping can structurally withstand the additional load from the Phase II vertical expansion (Tetra Tech 2022). Further, the Proposed Action is not expected to substantially affect the production and migration of leachate in the 30-year timeframe. Compared with the results of modeling of the currently permitted design, the Phase II vertical expansion will change both the peak day and average annual leachate generation by less than 1 percent (Tetra Tech 2022). Groundwater monitoring at the KLF would continue to be conducted in accordance with applicable regulations and in consultation with the HDOH. The Proposed Action would not change the current KLF groundwater monitoring program or alter existing impacts to groundwater. Therefore, no significant impacts to groundwater resources are anticipated with implementation of the Proposed Action.

3.17.2.2 *No Action Alternative*

Under the no action alternative, the Proposed Action would not be implemented and there would be no change to the water resources within the area. No new impacts to water resources are anticipated with implementation of the no action alternative.

3.18 Cumulative Impacts

“Cumulative impacts” refer to impacts on the environment that result from the incremental effect of an action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency (i.e., county, state, or federal) or person undertakes such actions. Cumulative impacts can result from individually minor yet collectively significant actions taking place over a period of time (HAR § 11-200-2). Major existing developments within the Kekaha Region are summarized in Table 3-3 and planned land development projects are listed in Table 3-4. A summary of resource attributes that may contribute to cumulative impacts is provided below.

Table 3-3. Existing Developments in the Region

#	Project Name and Description	Type
1	The U.S. Navy’s Pacific Military Range Facility–Barking Sands (PMRF) is the world’s largest instrumented, multi-dimensional testing and training missile range. The base is located on 2,385 acres and includes a 6,000-ft runway, maintenance facilities, and approximately 70 housing units. It is the largest employer in west Kaua’i. While the PMRF continues to improve and expand its operations, a review of publicly available information did not identify any new major development projects ¹ .	Military/Defense
2	Agribusiness Development Corporation (ADC) controls and manages over 12,000 acres of land in the Mānā Plains area of Kekaha, including the Kokee Ditch System, the Kekaha Ditch System, two pump stations, two hydroelectric power plants, and an irrigation/drainage ditch system. ADC’s proposed, short- to mid-range developments are provided in Table 3-4 below.	Agriculture
3	The Department of Hawaiian Homelands (DHHL) manages 52 acres of residential and special district lands in the Kekaha community. These lands are nearing its capacity for homestead development and currently support 117 residential lessees. No new developments are proposed for DHHL’s Kekaha lands. ³	Residential
Sources: 1. U.S. Navy 2023; 2. ADC 2022; 3. DHHL 2011.		

Table 3-4. Planned Developments and Land Use Changes

#	Project Name and Description	Type	Status	Proponent
1	West Kaua’i Energy Project¹ is a proposed renewable energy and battery storage project located 4 miles north of Kekaha that will utilize hydroelectric and solar photovoltaic energy production.	Utility	In progress. Finding of No Significant Impact determination 12/23/2022	Kaua’i Island Utility Cooperative and AES West Kaua’i Energy Project, LLC
2	Kekaha Ditch Modifications.² In 2022, the legislature appropriated \$3.5M to Agribusiness Development Corporation (ADC) for improve the Kekaha Ditch network to modify the instream flow and stop waste of water.	Agriculture	In progress. Funding allocated in 2022.	ADC
3	The Hawai’i Agribusiness Plan 2021³ provides short- to mid-range planning objectives for the ADC. Specific goals related to ADC’s Kekaha lands include	Agriculture	Mid-range planning.	ADC

#	Project Name and Description	Type	Status	Proponent
	convert 1,000 acres to productive diversified agriculture status (1 to 3 years); pressurize the existing irrigation system (1 to 5 years); rehabilitate the existing irrigation system, including repair of the hydroelectric plant (2 to 5 years); and improve the Kekaha Bridge (1 to 3 years).			
4	Kekaha Road and 'Akialoa Road Improvements Project ⁴ includes resurfacing the entire length of Kekaha Road and improving traffic flow at the intersection of Kekaha Road with Kōke'e Road.	Transportation	Project planning.	County of Kaua'i DPW
5	Federal-aid Highways 2035 Transportation Plan for the District of Kaua'i ⁵ is a planning document for land transportation planning decisions on Kaua'i through the year 2035. The plan identifies potential roadway infrastructure solutions, including widening the shoulders, resurfacing, and realigning portions of Kaumuali'i Highway in the Kekaha vicinity.	Transportation	Long-range planning.	Hawai'i Department of Transportation, Highways Division
6	West Side Path (Phase 1 Hanapēpē Town to Salt Pond and Waimea to Kekaha) ⁶ . Shared pathway; future phases and alignments to be determined.	Transportation	Mid- to long-range planning.	Unknown
7	Kīkīaola Mauka ⁶ is a proposed residential development for 270 new housing units in Waimea.	Residential	Mid- to long-range planning.	Unknown
8	Kīkīaola Field 14 ⁶ is a proposed residential development for 56 new housing units in Waimea.	Residential	Mid- to long-range planning.	Unknown
9	Kapalawai Resort, LLC ⁶ is a proposed resort development for 250 new housing units in Waimea.	Resort	Mid- to long-range planning.	Unknown
10	Kekaha Municipal Solid Waste Landfill -Recycling and Waste Diversion ⁷ . The County is assessing the feasibility of a curbside recycling program, alternative technologies to landfilling and a construction and demolition waste diversion pilot.	Solid Waste Management	Project planning.	County of Kaua'i, Solid Waste Management Division
11	Kekaha Municipal Solid Waste Landfill Construction of Phase II, Cell 3 ⁷ would increase landfill capacity at the KLF. Two alternatives are being considered: (1) install an engineered, liner system over Phase I and expand the landfill over that liner or (2) mine and remove waste from Phase I, construct an engineered, liner system, and commence Cell 3 operations upon this liner.	Solid Waste Management	Project permitting.	County of Kaua'i, Solid Waste Management Division
12	New Municipal Solid Waste Landfill ⁷ . The County is currently investigating the feasibility of siting a new	Solid Waste Management	Project planning.	County of Kaua'i, Solid Waste

#	Project Name and Description	Type	Status	Proponent
	landfill on a parcel owned by ADC that is also located in Kekaha.			Management Division
Sources: 1. SSFM International, Inc. 2022; 2. ADC 2022; 3. ADC 2020; 4. County of Kaua'i 2023; 5. CH2MHILL 2014; 6. County of Kaua'i 2018; 7. A. Fraley, DPW, personal communication, March 12, 2023.				

3.18.1 Air Quality

Existing air quality in the vicinity of the KLF is good. Emissions associated with Proposed Action would not hinder conformance with the NAAQS and HDOH ambient air quality standards. Operational activities would be conducted in accordance with Hawai'i air pollution control regulations and would employ proper administrative and engineered controls to reduce air emissions. In general, sources of pollutant air emissions may increase with increased development in the region include vehicle exhaust from Kaunauli'i Highway, dust from intensified agricultural cultivation, construction of new developments, and continued MSW landfill operations. However, development is expected to remain at relatively low levels in the Kekaha Region and prevailing trade winds would help disperse the accumulation of emissions. If the KLF Phase II, Cell 3 is constructed or a new landfill is sited in the Kekaha Region, BMPs would be implemented similar to those currently implemented at KLF to minimize dust and other emissions to less than significant levels. Potential impacts from the Proposed Action are anticipated to be less than significant and would not cause a cumulative impact to air quality when combined other proposed developments in the area.

3.18.2 Biological Resources

Flora and fauna of the KLF facility are comprised of primarily non-native species characteristic of highly disturbed lowland habitats. No sensitive species of flora are known to occur within the KLF; therefore, no impacts to botanical resources are anticipated. Listed waterbirds, listed seabirds, Hawaiian goose, and Hawaiian hoary bat have potential to occur in or traverse the KLF facility but have not been detected and are unlikely to occur within the active area of Phase II. Thus, no detrimental impacts to biological resources are anticipated with implementation of the Proposed Action and execution of agency recommended wildlife impact avoidance and minimization measures (Section 3.2). If the KLF Phase II, Cell 3 was constructed or a new landfill was sited in the Kekaha Region, wildlife impact avoidance and minimization measures would be implemented similar to those conducted at the current KLF and those proposed as part of the Proposed Action. In general, terrestrial and marine biological resources are continuously being negatively impacted by anthropogenic and natural activities throughout the Hawaiian Islands. However, no other actions have been identified in the vicinity of KLF that would result in a cumulative impact to biological resources in conjunction with implementation of the Proposed Action.

3.18.3 Climate

The Proposed Action is not anticipated to result in measurable impacts to climate or local climatic conditions (e.g., temperature, rainfall, wind) and would contribute a negligible amount of greenhouse gasses to the environment from the use of vehicles and equipment during operations and controlled landfill gas emissions. Even with continued growth in the region, greenhouse gas emissions are anticipated to occur at a low enough level that they are not expected to measurably contribute to regional or global greenhouse gas levels. No other foreseeable actions have been identified in the vicinity of the KLF that would cause a cumulative impact to climate when combined with implementation of the Proposed Action.

3.18.4 Cultural Resources

No ongoing cultural practices were identified within the KLF during background research and community consultation for this CIA. Although the KLF is in the general vicinity of ongoing cultural practices such as burial practices, fishing, and recreational activities, no impacts to these cultural practices are anticipated. Future development in the region would need to comply with state regulations related to the protection of cultural properties and practices. No other foreseeable actions have been identified in the vicinity of the KLF that would cause a cumulative impact to cultural resources when combined with implementation of the Proposed Action.

3.18.5 Geology, Topography, and Soils

Analysis of soil borings, test pits, and laboratory results indicate that the site is suitable for the Proposed Action from a geotechnical standpoint. Based on the soil and waste mass properties and the designed slopes of the landfill, the proposed landfill expansion is expected to remain stable. The existing LCRS, industry standard BMPs, and facility specific plans minimize the potential for inadvertent releases and impacts to soils. Intensification of agricultural uses on ADC lands in the vicinity of the KLF could impact soil quality. Construction of the Phase II, Cell 3 and/or siting of a new landfill within Kekaha would also change site topography. However, potential impacts from the Proposed Action are expected to be minor and would not cause a cumulative impact to geology, topography, or soils when combined with other proposed developments in the area.

3.18.6 Hazardous Materials and Hazardous Waste

The types of waste accepted at the KLF would not change under the Proposed Action, and current procedures to prevent disposal of hazardous waste materials at the facility would be maintained. Landfill operations would continue to be administered following the *Operations Manual* and the SPCC Plan developed for the KLF (Geosyntec 2023a). Cumulatively, with continued growth in the region, future specific uses could also increase the possibility of hazardous material and hazardous waste impacts, primarily during construction and transportation and if there are accidental spills. Given strict

adherence to petroleum operation rules and regulations, hazardous materials handling rules, and BMPs, the Proposed Actions contribution to cumulative impacts would be less than significant.

3.18.7 Historic and Archeological Resources

The Proposed Action would remain within the existing footprint of Phase II, above the existing landfill, and would not involve excavation or any new ground disturbance. An AIS conducted in 1993 and subsequent investigation by AECOM (2013) found no evidence that archaeological resources or historic properties remain within the Phase II area (Appendix C) and none were encountered during previous site activities. Archaeological research of KLF and its surrounding area indicates the foothills and wetland areas of the Mānā Plain were extensively modified and much of the physical evidence of the traditional settlement pattern has been obliterated by commercial agriculture and other operations. Future development in the region would need to comply with state and/or federal regulations related to historic and archeological properties. No other foreseeable actions have been identified in the vicinity of the KLF that would cause a cumulative impact to historic and archeological resources when combined with implementation of the Proposed Action.

3.18.8 Land Use

There would be no change to land use or ownership of the KLF facility with implementation of the Proposed Action. The continued use of the KLF facility would not affect or preclude the use of lands adjacent to or in the vicinity of the KLF and no changes to the land use designations are warranted or proposed. Future developments identified in the region are consistent with current land uses. No other foreseeable actions have been identified in the vicinity of the KLF that would cause a cumulative impact to land use when combined with implementation of the Proposed Action.

3.18.9 Natural Hazards

There have been no historical adverse impacts to the KLF facility from natural hazards (e.g., hurricanes, floods, tsunamis, and earthquakes) and the KLF is not expected to be impacted by sea level rise or climate-induced changes to natural hazards. While there is a potential for natural hazards to impact the facility short term, implementation of KLF's *Emergency Action Plan* would avoid and minimize injuries and property damage. No other foreseeable actions have been identified in the vicinity of the KLF that would cause cumulative natural hazard impacts when combined with implementation of the Proposed Action.

3.18.10 Noise

Noise from landfill operational activities decrease with distance from the active area and are minimal at the KLF border. Daily operations and associated noise generation at the landfill would not change because of the Proposed Action. Properties adjacent to the KLF are used for agricultural purposes, a firing range, and federal reserve land at PMRF. The nearest town is approximately 1.3 miles to the southeast and would not be impacted by noise from the KLF and the Proposed Action. There is a

potentially for noise impacts related to future construction, MWS landfill operations, and increased regional traffic. However, potential impacts from the Proposed Action are expected to be minor and would not cause a cumulative impact to noise when combined with other proposed developments in the area.

3.18.11 Public Facilities and Services

The Proposed Action would not result in an increased demand on public facilities or services. The cumulative demands on public facilities and services will likely increase over time as new residential and resort developments are constructed. However, potential impacts from the Proposed Action are anticipated to be less than significant and would not cause a cumulative impact to public facilities and services when combined other proposed developments in the area.

3.18.12 Safety and Health

Current procedures specified in the *Operations Manual* to ensure safe operation of the KLF would be continued under the Proposed Action. The proposed expansion of the KLF would result in long-term positive impacts on public safety and health by allowing for continued safe disposal of MSW on the island of Kauaʻi. No other foreseeable actions have been identified in the vicinity of the KLF that would cause a cumulative impact to safety and health when combined with implementation of the Proposed Action.

3.18.13 Socioeconomics

No adverse impacts to demographics, income, or employment are anticipated from implementation of the Proposed Action. The Proposed Action would allow for continued safe and environmentally-sound disposal of MSW on the island of Kauaʻi while a long-term waste capacity solution is implemented. During the extended operational lifespan of the facility, the KLF would contribute direct, indirect, and induced economic benefits to the Kauaʻi economy. Construction of the Phase II, Cell 3 and/or siting of a new landfill within Kekaha could illicit concerns from the community. However, the HCB program is anticipated to mitigate significant socio-economic impacts by providing continued fiscal support to the community. Potential impacts from the Proposed Action are anticipated to be less than significant and would not cause a cumulative impact to socioeconomic resources when combined other proposed developments in the area.

3.18.14 Transportation and Traffic

Landfill filling rates are not expected to change significantly over the life of the Proposed Action and there would not be any significant change to landfill-related traffic on local roadways. Construction of the Phase II, Cell 3 and/or siting of a new landfill within Kekaha would increase the timeline of waste disposal traffic in the region but the filling rate (i.e., amount of daily trip to and from the landfill) is not anticipated to significantly change. Proposed improvements to roadways within the vicinity of the KLF may have a temporary, short-term impacts on traffic, but are anticipated to result in a long-term benefit

to local transportation. Residential and resort developments proposed in Waimea may also increase local traffic. Potential impacts from the Proposed Action are anticipated to be less than significant and would not cause a cumulative impact to transportation or traffic when combined other proposed developments in the area.

3.18.15 Utility Infrastructure

The Proposed Action would not result in an increase in the daily load on public utilities, although use of public utilities by the KLF would continue for up to an additional estimated 2 to 4 years. The current KLF utility requirements would not exceed the existing capacity of local utility companies or on-site utility infrastructure. The Proposed Action would increase the capacity of Phase II and would be a positive benefit to the County's solid waste infrastructure. The cumulative demands on utility infrastructure and services will likely increase over time as new residential and resort developments are constructed. Construction of the Phase II, Cell 3 and/or siting of a new landfill within Kekaha would provide a long-term MWS waste capacity solution, resulting in a positive impact for the solid waste infrastructure on Kaua'i. Potential impacts from the Proposed Action are anticipated to be less than significant and would not cause a cumulative impact to public utilities when combined other proposed developments in the area.

3.18.16 Visual Resources

The maximum height of the landfill and final cover upon closure would be no greater than 171.5 ft amsl. Closure plans for the KLF Phase II may include provisions for landscaping of the fill areas, as well as the site perimeter, to minimize visual impacts. Construction of the Phase II, Cell 3 could increase the overall height of the KLF landfill to over 200 ft amsl (pending final design and permitting). Additionally, the construction and operation of a new landfill within Kekaha would further modify the visual landscape of the region. However, potential impacts from the Proposed Action are anticipated to be less than significant and would not cause a cumulative impact to visual resources when combined other proposed developments in the area.

3.18.17 Water Resources

Surface water drainage features would need to be modified slightly (i.e., extended upwards as the expansion is landfilled) to accommodate the increase in side slope lengths due to the proposed vertical increase, but existing infiltration ditches and basins would continue to manage site surface water without discharging off-site. Groundwater monitoring at the KLF would continue to be conducted. Generally, water quality may be affected by the development in the region. While intensification of agricultural uses upstream of the KLF could impact surface and groundwater in the vicinity of the KLF, ADC is expected to mitigate significant impacts with improvements to their stormwater management system (ADC 2022). Increases in impervious surfaces and reduced infiltration through soils potentially increase storm water runoff and introducing sediment and other pollutants to the nearshore environment. However, potential impacts from the Proposed Action are to be minor and would not

cause a cumulative impact to water resources when combined other proposed developments in the area.

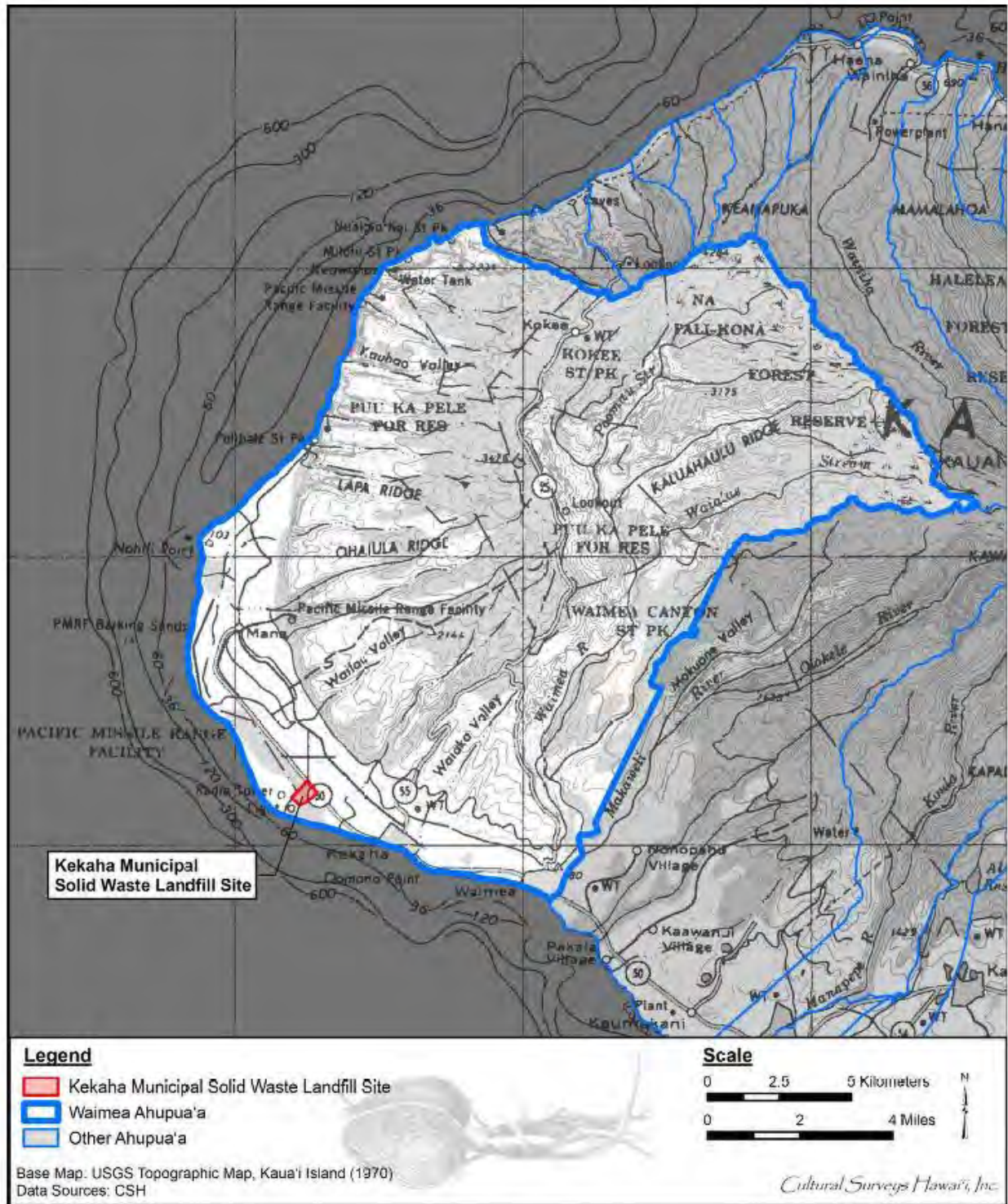


Figure 3-1. Location of the KLF within Waimea Ahupua'a

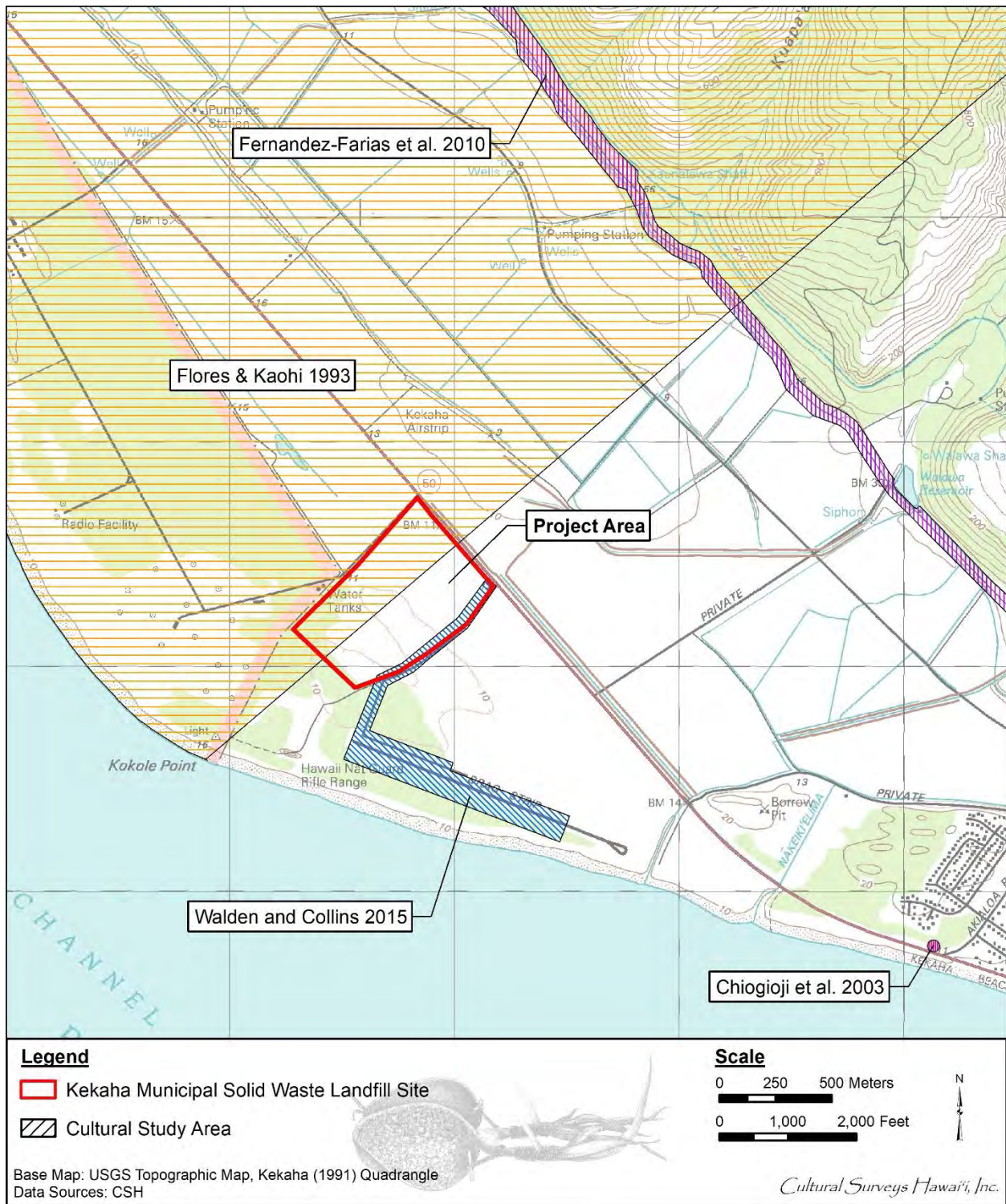


Figure 3-2. Previous Cultural Studies in the Vicinity of the KLF

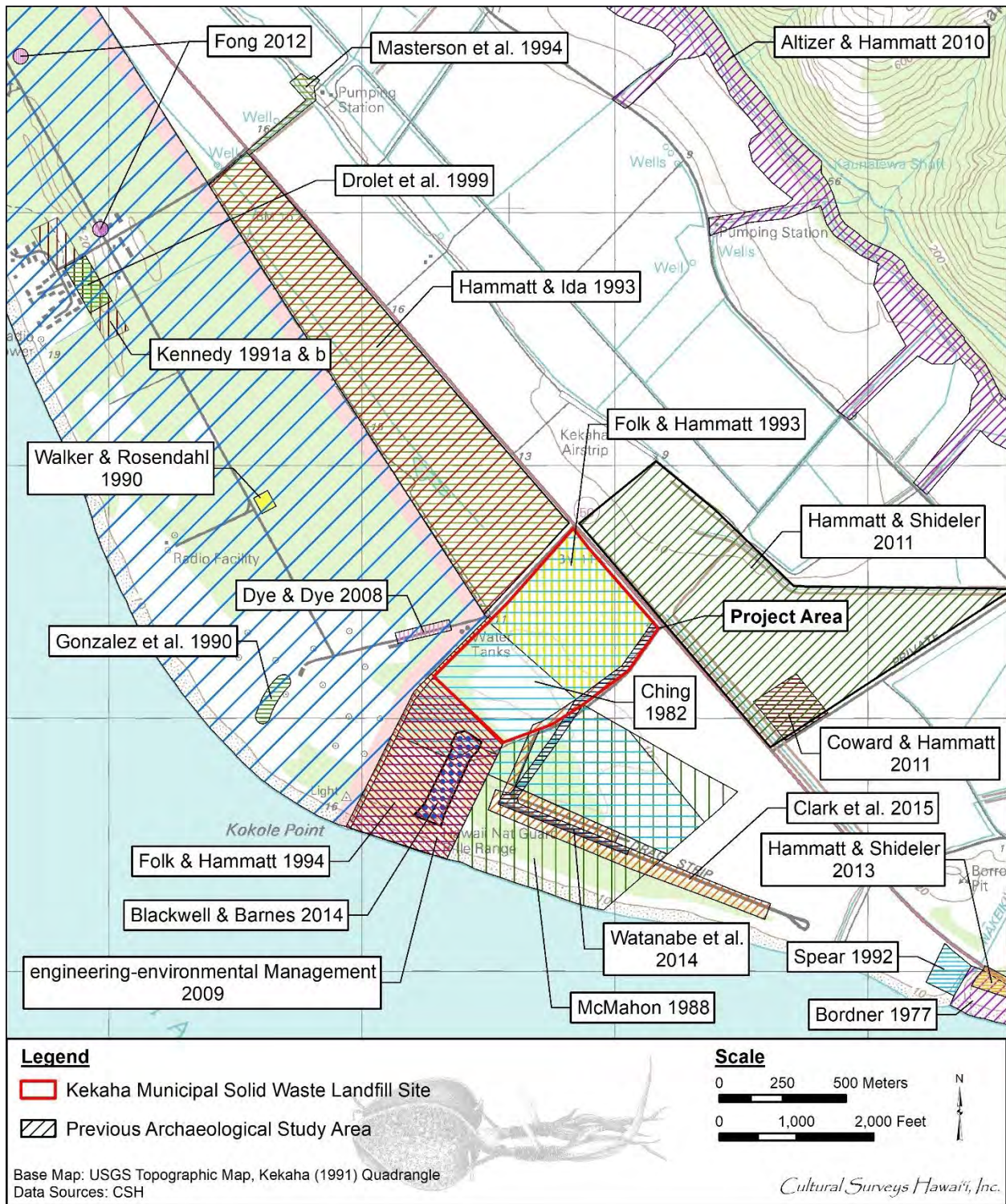


Figure 3-3. Previous Archaeological Studies in the Vicinity of the KLF

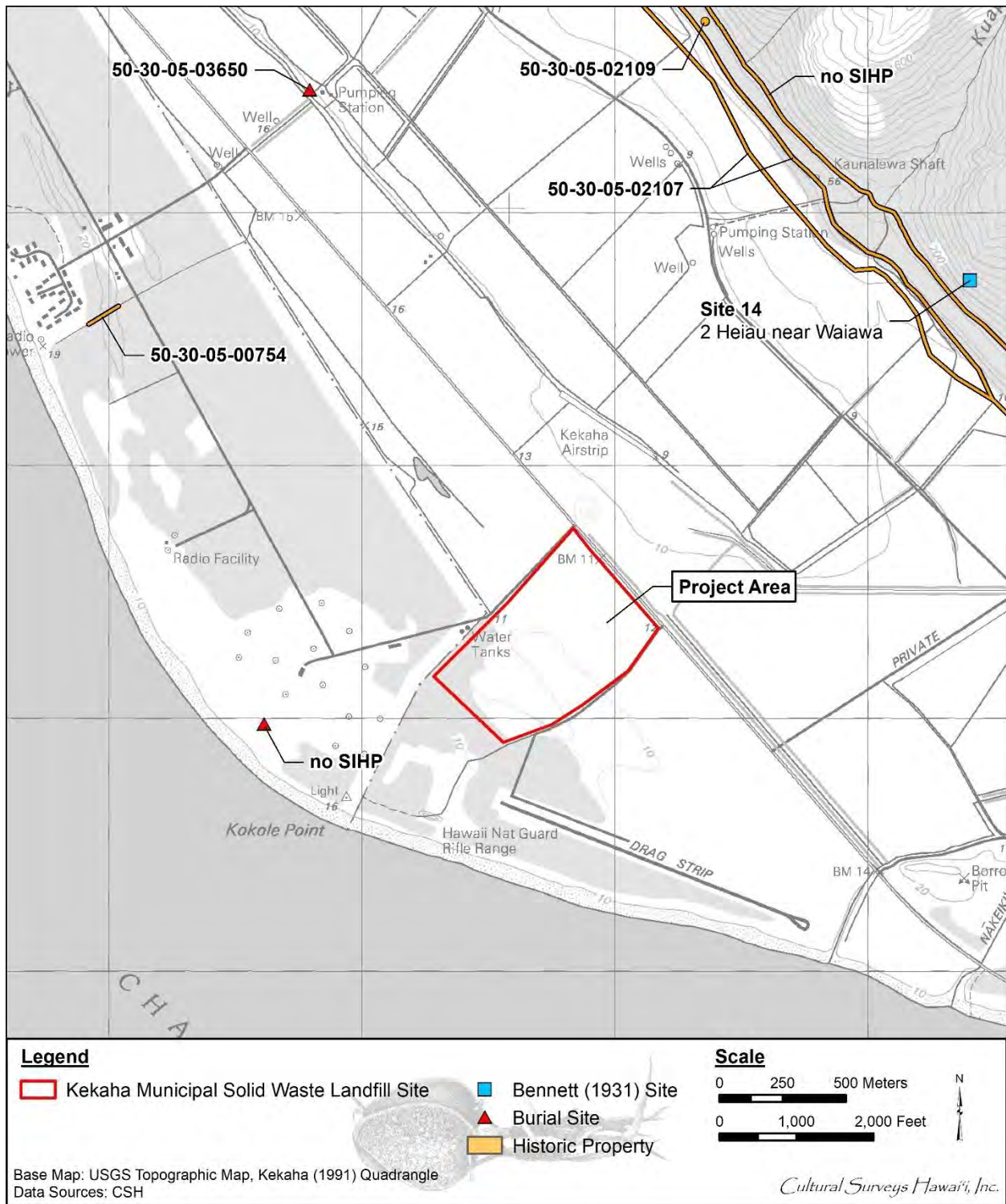


Figure 3-4. Historic Properties in the Vicinity of the KLF

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Kekaha Landfill Phase II Vertical Expansion

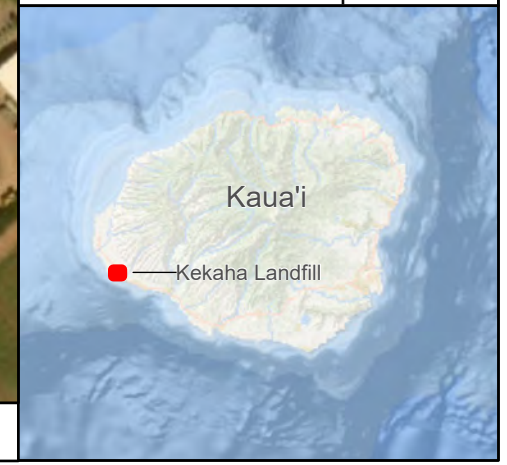
Figure 3.5
State Land Use
Designations

KAUAI COUNTY, HI

- Cell 1 Limit
- Cell 2 Limit
- Phase II Limit
- Phase I Limit
- TMK Parcel Boundary
- Approximate Extent of the Proposed Vertical Expansion
- State Land Use
 - Agricultural Land Use District
 - Conservation Land Use District



Reference Map



1:4,000

WGS 1984 UTM Zone 4N

0 0.13 0.25 Miles

NOT FOR CONSTRUCTION

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**Kekaha Landfill
Phase II Vertical
Expansion**

**Figure 3.6
County Zoning and
Special Management
Area**

KAUA'I COUNTY, HI

- Cell 1 Limit
- Cell 2 Limit
- Phase II Limit
- Phase I Limit
- TMK Parcel Boundary
- Approximate Extent of the Proposed Vertical Expansion
- Special Management Area
- County Agriculture Zone

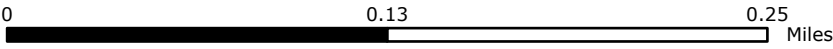


Reference Map



1:4,000

WGS 1984 UTM Zone 4N



NOT FOR CONSTRUCTION

**Kekaha Landfill
Phase II Vertical
Expansion**

**Figure 3.7
Coastal and
Flood Hazards**

KAUA'I COUNTY, HI

- Approximate Extent of the Proposed Vertical Expansion
- TMK Parcel Boundary
- Phase I Limit
- Phase II Limit
- Cell 1 Limit
- Cell 2 Limit

- Sea Level Rise
- 3.2 Feet
- Tsunami Evacuation Zone
- Tsunami Evacuation Zone
 - Extreme Evacuation Zone
- Flood Zone
- A, 1% Annual Chance Flood Hazard
 - AE, 1% Annual Chance Flood Hazard
 - AH, 1% Annual Chance Flood Hazard
 - VE, 1% Annual Chance Flood Hazard
 - X, 0.2 PCT ANNUAL CHANCE FLOOD HAZARD
 - X, AREA OF MINIMAL FLOOD HAZARD



Reference Map



4. Consistency with Plans, Policies and Controls

4.1 State of Hawai'i

4.1.1 State Land Use Law (HRS Chapter 205)

The Hawai'i State Land Use Law (HRS Chapter 205) established the state Land Use Commission (LUC) and granted the authority to classify all lands in the state into one of four land use districts: urban, rural, agricultural, and conservation. As shown in Figure 3-5, the Proposed Action will take place entirely within TMK 1-2-002:001(por.), which is within the state agriculture land use district²¹. Permissible uses within the state agricultural land use district are listed in HRS § 205-4.5. Landfills and solid waste management operations at landfills are not listed in this section; however, pursuant to HRS § 205-6, the county Planning Commission and state LUC may permit certain unusual and reasonable uses, other than those for which the district is classified, through the issuance of a Special Use Permit (SUP). The county Planning Commission is the decision-making authority for all SUPs; as the proposed use involves more than 15 acres of land, the SUP also requires approval by the State LUC.

The LUC issued an SUP to the County DPW in 1993 (Petition Docket No. SP93-384) to allow 63.18 acres of land within the state agricultural district to be used for landfill purposes (for KLF Phase II). Based on consultation with County of Kaua'i Planning Department, the Proposed Action (i.e. a vertical expansion of Phase II at KLF) is permissible under the existing SUP (K. Hull, County of Kaua'i Planning Department, personal communication – email to A. Fraley, June 15, 2023) as the Proposed Action is consistent with the proposed use evaluated in the existing SUP (the construction and operation of Phase II). The existing SUP does not specify a height restriction to Phase II of KLF nor does it have an expiration date. Based on this determination, no changes to the land use designations are warranted or proposed.

The LUC guidelines for determining “unusual and reasonable” uses for granting of an SUP are provided in HAR § 15-15-95(b). These guidelines are evaluated in the Findings of Fact, Conclusions of Law, and Decision and Order for SUP No. SP93-384 (dated July 1, 1993) and are bulleted below, with a discussion of the Proposed Action's consistency with each guideline.

- (1) The use shall not be contrary to the objectives sought to be accomplished by HRS Chapters 205 and 205A and the rules of the commission*

In the Findings of Fact, Conclusions of Law, and Decision and Order for SUP No. SP93-384 (dated July 1, 1993), the county Planning Department determined that the proposed use (the construction and operation of Phase II of the KLF) would not be contrary to the objectives sought to be accomplished by HRS Chapters 205 and 205A, and the proposed use would not result in a substantial degradation or loss of prime and productive agricultural land. The Planning Department also found that the proposed use

²¹ The state land use district boundary line is located on the boundary of TMK (4) 1-2-002:009 and TMK (4) 1-2-002:001 (F. Talon, Land Use Commission, personal communication – telephone, April 3, 2023).

would have “no effect” on significant historical sites or adversely impact recreational, scenic, and open space requirements.

The Proposed Action is consistent with the conclusions made by the Planning Department in the existing SUP and is consistent with the objectives sought to be accomplished for the Agricultural District pursuant to HRS § 205-2 and HAR § 15-15-19.

Per HRS § 205-2(d), the Agricultural District includes areas that are “not used for, or that are not suited to, agricultural and ancillary activities by reason of topography, soils, and other related characteristics.” (HRS § 205-2[d]). The KLF site (within which the Proposed Action will take place) is consistent with this description as its topography (i.e. the current active landfill area), unproductive soils, and existing use as a solid waste management facility renders it not suitable for agricultural use. As discussed in the existing SUP, the native soils underlying the KLF are characterized as having poorly graded sand overlying dense sand. This soil has a very high permeability and low capacity to retain moisture and cannot be used for agriculture without extensive irrigation and soil amendments. The native soils, which have limited agricultural potential, are largely covered by refuse and cover soils used in landfill operations, further degrading the agricultural potential of the site.

Further, the Proposed Action would not take place on lands suitable for intensive agriculture in accordance with HRS § 205-2(a)(3): “in the establishment of the boundaries of agricultural districts the greatest possible protection shall be given to those lands with a high capacity for intensive cultivation.” The KLF facility is not designated or adjacent to Important Agricultural Land (IAL)²². The majority of the KLF site, including the lands underlying the Proposed Action, are also designated as Class E soils by the University of Hawai‘i Land Study Bureau (LSB) (Office of Planning 2021)²³ and as “other” in the Agricultural Lands of Importance in the State of Hawai‘i (ALISH) (UH CTAHR 1977)²⁴. Therefore, the Proposed Action would not withdraw prime agricultural lands from production.

The Proposed Action is expected to have an operational life of approximately 2 to 4 years with a 30-year closure/post-closure monitoring period. In the long term, when the facility is closed, heavy equipment and accessory structures that are not needed during the 30-year monitoring period would be removed

²² The Important Agricultural Lands (IAL) designation is a supplemental land use classification reserved for high quality farmland within the State Agricultural District.

²³ The University of Hawai‘i Land Study Bureau system rates the productivity of soils throughout the state based on characteristics including texture, slope, salinity, erodibility, and rainfall, and designates areas in categories ranging from A to E (with Class A representing the most productive soils and Class E representing the least productive soils). While the majority of the KLF site is designated as Class E soils, a small section of the northwest corner of TMK 1-2-002:001(por.) is designated as Class C soils; this is outside of the boundaries of the Proposed Action.

²⁴ The Soil Conservation Service, University of Hawai‘i College of Tropical Agricultural and Human Resources, and the State of Hawai‘i Department of Agriculture designated ALISH in 1977 (UH CTAHR 1977). The ALISH system designates areas into “prime”, “unique” and “other” classifications based on soil type, climate, water supply, and agricultural land use patterns. “Prime” lands are suited for production of food, feed, forage, and fiber crops, “unique” lands are useful for specific high value food crops (e.g., taro, coffee, rice, watercress) and “other” designates farmland of statewide or local importance.

and the KLF site would appear as a hill covered in natural vegetation. Consistent with the requirements of HRS Chapter 205, the County could consider using the site for other permissible use in the Agricultural Districts when the landfill is closed.

The Proposed Action would be in compliance with the objectives and policies of HRS Chapter 205A, as further discussed in Section 4.1.2.

(2) The desired use would not adversely affect surrounding property

In the Findings of Fact, Conclusions of Law, and Decision and Order for SUP No. SP93-384 (dated July 1, 1993), the county Planning Department determined that the proposed use (the construction and operation of Phase II of the KLF) should not adversely affect surrounding property based on the nature and conduct of the proposed operation.

The Proposed Action is consistent with the conclusions made by the Planning Department in the existing SUP and would not adversely affect or preclude the use of lands adjacent to or in the vicinity of the KLF.

The KLF site has been used as a landfill since the early 1950s. The KLF is located on the coastal Mānā Plain historically used for agriculture, portions of which are still in active agricultural use. The primary land use in the vicinity of the KLF is agricultural and agriculture-related commercial activity occurring to the north, northwest, and east of the KLF site. Other land uses in the vicinity of the KLF include federal reserve lands (PMRF and U.S. Lighthouse Service) to the south and west, land leased by the Hawai'i National Guard to the south, and a drag racing park (Kaua'i Raceway Park) to the southeast (Figure 1-2).

There would be no change to the existing land use at the KLF facility with implementation of the Proposed Action. The site would continue to be used as a solid waste management facility and will continue to implement engineering and operational controls to minimize and avoid adverse impacts to the environment and public nuisances including fugitive dust (Section 3.1), landfill gas (Section 3.1), odor (Section 3.1), hazardous waste and materials (Section 3.6), noise (Section 3.10), or surface and ground water (Section 3.17). No substantial changes to KLF's operations are proposed. Based on the nature and conduct of the Proposed Action, the continued use of the KLF facility would not adversely affect or preclude the use of lands adjacent to or in the vicinity of the KLF.

(3) The use would not unreasonably burden public agencies to provide roads and streets, sewers, water drainage and school improvements, and police and fire protection

In the Findings of Fact, Conclusions of Law, and Decision and Order for SUP No. SP93-384 (dated July 1, 1993), the county Planning Department determined that the proposed use (the construction and operation of Phase II of the KLF) would not unreasonably burden public agencies to provide roads and streets, sewers, water, drainage, and police and fire protection. The Planning Department noted the following in making this determination:

- Police, sewer and school improvements are not required for the proposed landfill.
- Water drainage and road improvements are incorporated into the design.
- Fire protection will be derived from emergency well systems installed at the site.

- Fresh water for drinking and irrigation is the only public service required, and the County will supply the required flows as part of a new water main which will be installed by the U.S. Navy.

As described in Section 3, the Proposed Action would not require improvements to or otherwise burden public infrastructure nor would it be expected to increase demand on public services including traffic and roadways (Section 3.14), utility infrastructure and services (Section 3.11), educational facilities and population (Section 3.11 and 3.13), or police, fire, and emergency services (Section 3.15). Therefore, the Proposed Action is consistent with the conclusions made by the Planning Department in the existing SUP and would not adversely unreasonably burden public agencies.

(4) Unusual conditions, trends, and needs have arisen since the district boundaries and rules were established

In the Findings of Fact, Conclusions of Law, and Decision and Order for SUP No. SP93-384 (dated July 1, 1993), the county Planning Department determined that Hurricane Iniki caused an unusual need for waste disposal capacity as the hurricane generated approximately five times the normal annual waste volume in one day. This waste disposal crisis was cited as an unusual condition which requires special consideration. Further, SUP No. SP93-384 states that the Phase II landfill area was “expected to serve the County’s future waste disposal need since there are no other areas on the island that are physically and climatically conducive for a sanitary landfill.” The Phase II site was unsuitable for agricultural production and was “characterized as having poorly graded sand overlying dense sand. This soil has a very high permeability and low capacity to retain moisture and cannot be used for agriculture without extensive irrigation and soil amendments. Therefore, the proposed landfill does not withdraw prime agricultural lands from production”.

The KLF is the only permitted MSW landfill on the Island of Kaua’i and is a key component of the county’s Integrated Solid Waste Management Plan (Jacobs 2021). The KLF Phase II is projected to reach capacity in June of 2027, at which time the island of Kaua’i would be without a landfill for the safe disposal of MSW. As summarized in Section 1.2.3, the County has a long history of attempts to site a new MSW landfill at another location on the island. Most recently, in 2018, the County had to abandon its plans to develop a new MSW landfill and resource recovery park at Ma’alo because the FAA and the HDOT Airports Division opposed the project due to the potential for the landfill to increase bird strikes at Līhu’e Airport. While the County is currently working on the task of siting a new landfill facility on Kaua’i, this is an extensive effort and is not anticipated to be accomplished in less than 10 years. If there are significant regulatory, technical, or community issues to overcome, siting a new facility could take much longer or not succeed, as happened with the prior new landfill site. Therefore, there is a need to provide landfill capacity beyond 2027 at the KLF. The Proposed Action is expected to add an additional 2 to 4 years of capacity to the KLF, depending on future waste intake rates and potential waste diversion strategies, to meet the County of Kaua’i’s immediate need for landfill capacity. This is an “unusual condition,” which requires special consideration.

(5) The land upon which the proposed use is sought is unsuited for the uses permitted within the district

In the Findings of Fact, Conclusions of Law, and Decision and Order for SUP No. SP93-384 (dated July 1, 1993), the county Planning Department determined that the KLF property is characterized as having poorly graded sand overlying dense sand and this soil has a very high permeability and low capacity to retain moisture and cannot be used for agriculture without extensive irrigation and soil amendments. Therefore, the proposed use does not withdraw prime agricultural lands from production.

As discussed in the response to HAR § 15-15-95(b)(1), the Proposed Action would not take place on lands suitable for intensive agriculture and would not withdraw prime agricultural lands from production. Pursuant to HAR § 15-15-25(b), HRS § 205-4.5,²⁵ and HRS § 205-2(d), permissible uses in the Agricultural District include agricultural uses as well as other uses including wind energy production, biofuel production, small-scale solar facilities, scientific data collection, and open area recreation facilities. As described above, agricultural activities at the Proposed Action site are highly constrained by site-specific factors. The KLF site is potentially suitable for small-scale solar energy facilities or biofuel production; small-scale meteorological, air quality, noise, and other scientific and environmental data collection; and open area recreational facilities. The Proposed Action would not preclude the use of the site for these purposes; but some uses would be delayed until post-closure.

4.1.2 Coastal Zone Management Program (HRS Chapter 205A)

Under the authority of the federal Coastal Zone Management Act (16 U.S.C. 1451-1456), the Hawai'i Coastal Zone Management (CZM) Program was enacted as HRS Chapter 205A and is administered by the State of Hawai'i Department of Business, Economic Development and Tourism, Office of Planning. The purpose of the Hawai'i CZM program is to provide for the effective management, beneficial use, protection, and development of the coastal zone. It is designed to integrate decisions made by state and county agencies to provide greater coordination and compliance with existing laws and rules. The CZM area encompasses the entire state. The objectives of the Hawai'i CZM Program are listed in Table 4-1, with a brief statement regarding the consistency of the Proposed Action with each of the objectives and associated policies.

The Proposed Action would not result in significant adverse impacts to recreational, historic, or scenic and open space resources; coastal ecosystems; public use beaches/shoreline access; or marine resources. The KLF is not mapped within a flood plain, an erosion-prone area, or on geologically hazardous area, and is not at increased risk of damage from coastal hazards. Public participation has been incorporated into the environmental review process for compliance with HRS 343. Therefore, the

²⁵ HRS 205-4.5 (c): "Within the agricultural district, all lands with soil classified by the land study bureau's detailed land classification as overall (master) productivity rating class C, D, E, or U shall be restricted to the uses permitted for agricultural districts as set forth in section 205-5(b)."

§205-5(b): "Within agricultural districts, uses compatible to the activities described in section 205-2 as determined by the commission shall be permitted; provided that accessory agricultural uses and services described in sections 205-2 and 205-4.5 may be further defined by each county by zoning ordinance.

Proposed Action is consistent with the objectives and policies of the coastal zone management program as outlined in HRS § 205A-2.

Key components of the Hawai'i CZM Program include (1) regulation of development within the Special Management Area (SMA), a designated area extending inland from the shoreline, (2) restrictions within the shoreline setback area, which serves as a buffer against coastal hazards and erosion and to protect view planes, and (3) a Federal Consistency provision, which requires that federal activities, permits, and financial assistance be consistent with the enforceable policies of the Hawai'i CZM program, to the maximum extent practicable.

As shown in Figure 3-6, the portion of the KLF within TMK (4) 1-2-002:009 (i.e. Phase I and a portion of Cell 2) is within the SMA. An SMA use permit (SMA(U)20-12-4) was obtained for the Phase II lateral expansion in 2012. However, the Proposed Action is not within the SMA as it would take place entirely within TMK (4) 1-2-002:001(por.).

The KLF is not within the shoreline setback area nor would it involve a federal activity or permit requiring federal consistency review.

Table 4-1. Proposed Action's Consistency with the Objective and Policies of the Hawai'i CZM Program

Objectives and Policies	Assessment of Consistency
Recreational Resources: Provide coastal recreational opportunities accessible to the public.	The KLF does not support coastal nor any other type of recreational resources. The Proposed Action would not impair access to the shoreline, degrade the quality of coastal waters, or otherwise affect coastal recreational opportunities.
Historic Resources: Protect, preserve, and where desirable, restore those natural and manmade historic and prehistoric resources in the coastal zone management area that are significant in Hawaiian and American history and culture.	The Proposed Action would remain within the existing footprint of Phase II, above the existing landfill, and would not involve excavation or new ground disturbance. An AIS conducted in 1993 and subsequent investigation (AECOM 2013) found no evidence that archaeological resources or historic properties remain within the Phase II area (Appendix C) and none were encountered during previous site activities. SHPD concurs with the County's project effect determination of "No historic properties affected" under HRS § 6E-8, HAR § 275(b), and HAR § 275-7 (Appendix C; SHPD Doc. No. 2305DB01).
Scenic and Open Space Resources: Protect, preserve, and where desirable, restore or improve the quality of coastal scenic and open space resources.	The existing KLF is not within a view plane that exhibits a high degree of intactness and does not block scenic landforms, scenic view planes, or shoreline views. The KLF Phase II is partially visible from Kaumuali'i Highway and the shoreline and has the appearance of an earthen mound. Phase II is covered daily with landfill cover and is partially vegetated; the earth-tone daily landfill color is generally consistent in color with the surrounding agricultural areas. The maximum height of the facility would increase by 51.5 ft with the Proposed Action, thus potentially increasing visibility of the site from surrounding areas. The Proposed Action would include a landscaping and revegetation program as part of its closure plan to minimize visual impacts to the public. Significant adverse impacts to visual resources are not anticipated.

Objectives and Policies	Assessment of Consistency
<p>Coastal Ecosystems: Protect valuable coastal ecosystems, including reefs, from disruption and to minimize adverse impacts on all coastal ecosystems.</p>	<p>The Proposed Action would not involve work within coastal ecosystems. Stormwater would continue to be conveyed to the stormwater infiltration basin. Similarly, the leachate collection and removal system, would collect and divert leachate into the lined leachate evaporation pond. The facility does not discharge water to off-site areas. The Proposed Action would not adversely impact coastal ecosystems.</p>
<p>Economic Uses: Provide public or private facilities and improvements important to the State's economy in suitable locations.</p>	<p>The Proposed Action would allow for continued safe and environmentally-sound disposal of MSW on the island of Kaua'i for several more years while a long-term waste capacity solution is implemented. During the extended operational lifespan of the facility, the KLF would contribute direct, indirect, and induced economic benefits to the Kaua'i economy. The Proposed Action would provide direct economic benefits from employment and wages, from purchasing goods and services from other local industries, and through contributions to the Host Community Benefit fund. As the only permitted MSW landfill for the island of Kaua'i, the Proposed Action also has indirect and induced economic impacts on all major industries of the Kaua'i economy, including the agriculture, tourism, renewable energy development, health care, and science and technology-based sectors. Overall, the Proposed Action is anticipated to have a beneficial impact on the Kaua'i economy.</p>
<p>Coastal Hazards: Reduce hazard to life and property from coastal hazards.</p>	<p>The KLF is located outside of the 100-year and 500-year floodplains and 3.2-ft sea level rise exposure area and is not expected to be subject to coastal storm surge. The Proposed Action would take place at elevations ranging from 120 to 171.5 ft amsl, far above the projected and observed tsunami run-up heights. Therefore, the Proposed Action is not anticipated to be affected by coastal hazards and would not contribute to coastal flooding.</p>
<p>Managing Development: Improve the development review process, communication, and public participation in the management of coastal resources and hazards.</p>	<p>As detailed in Section 6, outreach and consultation was initiated with stakeholders early in the Project development process. In parallel, this EA has been prepared to disclose the potential impacts of the Proposed Action; the environmental review process includes opportunities for public review and comment, pursuant to HRS Chapter 343 and HAR § 11-200.1. The discretionary permitting process will also include opportunities for public participation.</p>
<p>Public Participation: Stimulate public awareness, education, and participation in coastal management.</p>	<p>The Proposed Action does not contain a public participation component for programmatic coastal management issues. Project-specific input has and will continue to be sought through the HRS Chapter 343 EA and permitting process.</p>
<p>Beach and Coastal Dune Protection: Protect beaches and coastal dunes for: (i) Public use and recreation; (ii) The benefit of coastal ecosystems; and (iii) Use as natural buffers against coastal hazards; and (B) Coordinate and fund beach management and protection.</p>	<p>The Proposed Action would not involve placement of structures within the shoreline setback area or otherwise affect erosion or natural shoreline processes.</p>

Objectives and Policies	Assessment of Consistency
<p>Marine and Coastal Resources: Promote the protection, use, and development of marine and coastal resources to assure their sustainability.</p>	<p>The Proposed Action would not involve work within marine or coastal ecosystems. Stormwater would continue to be conveyed to the stormwater infiltration basin and the leachate collection and removal system, would collect and divert leachate into the lined leachate evaporation pond. The facility does not discharge water to off-site areas. Therefore, the Proposed Action would not adversely affect marine or coastal resources.</p>

4.1.3 Hawai'i State Planning Act (HRS Chapter 226)

The Hawai'i State Planning Act (HRS Chapter 226) is a broad policy document relating to the statewide planning system, including all activities, programs and decisions made by local and state agencies. It is intended to "improve the planning process in this state, to increase the effectiveness of government and private actions, to improve coordination among different agencies and levels of government, to provide for wise use of Hawai'i's resources and to guide the future development of the state" (HRS § 226-1). The State Plan serves as a written guide for the long-range development of the state by describing the desired future for the residents of Hawai'i and providing a set of goals, objectives, and policies that are intended to shape the general direction of public and private development. Part I of the State Plan lists the state's long-range goals, objectives, policies, and priorities. Part II establishes a statewide planning system to coordinate and implement the State Plan. Part III establishes priority guidelines to address areas of statewide concern.

The stated goals of the state plan relate to a strong viable economy, a desired physical environment, and individual and family well-being (HRS § 226-4). Overall, the Proposed Action supports these goals. The Proposed Action would meet county's immediate need for landfill capacity and provide an environmentally sound and safe place to dispose of MSW on the island of Kaua'i. The KLF would continue to contribute direct, indirect, and induced economic benefits to the Kaua'i economy and would implement engineering and operational controls to minimize and avoid adverse impacts to the environment. Consistency of the Proposed Action with the specific objectives and policies in the Hawai'i State Plan is summarized in Table 4-2. Consistency of the Project with the specific relevant priority guidelines in the Hawai'i State Plan is summarized in Table 4-3. Relevant state functional plans are discussed in the following subsection.

Table 4-2. Proposed Action’s Consistency with the Objective and Policies of the Hawai’i State Planning Act

Objectives	Assessment of Consistency
<p>Population: It shall be the objective in planning for the State's population to guide population growth to be consistent with the achievement of physical, economic, and social objectives contained in this chapter.</p>	<p>The Proposed Action would not affect population growth.</p>
<p>Economy - In General: Planning for the State's economy in general shall be directed toward achievement of the following objectives:</p> <p>Increased and diversified employment opportunities to achieve full employment, increased income and job choice, and improved living standards for Hawai’i’s people, while at the same time stimulating the development and expansion of economic activities capitalizing on defense, dual-use, and science and technology assets, particularly on the neighbor islands where employment opportunities may be limited.</p> <p>A steadily growing and diversified economic base that is not overly dependent on a few industries and includes the development and expansion of industries on the neighbor islands.</p>	<p>The Proposed Action would be consistent with the objectives and policies for this theme. The Proposed Action would contribute to economic and social welfare by providing employment and wages, purchasing goods and services from other local industries, and through contributions to the Host Community Benefit fund. As the only permitted MSW landfill for the island of Kaua’i, the Proposed Action also has indirect and induced economic impacts on all major industries of the Kaua’i economy, including the agriculture, tourism, renewable energy development, health care, and science and technology-based sectors. Overall, the Proposed Action is anticipated to have a beneficial impact on the Kaua’i economy.</p>
<p>Economy – Agriculture: Planning for the State's economy with regard to agriculture shall be directed towards achievement of the following objectives:</p> <p>Viability of Hawai’i’s sugar and pineapple industries.</p> <p>Growth and development of diversified agriculture throughout the State.</p> <p>An agriculture industry that continues to constitute a dynamic and essential component of Hawai’i’s strategic, economic, and social well-being.</p>	<p>The Proposed Action would not have a direct effect on the economy as related to agriculture.</p>
<p>Economy – Visitor Industry: Planning for the State's economy with regard to the visitor industry shall be directed towards the achievement of the objective of a visitor industry that constitutes a major component of steady growth for Hawai’i’s economy.</p>	<p>The Proposed Action would not have a direct effect on the economy as related to the visitor industry.</p>
<p>Economy – Federal Expenditures: Planning for the State's economy with regard to federal expenditures shall be directed towards achievement of the objective of a stable federal investment base as an integral component of Hawai’i’s economy.</p>	<p>The Proposed Action would not involve federal expenditures.</p>
<p>Economy - Potential Growth and Innovative Activities: Planning for the State's economy with regard to potential growth and innovative activities shall be directed towards achievement of the objective of development and expansion</p>	<p>The Proposed Action would not have a direct effect on the economy as related to the potential growth and innovative activities.</p>

Objectives	Assessment of Consistency
of potential growth and innovative activities that serve to increase and diversify Hawai'i's economic base.	
Economy - Information Industry: Planning for the State's economy with regard to telecommunications and information technology shall be directed toward recognizing that broadband and wireless communication capability and infrastructure are foundations for an innovative economy and positioning Hawai'i as a leader in broadband and wireless communications and applications in the Pacific Region.	<p>The Project would not have a direct effect on the economy as related to telecommunication and information technology.</p>
<p>Physical Environment - Land-based, Shoreline, and Marine Resources: Planning for the State's physical environment with regard to land-based, shoreline, and marine resources shall be directed towards achievement of the following objectives:</p> <p>Prudent use of Hawai'i's land-based, shoreline, and marine resources.</p> <p>Effective protection of Hawai'i's unique and fragile environmental resources.</p>	<p>The Proposed Action would be consistent with the objectives and policies for this theme, particularly the following policies:</p> <p>(3) Take into account the physical attributes of areas when planning and designing activities and facilities.</p> <p>(8) Pursue compatible relationships among activities, facilities, and natural resources.</p> <p>The KLF site has been extensively modified by past and ongoing solid waste management operations. The Proposed Action aims to maximize the use of the existing facility and would take place entirely within the existing Phase II footprint. The KLF would continue to implement engineering and operational controls to minimize and avoid adverse impacts to the environment.</p>
<p>Physical Environment - Scenic, Natural Beauty, and Historic Resources: Planning for the State's physical environment shall be directed towards achievement of the objective of enhancement of Hawai'i's scenic assets, natural beauty, and multi-cultural/historical resources.</p>	<p>The Proposed Action would be consistent with the objectives and policies for this theme, particularly the following policies:</p> <p>(1) Promote the preservation and restoration of significant natural and historic resources.</p> <p>(3) Promote the preservation of views and vistas to enhance the visual and aesthetic enjoyment of mountains, ocean, scenic landscapes, and other natural features.</p> <p>The Proposed Action would remain within the existing footprint of Phase II, above the existing landfill, and would not involve excavation or new ground disturbance. No archaeological resources or historic properties remain within the Phase II area, therefore, no impacts to archaeological or historic resources are anticipated. The existing KLF is not within a view plane that exhibits a high degree of intactness and does not block scenic landforms, scenic view planes, or shoreline views. The KLF Phase II is partially visible from Kaumuali'i Highway and the shoreline and has the appearance of an earthen mound. The maximum height of the facility would increase by 51.5 ft with the Proposed Action, thus potentially increasing</p>

Objectives	Assessment of Consistency
	visibility of the site from surrounding areas. The Proposed Action would include a landscaping and revegetation program as part of its closure plan to minimize visual impacts to the public. Significant adverse impacts to visual resources are not anticipated.
<p>Physical Environment - Land, Air, and Water Quality: Planning for the State's physical environment with regard to land, air, and water quality shall be directed towards achievement of the following objectives: Maintenance and pursuit of improved quality in Hawai'i's land, air, and water resources. Greater public awareness and appreciation of Hawai'i's environmental resources.</p>	<p>The Proposed Action would be consistent with the objectives and policies for this theme, particularly the following policies:</p> <p>(3) Promote effective measures to achieve desired quality in Hawai'i's surface, ground, and coastal waters.</p> <p>(6) Encourage design and construction practices that enhance the physical qualities of Hawaii's communities.</p> <p>Engineered and operational controls would be implemented as part of the Proposed Action to avoid and minimize impacts to soil, water and air quality.</p>
<p>Facility Systems – In General: Planning for the State's facility systems in general shall be directed towards achievement of the objective of water, transportation, waste disposal, and energy and telecommunication systems that support statewide social, economic, and physical objectives.</p>	<p>The Proposed Action would be consistent with the objectives and policies for this theme, particularly the following policies:</p> <p>(2) Encourage flexibility in the design and development of facility systems to promote prudent use of resources and accommodate changing public demands and priorities.</p> <p>(3) Ensure that required facility systems can be supported within resource capacities and at reasonable cost to the user.</p> <p>The Proposed Action would provide an environmentally sound and safe place to dispose MSW on the island of Kaua'i. The Proposed Action would maximize the use of the existing KLF facility (and the county's investment) to the extent practical and meet county's immediate need for landfill capacity.</p>
<p>Facility Systems – Solid and Liquid Wastes: Planning for the State's facility systems with regard to solid and liquid wastes shall be directed towards the achievement of the following objectives: Maintenance of basic public health and sanitation standards relating to treatment and disposal of solid and liquid wastes. Provision of adequate sewerage facilities for physical and economic activities that alleviate problems in housing, employment, mobility, and other areas.</p>	<p>The Proposed Action would be consistent with the objectives and policies for this theme, particularly the following policies:</p> <p>(2) Promote reuse and recycling to reduce solid and liquid wastes and employ a conservation ethic.</p> <p>As detailed in the Kaua'i Integrated Solid Waste Management Plan update (Jacobs 2021), a key component of the County's solid waste management system is source reduction, reuse, and recycling. Implementation of recycling and waste diversion programs are depended on the ability to safely dispose of unrecyclable materials in the landfill. The Proposed Action is necessary to provide immediate landfill capacity for the island of Kaua'i.</p>

Objectives	Assessment of Consistency
<p>Facility Systems – Water: Planning for the State's facility systems with regard to water shall be directed towards achievement of the objective of the provision of water to adequately accommodate domestic, agricultural, commercial, industrial, recreational, and other needs within resource capacities.</p>	<p>The Proposed Action would not adversely affect facility systems related to water.</p>
<p>Facility Systems – Transportation: Planning for the State's facility systems with regard to transportation shall be directed towards the achievement of the following objectives:</p> <p>An integrated multi-modal transportation system that services statewide needs and promotes the efficient, economical, safe, and convenient movement of people and goods.</p> <p>A statewide transportation system that is consistent with and will accommodate planned growth objectives throughout the State.</p>	<p>The Proposed Action would not adversely affect facility systems related to transportation.</p>
<p>Facility Systems – Energy: Planning for the State's facility systems with regard to energy shall be directed toward the achievement of the following objectives, giving due consideration to all:</p> <p>Dependable, efficient, and economical statewide energy systems capable of supporting the needs of the people;</p> <p>Increased energy security and self-sufficiency through the reduction and ultimate elimination of Hawai'i's dependence on imported fuels for electrical generation and ground transportation;</p> <p>Greater diversification of energy generation in the face of threats to Hawai'i's energy supplies and systems;</p> <p>Reduction, avoidance, or sequestration of greenhouse gas emissions from energy supply and</p> <p>Utility models that make the social and financial interests of Hawai'i's utility customers a priority.</p>	<p>The Proposed Action would not adversely affect facility systems related to energy.</p>
<p>Facility Systems – Telecommunications: Planning for the State's telecommunications facility systems shall be directed towards the achievement of dependable, efficient, and economical statewide telecommunications systems capable of supporting the needs of the people.</p>	<p>The Proposed Action would not adversely affect facility systems related to telecommunications.</p>
<p>Socio-Cultural Advancement - Housing: Planning for the State's socio-cultural advancement with regard to housing shall be directed toward the achievement of the following objectives:</p> <p>Greater opportunities for Hawai'i's people to secure reasonably priced, safe, sanitary, and livable homes, located</p>	<p>The Proposed Action would not adversely affect housing.</p>

Objectives	Assessment of Consistency
<p>in suitable environments that satisfactorily accommodate the needs and desires of families and individuals, through collaboration and cooperation between government and nonprofit and for-profit developers to ensure that more rental and for sale affordable housing is made available to extremely low-, very low-, lower-, moderate-, and above moderate-income segments of Hawai'i's population.</p> <p>The orderly development of residential areas sensitive to community needs and other land uses.</p> <p>The development and provision of affordable rental housing by the State to meet the housing needs of Hawai'i's people.</p>	
<p>Socio-Cultural Advancement – Health: Planning for the State's socio-cultural advancement with regard to health shall be directed towards achievement of the following objectives:</p> <p>Fulfillment of basic individual health needs of the general public.</p> <p>Maintenance of sanitary and environmentally healthful conditions in Hawai'i's communities.</p> <p>Elimination of health disparities by identifying and addressing social determinants of health.</p>	<p>The Proposed Action would not adversely affect the health of the general public or healthcare systems.</p>
<p>Socio-Cultural Advancement – Education: Planning for the State's socio-cultural advancement with regard to education shall be directed towards achievement of the objective of the provision of a variety of educational opportunities to enable individuals to fulfill their needs, responsibilities, and aspirations.</p>	<p>The Proposed Action would not have an effect on education.</p>
<p>Socio-Cultural Advancement – Social Services: Planning for the State's socio-cultural advancement with regard to social services shall be directed towards the achievement of the objective of improved public and private social services and activities that enable individuals, families, and groups to become more self-reliant and confident to improve their well-being.</p>	<p>The Proposed Action would not have an effect on social services.</p>
<p>Socio-Cultural Advancement – Leisure: Planning for the State's socio-cultural advancement with regard to leisure shall be directed towards the achievement of the objective of the adequate provision of resources to accommodate diverse cultural, artistic, and recreational needs for present and future generations.</p>	<p>The Proposed Action would not adversely affect recreational facilities or leisure activities.</p>
<p>Socio-Cultural Advancement – Individual Rights and Personal Well-Being: Planning for the State's socio-cultural advancement with regard to individual rights and personal well-being shall be directed towards achievement of the objective of increased opportunities and protection of</p>	<p>The Proposed Action would not have an effect on individuals' rights and personal well-being.</p>

Objectives	Assessment of Consistency
individual rights to enable individuals to fulfill their socio-economic needs and aspirations.	
Socio-Cultural Advancement – Culture: Planning for the State's socio-cultural advancement with regard to culture shall be directed toward the achievement of the objective of enhancement of cultural identities, traditions, values, customs, and arts of Hawai'i's people.	<p>The Proposed Action would not adversely affect cultural identities, traditions, values, customs, or arts of Hawai'i's people.</p>
Socio-Cultural Advancement – Public Safety: Planning for the State's socio-cultural advancement with regard to public safety shall be directed towards the achievement of the following objectives: Assurance of public safety and adequate protection of life and property for all people. Optimum organizational readiness and capability in all phases of emergency management to maintain the strength, resources, and social and economic well-being of the community in the event of civil disruptions, wars, natural disasters, and other major disturbances. Promotion of a sense of community responsibility for the welfare and safety of Hawai'i's people.	<p>The Proposed Action would not adversely affect public safety.</p>
Socio-Cultural Advancement – Government: Planning the State's socio-cultural advancement with regard to government shall be directed towards the achievement of the following objectives: Efficient, effective, and responsive government services at all levels in the State. Fiscal integrity, responsibility, and efficiency in the state government and county governments.	<p>The Proposed Action would be consistent with the objectives and policies for this theme, particularly the following policies:</p> <ul style="list-style-type: none"> (1) Provide for necessary public goods and services not assumed by the private sector. (2) Pursue an openness and responsiveness in government that permits the flow of public information, interaction, and response. (5) Assure that government attitudes, actions, and services are sensitive to community needs and concerns. <p>The Proposed Action would meet the county's immediate need for landfill capacity and would provide an overall benefit to the solid waste management services for the island of Kaua'i.</p> <p>As detailed in Section 6, outreach and consultation was initiated with stakeholders early in the Project development process. In parallel, this EA has been prepared to disclose the potential impacts of the Proposed Action; the environmental review process includes opportunities for public review and comment, pursuant to HRS Chapter 343 and HAR § 11-200.1. The discretionary permitting process will also include opportunities for public participation.</p>

Table 4-3. Proposed Action's Consistency with the Priority Guidelines of the Hawai'i State Planning Act

Priority Guidelines	Assessment of Consistency
Economic Priority Guidelines	
(a) To stimulate economic growth and encourage business expansion and development to provide needed jobs for Hawai'i's people and achieve a stable and diversified economy	The Proposed Action would be consistent with these guidelines. The Proposed Action would contribute to economic and social welfare by providing employment and wages, purchasing goods and services from other local industries, and through contributions to the Host Community Benefit fund. As the only permitted MSW landfill for the island of Kaua'i, the Proposed Action has indirect and induced economic impacts on all major industries of the Kaua'i economy, including the agriculture, tourism, renewable energy development, health care, and science and technology-based sectors. Overall, the Proposed Action is anticipated to have a beneficial impact on the Kaua'i economy.
(b) To promote the economic health and quality of the visitor industry	The Proposed Action would not adversely affect the visitor industry.
(c) To promote the continued viability of the sugar and pineapple industries	The Proposed Action would not adversely affect the sugar and pineapple industries.
(d) To promote the growth and development of diversified agriculture and aquaculture	The Proposed Action would not adversely affect diversified agriculture and aquaculture.
(e) Water use and development	The Proposed Action would not adversely affect water use and development.
(f) Energy use and development	The Proposed Action would not adversely affect energy use and development.
(g) To promote the development of the information industry	The Proposed Action would not adversely affect the information industry.
Population Growth and Land Resources Priority Guidelines	
(a) To effect desired statewide growth and distribution	The Proposed Action would not affect statewide growth and distribution.
(b) Regional growth distribution and land resource utilization	<p>The Proposed Action would be consistent with these guidelines, particularly the following:</p> <p>(2) Make available marginal or nonessential agricultural lands for appropriate urban uses while maintaining agricultural lands of importance in the agricultural district.</p> <p>(9) Direct future urban development away from critical environmental areas or impose mitigating measures so that negative impacts on the environment would be minimized.</p> <p>(12) Utilize Hawaii's limited land resources wisely, providing adequate land to accommodate projected population and economic growth needs while ensuring the protection of the environment and the availability of the shoreline, conservation lands, and other limited resources for future generations.</p> <p>Although the KLF is within the agricultural district, agricultural activities are highly constrained by site-specific factors; topography (i.e. the current active</p>

Priority Guidelines	Assessment of Consistency
	landfill area), unproductive soils, and existing use as a solid waste management facility renders it not suitable for agricultural use. The Proposed Action aims to maximize the use of the existing facility and would take place entirely within the existing Phase II footprint. The KLF would continue to implement engineering and operational controls to minimize and avoid adverse impacts to the environment. Consistent with the requirements of HRS Chapter 205, the County could consider using the site for other permissible use in the Agricultural Districts when the site reaches capacity and is closed.
Crime and Criminal Justice Priority Guidelines	
In the area of crime and criminal justice	The Proposed Action would not affect crime and criminal justice.
Affordable Housing Priority Guidelines	
Provision of affordable housing	The Proposed Action would not affect affordable housing.
Quality Education Priority Guidelines	
To promote quality education	The Proposed Action would not affect quality education.
Sustainability Priority Guidelines	
To promote sustainability	<p>The Project would be consistent with these guidelines, particularly the following:</p> <ul style="list-style-type: none"> (1) Encouraging balanced economic, social, community, and environmental priorities (2) Encouraging planning that respects and promotes living within the natural resources and limits of the State (3) Promoting a diversified and dynamic economy (4) Encouraging respect for the host culture (5) Promoting decisions based on meeting the needs of the present without compromising the needs of future generations <p>The Proposed Action would help to meet Hawai'i's economic, social, community and environmental priorities by providing an environmentally sound and safe place to dispose of municipal solid waste on the island of Kaua'i. The Proposed Action aims to maximize the use of the existing facility to the extent practical and would continue to implement engineering and operational controls to minimize and avoid adverse impacts to the environment. The Proposed Action would also contribute to economic and social welfare by providing employment and wages, purchasing goods and services from other local industries, and through contributions to the Host Benefit Community fund. As the only permitted MSW landfill for the island of Kaua'i, the Proposed Action has indirect and induced economic impacts on all major industries of the Kaua'i economy, including the agriculture, tourism, renewable energy development, health care, and science and technology-based sectors. Overall, the Proposed Action is anticipated to have a beneficial impact on the Kaua'i economy.</p>
Climate Change Adaptation Priority Guidelines	

Priority Guidelines	Assessment of Consistency
<p>To prepare the State to address the impacts of climate change, including impacts to the areas of agriculture; conservation lands; coastal and nearshore marine areas; natural and cultural resources; education; energy; higher education; health; historic preservation; water resources; the built environment, such as housing, recreation, transportation; and the economy</p>	<p>The Proposed Action would be consistent with these guidelines, particularly the following:</p> <p>(7) Promote sector resilience in areas such as water, roads, airports, and public health, by encouraging the identification of climate change threats, assessment of potential consequences, and evaluation of adaptation options;</p> <p>(10) Encourage planning and management of the natural and built environments that effectively integrate climate change policy</p> <p>The Proposed Action would generate negligible amounts of greenhouse gas emissions from equipment and vehicle exhaust and controlled landfill gas emissions. The KLF is also outside of the 3.2 ft, sea level rise exposure area and is not expected to be adversely impacted by storm surge or coastal flooding. There is a potential for climate-induced changes to natural hazards over the 30-year period of post-closure care. Specifically, Hawai'i is expected to see an increase in tropical cyclone and extreme rainfall events. The final cover and revegetation of the closed landfill would protect the integrity of the landfill and prevent its contents from being exposed to outside forces. Therefore, the potential for adverse impacts from climate-induced changes to natural hazards is low.</p>

In addition to establishing goals, objectives, and policies for the State of Hawai'i, HRS Chapter 226 also directs state agencies to prepare state functional plans for statewide priority issues. A total of 13 functional plans have been developed; these relate to agriculture, conservation lands, education, employment, energy, health, higher education, historic preservation, housing, human services, recreation, tourism, and transportation. The State Agricultural Functional Plan is the most relevant to the Proposed Action; a brief discussion of the Project's consistency with this plan follows.

The State Agricultural Functional Plan sets forth the policies, programs, and projects for implementing the agricultural and agricultural-related objectives, policies, and priority guidelines contained in the Hawaii State Plan. The agriculture functional plan describes the two fundamental objectives: (1) continued viability in Hawai'i's sugar and pineapple industries, and (2) continued growth and development of diversified agriculture through the state (HDOA 1991). The plan outlines actions directed at the factors and conditions that are key to achieving these objectives; these relate to industry research and development, agricultural pests and the environment, land and water, and services and infrastructure. The plan identifies objectives, policies, and priority actions relative to each of these issues. The majority of these relate to the broader agricultural industry and thus are not applicable to the Proposed Action; however, the Proposed Action would be consistent with Objective (H): "achievement of productive agricultural use of lands most suitable and needed for agriculture."

Per HRS § 205-2(d), the Agricultural District includes areas that are "not used for, or that are not suited to, agricultural and ancillary activities by reason of topography, soils, and other related characteristics." (HRS § 205-2[d]). The KLF site (within which the Proposed Action will take place) is consistent with this

description as its topography (i.e., the current active landfill area), unproductive soils, and existing use as a solid waste management facility renders it not suitable for agricultural use. The native soils underlying the KLF are characterized as having poorly graded sand overlying dense sand. This soil has a very high permeability and low capacity to retain moisture and cannot be used for agriculture without extensive irrigation and soil amendments. The native soils, which have limited agricultural potential, are largely covered by refuse and cover soils used in landfill operations, further degrading the agricultural potential of the site. Further, the Proposed Action would not take place on lands suitable for intensive agriculture in accordance with HRS § 205-2(a)(3). The KLF facility is not designated or adjacent to IAL. The majority of the KLF site is designated as Class E soils (Office of Planning 2021) and the KLF is not designated as prime or unique lands on ALISH maps (UH CTAHR 1977). The agricultural potential of the site has been severely altered by the construction and operation of the Phase II landfill. Therefore, the Proposed Action would not withdraw prime agricultural lands from production.

The Proposed Action is expected to have an operational life of approximately 2 to 4 years with a 30-year closure/post-closure monitoring period. In the long term, when the facility is closed, heavy equipment and accessory structures that are not needed during the 30-year monitoring period would be removed and the KLF site would appear as a hill covered in natural vegetation. Post-closure, the County could consider using the site for other permissible use in the Agricultural Districts pursuant to HRS § 205-2(d).

4.1.4 Hawai'i State Environmental Policy (HRS Chapter 344)

HRS Chapter 344 establishes a state policy to encourage productive and enjoyable harmony between people and their environment, promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of humanity, and enrich the understanding of ecological systems and natural resources important to the people of Hawai'i. Table 4-4 summarizes the Proposed Action's consistency with the specific guidelines identified in HRS Chapter 344.

Table 4-4. Proposed Action's Consistency with Hawai'i State Environmental Policy

Guideline	Assessment of Consistency
Population	
Recognize population impact as a major factor in environmental degradation and adopt guidelines to alleviate this impact and minimize future degradation;	The Proposed Action would not affect population trends, distribution, or household demographics.
Recognize optimum population levels for counties and districts within the State, keeping in mind that these will change with technology and circumstance, and adopt guidelines to limit population to the levels determined.	
Land, Water, Mineral, Visual, Air, and Other Natural Resources	
Encourage management practices which conserve and fully utilize all natural resources;	The Proposed Action would provide an environmentally sound and safe place to dispose of MSW on the island of Kaua'i. The Proposed Action aims to maximize the use of the existing facility to the extent practical and would continue to implement engineering and

Guideline	Assessment of Consistency
	operational controls to minimize and avoid adverse impacts to the environment.
Promote irrigation and waste water management practices which conserve and fully utilize vital water resources;	Wastewater generated at the KLF is treated by an on-site septic system. Non-potable water used for dust control is obtained from a former Kekaha Sugar Company irrigation ditch and transported to the site using a 4,000-gallon capacity water truck. The current KLF water and wastewater requirements do not exceed the existing capacity and no adverse impacts are anticipated from implementation of the Proposed Action.
Promote the recycling of waste water;	
Encourage management practices which conserve and protect watersheds and water sources, forest, and open space areas;	No naturally occurring surface waters would be impacted by the Proposed Action. Stormwater would continue to be managed on site by the KLF's stormwater management system, which is adequately sized to accommodate the anticipated increase in stormwater flow and velocities from the Proposed Action. Groundwater underneath the KLF is brackish; therefore, it is not suitable for current or future use as irrigation water or as a potable water supply. The Proposed Action would expand the Phase II landfill above the existing RCRA Subtitle D base liner and would not change the current KLF groundwater monitoring program or altered existing impacts to groundwater. The Proposed Action would not affect forest or open space areas.
Establish and maintain natural area preserves, wildlife preserves, forest reserves, marine preserves, and unique ecological preserves;	The Proposed Action would not involve any activities within a natural area preserve, wildlife preserve, forest reserve, marine preserve, or unique ecological preserve.
Maintain an integrated system of state land use planning which coordinates the state and county general plans;	The Proposed Action would be consistent with relevant state and county plans, as discussed in Section 4 of the EA.
Promote the optimal use of solid wastes through programs of waste prevention, energy resource recovery, and recycling so that all our wastes become utilized.	As detailed in the Kaua'i Integrated Solid Waste Management Plan update (Jacobs 2021), a key component of the County's solid waste management system is source reduction, reuse, and recycling. Implementation of recycling and waste diversion programs are depended on the ability to safely dispose of unrecyclable materials in the landfill. The Proposed Action would meet the county's immediate need for landfill capacity and would provide an overall benefit to the solid waste management services for the island of Kaua'i.
Flora and Fauna	
Protect endangered species of indigenous plants and animals and introduce new plants or animals only upon assurance of negligible ecological hazard	The Proposed Action would take place entirely within the existing Phase II footprint, which has been highly modified by the construction and operation of the Phase II landfill. No new areas will be disturbed as a result of the Proposed Action. No listed or rare plants are known to occur within the KLF and previous surveys recorded a dominance of non-native plant species. Listed waterbirds, the Hawaiian goose, listed seabirds, and the Hawaiian hoary bat could occur in or transit through the KLF. As detailed in Section 3. 2, species-specific measures, as recommended by

Guideline	Assessment of Consistency
	USFWS and DOFAW, would be implemented to avoid and minimize potential impacts.
Foster the planting of native as well as other trees, shrubs, and flowering plants compatible to the enhancement of our environment	It is anticipated that the post-closure landscaping and revegetation program would incorporate native species that are ecologically and culturally appropriate for this location, as practicable.
Parks, Recreation, and Open Space Guidelines	
Establish, preserve and maintain scenic, historic, cultural, park and recreation areas, including the shorelines, for public recreational, educational, and scientific uses	The KLF does not support coastal nor any other type of recreational resources, nor would it affect recreational opportunities. The Proposed Action is not located along the shoreline, nor would it affect shoreline structures or processes. The existing KLF is not within a view plane that exhibits a high degree of intactness and does not block scenic landforms, scenic view planes, or shoreline views. The KLF Phase II is partially visible from Kaumuali'i Highway and the shoreline and has the appearance of an earthen mound. The maximum height of the facility would increase by 51.5 ft with the Proposed Action, thus potentially increasing visibility of the site from surrounding areas. The Proposed Action would include a landscaping and revegetation program as part of its closure plan to minimize visual impacts to the public. Significant adverse impacts to visual resources are not anticipated.
Protect the shorelines of the State from encroachment of artificial improvements, structures, and activities	
Promote open space in view of its natural beauty not only as a natural resource but as an ennobling, living environment for its people	
Economic Development Guidelines	
Encourage industries in Hawai'i which would be in harmony with our environment	As discussed in Section 3.13, the Proposed Action would be expected to positively impact the economic and social welfare of the community by providing a safe and environmental-sound place to dispose of MSW on the island of Kaua'i while a long-term waste capacity solution is implemented. During the extended operational lifespan of the facility, the KLF would contribute direct, indirect, and induced economic benefits to the Kaua'i economy. The Proposed Action would provide direct economic benefits from employment and wages, from purchasing goods and services from other local industries, and through contributions to the Host Community Benefit fund. As the only permitted MSW landfill for the island of Kaua'i, the Proposed Action also has indirect and induced economic impacts on all major industries of the Kaua'i economy, including the agriculture, tourism, renewable energy development, health care, and science and technology-based sectors. Overall, the Proposed Action is anticipated to have a beneficial impact on the Kaua'i economy.
Promote and foster the agricultural industry of the State; and preserve and conserve productive agricultural lands;	
Encourage federal activities in Hawai'i to protect the environment;	
Encourage all industries including the fishing, aquaculture, oceanography, recreation, and forest products industries to protect the environment;	
Establish visitor destination areas with planning controls which shall include but not be limited to the number of rooms;	
Promote and foster the aquaculture industry of the State; and preserve and conserve productive aquacultural lands.	
Transportation Guidelines	
Encourage transportation systems in harmony with the lifestyle of the people and environment of the State	Transportation system improvements are not included as part of the Proposed Action. As discussed in Section 3.14, the KLF accounts for a small percentage of the overall traffic volume on Kaumuali'i Highway in the vicinity of the KLF. The Proposed Action
Adopt guidelines to alleviate environmental degradation caused by motor vehicles	

Guideline	Assessment of Consistency
Encourage public and private vehicles and transportation systems to conserve energy, reduce pollution emission, including noise, and provide safe and convenient accommodations for their users	would not change the quantity of waste received nor the number of commercial and non-commercial loads accepted at the facility. Therefore, there would not be any significant changes to landfill-related traffic on Kaumuali'i Highway and no significant adverse impacts to roadways or traffic are anticipated from implementation of the Proposed Action.
Energy Guidelines	
Encourage the efficient use of energy resources	The Proposed Action would not increase the daily electrical load over existing levels, although use of public electric utility would continue for an additional 2 to 4 years. The current KLF energy requirements do not exceed the existing capacity and no adverse impacts to the electric utility is anticipated from implementation of the Proposed Action.
Community Life and Housing Guidelines	
Foster lifestyles compatible with the environment; preserve the variety of lifestyles traditional to Hawai'i through the design and maintenance of neighborhoods which reflect the culture and mores of the community	The Proposed Action would benefit community life as it would continue safe and proper disposal of MSW on the island of Kaua'i for several more years while a long-term waste capacity solution is implemented. The Proposed Action would not affect community culture, identity, or lifestyle.
Develop communities which provide a sense of identity and social satisfaction in harmony with the environment and provide internal opportunities for shopping, employment, education, and recreation	
Encourage the reduction of environmental pollution which may degrade a community	
Foster safe, sanitary, and decent homes	
Recognize community appearances as major economic and aesthetic assets of the counties and the State; encourage green belts, plantings, and landscape plans and designs in urban areas; and preserve and promote mountain-to-ocean vistas	
Education and Culture Guidelines	
Foster culture and the arts and promote their linkage to the enhancement of the environment	The Proposed Action would not adversely affect existing or future educational or cultural programs.
Encourage both formal and informal environmental education to all age groups	
Citizen Participation Guidelines	
Encourage all individuals in the State to adopt a moral ethic to respect the natural environment; to reduce waste and excessive consumption; and to fulfill the responsibility as trustees of the environment for the present and succeeding generations	The HRS Chapter 343 environmental review process provides opportunity for public input at various stages, including pre-assessment consultation and public review of the Draft EA. In addition, the land use permitting process also includes opportunity for public input regarding the Proposed Action.

Guideline	Assessment of Consistency
Provide for expanding citizen participation in the decision-making process so it continually embraces more citizens and more issues	

4.2 County of Kauaʻi

4.2.1 Kauaʻi General Plan

The Kauaʻi General Plan establishes priorities for managing growth and community development over a 20-year planning timeframe and guides future action concerning land use and development regulations, urban renewal programs, and expenditures for capital improvements (County of Kauaʻi 2018). The General Plan is divided into five elements: vision and goals, policies, objectives and actions by sector, policy maps, and implementation programs. The Proposed Actions consistency with each of these elements is described below.

The Kauaʻi General Plan states four over-arching goals: 1) a sustainable island, 2) a unique and beautiful, 3) a healthy and resilient people, and 4) an equitable place, with opportunity for all. Overall, the Proposed Action supports these goals. The Proposed Action would meet county’s immediate need for landfill capacity and provide an environmentally sound and safe place to dispose of MSW on the island of Kauaʻi. The KLF would continue to contribute direct, indirect, and induced economic benefits to the Kauaʻi economy and would implement engineering and operational controls to minimize and avoid adverse impacts to the environment. Implementation of the four Kauaʻi General Plan goals are broken into nineteen policies that address the issues most important to Kauaʻi residents and serve to guide the county’s direction and priorities in accommodating and managing future growth. Consistency of the Proposed Action with the nineteen policies of the Kauaʻi General Plan is summarized in Table 4-5.

Table 4-5. Proposed Action’s Consistency with the Policies of the Kauaʻi General Plan

Policies	Assessment of Consistency
Policy 1: Manage growth to preserve rural character.	The Proposed Action would not induce changes in land use, development, or population size in the Kekaha Region (Section 3.13).
Policy 2: Provide affordable housing while facilitating a diversity of privately developed housing for local families.	The Proposed Action would not adversely affect affordable housing.
Policy 3: Recognize the identity of Kauaʻi’s individual towns and districts.	As further described below, the Proposed Action is consistent with the community planning guidelines for Waimea-Kekaha, which are to preserve the Kekaha’s agricultural, county-living identity, and ensure that the community is resilient to climate change and coastal hazards. The KLF is also an established use within Kekaha and is shown as a solid waste management facility on Waimea-Kekaha Infrastructure Map (County of Kauaʻi 2018: Figure 5-25).
Policy 4: Design healthy and complete neighborhoods.	The Proposed Action would benefit community life as it would continue safe and proper disposal of MSW on the island of Kauaʻi. The KLF would continue to

Policies	Assessment of Consistency
	implement engineering and operational controls to minimize and avoid adverse impacts to the environment and public health and safety. The Proposed Action would not affect the character of the neighborhood nor adversely impact roadways, recreational facilities, or public services (Section 3.11 and 3.14).
Policy 5: Make strategic infrastructure investments.	The Proposed Action is consistent with the county's objective to provide environmentally-sound waste disposal and collection services. The Proposed Action would maximize the use of the existing KLF facility (and the county's investment) to the extent practical and meet county's immediate need for landfill capacity. It would result in an overall positive impact for solid waste infrastructure for the Island of Kaua'i (Section 3.15).
Policy 6: Reduce the cost of living.	The Proposed Action would not have a direct effect on the cost of living. As discussed in Section 3.13, demographics, employment, and income within the Kekaha region would not be significantly impacted by the Proposed Action. The Proposed Action would be expected to contribute direct, indirect, and induced economic benefits to the Kaua'i economy.
Policy 7: Build a balanced multimodal transportation system.	The Proposed Action would not adversely affect traffic or transportation systems (Section 3.14).
Policy 8: Protect Kaua'i's scenic beauty.	The existing KLF is not within a view plane that exhibits a high degree of intactness and does not block scenic landforms, scenic view planes, or shoreline views. The KLF Phase II is partially visible from Kaumuali'i Highway and the shoreline and has the appearance of an earthen mound. The maximum height of the facility would increase by 51.5 ft with the Proposed Action, thus potentially increasing visibility of the site from surrounding areas. The Proposed Action would include a landscaping and revegetation program as part of its closure plan to minimize visual impacts to the public. Significant adverse impacts to visual resources are not anticipated (Section 3.17).
Policy 9: Uphold Kaua'i as a unique visitor destination.	The Proposed Action would not have a direct effect on the visitor industry.
Policy 10: Help business thrive.	The Proposed Action would provide direct economic benefits from purchasing goods and services from other local industries. As the only permitted MSW landfill for the island of Kaua'i, the Proposed Action also has indirect and induced economic impacts on all major industries of the Kaua'i economy, including the agriculture, tourism, renewable energy development, health care, and science and technology-based sectors (Section 3.13).
Policy 11: Help agricultural lands be productive.	Although the KLF is within the agricultural district, agricultural activities are highly constrained by site-specific factors; topography (i.e. the current active landfill area), unproductive soils, and existing use as a solid waste management facility renders it not suitable for agricultural use. The Proposed Action would not withdraw prime agricultural lands from production nor would it preclude or adversely affect agricultural uses within the vicinity of the KLF.
Policy 12: Protect our watersheds.	The KLF is within the Hoesa watershed (CWRM 2008). No surface water features (including wetlands, streams, ditches) are identified within the KLF site. Wetlands and ponds are identified adjacent to the KLF north of Kaumuali'i

Policies	Assessment of Consistency
	<p>Highway and within the PMRF. The Pacific Ocean is approximately 2,800 ft makai of the Phase II area.</p> <p>No naturally occurring surface waters would be impacted by the Proposed Action. Stormwater would continue to be managed on site by the KLF's stormwater management system, which is adequately sized to accommodate the anticipated increase in stormwater flow and velocities from the Proposed Action.</p> <p>Groundwater underneath the KLF is brackish; therefore, it is not suitable for current or future use as irrigation water or as a potable water supply. The Proposed Action would expand the Phase II landfill above the existing RCRA Subtitle D base liner and would not change the current KLF groundwater monitoring program or altered existing impacts to groundwater.</p> <p>Therefore, the Proposed Action would be consistent with the General Plan's policy to protect watersheds.</p>
Policy 13: Complete Kaua'i's shift to clean energy.	The Proposed Action would not affect the county's transition to clean energy. Energy requirements of the KLF include minor electricity consumption for management and maintenance facilities and diesel fuel for operation of heavy equipment. The Proposed Action would not increase the daily load on local utilities or increase daily consumption of fossil fuels (Section 3.15).
Policy 14: Prepare for climate change.	Section 3.9 analyzes the potential impacts of climate change on the Proposed Action. The KLF is also outside of the 3.2 ft, sea level rise exposure area and is not expected to be adversely impacted by storm surge or coastal flooding. There is a potential for climate-induced changes to natural hazards over the 30-year period of post-closure care. Specifically, Hawai'i is expected to see an increase in tropical cyclone and extreme rainfall events. The final cover and revegetation of the closed landfill would protect the integrity of the landfill and prevent its contents from being exposed to outside forces. Therefore, the potential for adverse impacts from climate change is low. The Proposed Action would generate negligible amounts of greenhouse gas emissions from equipment and vehicle exhaust and controlled landfill gas emissions.
Policy 15: Respect Native Hawaiian rights and wahi pana.	Based on information gathered from the cultural and historical background, as well as community consultation conducted as part of the CIA, no cultural resources, practices, or beliefs have been identified as existing within the KLF (Section 3.4). The Proposed Action is not anticipated to impact cultural practices that are currently being exercised elsewhere within the Waimea Ahupua'a.
Policy 16: Protect access to Kaua'i's treasured places.	The Proposed Action would not restrict access to or adversely affect the shoreline, recreational areas, or places for religious and cultural observances.
Policy 17: Nurture our keiki.	The Proposed Action would not affect the County's policy to provide future generations with safe communities, great schools and facilities, and financially sustainable jobs, housing, and transportation opportunities.
Policy 18: Honor our kupuna.	The Proposed Action would not affect services or housing for the elderly.
Policy 19: Communicate with aloha.	As detailed in Section 6, outreach and consultation was initiated with stakeholders early in the Project development process. In parallel, this EA has been prepared to disclose the potential impacts of the Proposed Action; the

Policies	Assessment of Consistency
	environmental review process includes opportunities for public review and comment, pursuant to HRS Chapter 343 and HAR § 11-200.1. The discretionary permitting process will also include opportunities for public participation.

The Kauaʻi General Plan also describes objectives and actions by sector. *Sector IV. Critical Infrastructure* is the most applicable to the Proposed Action and includes the County’s solid waste management objective “To provide environmentally-sound waste disposal and collection services with a goal to reduce the solid waste stream by 70 percent” (County of Kauaʻi 2018). The Proposed Action would be consistent with this objective as it would meet the county’s immediate need for “environmentally-sound waste disposal” by increasing landfill capacity at KLF and would provide an overall benefit to the solid waste management services for the island of Kauaʻi. The Proposed Action aims to maximize the use of the existing facility (and the county’s investment) to the extent practical and would continue to implement engineering and operational controls to minimize and avoid adverse impacts to the environment. As detailed in the Kauaʻi ISWMP update (Jacobs 2021), a key component of the County’s solid waste management system is source reduction, reuse, and recycling. Implementation of recycling and waste diversion programs are dependent on the ability to safely dispose of unrecyclable materials in the landfill.

Community and special area plans establish more detailed policy and maps that are specific to a certain community or geographic area. The KLF is an established use within the Waimea-Kekaha community and is shown as a solid waste management facility on the Waimea-Kekaha Infrastructure Map (County of Kauaʻi 2018: Figure 5-25). The Proposed Action is consistent with the community planning guidelines for Waimea-Kekaha, particularly to preserve the Kekaha’s agricultural, county-living identity, and ensure that the community is resilient to climate change and coastal hazards. As described above, the Proposed Action would not withdraw prime agricultural lands from production, nor would it preclude or adversely affect agricultural uses within the vicinity of the KLF. The Proposed Action would also not induce changes in land use, development, or population size in the Kekaha Region (Section 3.13). As described in Section 3.9, the potential for adverse impacts from climate change is low; the KLF is outside of the 3.2 ft, sea level rise exposure area and is not expected to be adversely impacted by storm surge or coastal flooding. There is a potential for climate-induced changes to natural hazards over the 30-year period of post-closure care. Specifically, Hawaiʻi is expected to see an increase in tropical cyclone and extreme rainfall events. However, the final cover and revegetation of the closed landfill would protect the integrity of the landfill and prevent its contents from being exposed to outside forces. The Proposed Action would generate negligible amounts of greenhouse gas emissions from equipment and vehicle exhaust and controlled landfill gas emissions.

4.2.2 West Kauaʻi Community Plan

The West Kauaʻi Community Plan (WKCP) represents the County’s land use policy at the regional level (County of Kauaʻi 2020). It is a long-range plan that considers a 20-year planning timeframe to the year 2040. The WKCP is one of five community plans that guide the County’s land use decisions and

infrastructure investment priorities, while also advancing the goals of the Kauaʻi County General Plan. The WKCP is broken into five main components: region-wide policies, objectives, and goals; town plans; plans for other key communities outside of the town cores; implementation actions; and maps. Consistency of the Proposed Action with the regional policies in the WKCP is summarized in Table 4-6. The Proposed Actions consistency with the Kekaha Town Plan is provided in the subsequent paragraphs.

Table 4-6. Proposed Action’s Consistency with the Policies of the West Kauaʻi Community Plan

Policies	Assessment of Consistency
A. Town Design. West Kauaʻi’s towns embody the region’s rich and storied past. Each town’s historic buildings and built environment lay the groundwork for future development. By retaining the character and well-defined edges of each small town, we also protect the region’s open spaces and rural heritage.	The Proposed Action would preserve the Kekaha’s agricultural, county-living identity; it would not induce changes in land use, development, or population size in the Kekaha Region (Section 3.13), would not withdraw prime agricultural lands from production (Section 4.1.1), nor would it preclude or adversely affect agricultural uses within the vicinity of the KLF (Section 3.8).
B. Land Transportation. The land transportation strategy is to address congestion, improve safety and efficiency for all roadway users, increase accessibility to transit, improve resiliency of regional connectivity, and develop multimodal transportation networks that support the land use, environmental impact, and economic development goals of this plan. This strategy is addressed through the regional policies outlined below, as well as through circulation maps and recommendations for each town. This section focuses on land transportation only. Other aspects of transportation, such as airports and harbors, are addressed elsewhere in this plan.	The Proposed Action would not adversely affect traffic or land transportation systems (Section 3.14).
C. Heritage Resources. Heritage is important in understanding the story of West Kauaʻi—its history, identity, and people. Heritage resources include scenic corridors, storied sites, buildings, parks and streets, and even people, especially our kūpuna. They are both tangible and ethereal.	No archaeological properties or cultural resources, practices, or beliefs have been identified within the KLF (Section 3.4 and 3.7). The Proposed Action is not anticipated to impact cultural practices that are currently being exercised elsewhere within the Waimea Ahupuaʻa.
D. Resiliency. As a coastal community, West Kauaʻi must prepare for climate change, such as higher temperatures, SLR, and changing precipitation patterns. These impacts threaten residents by affect-ing housing, infrastructure, jobs, and arable land. Through proactive measures and solutions grounded in resiliency, sustainability, and the Hawaiian concept of ʻāina aloha (beloved homeland), West Kauaʻi’s people can strengthen their ability to withstand and recover from hazards and the impacts of climate change	Section 3.9 of the EA analyzes the potential impacts of climate change on the Proposed Action and concluded that the potential for adverse impacts from climate change is low.
E. Shared Spaces. Shared spaces, also known as “civic spaces,” are areas that are enjoyed by community members and visitors of all ages and abilities. Shared space can be specific locations, such as a town centers, government buildings and schools, shopping areas, or parks. They can also be corridors like shared-use paths or public streets. Shared spaces not only connect people but create accessways that connect public places throughout the	The Proposed Action would not restrict access to or adversely affect the shoreline, recreational areas, schools, government facilities, or other public spaces (Section 3.11).

Policies	Assessment of Consistency
region—east to west, mauka to makai. Placemaking inspires people to collectively reimagine and reinvent public spaces as the heart of every community, strengthening the connection between people and the places they share.	
F. Economic Development. West Kauaʻi’s economy should not only create jobs but build prosperity and opportunity for all its communities. Public investment and infrastructure must support the region’s existing economic drivers: agriculture, tourism, and government services. Technological innovation is key to building these existing industries and unlocking new ones. This will require expanding entrepreneurial skills and the development of a STREAM workforce with expertise and vocational skills.	As discussed in Section 3.13, the Proposed Action would be expected to contribute direct, indirect, and induced economic benefits to the Kauaʻi economy.

The WKCP also identifies the visions, goals, objectives, and actions for West Kauaʻi’s historic town cores. The KLF is an established use within the Kekaha Town Plan and is shown as a landfill on the West Kauai Regional Map (County of Kauaʻi 2020). The Kekaha Town Plan acknowledges the role of the Kekaha Landfill in the community and the difficulty of siting and constructing a new landfill facility. Specifically, the goals and objectives of the Kekaha Town Plan include:

5. *Manage the Kekaha landfill and impacts to the Kekaha community.*
 - a. *Implement the lateral expansion and finalize plans for the future of the landfill.*
 - b. *Continue providing funding to the Kekaha Host Benefits Community Fund and allow a Citizens Advisory Committee to distribute funds.*

The KLF Phase II has undergone three vertical expansions and two lateral expansions since it began accepting solid waste in 1993. Phase II was originally permitted to reach a height of 37 ft above msl, but was permitted for vertical expansion in 1998, 2004, and 2013; the current maximum permitted landfill height of Phase II is 120 ft above msl. Phase II was also expanded laterally to include Cell 1 and Cell 2 in 2010 and 2020, respectively, reaching the currently permitted landfill area of 44 acres. The purpose of the previous vertical and lateral expansions was to provide additional air space volume for placement of refuse while the siting, design, and construction phases for a new landfill facility or other long-term landfill capacity solutions was completed. As summarized in Section 1.2.3, the County has a long history of attempts to site a new MSW landfill at another location on the island. Most recently, in 2018, the County had to abandon its plans to develop a new MSW landfill and resource recovery park at Maʻalo because the FAA and the HDOT Airports Division opposed the project due to the potential for the landfill to increase bird strikes at Līhuʻe Airport.

While the County is currently working on the task of siting a new landfill facility on Kauaʻi, this is an extensive effort and is not anticipated to be accomplished in less than 10 years. If there are significant regulatory, technical, or community issues to overcome, siting a new facility could take much longer or not succeed, as happened with the prior new landfill site. Therefore, there is a need to provide landfill capacity beyond 2027, when Phase II is expected to reach capacity at the KLF. The Proposed Action is

expected to add an additional 2 to 4 years of capacity to the KLF, depending on future waste intake rates and potential waste diversion strategies, to meet the County of Kauaʻi's immediate need for landfill capacity.

The Kekaha HCB Fund was founded in 2008 to “balance the need for safe disposal of solid waste with the sacrifices borne by the host community.” The HCB fund started with \$650,000 in 2008. Since then, the amount allocated annually has varied from \$1 per ton to over \$3 per ton and is determined by the Kauaʻi County Council. While the Proposed Action is not anticipated to impact the amount allocated annually; the continued operation of the KLF for an additional 2 to 4 years would extend the period that the Kekaha community receives HCB funds.

Between 2012 and 2022, the Citizens Advisory Committee, who manages the distribution of HCP funds, has approved 97 different projects valued at over \$2.9 million (Kekaha HCB 2023). Projects funded by the HCB fund directly benefit the Kekaha Community and include community improvements, economic revitalization, and various environmental sustainability, educational, cultural, art, and health and wellness programs. The Proposed Action would not affect the Citizens Advisory Committee's authority to distribute HCP funds.

4.2.3 Comprehensive Zoning Ordinance (Kaua'i County Code Chapter 8)

The County of Kauaʻi developed the comprehensive zoning ordinance (CZO) as an implementing tool for the Kauaʻi General Plan to address long-range growth and development. The CZO establishes several land districts and delineates the respective types of permitted uses and development that can take place in those districts. As shown in Figure 3-6, the Proposed Action is located within the county agricultural district. Permissible uses within the county agricultural district are listed in CZO § 8-2.4. Solid waste management operations and landfills are not listed in this section; however, pursuant to CZO § 8-2.4(r)(15), the county may allow “any other use or structure which the Planning Director finds to be similar in nature to those listed in this Section and appropriate to the District,” with issuance of a use permit. Pursuant to CZO § 8-8.4(4)(a), a class IV permit shall also be obtained for any construction or development on an agricultural zoned parcel for which a use permit is required.

The Kauaʻi County Planning Commission issued use permit U-93-56 and class IV zoning permit Z-IV-93-64 in 1993 to allow for the construction and operation of the Phase II landfill within the county agricultural district. Based on consultation with Kauaʻi County Department of Planning, the Proposed Action is permissible under the existing use permit and class IV zoning permit (K. Hull, County of Kauaʻi Planning Department. personal communication—email to A. Fraley, June 15, 2023). No changes to the land-use designations are warranted or proposed.

Pursuant to CZO § 8-3.2(e), a use permit may be granted only if the Planning Commission finds that the Proposed Action is a “compatible use and is not detrimental to health, safety, peace, morals, comfort and the general welfare of persons residing or working in the neighborhood of the proposed use, or detrimental or injurious to property and improvements in the neighborhood or to the general welfare of the community, and will not cause any substantial harmful environmental consequences on the land of

the applicant or on other lands or waters, and will not be inconsistent with the intent of this Chapter and the General Plan.” These criteria are bulleted below, with a discussion of the Proposed Action’s compliance with each criterion.

a) the use must be a compatible use;

The Proposed Action is consistent with the objectives for the Agricultural District pursuant to CZO § 8-8.1, particularly: “(a) To protect the agriculture potential of lands within the County of Kaua’i to ensure a resource base adequate to meet the needs and activities of the present and future. (b) To assure a reasonable relationship between the availability of agriculture lands for various agriculture uses and the feasibility of those uses. (c) To limit and control the dispersal of residential and urban use within agriculture lands.”

Although the Proposed Action is located within the county agricultural land use district, agricultural activities are highly constrained by site-specific factors. The topography (i.e., the current active landfill area), unproductive soils, and existing use as a solid waste management facility render it not suitable for agricultural use. The Proposed Action would not withdraw prime agricultural lands from production, nor would it preclude or adversely affect agricultural uses within the vicinity of the KLF. The KLF facility is not designated or adjacent to IAL. The majority of the KLF site is designated as Class E soils (Office of Planning 2021) and the KLF is not designated as prime or unique lands on ALISH maps (UH CTAHR 1977). As described in more detail below, the KLF would continue to implement engineering and operational controls to minimize and avoid adverse impacts to the environment and agricultural uses in the vicinity of the KLF. Post-closure, the County could consider using the site for other permissible uses in the agricultural district pursuant to CZO § 8-2.4.

b) the use must not be detrimental to persons or property in the area;

The Proposed Action would be expected to positively impact the economic and social welfare of the community by providing a safe and environmental-sound place to dispose of MSW on the island of Kaua’i while a long-term waste capacity solution is implemented. During the extended operational lifespan of the facility, the KLF would contribute direct, indirect, and induced economic benefits to the Kaua’i economy. The Proposed Action would not induce changes in land use, development, or population size in the Kekaha Region (Section 3.13).

The KLF would continue to implement engineering and operational controls to minimize and avoid adverse impacts to public health and safety and environmental quality. The Proposed Action would conform to the provisions of HAR 11-58.1 including provisions for continued implementation of a waste acceptance and exclusion program, landfill liner, LCRS, GCCS, surface-water management system, and groundwater and leachate monitoring activities (Section 1.2.1.2). The KLF also implements operational controls to minimize and avoid adverse impacts to public health and safety including access and traffic control, litter control, dust control, odor control, vector control, explosive gas control, spill prevention control and countermeasures plan, and emergency management procedures. With implementation of the current operating procedures, no significant adverse impacts to public or employee safety and health are anticipated from implementation of the Proposed Action (Section 3.12).

As described in Section 3.8, the Proposed Action would not preclude or otherwise limit the uses of properties in the vicinity of the KLF. Existing land uses in the vicinity of the KLF include agricultural and agriculture-related commercial activity, federal reserve lands (PMRF and U.S. Lighthouse Service), Hawai'i National Guard lands, and a drag racing park (Kaua'i Raceway Park) (Figure 1-2). There would be no change to the existing land use or operations at the KLF facility with implementation of the Proposed Action. The continued use of the KLF facility would not affect or preclude the use of lands adjacent to or in the vicinity of the KLF (Section 3.8). Based on this analysis, implementation of the Proposed Action would not result in a detrimental effect to health, safety, or the general welfare of persons residing or working in the vicinity of the KLF, nor to property and improvements in the Kekaha region.

c) the use must not cause substantial environmental consequences; and

The Proposed Action would take place entirely within the existing Phase II footprint, which has been highly modified by the construction and operation of the Phase II landfill. No new areas will be disturbed as a result of the Proposed Action. The KLF would continue to implement engineering and operational controls to minimize and avoid adverse impacts to the environment including air quality (Section 3.1), biological resources (Section 3.2), climate (Section 3.3), geology, topography, or soils (Section 3.5), or surface and ground water quality (Section 3.17).

d) the use must not be inconsistent with the intent of the Comprehensive Zoning Ordinance (CZO) and General Plan.

The Proposed Action is consistent with the objectives and standards for the Agricultural District pursuant to the CZO. Although the Proposed Action is located within the county agricultural land use district, agricultural activities are highly constrained by site-specific factors and would not take place on lands suitable for intensive agriculture. Post-closure, the County could consider using the site for other permissible uses in the agricultural district pursuant to CZO § 8-2.4. The Proposed Action is consistent with the agricultural district development standards pursuant to CZO § 8-8.1 (see Section 4.2.3.1 below). The Proposed Action would not conflict with the objectives and policies of the Kaua'i General Plan or West Kaua'i Community Plan. A detailed discussion of the Proposed Action's consistency with these policies and goals is provided in Section 4.2.1 and 4.2.2, respectively.

4.2.3.1 Agriculture District Development Standards

CZO § 8-8.1, § 8-4.3, § 8-4.5 identifies the development standards applicable in the agricultural district. As the Proposed Action will not change the parcel boundaries and does not propose any new pavements, structures, or buildings, the development standards related to parcel area, parcel dimensions, setbacks, minimum distance between buildings, density, and building height do not apply to the Proposed Action. The Proposed Action also does not propose changes to access roads, driveways, or off-street parking; public utility services; or public access; therefore, these standards also do not apply to the Proposed Action. There are no non-conforming lots or structures.

As the Proposed Action does not propose subdivision of the parcel, development in another zoning district, or farm worker housing, CZO § 8-8.3, § 8-8.5, and § 8-8.6 are not applicable.

5. Summary of Findings and Anticipated Determination

The potential impacts of the Proposed Action have been thoroughly evaluated and discussed in this Draft EA. As detailed throughout the document, the Proposed Action would incorporate a variety of avoidance and minimization measures such that no significant impacts are anticipated for the identified environmental resources.

The HRS Chapter 343 environmental review process requires that the sum of the effects of a proposed action on the quality of the environment be considered as part of the determination of significance. Specific significant criteria are identified in HAR § 11-200.1-13 for consideration in determining whether the action may have a significant effect on the environment. These significance criteria are listed in Section 5.1 below, with an assessment of the Proposed Action relative to each criterion. Section 5.2 summarizes the determination resulting from the assessment provided in Section 5.1.

5.1 Significance Criteria

Per HAR § 11-200.1-13(b), the following significance criteria must be considered when determining whether an action may have significant effect on the environment.

A significant effect on the environment shall be determined if the action may:

- (1) Irrevocably commit a natural, cultural, or historic resource*

Assessment of Significance Criteria:

The Proposed Action would be located within the footprint of the Phase II landfill, which has been extensively modified by past and ongoing solid waste management operations. The Proposed Action aims to maximize the use of the existing facility and would continue to implement engineering and operational controls to minimize and avoid adverse impacts to the environment.

As discussed in Section 3.2, no listed or rare plants are known to occur within the KLF, and previous surveys recorded a dominance of non-native plant species. Listed waterbirds, the Hawaiian goose, listed seabirds, and the Hawaiian hoary bat could occur in or transit through the KLF. Species-specific measures, as recommended by USFWS and DOFAW, would be implemented to avoid and minimize potential impacts. The Proposed Action is expected to have less than significant adverse impacts to flora and protected wildlife species.

With respect to cultural and historic resources, the CIA did not identify any cultural resources, practices, or beliefs as currently existing within the Project Area (Section 3.4). No archaeological resources or historic properties were identified within the Phase II area and the Proposed Action would remain within the existing footprint of Phase II, above the existing landfill, and would not involve excavation or new ground disturbance (Section 3.7). Therefore, no impacts to cultural, archaeological, or historic resources are anticipated.

Based on this analysis, implementation of the Proposed Action would not be expected to result in an irrevocable commitment to loss or destruction of important natural or cultural resources.

(2) Curtail the range of beneficial uses of the environment.

Assessment of Significance Criteria:

The range of beneficial uses of the environment is determined by the physical setting and the land use controls that define its use. Although the KLF is within the state and county agricultural district, agricultural activities are highly constrained by site-specific factors, and its topography (i.e., the current active landfill area), unproductive soils, and existing use as a solid waste management facility render it not suitable for agricultural use. The Proposed Action is expected to have an operational life of approximately 2 to 4 years with a 30-year closure/post-closure monitoring period. In the long term, when the facility is closed, heavy equipment and accessory structures that are not needed during the 30-year monitoring period would be removed and the KLF site would appear as a hill covered in natural vegetation. Consistent with the requirements of HRS Chapter 205, the County could consider using the site for other permissible uses in the Agricultural Districts when the landfill is closed.

The Proposed Action would help to meet Hawai'i's economic, social, community and environmental priorities by providing a safe and environmentally-sound place to dispose of MSW on the island of Kaua'i. The Proposed Action aims to maximize the use of the existing facility to the extent practical and would continue to implement engineering and operational controls to minimize and avoid adverse impacts to the environment and public nuisances. As the Proposed Action would provide a vital public service and would not preclude future compatible land use following closure, it would not be expected to curtail the range of beneficial uses of the environment.

(3) Conflict with the State's environmental policies or long-term environmental goals established by law

Assessment of Significance Criteria:

The Proposed Action would not conflict with the State's environmental policies or long-term environmental goals, which are specified in HRS Chapter 344. A detailed discussion of the Proposed Action's consistency with these policies and goals is provided in Section 4.1.4.

(4) Have a substantial adverse effect on the economic welfare, social welfare, or cultural practices of the community and State

Assessment of Significance Criteria:

As discussed in Section 3.13, the Proposed Action would be expected to positively impact the economic and social welfare of the community by providing a safe and environmental-sound place to dispose of MSW on the island of Kaua'i while a long-term waste capacity solution is implemented. During the extended operational lifespan of the facility, the KLF would contribute direct, indirect, and induced economic benefits to the Kaua'i economy. The Proposed Action would provide direct economic benefits from employment and wages, from purchasing goods and services from other local industries, and

through contributions to the HCB fund. As the only permitted MSW landfill for the island of Kauaʻi, the Proposed Action also has indirect and induced economic impacts on all major industries of the Kauaʻi economy including the agriculture, tourism, renewable-energy development, health care, and science and technology-based sectors. Overall, the Proposed Action is anticipated to have a beneficial impact on the Kauaʻi economy.

Based on information gathered from the cultural and historical background, as well as community consultation conducted as part of the CIA, no cultural resources, practices, or beliefs have been identified as existing within the KLF (Section 3.4). The Proposed Action is not anticipated to impact cultural practices that are currently being exercised elsewhere within the Waimea Ahupuaʻa.

As such, the Proposed Action would not result in a substantial adverse effect on the economic welfare, social welfare, or cultural practices of the community and State.

(5) Have a substantial adverse effect on public health

Assessment of Significance Criteria:

The Proposed Action would have long-term positive impacts on public safety and health by allowing for continued proper and safe disposal of MSW on the Island of Kauaʻi. Current operating procedures in-place to mitigate for safety and health concerns related to heavy equipment operation, vector control, explosive gas, landfill fires, and injury and illness would continue (Section 3.12). No significant adverse impacts to public or employee safety and health are anticipated from implementation of the Proposed Action.

(6) Involve adverse secondary impacts, such as population changes or effects on public facilities

Assessment of Significance Criteria:

While the Proposed Action is anticipated to have direct, indirect, and induced economic benefits, it is not anticipated to cause significant secondary effects in the local economy. The Proposed Action would not induce changes in land use, development, or population size in the Kekaha Region (Section 3.13). It is also not anticipated to increase the demand on emergency services or public utilities (Sections 3.11 and 3.15). Therefore, public facilities would not be adversely affected, nor would additional use of public facilities occur as a result of the Proposed Action.

(7) Involve a substantial degradation of environmental quality

Assessment of Significance Criteria:

The Proposed Action would be located within the footprint of the Phase II landfill, which has been extensively modified by past and ongoing solid waste management operations. The Proposed Action would conform to the provisions of HAR 11-58.1 including provisions for continued implementation of a waste acceptance and exclusion program, landfill liner and a leachate collection and removal system, GCCS, surface water management system, and groundwater and leachate monitoring activities. The KLF also incorporates operational controls to minimize and avoid adverse impacts to public health and safety including access and traffic control; litter, dust, odor, and vector control; explosive gas control; spill

prevention, control, and countermeasures plan; and emergency management procedures. Overall, the continued presence of a modern engineered landfill for safe disposal of MSW improves the overall environmental quality of the Island of Kauaʻi. Based on this analysis, implementation of the Proposed Action would not be expected to result in substantial degradation of environmental quality.

(8) Be individually limited but cumulatively have substantial adverse effect upon the environment or involves a commitment for larger actions

Assessment of Significance Criteria:

The Proposed Action does not involve a commitment to a larger action, although it would provide continued presence of a modern engineered landfill for safe disposal for the Island of Kauaʻi. When considered in combination with other actions, the Proposed Action is not anticipated to result in adverse cumulative impacts (Section 3.18).

(9) Have a substantial adverse effect on a rare, threatened, or endangered species, or its habitat

Assessment of Significance Criteria:

The Proposed Action would take place entirely within the existing Phase II footprint, which has been highly modified by the construction and operation of the Phase II landfill. No new areas will be disturbed as a result of the Proposed Action. No listed or rare plants are known to occur within the KLF, and previous surveys recorded a dominance of non-native plant species. Listed waterbirds, the Hawaiian goose, listed seabirds, and the Hawaiian hoary bat could occur in or transit through the KLF. As detailed in Section 3.2, species-specific measures, as recommended by USFWS and DOFAW, would be implemented to avoid and minimize potential impacts. As no critical habitat for plants or wildlife has been designated by the USFWS in the KLF site or its immediate vicinity, no impacts to critical habitat are anticipated. Therefore, the Proposed Action is not expected to have a substantial adverse effect on rare, threatened, or endangered species or their habitat.

(10) Have a substantial adverse effect on air or water quality or ambient noise levels

Assessment of Significance Criteria:

In general, existing air quality in the vicinity of the KLF is good. Airborne emissions on the island are relatively low due to low levels of development and automobile emissions and prevailing trade winds that help disperse the accumulation of emissions. Potential sources of air pollutants and emissions associated with the Proposed Action include diesel- and gasoline-powered equipment, motor vehicles and refuse transfer trucks, landfill gas, and fugitive dust. With the continued use of BMPs to minimize fugitive dust and operation of the GCCS, air emissions would not significantly differ from existing conditions and are not anticipated to have a significant adverse effect on air quality (Section 3.1).

No naturally occurring surface waters would be impacted by the Proposed Action. Stormwater would continue to be managed on site by the KLF's stormwater management system, which is adequately sized to accommodate the anticipated increase in stormwater flow and velocities from the Proposed Action. Groundwater underneath the KLF is brackish; therefore, it is not suitable for current or future use as

irrigation water or as a potable water supply. The Proposed Action would expand the Phase II landfill above the existing RCRA Subtitle D base liner and would not change the current KLF groundwater monitoring program or altered existing impacts to groundwater. With implementation of these engineering and operational controls, the Proposed Action is not anticipated to have a substantial adverse effect on surface or ground water resources (Section 3.17).

As described in Section 3.10, the daily operations of the landfill would not change with implementation of the Proposed Action; therefore, it is not anticipated that noise levels would change or significantly impact the surrounding area. Operational noise reduction controls contained would continue to be implemented, and the Proposed Action is not anticipated to create significant adverse impacts related to noise.

(11) Have a substantial adverse effect on or be likely to suffer damage by being located in an environmentally sensitive area such as a flood plain, tsunami zone, sea level rise exposure area, beach, erosion-prone area, geologically hazardous land, estuary, fresh water, or coastal waters

Assessment of Significance Criteria:

The KLF facility is not mapped within the 100-year and 500-year floodplain, 3.2-ft sea level rise exposure area, a seismic impact zone, beach or shoreline, erosion-prone or other geologically hazardous area, or an estuary, freshwater, or coastal water (Sections 3.9 and 3.17). The Proposed Action is located within the tsunami evacuation zone but would take place at elevations ranging from 120 to 171.5 ft amsl, far above the projected and observed tsunami run-up heights. Therefore, the Proposed Action would not result in substantial adverse effect on an environmentally sensitive area nor be likely to suffer damage by natural hazards.

(12) Have a substantial adverse effect on scenic vistas and viewplanes, during day or night, identified in county or state plans or studies

Assessment of Significance Criteria:

Phase II is partially visible from Kaumuali'i Highway and the shoreline. It is visible from most viewpoints to the northwest where the vegetation along Kaumuali'i Highway consists mostly of grasses and low-lying shrubs. The Phase II landfill is partially obscured from viewpoints to the southeast due to tree lines located along Kaumuali'i Highway and the access road adjacent to the southeastern boundary of the KLF facility that create a vegetative visual buffer. The line of sight to the KLF from the nearby shoreline is obstructed by coastal dunes and an earthen berm associated with the National Guard Rifle Range; the KLF Phase II is partially visible from the shoreline area southeast of the landfill. Where visible, the Phase II landfill has the appearance of an earthen mound. Phase II is covered daily with landfill cover and is partially vegetated; the earth-tone daily landfill color is generally consistent in color with the surrounding agricultural areas. The maximum height of the facility would increase by 51.5 ft with the Proposed Action, thus potentially increasing visibility of the site from surrounding areas.

As described in Section 3.16, no scenic resources or corridors have been identified at or in the vicinity of the KLF in either the Kaua'i County General Plan (County of Kaua'i 2018) or the West Kaua'i Community

Plan (County of Kaua'i 2020). The existing KLF is not within a view plane that exhibits a high degree of intactness and does not block any scenic landforms, scenic view planes, or shoreline views, as defined in the Kaua'i County General Plan. Therefore, the Proposed Action does not conflict with County policies for the protection of scenic resources.

During operations, the Proposed Action would continue to appear as an earthen mound. Only one landfill cell would be open and operational at a time and debris would be spread, compacted, and covered each night with daily cover. Closure plans for the Proposed Action would include a landscaping and revegetation program for revegetation of the landfill base and slopes and landscaping at the site entrance to minimize visual impacts to the public. With implementation of the landscaping and revegetation measures described above, significant short- and long-term adverse impacts to visual resources are not anticipated.

(13) Require substantial energy consumption or emit substantial greenhouse gases

Assessment of Significance Criteria:

Energy requirements of the KLF include minor electricity consumption for management and maintenance facilities and diesel fuel for operation of heavy equipment. The Proposed Action would not increase the daily load on local utilities or increase daily consumption of fossil fuels. It would contribute a minor amount of greenhouse gases to the environment from the use of vehicles and equipment during operations and controlled landfill gas emissions. However, emissions would occur at a low enough level that they are not expected to measurably contribute to regional or global greenhouse gas levels. Therefore, the Proposed Action would not require substantial energy consumption or emit substantial greenhouse gases.

5.2 Determination

Based upon the analysis and findings presented in this document, implementation of the Proposed Action is not expected to result in a significant adverse direct, indirect, or cumulative impact on the quality of the environment. As such, the County DPW anticipates issuing a FONSI in accordance with HRS Chapter 343. This determination is based on an evaluation of the Project impacts in relation to the significance criteria specified in HAR § 11-200.1-13, as detailed above.

6. Coordination and Consultation

6.1 Agency Consultation and Community Outreach

In addition to the consultation that has been conducted specifically for the HRS Chapter 343 environmental review process, the County conducted public outreach to solicit feedback from the broader community.

The County held a community meeting on May 3, 2023, from 5:30 to 8:00 p.m. at Kekaha Elementary School Cafeteria; approximately 100 individuals attended the meeting. Mayor Kawakami, HCB facilitator, and the County addressed the meeting attendees and assisted with technical responses as necessary. While there was much discussion, the majority of the subject matter was the HCB program, the vertical expansion to Kekaha, waste diversion, and the potential future landfill site located mauka and west of the existing landfill.

The County held a second community meeting on August 31, 2023 from 5:30 to 7:00pm at the Kekaha Neighborhood Center. The purpose of the second meeting was to inform the public about the Proposed Action, share information on the design, answer questions, and take comments. Approximately 30 individuals attended the event, which was in an open-house format and included information stations on the vertical expansion design and Draft EA, Kaua'i's landfill history, current landfill operations, host community benefits, and waste diversion. The meeting was publicized on the County website and in the online and print editions of The Garden Island on August 19 and August 21, 2023.

Additional detail regarding the community meetings are provided in Appendix F. Written comments received during the open house are included in Appendix D.

The Project team also has begun consultation with State and County agencies with jurisdiction related to the Project, including the Department of Planning and the Land Use Commission. The list of parties consulted to date is summarized in Table 6-1. In addition, a website was published for the Project (<https://www.kauai.gov/KekahaLExpansion>) with contact information for receiving input regarding the Project.

Community outreach and consultation efforts are anticipated to continue through the Project development and approval process. Key issues and concerns identified through community outreach and agency coordination for the Proposed Action have been integrated into this EA.

Table 6-1. Summary of Agency Consultation and Community Outreach

Entity	Date(s)	Description ¹
Community Outreach		
Kekaha Community Meeting	May 3, 2023	Public Meeting to discuss Project and request input.

Entity	Date(s)	Description ¹
Kekaha Community Open House	August 31, 2023	Open house to discuss the Project, answer questions, and take comments.
Agency Consultation		
U.S. Fish and Wildlife Services, Pacific Islands Fish and Wildlife Office	March 1, 2023 (Letter)	Written Request for Species List and Impact Avoidance Measures
State of Hawai'i, Department of Land and Natural Resources, Division of Forestry and Wildlife	March 1, 2023 (Letter)	Written Request for Species List and Impact Avoidance Measures
State of Hawai'i, Department of Land and Natural Resources, Office of Conservation and Coastal Lands	April 3, 2023 (Email) May 10, 2023 (Letter)	Written Request for Concurrence Regarding Conservation District Permit Requirements
State of Hawai'i, Land Use Commission	April 3, 2023	Informal Boundary Determination
State of Hawai'i, State Historic Preservation Division	March 1, 2023 (Letter)	Request for Concurrence with Project Effect Determination of "No Historic Properties Affected"
County of Kaua'i Department of Planning	December 14, 2022 April 4, 2023 (Letter) April 24, 2023	Meetings to discuss Project and request input. Written Request for Director Determination Regarding County Land Use Permit Requirements
1. Copies of the targeted agency consultation letter and responses received are provided in Appendix C.		

6.2 HRS Chapter 343 Scoping and Public Review Process

In addition to the general community outreach and agency coordination described above, additional consultation has been conducted specifically for the HRS Chapter 343 environmental review process. These efforts have included pre-assessment consultation/scoping and distribution of the draft EA for public comment in accordance with the requirements of HRS Chapter 343 and HAR § 11-200.1. The various agencies, elected officials, community organizations, and interested individuals contacted as part of the pre-assessment scoping and draft EA public review process are listed in Table 6-2. Additional detail regarding the pre-assessment scoping and the Draft EA review process, including the comments received, is provided the following sections.

Table 6-2. Agencies, Organizations and Individuals Involved in HRS Chapter 343 Pre-Assessment Consultation and Public Review Process

Stakeholder	Pre-Assessment Scoping Letter		Draft EA		Final EA
	Letter Sent ¹	Comment Received ¹	Notice of Availability ²	Comment Received ²	Notice of Availability
Federal Agencies					
U.S. Geological Survey, Pacific Islands Water Science Center			•		•
U.S. Fish and Wildlife Service	•	•	•		•
National Marine Fisheries Service			•		•
National Resources Conservation Service			•		•
U.S. Army Corps of Engineers			•		•
Department of the Navy - Pacific Missile Range Facility	•	•	•		•
Federal Aviation Administration			•		•
Federal Transit Administration			•		•
U.S. Coast Guard	•		•		•
Environmental Protection Agency	•		•		•
State Agencies					
Department of Agriculture	•		•		•
Dept. of Accounting and General Services (DAGS)			•	•	•
DAGS Archives Division			•		•
Dept. of Business, Economic Development and Tourism (DBEDT)			•		•
DBEDT Agriculture Development Corporation	•		•		•
DBEDT Environmental Review Program	•		•		•
DBEDT Land Use Commission			•		•
DBEDT Office of Planning and Sustainable Development	•		•		•

Stakeholder	Pre-Assessment Scoping Letter		Draft EA		Final EA
	Letter Sent ¹	Comment Received ¹	Notice of Availability ²	Comment Received ²	Notice of Availability
DBEDT Research and Economic Analysis Division			•		•
Department of Defense (DOD), Hawai'i Emergency Management Agency			•		•
DOD Hawai'i National Guard	•		•		•
Department of Education			•	•	•
Department of Hawaiian Homelands	•		•		•
Department of Health (HDOH) Environmental Health Administration	•		•		•
HDOH Clear Air Branch	•		•	•	•
HDOH Clean Water Branch	•		•	•	•
HDOH Solid and Hazardous Waste Branch	•	•	•		•
Department of Land and Natural Resources (DLNR), Division of Aquatics			•		•
DLNR Commission on Water Resource Management			•	•	•
DLNR Division of Forestry and Wildlife – Kaua'i District	•		•	•	•
DLNR Engineering Division	•	•	•	•	•
DLNR Land Division – Kaua'i District	•	•	•	•	•
DLNR Office of Conservation and Coastal Lands	•	•	•	•	•
DLNR State Historic Preservation Division	•	•	•		•
Department of Transportation (HDOT), Administration	•		•	•	•
HDOT Airports Division			•		•
HDOT Highways Division – Kaua'i District			•		•

Stakeholder	Pre-Assessment Scoping Letter		Draft EA		Final EA
	Letter Sent ¹	Comment Received ¹	Notice of Availability ²	Comment Received ²	Notice of Availability
University of Hawai'i (UH) Water Resources Research Center			•		•
UH Environmental Center	•		•		•
Office of Hawaiian Affairs			•		•
County of Kaua'i Agencies					
Department of Parks and Recreation	•		•		•
Department of Planning	•		•		•
Department of Public Works	•		•	•	•
Department of Water	•		•		•
Fire Department	•		•		•
Police Department	•		•		•
Transportation Agency	•	•	•		•
Utilities					
Kauai Island Utility Cooperative	•		•		•
Elected Officials					
U.S. Senator Brian Schatz			•		•
U.S. Senator Mazie Hirono			•		•
U.S. Representative Jill Tokuda			•		•
State Senator Ronald Kouchi			•		•
State Representative Dee Morikawa			•		•
Kaua'i County Council					•
Mayor Derek Kawakami			•		•
Organizations and Interested Individuals					
Kaua'i Watershed Alliance	•		•		•
West Kaua'i Watershed Council	•		•		•
Kekaha Landfill Host Community Benefits Citizen's Advisory Committee	•		•		•
E Ola Mau Na Leo O Kekaha	•		•		•

Stakeholder	Pre-Assessment Scoping Letter		Draft EA		Final EA
	Letter Sent ¹	Comment Received ¹	Notice of Availability ²	Comment Received ²	Notice of Availability
St. Theresa Catholic School Kauai	•		•		•
Kekaha Elementary School	•		•		•
Kekaha Hawaiian Homes Association	•		•		•
West Kaua'i Business and Professional Association	•		•		•
Kekaha Raceway Park	•		•		•
Kekaha Agriculture Association	•		•		•
Sunrise Capital Inc (Adjacent Lessee)	•		•		•
Syngenta Seeds, Inc. c/o Hartung Brothers, Inc. (Adjacent Lessee)	•		•		•
Kaunalewa	•		•	•	•
Nā Kia'i Kai				•	•
Earthjustice				•	•
John Harder				•	•
Ruta Jordans, Zero Waste Kauai				•	•
Zena Dean				•	•
Addison Bulosan, County Council				•	•
DJ Adams, Resident				•	•
Pam Adams, Resident				•	•
Bonnie P. Bator, Resident				•	•
Libraries					
Hawai'i State Library, Hawai'i Documents Center			•		•
Hawai'i State Library, Lihu'e Regional Library			•		•
Hawai'i State Library, Waimea Public Library			•		•
University of Hawai'i (UH) Thomas H. Hamilton Library			•		•
UH West O'ahu James & Abigail Campbell Library			•		•

Stakeholder	Pre-Assessment Scoping Letter		Draft EA		Final EA
	Letter Sent ¹	Comment Received ¹	Notice of Availability ²	Comment Received ²	Notice of Availability
UH Hilo, Edwin H. Mo'okini Library			•		•
UH Maui College Library			•		•
Kauai Community College Library			•		•
Legislative Reference Bureau Library			•		•
News Media					
Honolulu Star Advertiser			•		•
Hawai'i Tribune Herald			•		•
West Hawai'i Today			•		•
The Garden Island			•		•
Maui News			•		•
Molokai Dispatch			•		•
Honolulu Civil Beat			•		•
Hawai'i Public Radio			•		•
1. Copies of the pre-assessment consultation letter and comments received are provided in Appendix B. 2. Copies of the Notice of Availability of the Draft EA and comments received are provided in Appendix D.					

6.2.1 Pre-Assessment Scoping

HAR § 11-200.1-18(a) requires early consultation seeking the advice and input of the county agency responsible for implementing the county's general plan and other agencies having jurisdiction or expertise, as well as those citizen groups and individuals that may be affected by the Proposed Action. Pursuant to these requirements, as part of the scoping process for the draft EA, the governmental agencies, organizations, and individuals that may have a specific interest or could otherwise be affected by the Proposed Action were identified. These parties, which are listed in Table 7-2, were sent a pre-assessment consultation letter containing preliminary Project information and were asked to provide comments and related information for consideration in preparing the Draft EA. A copy of the pre-assessment consultation letter is provided in Appendix B.

A total of eight comment letters were received in response to the pre-assessment consultation request. Appendix B includes a matrix of the pre-assessment consultation comments and the County's responses. This is followed by copies of the comment letters. In accordance with the intent of HAR § 11-200.1, the information and input received through the pre-assessment process was considered in the preparation of the Draft EA.

6.2.2 Public Review of Draft EA

HAR § 11-200.1 requires publication of a Draft EA in the ERP's bimonthly bulletin, *The Environmental Notice*, followed by a 30-day public review period. In accordance with these requirements, the Draft EA was published in *The Environmental Notice* on August 8, 2023, with the 30-day public review period running from the publication date through September 7, 2023. Notice of the Draft EA publication and public review period including instructions for submitting comments was sent to the entities listed in Table 6-2.

A total of 21 comment letters/emails/comment cards were received during the 30-day public review period. Copies of the comment received, and the associated responses are provided in Appendix D. In accordance with HAR §11-200.1-20, comments received on the Draft EA were considered and incorporated into this Final EA, as appropriate.

7. References

- ADC (Agribusiness Development Corporation). 2020. Hawaii Agribusiness Plan 2021. December. <https://dbedt.hawaii.gov/adc/files/2023/01/ADC-Annual-Report-FY22-9-r.pdf> (accessed April 2023).
- ADC. 2022. Agribusiness Development Corporation Annual Report Fiscal Year 2022. December. <https://dbedt.hawaii.gov/adc/files/2023/01/ADC-Annual-Report-FY22-9-r.pdf> (accessed April 2023).
- AECOM (AECOM Technical Services, Inc.). 2007. Final Environmental Assessment, Kekaha Landfill Phase II Lateral Expansion, Kekaha, Kauaʻi, Hawaiʻi. November.
- AECOM. 2012. New Kauaʻi Landfill Siting Study Report, Kekaha, Kauaʻi, Hawaiʻi. July.
- AECOM. 2013a. Final Environmental Assessment, Kekaha Landfill Phase II Vertical Expansion, Kekaha, Kauaʻi, Hawaiʻi.
- AECOM. 2013b. Kauaʻi Resource Recovery Park Feasibility Study. Kauaʻi, Hawaiʻi. April.
- AECOM. 2016. Closure/Post-closure Plan, Kekaha Landfill Phase II, Kekaha, Kauaʻi, Hawaiʻi. May.
- AECOM, Pacific Waste Consulting Group, R.M. Towill Corporation. 2017. Alternatives Analysis, Proposed New Kauaʻi Landfill and Resource Recovery Park, Maʻalo, Kauaʻi, HI.. August 2017.
- Belt Collins (Belt Collins Hawaiʻi Ltd.). 1998. Final Environmental Assessment, Kekaha Landfill Phase II Vertical Expansion, Kauaʻi, Hawaiʻi. March.
- Bonaccorso, F.J., C.M. Todd, A.C. Miles, and P.M. Gorresen. 2015. Foraging Range Movements of the Endangered Hawaiian Hoary Bat, *Lasiurus cinereus semotus*. *Journal of Mammalogy* 96(1):64-71.
- Cheung, K.F. 2015. Hawaiʻi Tsunami Mapping Project: Data Sources, Procedures, and Products for Extreme Aleutian Events. Prepared for Hawaiʻi Emergency Management Agency, Honolulu, Hawaiʻi. June.
- Ching, F.K.W. 1982. Archaeological Reconnaissance of 3 Sites for Proposed Kauaʻi Central Sanitary Landfill Project, Kekaha, Kipu, and Kumukumu, Kauaʻi Island TMK 1-2-02:1, 9, 21, 40; 3-4-06:12; and 4-7-04:1. Archaeological Research Center Hawaiʻi, Inc., Lawaʻi, Kauaʻi.
- CH2MHILL. 2014. Federal-Aid Highways 2035 Transportation Plan for the District of Kauaʻi. Prepared for the State of Hawaiʻi Department of Transportation Highways Division. July.
- Chiogioji, R., G. Ida, and H.H. Hammatt. 2003. Cultural Impact Assessment in Support of the Proposes Sandwich Isles Fiber Optic Cable Landing at ʻAkialoa Road, Kekaha, Waimea Ahupuaʻa, Kona District, Island of Kauaʻi (TMK 4-13-001:999). Cultural Surveys Hawaiʻi, Inc., Kailua.
- County of Kauaʻi. 1994. Three Party Water Service Agreement. Adopted March 14 1994.

- County of Kauaʻi. 2018. Kauaʻi Kākoa Kauaʻi County General Plan. Adopted February 2018.
https://drive.google.com/file/d/131_c8upwnluedpOfInXcT3NHHscLUpbT/view (accessed April 2023)
- County of Kauaʻi. 2020. West Kauaʻi Community Plan. Adopted December 2020.
<https://www.kauai.gov/Government/Departments-Agencies/Planning-Department/Long-Range-Division> (accessed April 2023).
- County of Kauaʻi. 2023. Public Invited to a Design-Concept Review Meeting April 5 for Kekaha Road and ʻAkialoa Road. News Release, For Immediate Release: March 24, 2023.
<https://www.kauai.gov/LinkClick.aspx?fileticket=oLyE5cLsXR8%3d&tabid=108&portalid=0&mid=840> (accessed April 2023).
- Curtis, G. D. 1991. Hawaiʻi Tsunami Inundation/ Evacuation Map Project. Joint Institute for Marine and Atmospheric Research Contribution No. 91-327.
- CWRM (State of Hawaiʻi Commission on Water Resource Management). 2008. Surface water hydrologic unit boundaries for the 8 major Hawaiian Islands.
https://files.hawaii.gov/dbedt/op/gis/data/watersheds_cwrmm.pdf (accessed April 2023).
- DHHL (Department of Hawaiian Homeands). 2011. West Kauaʻi (Waimea, Kekaha, Hanapēpē) Regional Plan. February. https://dhhhl.hawaii.gov/wp-content/uploads/2011/06/DHHL_West_Kauai_Regional_Plan_030111_small.pdf (accessed April 2023).
- DLNR (State of Hawaiʻi Department of Land and Natural Resources). 1982. Biological Resources Survey Letter, Fauna and Flora Survey, Kekaha Sanitary Landfill Site.
- DLNR. 2015. Endangered Species Recovery Committee Hawaiian Hoary Bat Guidance Document. Prepared by Angela Amlin and Afsheen Siddiqi. December.
- Earth Tech (Earth Tech, Inc.). 2001. Kauaʻi Municipal Solid Waste Landfill Siting Study, Kauaʻi, Hawaiʻi. Prepared for County of Kauaʻi, Department of Public Works, Honolulu, Hawaiʻi. March.
- Earth Tech. 2002. New Kauaʻi Municipal Solid Waste Landfill Kalepa Site Evaluation, Kauaʻi, Hawaiʻi. Prepared for County of Kauaʻi, Department of Public Works, Honolulu, Hawaiʻi. June.
- Earth Tech and Wil Chee (Wil Chee–Planning, Inc.). 2004. Final Environmental Assessment, Kekaha Landfill Phase II Second Vertical Expansion, Kekaha, Kauaʻi, Hawaiʻi. September.
- EPA (U.S. Environmental Protection Agency). 1971. Noise from Construction Equipment and Operations, Building Equipment, and Home Appliances. U.S. Environmental Protection Agency. December 31.
- FAA (Federal Aviation Administration). 2023. Notice Criteria Tool - Desk Reference Guide V_2018.2.0.
<https://oeaaa.faa.gov/oeaaa/external/gisTools/gisAction.jsp> (accessed April 2023).

- FEMA (Federal Emergency Management Agency). 2020. Flood Insurance Rate Maps (FIRM). FEMA Flood Map Products. <https://www.fema.gov/flood-maps/products-tools/products> (accessed April 2023).
- Fernandes-Farias, M., A. Mitchell, and H.H. Hammatt. 2010. Cultural Impact Assessment for a Proposed Rock Crushing Establishment Along Portions of the New and Old Government Roads, Waimea Ahupua'a, Waimea District, Island of Kaua'i TMK: [4] 1-2-002:001. Cultural Surveys Hawai'i, Inc., Kailua, Hawai'i.
- Flores, K. E. and A. Kaohi. 1993. Hawaiian Cultural & Historical Survey of Nohili, Mānā, Kona District, Island of Kaua'i, State of Hawai'i. dba Hawai'i Pono'i, 'Ele'ele, Hawai'i.
- Folk, W.H., and H.H. Hammatt. 1993. Archaeological Inventory Survey and Subsurface Testing at the Kekaha Phase II Landfill Site (TMK 1-2-02:9), Draft. Prepared for Harding Lawson Associates Group, Inc., Novato, California. Cultural Surveys Hawai'i. August.
- Foote, D., E. Hill, S. Nakamura, and F. Stephens. 1972. Soil Survey, Islands of Kaua'i, O'ahu, Maui, Moloka'i, and Lanai, State of Hawai'i. U.S. Department of Agriculture, Soil Conservation Services, in cooperation with the University of Hawai'i Agricultural Experiment Station. U.S. Government Printing Office, Washington, D.C.
- Geosyntec. 2022a. Spill Prevention, Control, and Countermeasures Plan, Kekaha Municipal Solid Waste Landfill, Kekaha, Kaua'i, Hawai'i. September
- Geosyntec. 2022b. Kekaha Municipal Solid Waste Landfill and Kekaha Materials Drop-off Facility, Annual Operating Report, July 1, 2021, through June 30, 2022, Kekaha, Kaua'i, Hawai'i. August.
- Geosyntec. 2023a. Kekaha Municipal Solid Waste Landfill Operations Manual, Kekaha Municipal Solid Waste Landfill – Phase II, Kekaha, Kaua'i, Hawai'i. February.
- Geosyntec. 2023b. 2nd Semi-annual Covered Source Permit Report for Year 2022, Reporting Period: July 1, 2022–December 31, 2022, Landfill Gas Collection and Control System, Kekaha Sanitary Landfill, Kaua'i, Hawai'i. February.
- Geosyntec. 2023c. 4th Quarter 2022 Groundwater and Leachate Monitoring Report, Kekaha Landfill Phase I and Phase II, Kekaha, Kaua'i, Hawai'i. April.
- Geosyntec. 2023d. Kekaha Municipal Solid Waste Landfill and Kekaha Materials Drop-off Facility Annual Operating Report, July 1, 2022 Through June 30, 2023, Kekaha, Kaua'i, Hawai'i. July 31, 2023.
- Giambelluca, T.W. and T.A Schroeder. 1998. Climate. In: *Atlas of Hawai'i*, S.P. Juvik, J.O. Juvik, and T. R. Paradise (eds.). Mānoa: University of Hawai'i Press.
- Giambelluca, T.W., X. Shuai, M.L. Barnes, R.J. Alliss, R.J. Longman, T. Miura, Q. Chen, A.G. Frazier, R.G. Mudd, L. Cuo, and A.D. Businger. 2014. Evapotranspiration of Hawai'i. Final report submitted to the U.S. Army Corps of Engineers, Honolulu District, and the Commission on Water Resource Management, State of Hawai'i. <http://climate.geography.hawaii.edu/> (accessed March 2023).

Hammatt, H.H. and D.W. Shideler. 2011. Archaeological Literature Review of Eight Possible Locations for a Kaua'i Municipal Solid Waste Landfill: Kekaha-Mauka, Kekaha Ahupua'a; Pu'u o Pāpa'i, Makaweli Ahupua'a; Umi, Wahiawa Ahupua'a; Kōloa, Pā'ā Ahupua'a; Kīpū, Ha'ikū Ahupua'a; Kālepa, Hanamā'ulu Ahupua'a; Ma'alo, Wailua Ahupua'a; and Kumukumu, Keālia Ahupua'a. Cultural Surveys Hawai'i, Kailua, Hawai'i.

Hawai'i Climate Change Mitigation and Adaptation Commission. 2021. State of Hawai'i Sea Level Rise Viewer. Version 1.09. Prepared by the Pacific Islands Ocean Observing System (PacIOOS) for the University of Hawai'i Sea Grant College Program and the State of Hawai'i Department of Land and Natural Resources, Office of Conservation and Coastal Lands, with funding from National Oceanic and Atmospheric Administration Office for Coastal Management Award No. NA16NOS4730016 and under the State of Hawai'i Department of Land and Natural Resources Contract No. 64064. <http://hawaiisealevelriseviewer.org> (accessed April 2023).

Hawai'i State Climate Commission. 2022. Hawai'i Sea Level Rise Vulnerability and Adaptation Report 2022 Update. Report to the Thirty-second Legislature 2023 Regular Session. Prepared by the State of Hawai'i Department of Land and Natural Resources, Office of Conservation and Coastal Lands in Response to Act 32 of the Regular Session of 2017. December.

HDOA (State of Hawai'i Department of Health). 1991. Agriculture State Functional Plan. <https://files.hawaii.gov/dbedt/op/docs/Agriculture.pdf> (accessed May 2023).

HDOH (State of Hawai'i Department of Health). 2011. Aquifers, as determined/defined by DOH. Original maps prepared by John F. Mink and L. Stephen Lau, Water Resources Research Center, 1987, for the Department of Health's Groundwater Protection Program in the Safe Drinking Water Branch. Digitized by DOH - Environmental Planning Office from the original mylars, based on USGS 1:24,000 scale maps.

HDOH . 2019. Solid Waste Management Permit No. LF-0042-16.

HDOH. 2022. State of Hawai'i Annual Summary 2021 Air Quality Data. December 2021. https://health.hawaii.gov/cab/files/2022/12/aqbook_2021.pdf (accessed April 2023).

HHSC (Hawai'i Health Systems Corporation). 2023. Hawai'i Health Systems Corporation: Kaua'i Region. <https://kauai.hhsc.org/about-us/history-of-west-kauai-medical-center/>. (accessed April 2023).

HIEMA (Hawai'i Emergency Management Agency). 2023. Tsunami Evacuation Zones. <https://dod.hawaii.gov/hiema/public-resources/tsunami-evacuation-zone/> (accessed April 2023).

IPCC (Intergovernmental Panel on Climate Change). 2022. Synthesis Report of the IPCC Sixth Assessment Report (AR6). https://www.ipcc.ch/report/ar6/syr/downloads/report/IPCC_AR6_SYR_LongerReport.pdf (accessed April 2023).

Jacobs (Jacobs Solutions Inc.). 2021. Integrated Solid Waste Management Plan Update. County of Kaua'i, Department of Public Works, Solid Waste Division. Kekaha, Kaua'i, Hawai'i. November.

- Kekaha HCB (Kekaha Host Community Benefit Program). 2023. Kekaha Host Community Benefit Program 2023 Report. Prepared by Yvonne Hosaka, Facilitator and Kekaha HCB Citizen Advisory Committee. March 28, 2023. Available at:
https://users.neo.registeredsite.com/2/5/9/15584952/assets/KHCB_Project_Update_-_032923_.pdf
- Macdonald, G.A., A.T. Abbott, and F.L. Peterson. 1983. *Volcanoes in the Sea, the Geology of Hawai'i*. 2nd Edition. Honolulu: University of Hawai'i Press.
- NIOSH (National Institute for Occupational Safety and Health). 2011. NIOSH Power Tools Sound Power Dataset. https://www.cdc.gov/niosh/topics/noise/noise_levels.html. Accessed April 2023.
- NAVFAC (Naval Facilities Engineering Command Pacific and U.S. Marine Corps). 2014. Final Environmental Assessment Relocate Marine Unmanned Aerial Vehicle Squadron Three to Hawai'i. Prepared for Naval Facilities Engineering Command Pacific and U.S. Marine Corps. March.
- NIOSH (National Institute for Occupational Safety and Health). 2011. NIOSH Power Tools Sound Power Dataset. https://www.cdc.gov/niosh/topics/noise/noise_levels.html (accessed April 2023).
- NOAA (National Oceanic and Atmospheric Administration). 2022. Natural Hazards Viewer, National Centers for Environmental Information. <https://www.ncei.noaa.gov/maps/hazards/?layers=0> (accessed April 2023).
- NRCS (Natural Resources Conservation Service). 2019. Web Soil Survey. U.S. Department of Agriculture. <http://websoilsurvey.sc.egov.usda.gov/> (accessed April 2023).
- Office of Planning (Statewide GIS Program, Office of Planning, State of Hawai'i). 2021. Land Study Bureau Detailed Land Classification. <https://geoportal.hawaii.gov/datasets/HiStateGIS::lsb/explore?location=21.987108%2C-159.738237%2C15.00> (accessed May 2023)
- OSHA (Occupational Safety and Health Administration). 2019. OSHA Form 300A Summary of Work-Related Injuries and Illnesses, County of Kaua'i, Department of Public Works, Solid Waste Kekaha Landfill.
- OSHA. 2020. OSHA Form 300A Summary of Work-Related Injuries and Illnesses, County of Kaua'i, Department of Public Works, Solid Waste Kekaha Landfill.
- OSHA. 2021. OSHA Form 300A Summary of Work-Related Injuries and Illnesses, County of Kaua'i, Department of Public Works, Solid Waste Kekaha Landfill.
- OSHA. 2022a. OSHA Form 300A Summary of Work-Related Injuries and Illnesses, County of Kaua'i, Department of Public Works, Solid Waste Kekaha Landfill.
- OSHA. 2022b. OSHA Technical Manual (OTM) Section III: Chapter 5. <https://www.osha.gov/otm/section-3-health-hazards/chapter-5> (accessed April 2023).

- PGE (Pacific Geotechnical Engineers, Inc.). 2008. Final Letter Report, Geotechnical Exploration, Horizontal Expansion of the Kekaha MSW Phase II Landfill, Kekaha, Kauaʻi, Hawaiʻi. October 7.
- PGE. 2012. Final Letter Report, Geotechnical Exploration, Kekaha Landfill Phase II Cell 2 Lateral Expansion, Kekaha, Kauaʻi, Hawaiʻi. August 8.
- PGE. 2015. Final Letter Report, Geotechnical Consultation, Gas Collection and Control System Design, Kekaha Sanitary Landfill, Kekaha, Kauaʻi, Hawaiʻi. August 5.
- Price, J.P., J.D. Jacobi, S.M. Gon III, D. Matsuwaki, L. Mehrhoff, W. Wagner, M. Lucas, and B. Rowe. 2012. Mapping Plant Species Ranges in the Hawaiian Islands—Developing a Methodology and Associated GIS Layers. U.S. Geological Survey Open-File Report 2012–1192, 34 p., one appendix (species table), 1,158 maps. <http://pubs.usgs.gov/of/2012/1192/> (accessed March 2023).
- R.M. Towhill (R. M. Towill Corporation). 1983. Revised Environmental Impact Statement, Kekaha Sanitary Landfill Expansion Project. Department of Public Works, County of Kauaʻi. December.
- R.M. Towhill. 2009. Mayor’s Advisory Committee on Landfill Site Selection: Vol. 1: Report (May), Vol. 2: Site Data Sheets (March). Prepared for County of Kauaʻi, Department of Public Works, Refuse Division, Honolulu, Hawaiʻi.
- R.M. Towhill. 2018. Final Environmental Impact Statement New Kauaʻi Landfill Maʻalo, Kauaʻi, Hawaiʻi. July. https://files.hawaii.gov/dbedt/erp/EA_EIS_Library/2018-08-08-KA-FEIS-New-Kauai-Landfill.pdf (accessed December 2022).
- Sherrod, D.R., J.M. Sinton, S.E. Watkins, and K.M. Brunt. 2007. Geologic Map of the State of Hawaiʻi: U.S. Geological Survey, Open-File Report 2007-1089, Version 1.0, Plate 8, geologic map of the island of Kauaʻi.
- Stantec (Stantec Consulting Services, Inc.). 2021. Phase 1 Landfill Mining Feasibility Study, Kekaha Landfill, County of Kauaʻi, Hawaiʻi.
- SSFM International. 2022. West Kauaʻi Energy Project, Final Environmental Assessment, Finding of No Significant Impact. Prepared for Kauaʻi Island Utility Cooperative and AES West Kauaʻi Energy Project, LLC. November 2022.
- SWCA (SWCA Environmental Consultants). 2016. Proposed Maʻalo Landfill Project Wildlife Hazard Assessment. Prepared for AECOM. August.
- Tetra Tech (Tetra Tech, Inc.). 2021. Multi-hazard Mitigation and Resilience Plan. Prepared for County of Kauaʻi. May. https://kauaiconty-my.sharepoint.com/personal/csakai_kauai_gov/_layouts/15/onedrive.aspx?id=%2Fpersonal%2Fcsakai%5Fkauai%5Fgov%2FDocuments%2F2020%20Mitigation%20Plan%20Update%2F2021%2D05%2D04%5FKauaiCountyHMP%2DVol%2E1%5FFinal%2Epdf&parent=%2Fpersonal%2Fcsakai%5Fkauai%5Fgov%2FDocuments%2F2020%20Mitigation%20Plan%20Update&ga=1 (accessed April 2023).

- Tetra Tech. 2022. Engineering Report – 90%. Kekaha Sanitary Landfill, Phase II Vertical Expansion, Kekaha, Kauaʻi, Hawaiʻi. December.
- Tetra Tech. 2023. Kekaha Landfill Task 3 Technical Memorandum. Prepared for The County of Kauai. July 5, 2023.
- UH CTAHR (University of Hawaiʻi College of Tropical Agricultural and Human Resources). 1977. Agricultural Lands of Importance in the State of Hawaii [map].
<https://geoportal.hawaii.gov/datasets/HiStateGIS::alish/explore?location=21.986938%2C-159.740145%2C15.18> (accessed May 2023).
- UH Sea Grant Program (University of Hawaiʻi Sea Grant College Program). 2020. West Kauaʻi Community Vulnerability Assessment. Prepared by University of Hawaiʻi Sea Grant College Program. June.
<https://seagrant.soest.hawaii.edu/wp-content/uploads/2020/06/WKCVA-Final-Report-June-2020.pdf> (accessed April 2023).
- U.S. Census Bureau. 2022. American Community Survey 5-year Estimates 2017–2021.
<https://data.census.gov/table> (accessed April 2023).
- U.S. Navy. 2023. Pacific Missile Range Facility Barking Sands.
<https://cnrh.cnrc.navy.mil/Installations/PMRF-Barking-Sands/> (accessed April 2023).
- USFWS (U.S. Fish and Wildlife Service). 2004. Draft Revised Recovery Plan for the Nēnē or Hawaiian Goose (*Branta sandvicensis*). U.S. Fish and Wildlife Service, Portland, Oregon. 148 + xi pp.
- USFWS. 2011. Recovery Plan for Hawaiian Waterbirds. 2nd Revision. U.S. Fish and Wildlife Service, Portland, Oregon. xx + 233 pp.
- USFWS. 2017. Newell’s Shearwater (*Puffinus auricularis newelli*) 5-year Review: Short form summary. Pacific Islands Fish and Wildlife Office, Honolulu, Hawaiʻi.
- USFWS. 2021a. Band-rumped Storm Petrel (*Oceanodroma castro*) Hawaiʻi DPS, 5-year Review. Pacific Islands Fish and Wildlife Office, Honolulu, Hawaiʻi.
- USFWS. 2021b. ʻŌpeʻapeʻa or Hawaiian Hoary Bat (*Lasiurus cinereus semotus*) 5-year Review. Pacific Islands Fish and Wildlife Office, Honolulu, Hawaiʻi.
- USFWS. 2022a. Hawaiian Petrel (*Pterodroma sandwichensis*) 5-year Review: Short form summary. Pacific Islands Fish and Wildlife Office, Honolulu, Hawaiʻi.
- USFWS. 2022b. Final Avoidance and Minimization Measures (AMMs) for ESA Listed Species (Animals). Revised April 2022.
<https://www.fws.gov/sites/default/files/documents/Animal%20Avoidance%20and%20Minimization%20Measures-April%202022.pdf> (accessed March 2023).

USFWS. 2023. USFWS Threatened & Endangered Species Active Critical Habitat Report – Online Mapper. <https://fws.maps.arcgis.com/home/webmap/viewer.html?webmap=9d8de5e265ad4fe09893cf75b8dbfb77> (accessed April 2023).

Walden, J. and S. L. Collins. 2015. Cultural Impact Assessment in Support of Lighting and Electrical Improvements at the Mānā Drag Racing Strip in Kekaha, Waimea Ahupuaʻa, Kona District, Island of Kauaʻi, Hawaiʻi TMK (4) 1-2-02:009, 036, 040. Pacific Consulting Services, Inc., Honolulu.

Appendix A - Photo Log

Photos of Kehaha Municipal Solid Waste Landfill Facilities



Photo 1. View of Kehaha Municipal Solid Waste Landfill (KLF) entranceway from Kaumuali'i Highway.



Photo 2. KLF scale house.



Photo 3. View towards north from top of Phase II landfill looking towards the stormwater infiltration basin on the left (no water present) and the leachate evaporation pond on the right.

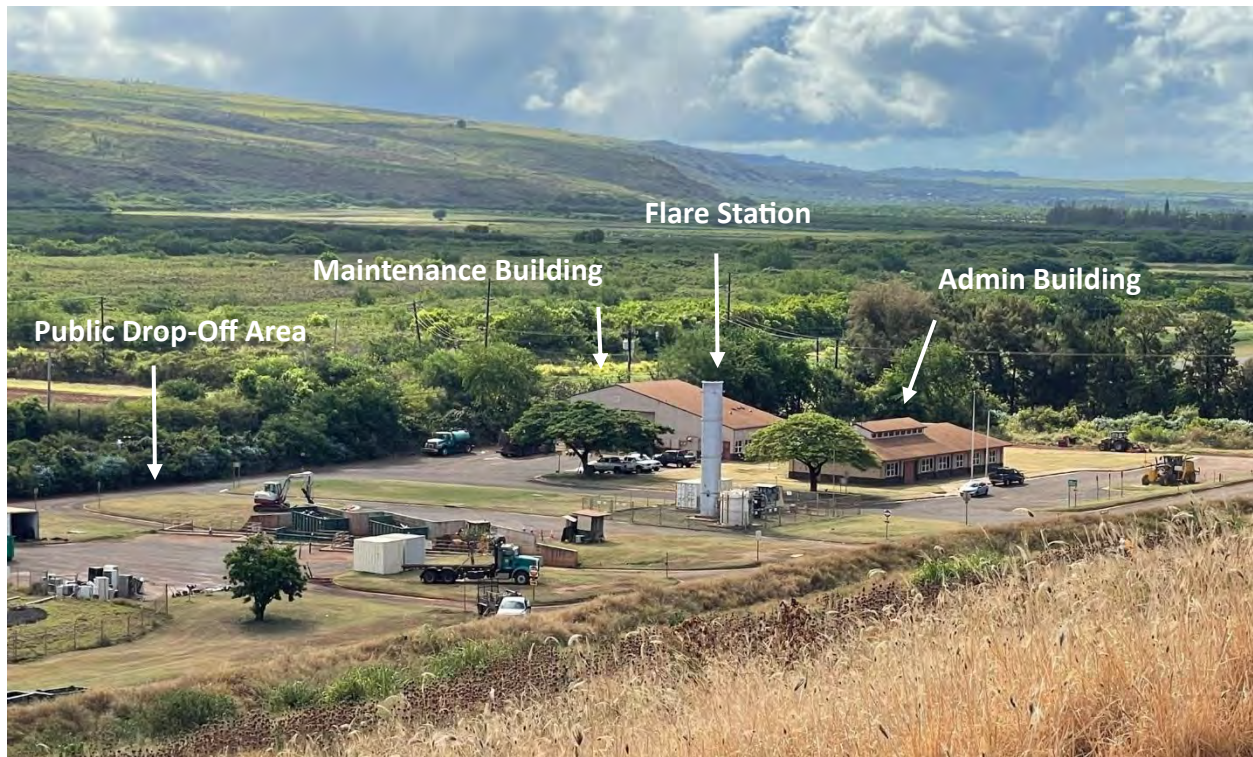


Photo 4. View towards northeast from Phase II landfill looking towards the public drop-off area, flare station, maintenance building, and administrative building.

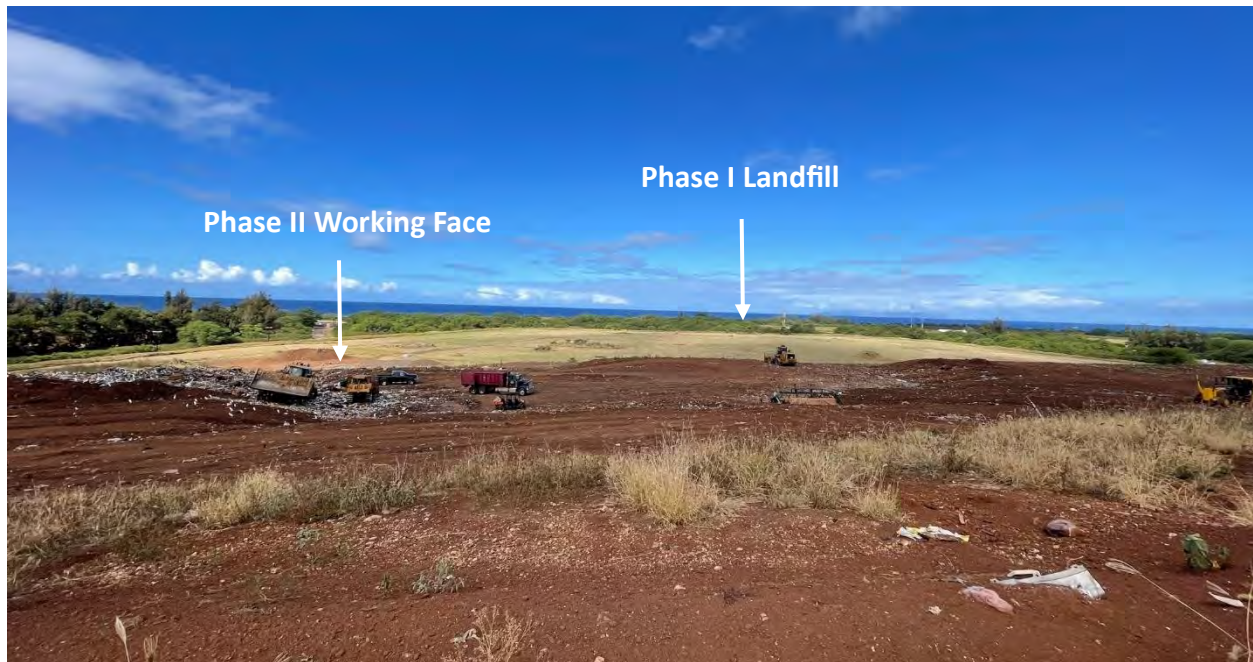


Photo 5. View towards south from top of Phase II landfill with Phase II working face in foreground and Phase I landfill in background.

Photos of Surrounding Land Uses



Photo 6. View towards the west from top of Phase II looking towards agricultural lands / uses west and northwest of the KLF. Shrimp farms in the Kekaha Agricultural Park shown in midground.



Photo 7. View towards the east from top of Phase II looking towards agricultural lands / uses east of the KLF. Hartung Brothers Hawaii in background.



Photo 8. View towards the southeast from top of Phase II looking towards agricultural lands / uses southeast of the KLF and road leading to the Kaua`i Raceway Park (not shown).

Photos of the view towards KLF Phase II landfill from Kaumuali'i Highway



Photo 9. View toward the southeast from Kaumuali'i Highway at the intersection with Tarter Drive.



Photo 10. View toward the southeast from Kaumuali'i Highway, approximately 0.5 miles from the KLF.



Photo 11. View toward the southeast from Kaumuali'i Highway, approximately 0.2 miles from the KLF.



Photo 12. View toward the southeast from Kaumuali'i Highway, approximately 0.1 miles from the KLF.



Photo 13. View toward the southwest from Kaumuali'i Highway at the intersection with Kaua'i Raceway Park access road. View of the Phase II landfill is obscured by vegetation.



Photo 14. View toward the west from Kaumuali'i Highway, approximately 0.2 miles from the KLF. View of the Phase II landfill is partially obscured by vegetation.



Photo 15. View toward the northwest from Kaumuali'i Highway. approximately 0.5 miles from the KLF. The view of the Phase II landfill is obscured by vegetation.

Photos of the view toward the KLF Phase II landfill from the shoreline



Photo 16. View towards the northwest from Kekaha Beach Park. The Phase II landfill is not visible.



Photo 17. View towards the northwest from Kekaha Beach from the east end of Kauaʻi Raceway Park.

Appendix B - Pre-Assessment Consultation

Contents

Distribution List for the Pre-Assessment Consultation Letter

Sample Pre-Assessment Consultation Letter

Pre-Assessment Consultation Comment and Response Matrix

Pre-Assessment Consultation Comment Letters

- County of Kaua'i Transportation Agency
 - State of Hawai'i Department of Land and Natural Resources, Engineering Division
 - State of Hawai'i Department of Land and Natural Resources, Land Division – Kaua'i District
 - State of Hawai'i Department of Land and Natural Resources, Office of Conservation and Coastal Lands
 - State of Hawai'i Historic Preservation Division
 - State of Hawai'i Department of Health, Solid and Hazardous Waste Branch
 - Department of the Navy Pacific Missile Range Facility
 - U.S. Fish and Wildlife Service, Pacific Island Fish and Wildlife Office
-

Distribution List for the Pre-Assessment Consultation Letter

Stakeholder	Letter Sent	Comment Received
Federal Agencies		
U.S. Fish and Wildlife Service	•	•
Department of the Navy - Pacific Missile Range Facility	•	•
U.S. Coast Guard	•	
Environmental Protection Agency	•	
State Agencies		
Department of Agriculture	•	
Department of Business, Economic Development, and Tourism (DBEDT)		
Agriculture Development Corporation	•	
Environmental Review Program	•	
Office of Planning and Sustainable Development	•	
Department of Hawaiian Homelands	•	
Department of Defense (DOD) Hawai'i National Guard	•	
Department of Health (HDOH) Environmental Health Administration	•	
HDOH Clear Air Branch	•	
HDOH Clean Water Branch	•	
HDOH Solid and Hazardous Waste Branch	•	•
DLNR Division of Forestry and Wildlife – Kaua'i District	•	
DLNR Engineering Division		•
DLNR Land Division – Kaua'i District	•	•
DLNR Office of Conservation and Coastal Lands	•	•
DLNR State Historic Preservation Division	•	•
Department of Transportation (HDOT)	•	
UH Environmental Center	•	
County of Kaua'i Agencies		
Department of Parks and Recreation	•	
Department of Planning	•	
Department of Public Works	•	
Department of Water	•	
Fire Department	•	
Police Department	•	
Transportation Agency	•	•
Utilities		
Kauai Island Utility Cooperative	•	
Organizations and Interested Individuals		

Stakeholder	Letter Sent	Comment Received
Kaua'i Watershed Alliance	•	
West Kaua'i Watershed Council	•	
Kaunalewa	•	
Kekaha Landfill Host Community Benefits Citizen's Advisory Committee	•	
E Ola Mau Na Leo O Kekaha	•	
St. Theresa Catholic School Kauai	•	
Kekaha Elementary School	•	
Kekaha Hawaiian Homes Association	•	
West Kaua'i Business and Professional Association	•	
Kekaha Raceway Park	•	
Kekaha Agriculture Association	•	
Sunrise Capital Inc (Adjacent Lessee)	•	
Syngenta Seeds, Inc. c/o Hartung Brothers, Inc. (Adjacent Lessee)	•	



February 27, 2023

RE: Kekaha Municipal Solid Waste Landfill Phase II Vertical Expansion
Kekaha, Kauaʻi, Hawaiʻi; TMK 1-2-002:001 (por.) and TMK 1-2-002:009
Pre-Assessment Consultation for HRS Chapter 343 Environmental Assessment

Dear Interested Party,

The County of Kauaʻi, Department of Public Works, Solid Waste Division (County) is proposing a vertical expansion of Phase II of the Kekaha Municipal Solid Waste Landfill (KLF) (Proposed Action). KLF is located 1.3 miles northwest of the town of Kekaha on the southwest side of the Island of Kauaʻi. The KLF encompasses approximately 98 acres of land within Tax Map Keys (TMK) 1-2-002:001 (por.) and 1-2-002:009, which is owned by the State of Hawaiʻi and administered by the Department of Land and Natural Resources (DLNR). The facility is situated adjacent to Kaumualiʻi Highway and approximately 1,700 feet (ft) from the shoreline of the Pacific Ocean.

The KLF is a municipal solid waste (MSW) landfill comprised of two refuse fill areas identified as Phase I and Phase II. Currently, the Phase II permitted limit-of-waste footprint is approximately 44 acres and the maximum permitted elevation is 120 ft above mean sea level (msl). Phase II is scheduled to reach its waste disposal capacity by October 2026. In order to develop additional air space volume for continued waste disposal, the County proposes to extend the landfill height vertically to a maximum permitted elevation of 171.5 ft above msl.

Hawaiʻi Revised Statutes (HRS) Chapter 343 environmental review is required for any agency action that includes one or more triggers identified in HRS Chapter 343-5(a). The Proposed Action would be located on state lands and use county funds, which is an identified trigger per HRS Chapter 343-5(a)(1). Pursuant to the requirements of HRS Chapter 343 and Hawaiʻi Administrative Rules (HAR) §11-200.1, the County is preparing an Environmental Assessment (EA) to evaluate the potential environmental effects of the Proposed Action.

As part of the environmental review process, pre-assessment consultation is being conducted to obtain input on the scope of issues to be considered in the Draft EA. An overview of the Proposed Action and a Location Map are attached. We are requesting input regarding the Proposed Action, including concerns related to particular environmental resources, as well as relevant information that should be considered in the evaluation.

Tetra Tech, Inc.

737 Bishop St., Suite 2000, Mauka Tower, Honolulu, HI 96813
Tel 808.441.6655 www.tetrattech.com

Please provide comments regarding the scope of the EA in writing via U.S. postal mail to Kayla Yost at Tetra Tech (737 Bishop Street, Suite 2000, Honolulu, Hawai'i 96813; Tel: (808) 441-6600; Fax: (808) 536-3953) or kayla.yost@tetrattech.com. Comments must be postmarked by March 29, 2023 to be considered in the Draft EA. Copies of the Draft EA and Final EA will be made available for public review. The Draft EA is anticipated to be published in Q2 of 2023.

Thank you for your participation in the environmental review process for the Proposed Action.

Sincerely,

A handwritten signature in black ink that reads "Kayla Yost". The signature is written in a cursive, flowing style.

Kayla Yost

Project Manager and Environmental Planner
Tetra Tech, Inc.

Attachments: Proposed Action Overview
Figure 1: Location Map
Figure 2: Simple Profile of KLF Phase II Vertical Expansion

Kekaha Municipal Solid Waste Landfill Phase II Vertical Expansion Proposed Action Overview

The County of Kauaʻi, Department of Public Works, Solid Waste Division (County) is proposing a vertical expansion of Phase II of the Kekaha Municipal Solid Waste Landfill (KLF) (Proposed Action). The KLF is a municipal solid waste (MSW)¹ landfill comprised of two refuse fill areas identified as Phase I and Phase II. The Proposed Action would extend Phase II upward from the currently permitted maximum height of 120 feet (ft) above mean sea level (msl) to a new permitted maximum height of 171.5 ft above msl. This proposed vertical expansion would be within the existing permitted footprint of the Phase II landfill area.

KLF is located 1.3 miles northwest of the town of Kekaha on the southwest side of the Island of Kauaʻi. The KLF encompasses approximately 98 acres of land within Tax Map Keys (TMK) 1-2-002:001 (por.) and 1-2-002:009, which are owned by the State of Hawaiʻi and administered by the Department of Land and Natural Resources (DLNR). Executive Order 1558 (signed April 27, 1953) and Executive Order 2872 (signed October 6, 1977) places the control and management of the lands underlying the KLF to the County of Kauaʻi. The KLF is situated adjacent to Kaumualiʻi Highway and approximately 1,700 ft from the shoreline of the Pacific Ocean. The location and boundaries of the KLF and limits of the proposed vertical expansion are shown in the attached Figure 1: Location Map.

HISTORY OF KLF

As discussed above, the KLF is comprised of two distinct refuse fill areas: Phase I and Phase II. Phase I is a closed, unlined landfill that began accepting solid waste in 1953 and ceased operations October 8, 1993. Phase II is an active, lined² landfill that began accepting solid waste on October 9, 1993 and is predicted to reach its capacity in October of 2026.

KLF Phase II has undergone three vertical expansions and two lateral expansions since the initial permitting of the refuse area. Phase II was originally permitted to reach a height of 37 ft above msl, but was permitted for vertical expansion in 1998, 2004, and 2013; the current maximum permitted landfill height of Phase II is 120 ft above msl. Phase II was also expanded laterally to include Cell 1 and Cell 2 in 2009 and 2019, respectively, reaching the currently permitted landfill area of 44 acres.

¹ MSW is waste collected by County of Kauai from residential, commercial, industrial, and construction and demolition sources. The KLF accepts both organic wastes such as paper, cardboard, food, yard trimmings, and plastics, and inorganic wastes such as metal and glass. The KLF does not accept toxic or hazardous waste.

² The Phase II portion of the landfill was constructed with a Resource Conservation and Recovery Act (RCRA) Subtitle D base liner which protects the underlying soils and aquifer from landfill leachate.

The purpose of the previous vertical and lateral expansions was to provide additional air space volume for placement of refuse while the siting, design, and construction phases for a new landfill facility or other long-term landfill capacity solutions was completed. The County has previously attempted to site a new MSW landfill at another location on the island. The County completed landfill siting studies in 2001/2002, 2007, and 2012. In 2018, the County completed an engineering design and Environmental Impact Statement (EIS) for a new MSW landfill and resource recovery park at Ma'alo. However, during the permitting process, the County had to abandon its plans to develop a new MSW landfill facility at Ma'alo due to the potential for the landfill to increase bird strikes at Līhu'e Airport. The County understands there is a critical need to identify a long-term MSW capacity solution for the Island of Kaua'i and continues to evaluate alternative landfill sites and other long-term options for increasing the landfill capacity on Kaua'i.

PURPOSE AND NEED

KLF is Kaua'i Island's only permitted MSW landfill and is predicted to reach its capacity in October of 2026. However, the planning, permitting, and implementation of any potential long-term landfill capacity solution is anticipated to require more than five years (i.e., would not be available for MSW disposal until after October 2026). Therefore, there is a need to provide landfill capacity beyond October 2026 while a long-term landfill capacity solution is planned, permitted, and implemented. The purpose of the vertical expansion of the Phase II portion of the KLF is to add landfill capacity to the existing landfill while a long-term landfill capacity solution is implemented.

PROPOSED ACTION

The major components of the Proposed Action would include:

- **Vertical Landfill Expansion:** The proposed Phase II vertical expansion would extend the existing waste disposal area upwards to a maximum height of 171.5 ft above msl, without expanding the existing permitted footprint. The approximate extent of the proposed vertical expansion is shown in Figure 1: Location Map and Figure 2: Simple Profile of KLF Phase II Vertical Expansion. The proposed vertical expansion would be designed for slope stability, positive drainage off the landfill surface, and to maximize disposal capacity. New, access roads would be constructed to access the upper reaches of the landfill area.
- **Landfill Gas Collection and Control System (GCCS)³:** Modern MSW landfills require GCCSs to collect and properly dispose of landfill gas. KLF's existing GCCS consists of a network of high-density polyethylene (HDPE) pipes, gas collection devices (i.e., gas wells), and an enclosed

³ Landfill gases are produced when bacteria break down organic waste. Landfill gases are primarily made up of methane and carbon dioxide but may also include small amounts of nitrogen, oxygen, ammonia, sulfides, hydrogen, and various other gases. Gas Collection and Control Systems (GCCS) are a common and major component of most landfills. They are designed to help control odors, minimize releases to the atmosphere, and increase safety by controlling migration and reducing landfill fire risk.

landfill gas flare that is designed to minimize and control emissions. The existing GCCS would be expanded to accommodate the increased height of Phase II by raising or relocating the existing GCCS infrastructure within the footprint of the vertical expansion and installing additional landfill gas extraction wells and piping in the areas of new waste.

- **Stormwater Management⁴:** Modern MSW landfills require stormwater management systems to prevent stormwater from coming into contact with waste and other contaminants, control the flow of stormwater into drainage features, and prevent run-off into nearby water bodies. The KLF includes drainage features that diverts stormwater away from the active refuse areas to infiltration ditches around the perimeter of the landfill and to an existing stormwater infiltration basin. Under the Proposed Action, existing surface water drainage features that currently divert stormwater away from the refuse areas would need to be modified slightly (i.e., extended upwards) to accommodate the increase in height of the Phase II waste disposal area.

In addition to the landfill gas GCCS and stormwater management infrastructure, KLF currently incorporates engineering and operational controls⁵ to minimize and avoid adverse impacts to the environment and public. These controls include, but are not limited to, groundwater and leachate monitoring, litter control, dust control, odor control, and vector control. KLF also implements a spill prevention, control, and countermeasures plan, emergency management procedures, and other operational plans. KLF would continue to implement its operational controls and plans under the Proposed Action. No substantial changes to KLF's operations are proposed.

As no construction is required to begin operating the vertical expansion, the Proposed Action can begin once all approvals are received (anticipated to be Q4 of 2023).

For more information regarding the Project, please visit <https://www.kauai.gov/KekahaLExpansion>.

⁴ Stormwater is water from rain and can soak into the soil (infiltrate), be held on the surface and evaporate, or run off and end up in a nearby stream, river, or other water body. Stormwater management systems are a common and major component of most landfills. They are designed to prevent stormwater from coming into contact with waste and other contaminants, control the flow of stormwater into drainage features, and prevent run-off into nearby water bodies.

⁵ Engineering and operational controls are measures to keep our environment (groundwater, surface water, air, and ecosystem) clean from the gas, leachate, and stormwater contamination caused by a landfill.

P:\GIS\PROJECTS\Kauai_County\Kekaha_Landfill_Verical_Expansion\Maps\CIA_20221205\KauaiCounty_KekahaLandfill_CIA_20221205.aprx



Kekaha Landfill Phase II Vertical Expansion

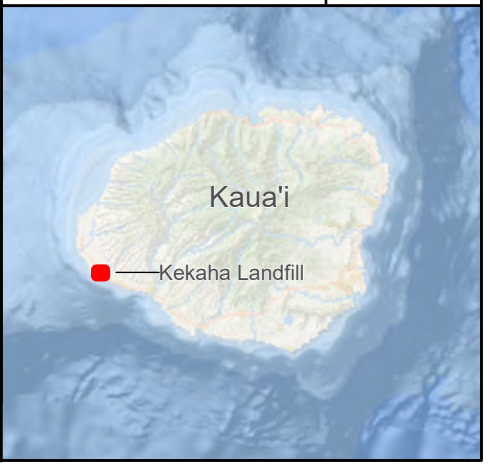
Figure 1
Project Location

KAUA'I COUNTY, HI

- Approximate Extent of the Proposed Vertical Expansion
- TMK Parcel Boundary
- Phase I Limit
- Phase II Limit
- Cell 1 Limit
- Cell 2 Limit

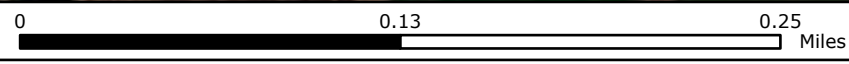


Reference Map



1:4,000

WGS 1984 UTM Zone 4N



NOT FOR CONSTRUCTION

Figure 2: Simple Profile of KLF Phase II Vertical Expansion



Pre-Assessment Consultation Comment and Response Matrix

Pre-Assessment Consultation Comment	County of Kaua'i Response
County of Kaua'i Transportation Agency (email dated March 3, 2023)	
The County of Kaua'i Transportation Agency (CTA) has no further comment on this project at this time.	N/A
State of Hawai'i Department of Land and Natural Resources, Engineering Division (letter dated March 28, 2023)	
We have no comments.	N/A
State of Hawai'i Department of Land and Natural Resources, Land Division – Kaua'i District (letter dated March 28, 2023)	
We have no comments.	N/A
State of Hawai'i Department of Land and Natural Resources, Office of Conservation and Coastal Lands (letter dated March 28, 2023)	
<p>The OCCL regulates land uses in the State Land Use Conservation District through the issuance of Conservation District Use Permits and Site Plan Approvals to help conserve, protect, and preserve important natural and cultural resources. The OCCL notes that the portion of KLF that occupies TMK: (4) 1-2-002:001 appears to lie the State Land Use Agricultural District and that a portion of TMK: (4) 1-2- 002:009 appears to lie in the Limited Subzone of the State Land Use Conservation District. The County and Tetra Tech may want to consider consulting with the State of Hawaii Land Use Commission (LUC - (808) 587-3822) regarding the Agricultural and Conservation District boundary on the subject properties and the need for a Boundary Interpretation to determine jurisdictional authority.</p> <p>According to the OCCL files, the Board of Land and Natural Resources (BLNR) approved Conservation District Use Permit (CDUP) KA-3625 for the KLF Phase II Expansion on August 24, 2012, subject to nineteen (19) conditions. A portion of the KLF Phase II Expansion involved KLF lands that appeared to lie in the Limited Subzone. On July 8, 2016, the BLNR approved Time Extension Request KA 16-13 and amended Condition #5 of CDUP KA-3625 to provide the County until August 24, 2018, to initiate</p>	<p>The County discusses the state land use designations applicable the Proposed Action in <i>Section 3.8. Land Use</i> of the draft EA. As shown in Figure 3-3 of the draft EA, the conservation district boundary line is located at the boundary of TMK (4) 1-2-002:009 and TMK (4) 1-2-002:001 (F. Talon, Land Use Commission, personal communication – phone, April 3, 2023). The components of the Phase II Vertical Expansion (Proposed Action) would be located entirely within TMK 4-1-2-002:001 (por.), which is in the State Land Use Agricultural District. Discussion of the Proposed Actions compliance with the rules regulating the State Agricultural District are discussed in <i>Section 3.8. Land Use</i> of the draft EA.</p>

Pre-Assessment Consultation Comment	County of Kaua'i Response
<p>construction of the KLF Phase II Expansion project and until August 24, 2022, to complete construction.</p> <p>Based on the information you have provided; it is unclear if land uses are proposed in the Conservation District. Should the current KLF Phase II Vertical Expansion project involve proposed land uses in the Conservation District, they will require review by the OCCL and potentially authorization from the Department or BLNR. A copy of the current rules and regulations of the Conservation District as well as proposed amendments to Hawaii Administrative Rules (HAR) Chapter 13-5 can be found at https://dlnr.hawaii.gov/occl/rules/.</p>	
<p>In this context, the OCCL offers the following comments regarding the development of a Draft EA for the project. The OCCL requests that the Draft EA contain a discussion and analysis of sea level rise impacts to the KLF and proposed expansion. A cursory review of the State of Hawaii Sea Level Rise Viewer (https://www.pacioos.hawaii.edu/shoreline/slr-hawaii/) appears to indicate that the KLF and surrounding areas may be impacted by 3.2ft of sea level rise, and recent projections appear to indicate that sea level rise may exceed this threshold prior to 2100. The OCCL also requests the Draft EA describe the County's efforts towards Waste Diversion to help with the KLF use and capacity.</p>	<p>A discussion and analysis of sea level rise impacts to the Kekaha Municipal Solid Waste Landfill Facility (KLF) and Proposed Action is included in <i>Section 3.9. Natural Hazards</i> of the Project's draft EA. A description of the County's waste diversion efforts is also included in <i>Section 1.2. Background</i> of the draft EA.</p>
<p>Regarding the County's efforts to find a potential long-term landfill capacity solution and/or new landfill site, Hawaii Revised Statutes (HRS) §183C-4 Zoning, amendments. states:</p> <p><i>{b) The department shall adopt rules governing the use of land within the boundaries of the conservation district that are consistent with the conservation of necessary forest growth, the conservation and development of land and natural resources adequate for present and future needs, and the conservation and preservation of open space areas for public use and enjoyment; provided that no waste or disposal facility shall be located in a conservation district except in emergency circumstances where it may be necessary to mitigate significant risks to</i></p>	<p>The County acknowledges that HRS §183C-4 Zoning, prohibits waste or disposal facility in a conservation district except in emergency circumstances, for nonconforming use, and if the use is in accordance with a zoning rule.</p> <p>As noted above, the components of the Phase II Vertical Expansion (Proposed Action) would be located entirely within TMK 4-1-2-002:001 (por.) which is outside the Conservation District.</p>

Pre-Assessment Consultation Comment	County of Kaua'i Response
<p><i>public safety and health; provided further that emergency circumstances shall not exceed three years. No use except a nonconforming use as defined in section 183C-5, shall be made within the conservation district unless the use is in accordance with a zoning rule.</i></p> <p><i>For the purposes of this subsection:</i></p> <p><i>"Emergency" means any actual or imminent natural or human-caused occurrence that results or likely will result in substantial injury or harm to the population or substantial damage to or loss of property.</i></p> <p><i>"Waste or disposal facility" means any transfer station or landfill as defined in section 340A-1, open dump as defined in section 342H-1, solid waste reduction facility or waste reduction facility as defined in section 342G-1, disposal facility, or any other facility for the disposal of solid waste that is required by law to obtain a permit from the department of health. "Waste or disposal facility" excludes individual, state certified, non-industrial redemption centers.</i></p>	
State of Hawai'i Historic Preservation Division (email dated February 27, 2023)	
<p>SHPD does not accept any project submissions for review via email. All submissions must be submitted via SHPD's HICRIS portal (see SHPD website).</p>	<p>On behalf of the County, Cultural Surveys Hawaii (CSH) submitted the <i>Request for Concurrence with Project Effect Determination of "No Historic Properties Affected" HRS §6E-8/HAR §275-7 for the Kekaha Landfill Phase II Vertical Expansion Project, Waimea Ahupua'a, Waimea District, Kaua'i, TMKs: (4) 1-2-002:009 and 1-2-002:001 (por.).</i> (CSH job code WAIMEA 51) to SHPD on March 1, 2023 under HICRIS #2023PR00306.</p>
State of Hawai'i Department of Health, Solid and Hazardous Waste Branch (letter dated March 20, 2023)	
<p>Municipal solid waste landfills (MSWLF) are regulated by the DOH under Chapter 342H, Hawaii Revised Statutes (HRS) and Chapter 11-58.1, Hawaii Administrative Rules. A vertical expansion of the MSWLF requires a modification of the landfill permit which includes a submission to the DOH of a permit application for the permit modification, an appropriate filing fee accompanying the application submission, and a public notice</p>	<p>Thank you for your comment. Upon completion of the HRS 343 environmental review process, the County will submit an application for a Solid Waste Management Permit modification. The County will continue to coordinate with the Hawaii Department of Health as the Project progresses.</p>

Pre-Assessment Consultation Comment	County of Kaua'i Response
<p>of the draft permit modification with a 30-day public comment period. The modification must meet all applicable requirements of administrative rules and statutes at the time of the application submission.</p>	
<p>Please note, there is a recent amendment to Section 342H-52, HRS that prohibits modification or expansion of an MSWLF or component of an MSWLF without establishing no less than a one-half mile buffer zone (as defined in the section) around the facility. Although the Kekaha MSWLF is an existing facility, it must meet this statutory requirement for the vertical expansion to be permitted.</p>	<p>The County acknowledges that HRS Section 342H-52 prohibits the modification or expansion of a waste or disposal facility, including a municipal solid waste landfill unit, without first establishing a buffer zone of no less than one-half mile around the waste or disposal facility. Pursuant to this subsection 342H-52(b) "Buffer zone" is defined as "the distance between the edge of waste or waste activity and the nearest residential, school, or hospital property line". There are no residences, schools, or hospitals within 0.5 miles of the KLF. The nearest residential property lines are the Pacific Missile Range (PMRF) military housing approximately 1.25 miles to the northwest and a neighborhood of Kekaha approximately 1.3 miles to the southeast of the KLF. The nearest school is Kekaha Elementary School and the nearest hospital is the Kauai Veterans Memorial Hospital, approximately 2 miles and 5 miles to the southeast of the KLF facility, respectively.</p>
Department of the Navy Pacific Missile Range Facility (letter dated March 23, 2023)	
<p>Per reference (a), prior to raise of elevation of the landfill, action will have to be taken by Tetra Tech/County of Kauai, the Federal Aviation Administration (FAA), and Pacific Missile Range Facility (PMRF). In order to provide acceptable obstacle clearance for aircraft utilizing the PMRF Barking Sands Airfield, the FAA requires submission of an FAA Form 7460-1 (Notice of Proposed Construction or Alteration) to the FAA to initiate an Obstacle Evaluation.</p> <p>The form submission will result in the FAA working with other federal entities and PMRF to conduct a review and determine possible risks to aircraft and evaluate other concerns including Bird Animal Strike Hazard (BASH), Hazard of Electronic Radiation to Ordnance (HERO), Radiation Hazard (RADHAZ), and visibility risks, among others. The final action will</p>	<p>Thank you for your comment. The County will submit an FAA Form 7460-1 (Notice of Proposed Construction or Alteration) to the FAA to initiate an obstacle evaluation and determine possible risks to aircraft utilizing the PMRF Barking Sands Airfield. As you've noted, a "Determination of No Hazard" is anticipated based on past determinations made by the FAA for the previous vertical and lateral expansions of the KLF.</p>

Pre-Assessment Consultation Comment	County of Kaua'i Response
<p>result in a Letter of Determination by the FAA on whether the raise in elevation raises an acceptable, or unacceptable, risk.</p> <p>I have been informed that the landfill elevation has been raised multiple times in the last 10-15 years through this process with no concerns noted from the FAA, PMRF, or other entities.</p>	
U.S. Fish and Wildlife Service, Pacific Island Fish and Wildlife Office (letter dated March 27, 2023)	
<p>Our letter has been prepared under the authority of and in accordance with provisions of the Endangered Species Act of 1973 (16 U.S.C. 1531 <i>et seq.</i>), as amended (ESA). We have reviewed the information you provided and pertinent information in our files, as it pertains to federally listed species in accordance with section 7 of the ESA. Our data indicate the following species may occur or transit through the vicinity of the proposed project area: the endangered 'ōpe'ape'a (Hawaiian hoary bat, <i>Lasiurus cinereus semotus</i>); endangered 'ua'u (Hawaiian petrel, <i>Pterodroma sandwichensis</i>), endangered Hawai'i distinct population segment (DPS) of the 'akē'akē (band-rumped storm-petrel, <i>Oceanodroma castro</i>), threatened 'a'o (Newell's shearwater, <i>Puffinus auricularis newelli</i>) (hereafter collectively referred to as Hawaiian seabirds); the endangered koloa (Hawaiian duck, <i>Anas wyvilliana</i>), endangered 'alae ke'oke'o (Hawaiian coot, <i>Fulica alai</i>), endangered ae'o (Hawaiian stilt, <i>Himantopus mexicanus knudseni</i>), the endangered 'alae 'ula (Hawaiian gallinule, <i>Gallinula galeata sandvicensis</i>) (hereafter collectively referred to as Hawaiian waterbirds); and the threatened nēnē (Hawaiian goose, <i>Branta sandvicensis</i>).</p>	<p>The County acknowledges that these species could occur or transit through the vicinity of the KLF and have incorporated the U.S. Fish and Wildlife Service (Service)'s recommended measures into <i>Section 3.2. Biological Resources</i> of the draft EA.</p>
<p><u>'Ōpe'ape'a</u></p> <p>The Hawaiian hoary bat roosts in both exotic and native woody vegetation across all islands and will leave young unattended in trees and shrubs when they forage. If trees or shrubs 15 feet or taller are cleared during the pupping season, there is a risk that young 'ōpe'ape'a could inadvertently be harmed or killed since they are too young to fly or may not move away. 'Ōpe'ape'a forage for insects from as low as 3</p>	<p>The County acknowledges that 'ōpe'ape'a may occur in the vicinity of and potentially occasionally traverse the KLF. The number of trees over 15 feet tall within the KLF is limited, and no trees occur within the proposed limits of the Phase II vertical expansion. A description of the 'ōpe'ape'a, including the information contained in the comment, is included in <i>Section 3.2. Biological Resources</i> of the draft EA.</p>

Pre-Assessment Consultation Comment	County of Kaua'i Response
<p>feet to higher than 500 feet above the ground and can become entangled in barbed wire used for fencing.</p> <p>To avoid and minimize impacts to the endangered 'ōpe'ape'a we recommend incorporating the following applicable measures into your project:</p> <ul style="list-style-type: none"> • Do not disturb, remove, or trim woody plants greater than 15 ft. tall during the 'ōpe'ape'a birthing and pup rearing season (June 1 through September 15). • Do not use barbed wire for fencing. 	<p>The Service's recommended measures have also been incorporated into <i>Section 3.2. Biological Resources</i> of the draft EA and would be implemented, as applicable, by the County to avoid and minimize Project-related impacts to 'ōpe'ape'a. No trees or shrubs greater than 15 feet tall will be disturbed, trimmed or removed during the 'ōpe'ape'a birthing and pupping season (June 1 through September 15). No fences are planned to be erected as part of the Proposed Action.</p>
<p><u>Hawaiian seabirds</u></p> <p>Hawaiian seabirds may traverse the project area at night during the breeding, nesting and fledging seasons (March 1 to December 15). Outdoor lighting could result in seabird disorientation, fallout, and injury or mortality. Seabirds are attracted to lights and after circling the lights they may become exhausted and collide with nearby wires, buildings, or other structures or they may land on the ground. Downed seabirds are subject to increased mortality due to collision with automobiles, starvation, and predation by dogs, cats, and other predators. Young birds (fledglings) traversing the project area between September 15 and December 15, in their first flights from their mountain nests to the sea, are particularly vulnerable.</p> <p>To avoid and minimize potential project impacts to Hawaiian seabirds we recommend you incorporate the following applicable measures into your project:</p> <ul style="list-style-type: none"> • Fully shield all outdoor lights so the bulb can only be seen from below bulb height and only use when necessary. • Install automatic motion sensor switches and controls on all outdoor lights or turn off lights when human activity is not occurring in the lighted area. • Avoid nighttime construction during the seabird fledging period (September 15 through December 15). 	<p>The County acknowledges that Hawaiian seabirds have the potential to transverse the KLF at night during the breeding, nesting, and fledging seasons (March 1–December 15). A description of listed Hawaiian seabirds, including the information contained in the comment, has been included in <i>Section 3.2. Biological Resources</i> of the draft EA.</p> <p>The measures recommended by the Service are currently being implemented at the KLF to avoid and minimize impacts to Hawaiian seabirds from existing operations and would continue with execution of Proposed Action. The existing outdoor lighting at the KLF is limited to street lighting and outdoor lights placed above the maintenance shop, employee kitchen, employee restroom, and supervisor's doors. All outdoor lighting is fully shielded and directed downward. Normal operating hours are 8:00 a.m. to 4:00 p.m. Lighting is generally only needed during early morning or early evening hours during the winter months, when daylight hours are reduced. Outdoor lighting is controlled by timers that automatically turn-off outdoor lights after the facility has closed and site personnel have left. The Project does not include plans to add or alter the existing outdoor lighting. Landfill operations associated with the Proposed Action would continue to be conducted primarily during daylight hours. The Proposed Action does not involve nighttime construction.</p>

Pre-Assessment Consultation Comment	County of Kaua'i Response
<p><u>Hawaiian waterbirds</u></p> <p>Hawaiian waterbirds are currently found in a variety of wetland habitats including freshwater marshes and ponds, coastal estuaries and ponds, artificial reservoirs, lo'i kalo (taro, <i>Colocasia esculenta</i> patches), irrigation ditches, sewage treatment ponds, and in the case of the koloa, montane streams and marshlands. Ae'o may also be found wherever ephemeral or persistent standing water may occur. Threats to these species include non-native predators, habitat loss, and habitat degradation. Koloa are also subject to threats from hybridization with introduced mallards.</p> <p>To avoid and minimize potential project impacts to Hawaiian waterbirds we recommend you incorporate the following measures into your project:</p> <ul style="list-style-type: none"> • In areas where waterbirds are known to be present, post and implement reduced speed limits, and inform project personnel and contractors about the presence of endangered species on-site. • If water resources are located within or adjacent to the project site, incorporate applicable best management practices regarding work in aquatic environments into the project design. • Have a biological monitor that is familiar with the species' biology conduct Hawaiian waterbird nest surveys where appropriate habitat occurs within the vicinity of the proposed project site prior to project initiation. Repeat surveys again within 3 days of project initiation and after any subsequent delay of work of 3 or more days (during which the birds may attempt to nest). If a nest or active brood is found: <ul style="list-style-type: none"> o Contact the Service within 48 hours for further guidance. o Establish and maintain a 100-foot buffer around all active nests and/or broods until the chicks/ducklings have fledged. Do not conduct potentially disruptive activities or habitat alteration within this buffer. o Have a biological monitor that is familiar with the species' biology present on the project site during all construction or earth moving 	<p>The County acknowledges that listed Hawaiian waterbirds have been observed at the KLF and have the potential to traverse or occur in the vicinity of the KLF. Although listed waterbirds may be attracted to occasional standing water in the leachate evaporation pond or stormwater infiltration basin located at the northeast boundary of the KLF site, these human-made features are typically dry, and therefore do not attract many waterbirds (SWCA 2016).</p> <p>A description of listed Hawaiian waterbirds, including the avoidance and minimization measures provided by the Service have been included in <i>Section 3.2. Biological Resources</i> of the draft EA. The Service's recommended measures would be implemented, as applicable, by the County to avoid and minimize Project-related impacts to Hawaiian waterbirds. The posted speed limit with the KLF is 15 mph. Neither the leachate evaporation pond nor stormwater infiltration basin would be altered or disturbed as a result of the Proposed Action. The Proposed Action would not create standing water or open water.</p>

Pre-Assessment Consultation Comment	County of Kaua'i Response
<p>activities until the chicks/ducklings fledge to ensure that Hawaiian waterbirds and nests are not adversely impacted.</p> <p>In addition, your project may result in the creation of standing water or open water that could attract Hawaiian waterbirds to the project site. Hawaiian waterbirds attracted to sub-optimal habitat may suffer adverse impacts, such as predation and reduced reproductive success, and thus the project may create an attractive nuisance. The ae'o is also known to nest in sub-optimal locations (e.g. any ponding water), if water is present. Therefore, we recommend you work with our office during the project planning phase so that we may assist you in developing measures to avoid impacts to listed species (e.g., fencing, vegetation control, predator management).</p>	
<p><u>Nēnē</u></p> <p>Nēnē are found on the islands of Hawai'i, Maui, Moloka'i, and Kaua'i. They are observed in a variety of habitats, but prefer open areas, such as pastures, golf courses, wetlands, natural grasslands and shrublands, and lava flows. Threats to the species include introduced mammalian and avian predators, wind facilities, and vehicle strikes.</p> <p>To avoid and minimize potential project impacts to nēnē we recommend you incorporate the following measures into your project description:</p> <ul style="list-style-type: none"> • Do not approach, feed, or disturb nēnē. • If nēnē are observed loafing or foraging within the project area during the breeding season (September through April), have a biologist familiar with nēnē nesting behavior survey for nests in and around the project area prior to the resumption of any work. Repeat surveys after any subsequent delay of work of 3 or more days (during which the birds may attempt to nest). • Cease all work immediately and contact the Service for further guidance if a nest is discovered within a radius of 150 feet of proposed project, or a previously undiscovered nest is found within the 150-foot radius after work begins. 	<p>The County acknowledges that nēnē have been observed at the KLF and have the potential to traverse or occur in the vicinity of the KLF. Nēnē have been observed at the KLF, particularly near green waste piles and vegetated areas in the Phase I portion of the facility and at the stormwater basin and leachate pond (County of Kaua'i, personal communication - email, February 17, 2023); however, there is no indication that Hawaiian geese are attracted to the active landfill area within the Phase II portion of the landfill or at other KLF facilities (SWCA 2016). The Service's recommended measures have been incorporated into <i>Section 3.2. Biological Resources</i> of the draft EA and would be implemented, as applicable, by the County as necessary to avoid and minimize Project-related impacts to nēnē. The posted speed limit within the KLF facility is 15 mph. The Phase I portion of the KLF, leachate evaporation pond nor the stormwater infiltration basin would be altered or disturbed as a result of the Proposed Action. In the unlikely event that a nēnē nest is discovered within a 150 feet radius of the active landfill area of the Phase II landfill, the County will cease all work in the vicinity of the nest immediately and contact the Service for further guidance.</p>

Pre-Assessment Consultation Comment	County of Kaua'i Response
<ul style="list-style-type: none"> • In areas where nēnē are known to be present, post and implement reduced speed limits, and inform project personnel and contractors about the presence of endangered species on-site. <p><u>Enclosure: Service's Recommended Standard Best Management Practices</u></p> <p>The U.S. Fish and Wildlife Service (Service) recommends the following measures to be incorporated into project planning to avoid or minimize impacts to fish and wildlife resources. Best Management Practices (BMPs) include the incorporation of procedures or materials that may be used to reduce either direct or indirect negative impacts to aquatic habitats that result from project construction-related activities. These BMPs are recommended in addition to, and do not over-ride any terms, conditions, or other recommendations prepared by the USFWS, other federal, state or local agencies. If you have questions concerning these BMPs, please contact the USFWS Aquatic Ecosystems Conservation Program at 808-792-9400.</p> <ol style="list-style-type: none"> 1. Authorized dredging and filling-related activities that may result in the temporary or permanent loss of aquatic habitats should be designed to avoid indirect, negative impacts to aquatic habitats beyond the planned project area. 2. Dredging/filling in the marine environment should be scheduled to avoid coral spawning and recruitment periods, and sea turtle nesting and hatching periods. Because these periods are variable throughout the Pacific islands, we recommend contacting the relevant local, state, or federal fish and wildlife resource agency for site specific guidance. 3. Turbidity and siltation from project-related work should be minimized and contained within the project area by silt containment devices and curtailing work during flooding or adverse tidal and weather conditions. BMPs should be maintained for the life of the construction period until turbidity and siltation within the project area is stabilized. All project construction-related debris and sediment containment devices should be removed and disposed of at an approved site. 	<p>The County acknowledges receipt of the Service's Recommended Standard Best Management Practices for aquatic habitats. The Project does not include work within aquatic habitats, therefore the recommended measures 1, 2, and 4 do not apply to the Proposed Action. Applicable portions of recommended measures 3, and 5-7 have been incorporated into <i>Section 3.2. Biological Resources</i> of the draft EA and would be implemented, as applicable, by the County to avoid and minimize Project-related impacts to fish and wildlife resources.</p>

Pre-Assessment Consultation Comment	County of Kaua'i Response
<p>4. All project construction-related materials and equipment (dredges, vessels, backhoes, silt curtains, etc.) to be placed in an aquatic environment should be inspected for pollutants including, but not limited to; marine fouling organisms, grease, oil, etc., and cleaned to remove pollutants prior to use. Project related activities should not result in any debris disposal, non-native species introductions, or attraction of non-native pests to the affected or adjacent aquatic or terrestrial habitats. Implementing both a litter-control plan and a Hazard Analysis and Critical Control Point plan (HACCP – see http://www.haccp-nrm.org/Wizard/default.asp) can help to prevent attraction and introduction of non-native species.</p> <p>5. Project construction-related materials (fill, revetment rock, pipe, etc.) should not be stockpiled in, or near aquatic habitats and should be protected from erosion (e.g., with filter fabric, etc.), to prevent materials from being carried into waters by wind, rain, or high surf.</p> <p>6. Fueling of project-related vehicles and equipment should take place away from the aquatic environment and a contingency plan to control petroleum products accidentally spilled during the project should be developed. The plan should be retained on site with the person responsible for compliance with the plan. Absorbent pads and containment booms should be stored on-site to facilitate the clean-up of accidental petroleum releases.</p> <p>7. All deliberately exposed soil or under-layer materials used in the project near water should be protected from erosion and stabilized as soon as possible with geotextile, filter fabric or native or non-invasive vegetation matting, hydro-seeding, etc.</p>	

From: [Leonard Peters](#)
To: [Yost, Kayla](#)
Subject: FW: Kekaha Municipal Solid Waste Landfill Phase II Vertical Expansion - Pre-Assessment Consultation for HRS Chapter 343 Environmental Assessment
Date: Friday, March 3, 2023 1:05:48 PM
Attachments: [image001.png](#)
[image002.png](#)
[image003.png](#)
[image004.png](#)
[image006.png](#)
[Outlook-Logo_comp.png](#)
[KLF Vertical Expansion_Scoping Letter_02-27-23.pdf](#)

CAUTION: This email originated from an external sender. Verify the source before opening links or attachments.

Aloha Ms. Yost-

The County of Kaua'i Transportation Agency (CTA) has no further comment on this project at this time.

Mahalo!

Leonard Peters

Assistant Executive on Transportation
(808) 246-8112



From: The Kauai Bus <thekauaibus@kauai.gov>
Sent: Monday, February 27, 2023 4:58 PM
To: CTA All Management <Management@kauai.gov>
Subject: Fw: Kekaha Municipal Solid Waste Landfill Phase II Vertical Expansion - Pre-Assessment Consultation for HRS Chapter 343 Environmental Assessment

Aloha,

Please see email below.

Mahalo,

Cece



County of Kaua'i

Main Line : 808-246-8110

Fax: 808-241-6417

Email
: thekauaibus@kauai.gov

www.Kauai.gov/Transportation

www.theKauaiBus.com

From: Yost, Kayla <KAYLA.YOST@tetrattech.com>
Sent: Monday, February 27, 2023 3:11 PM

To: Yost, Kayla <KAYLA.YOST@tetratech.com>

Subject: Kekaha Municipal Solid Waste Landfill Phase II Vertical Expansion - Pre-Assessment Consultation for HRS Chapter 343 Environmental Assessment

CAUTION: This email originated from outside the County of Kauai. Do not click links or open attachments even if the sender is known to you unless it is something you were expecting.

Aloha,

The County of Kaua'i, Department of Public Works, Solid Waste Division (County) is proposing a vertical expansion of Phase II of the Kekaha Municipal Solid Waste Landfill (KLF) (Proposed Action). KLF is located 1.3 miles northwest of the town of Kekaha on the southwest side of the Island of Kaua'i. The KLF is a municipal solid waste (MSW) landfill comprised of two refuse fill areas identified as Phase I and Phase II. Currently, the Phase II permitted limit-of-waste footprint is approximately 44 acres and the maximum permitted elevation is 120 ft above mean sea level (msl). Phase II is scheduled to reach its waste disposal capacity by October 2026. In order to develop additional air space volume for continued waste disposal, the County proposes to extend the landfill height vertically to a maximum permitted elevation of 171.5 ft above msl.

Pursuant to the requirements of Hawai'i Revised Statutes (HRS) Chapter 343 and Hawai'i Administrative Rules (HAR) §11-200.1, the County is preparing an Environmental Assessment (EA) to evaluate the potential environmental effects of the Proposed Action. As part of the environmental review process, pre-assessment consultation is being conducted to obtain input on the scope of issues to be considered in the Draft EA. An overview of the Proposed Action and a Location Map are attached. We are requesting input regarding the Proposed Action, including concerns related to particular environmental resources, as well as relevant information that should be considered in the evaluation.

Please provide comments regarding the scope of the EA in writing via U.S. postal mail to Kayla Yost at Tetra Tech (737 Bishop Street, Suite 2000, Honolulu, Hawai'i 96813; Tel: (808) 441-6600; Fax: (808) 536-3953) or kayla.yost@tetratech.com. Comments must be postmarked by March 29, 2023 to be considered in the Draft EA. Copies of the Draft EA and Final EA will be made available for public review.

Thank you for your participation in the environmental review process for the Proposed Action.

Mahalo,

Kayla Yost | Environmental Planner

Pronouns: she, her, hers

Business **+1 (808) 441-6600** | Mobile **+1 (808) 352-2247** | Fax **+1 (808) 536-3953** | kayla.yost@tetratech.com

Tetra Tech | *Leading with Science®* | CES

737 Bishop St. Suite 2000 | Mauka Tower | Honolulu, HI 96813-3201 | tetratech.com

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TETRA TECH

JOSH GREEN, M.D.
GOVERNOR | KE KIA'ĀINA

SYLVIA LUKE
LIEUTENANT GOVERNOR | KA HOPE KIA'ĀINA



DAWN N. S. CHANG
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE
MANAGEMENT

STATE OF HAWAI'I | KA MOKU'ĀINA 'O HAWAI'I
DEPARTMENT OF LAND AND NATURAL RESOURCES
KA 'OIHANA KUMUWAIWAI 'ĀINA
LAND DIVISION

P.O. BOX 621
HONOLULU, HAWAII 96809

March 28, 2023

LD 0170e

Kayla Yost
TETRA TECH
737 Bishop Street, Suite 2000
Honolulu, HI 96813

Via email: kayla.yost@tetrattech.com

To Whom It May Concern:

**SUBJECT: Kekaha Municipal Solid Waste Landfill Phase II Vertical Expansion
Pre-Assessment Consultation for HRS Ch 343 Environmental Assessment**
Kekaha, Island of Kauai, Hawaii
TMK: (4)1-2-002:001 (por.) and 1-2-002:009

Thank you for the opportunity to review and comment on the subject project. The Land Division of the Department of Land and Natural Resources (DLNR) distributed copies of your request to DLNR's various divisions for their review and comment.

Enclosed are responses/comments received from our (a) Engineering Division Name, (b) Land Division - Kauai District, and (c) Office of Conservation and Coastal Lands. If you have any questions, please feel free to contact Barbara Lee via email at *barbara.j.lee@hawaii.gov*. Thank you.

Sincerely,

Russell Tsuji

Russell Y. Tsuji
Land Administrator

Attachments

cc: Central Files

JOSH GREEN, M.D.
GOVERNOR | KE KIA'ĀINA

SYLVIA LUKE
LIEUTENANT GOVERNOR | KA HOPE KIA'ĀINA



DAWN N. S. CHANG
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE
MANAGEMENT

STATE OF HAWAII | KA MOKU'ĀINA 'O HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
KA 'ŌIHANA KUMUWAIWAI 'ĀINA
LAND DIVISION

P.O. BOX 621
HONOLULU, HAWAII 96809

February 28, 2023

LD 0170e

MEMORANDUM

FROM: ~~TO:~~

DLNR Agencies:

☒ Div. of Aquatic Resources (via email: glenn.r.higashi@hawaii.gov)

☐ Div. of Boating & Ocean Recreation

☒ **Engineering Division** (via email: DLNR.Engr@hawaii.gov)

☒ Div. of Forestry & Wildlife (via email: Rubyrosa.T.Terrago@hawaii.gov)

☐ Div. of State Parks

☒ Commission on Water Resource Management (via email: DLNR.CWRM@hawaii.gov)

☒ Office of Conservation & Coastal Lands (via email: sharleen.k.kuba@hawaii.gov)

☒ Land Division – Kauai District (via email: alison.neustein@hawaii.gov)

☒ Aha Moku (via email: leimana.k.damate@hawaii.gov)

TO: ~~FROM:~~

Russell Y. Tsuji, Land Administrator *Russell Tsuji*

SUBJECT:

**Kekaha Municipal Solid Waste Landfill Phase II Vertical Expansion
Pre-Assessment Consultation for HRS Ch 343 Environmental Assessment**

LOCATION:

Kekaha, Island of Kauai, Hawaii

TMK: (4)1-2-002:001 (por.) and 1-2-002:009

APPLICANT:

Tetra Tech on behalf of County of Kauai Department of Public Works

Transmitted for your review and comment is information on the above-referenced project. Please review the attached information and submit any comments by the internal deadline of **March 27, 2023** to barbara.j.lee@hawaii.gov at the Land Division.

If no response is received by the above due date, we will assume your agency has no comments at this time. Should you have any questions about this request, please contact Barbara Lee at the above email address. Thank you.

BRIEF COMMENTS:

- () We have no objections.
(✓) We have no comments.
() We have no additional comments.
() Comments are included/attached.

Signed:

Print Name:

Division:

Date:

[Signature]
Carty S. Chang, Chief Engineer
Engineering Division
Mar 22, 2023

Attachments
Cc: Central Files

JOSH GREEN, M.D.
GOVERNOR | KE KIA'ĀINA

SYLVIA LUKE
LIEUTENANT GOVERNOR | KA HOPE KIA'ĀINA



DAWN N. S. CHANG
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE
MANAGEMENT

STATE OF HAWAII | KA MOKU'ĀINA 'O HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
KA 'OIHANA KUMUWAIWAI 'ĀINA
LAND DIVISION

P.O. BOX 621
HONOLULU, HAWAII 96809

February 28, 2023

LD 0170e

MEMORANDUM

TO: **DLNR Agencies:**
X Div. of Aquatic Resources (via email: glenn.r.higashi@hawaii.gov)
 Div. of Boating & Ocean Recreation
X Engineering Division (via email: DLNR.Engr@hawaii.gov)
X Div. of Forestry & Wildlife (via email: Rubyrosa.T.Terrago@hawaii.gov)
 Div. of State Parks
X Commission on Water Resource Management (via email: DLNR.CWRM@hawaii.gov)
X Office of Conservation & Coastal Lands (via email: sharleen.k.kuba@hawaii.gov)
X Land Division – Kauai District (via email: alison.neustein@hawaii.gov)
X Aha Moku (via email: leimana.k.damate@hawaii.gov)

FROM: Russell Y. Tsuji, Land Administrator *Russell Tsuji*

SUBJECT: **Kekaha Municipal Solid Waste Landfill Phase II Vertical Expansion
Pre-Assessment Consultation for HRS Ch 343 Environmental Assessment**

LOCATION: Kekaha, Island of Kauai, Hawaii
TMK: (4)1-2-002:001 (por.) and 1-2-002:009

APPLICANT: **Tetra Tech on behalf of County of Kauai Department of Public Works**

Transmitted for your review and comment is information on the above-referenced project. Please review the attached information and submit any comments by the internal deadline of **March 27, 2023** to barbara.j.lee@hawaii.gov at the Land Division.

If no response is received by the above due date, we will assume your agency has no comments at this time. Should you have any questions about this request, please contact Barbara Lee at the above email address. Thank you.

BRIEF COMMENTS:

- () We have no objections.
(X) We have no comments.
() We have no additional comments.
() Comments are included/attached.

Signed: *Alison Neustein*
Print Name: Alison Neustein
Division: Land Division
Date: 3/24/2023

Attachments
Cc: Central Files

JOSH GREEN, M.D.
GOVERNOR | KE KIA'ĀINA

SYLVIA LUKE
LIEUTENANT GOVERNOR | KA HOPE KIA'ĀINA



DAWN N. S. CHANG
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE
MANAGEMENT

IN DEVELOPMENT
OFFICE OF CONSERVATION
AND COASTAL LANDS

2023 FEB 28 P 4:29

STATE OF HAWAII | KA MOKU'ĀINA 'O HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
KA 'OIHANA KUMUWAIWAI 'ĀINA
LAND DIVISION

P.O. BOX 621
HONOLULU, HAWAII 96809

February 28, 2023

LD 0170e

MEMORANDUM

TO: **DLNR Agencies:**
☒ Div. of Aquatic Resources (via email: glenn.r.higashi@hawaii.gov)
☐ Div. of Boating & Ocean Recreation
☒ Engineering Division (via email: DLNR.Engr@hawaii.gov)
☒ Div. of Forestry & Wildlife (via email: Rubyrosa.T.Terrago@hawaii.gov)
☐ Div. of State Parks
☒ Commission on Water Resource Management (via email: DLNR.CWRM@hawaii.gov)
☒ Office of Conservation & Coastal Lands (via email: sharleen.k.kuba@hawaii.gov)
☒ Land Division – Kauai District (via email: alison.neustein@hawaii.gov)
☒ Aha Moku (via email: leimana.k.damate@hawaii.gov)

FROM: Russell Y. Tsuji, Land Administrator *Russell Tsuji*

SUBJECT: **Kekaha Municipal Solid Waste Landfill Phase II Vertical Expansion
Pre-Assessment Consultation for HRS Ch 343 Environmental Assessment**

LOCATION: Kekaha, Island of Kauai, Hawaii
TMK: (4)1-2-002:001 (por.) and 1-2-002:009

APPLICANT: **Tetra Tech on behalf of County of Kauai Department of Public Works**

Transmitted for your review and comment is information on the above-referenced project. Please review the attached information and submit any comments by the internal deadline of **March 27, 2023** to barbara.j.lee@hawaii.gov at the Land Division.

If no response is received by the above due date, we will assume your agency has no comments at this time. Should you have any questions about this request, please contact Barbara Lee at the above email address. Thank you.

BRIEF COMMENTS:

- () We have no objections.
() We have no comments.
() We have no additional comments.
☒ Comments are included/attached.

Signed:

Print Name:

Division:

Date:

Trevor Fitzpatrick
Trevor Fitzpatrick
OCCL
3/28/2023

Attachments

Cc: Central Files

JOSH GREEN, M.D.
GOVERNOR | KE KIA ĀINA

SYLVIA LUKE
LIEUTENANT GOVERNOR | KA HOPE KIA ĀINA



STATE OF HAWAII | KA MOKU'ĀINA 'O HAWAII'
DEPARTMENT OF LAND AND NATURAL RESOURCES
KA 'OIHANA KUMUWAIWAI 'ĀINA
Office of Conservation and Coastal Lands
P.O. BOX 621
HONOLULU, HAWAII 96809

DAWN N.S. CHANG
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE
MANAGEMENT
LAURA H.E. KAKUA
FIRST DEPUTY
M. KALEO MANUEL
DEPUTY DIRECTOR - WATER
AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
COMMISSION ON WATER RESOURCE
MANAGEMENT
CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES
ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

REF: OCCL: TF

COR: KA 23-133

Kayla Yost
Tetra Tech, Inc.
737 Bishop Street, Suite 2000 Mauka Tower
Honolulu, HI 96813

Mar 28, 2023

SUBJECT: Kekaha Municipal Solid Waste Landfill Phase II Vertical Expansion Pre-Assessment
Consultation for HRS Ch 343 Environmental Assessment
Located at 6900 Kaumualii Highway #A
Por. Kekaha, Waimea, Kauai
Tax Map Keys (TMKs): (4) 1-2-002:001 (por.) and (4) 1-2-002:009

Dear Kayla Yost:

The Office of Conservation and Coastal Lands (OCCL) has reviewed your letter and attachments regarding the subject matter. According to the information in your letter, the County of Kauai Department of Public Works Solid Waste Division (County) is proposing a vertical expansion of Phase II of the Kekaha Municipal Solid Waste Landfill (KLF). The KLF encompasses approximately 98 acres of land within TMK: (4) 1-2-002:009 and a portion of TMK: (4) 1-2-002:001.

Executive Orders 1558 (signed April 27, 1953) and 2872 (signed October 6, 1977) placed the control and management of the lands underlying the KLF to the County of Kauai. The KLF is comprised of two (2) refuse fill areas: Phase I and Phase II. Phase I is an unlined landfill that began accepting solid waste in 1953 and ceased operations on October 8, 1993. Phase II is an active lined landfill that began accepting solid waste on October 9, 1993.

The letter notes that KLF is Kauai's only permitted municipal solid waste landfill and is predicted to reach its capacity in October of 2026. The letter states that major components of the proposed vertical expansion of KLF's Phase II include:

- **Vertical Landfill Expansion:** Extend the existing waste disposal area from the authorized 120ft above mean sea level (msl) to a maximum height of 171.5ft above msl without expanding the existing permitted footprint (approximately 44 acres).
 - New access roads would be constructed to access the upper reaches of the landfill area.
- **Landfill Gas Collection and Control System (GCCS):** The existing GCCS would be expanded to accommodate the increased height of Phase II by raising or relocating the existing GCCS

infrastructure within the footprint of the proposed vertical expansion and installing additional landfill gas extraction wells and piping in the areas of new waste.

- **Stormwater Management:** Existing surface water drainage features that currently divert stormwater away from the refuse areas would need to be modified slightly to extend upwards to accommodate the increase in height of the Phase II waste disposal area.

The letter notes that the purpose of the proposed vertical expansion of the Phase II portion of the KLF is to add landfill capacity to the existing landfill while a long-term landfill capacity solution is implemented. The letter states that the County expects the planning, permitting, and implementation of any potential long-term landfill capacity solution would likely take more than five (5) years and the new site would likely not be operational until after October 2026. On behalf of the County, Tetra Tech is seeking pre-assessment consultation comments in advance of developing a Draft Environmental Assessment (EA) for the project.

The OCCL regulates land uses in the State Land Use Conservation District through the issuance of Conservation District Use Permits and Site Plan Approvals to help conserve, protect, and preserve important natural and cultural resources. The OCCL notes that the portion of KLF that occupies TMK: (4) 1-2-002:001 appears to lie the State Land Use Agricultural District and that a portion of TMK: (4) 1-2-002:009 appears to lie in the Limited Subzone of the State Land Use Conservation District. The County and Tetra Tech may want to consider consulting with the State of Hawaii Land Use Commission (LUC – (808) 587-3822) regarding the Agricultural and Conservation District boundary on the subject properties and the need for a Boundary Interpretation to determine jurisdictional authority.

According to OCCL files, the Board of Land and Natural Resources (BLNR) approved Conservation District Use Permit (CDUP) KA-3625 for the KLF Phase II Expansion on August 24, 2012, subject to nineteen (19) conditions. A portion of the KLF Phase II Expansion involved KLF lands that appeared to lie in the Limited Subzone. On July 8, 2016, the BLNR approved Time Extension Request KA 16-13 and amended Condition #5 of CDUP KA-3625 to provide the County until August 24, 2018, to initiate construction of the KLF Phase II Expansion project and until August 24, 2022, to complete construction.

Based on the information you have provided; it is unclear if land uses are proposed in the Conservation District. Should the current KLF Phase II Vertical Expansion project involve proposed land uses in the Conservation District, they will require review by the OCCL and potentially authorization from the Department or BLNR. A copy of the current rules and regulations of the Conservation District as well as proposed amendments to Hawaii Administrative Rules (HAR) Chapter 13-5 can be found at <https://dlnr.hawaii.gov/occl/rules/>.

In this context, the OCCL offers the following comments regarding the development of a Draft EA for the project. The OCCL requests that the Draft EA contain a discussion and analysis of sea level rise impacts to the KLF and proposed expansion. A cursory review of the State of Hawaii Sea Level Rise Viewer (<https://www.pacioos.hawaii.edu/shoreline/slr-hawaii/>) appears to indicate that the KLF and surrounding areas may be impacted by 3.2ft of sea level rise, and recent projections appear to indicate that sea level rise may exceed this threshold prior to 2100. The OCCL also requests the Draft EA describe the County's efforts towards Waste Diversion to help with the KLF use and capacity.

Regarding the County's efforts to find a potential long-term landfill capacity solution and/or new landfill site, Hawaii Revised Statutes (HRS) §183C-4 Zoning, amendments, states:

(b) The department shall adopt rules governing the use of land within the boundaries of the conservation district that are consistent with the conservation of necessary forest growth, the conservation and development of land and natural resources adequate for present and future needs, and the conservation and preservation of open space areas for public use and enjoyment; provided that no waste or disposal facility shall be located in a conservation district except in emergency circumstances where it may be necessary to mitigate significant risks to public safety and health; provided further that emergency circumstances shall not exceed three years. No use except a nonconforming use as defined in section 183C-5, shall be made within the conservation district unless the use is in accordance with a zoning rule.

For the purposes of this subsection:

"Emergency" means any actual or imminent natural or human-caused occurrence that results or likely will result in substantial injury or harm to the population or substantial damage to or loss of property.

"Waste or disposal facility" means any transfer station or landfill as defined in section 340A-1, open dump as defined in section 342H-1, solid waste reduction facility or waste reduction facility as defined in section 342G-1, disposal facility, or any other facility for the disposal of solid waste that is required by law to obtain a permit from the department of health. "Waste or disposal facility" excludes individual, state certified, non-industrial redemption centers.

The OCCL thanks the County and Tetra Tech for the opportunity to provide comments prior to the development of the Draft EA for the project.

Should you have any questions, feel free to contact Trevor Fitzpatrick of the Office of Conservation and Coastal Lands at (808) 798-6660 or trevor.j.fitzpatrick@hawaii.gov.

Sincerely,

S Michael Cain

Michael Cain, Administrator
Office of Conservation and Coastal Lands

CC: Kauai Division Land Office
County of Kauai, Planning Department

From: [Lebo, Susan A](#)
To: [Yost, Kayla](#); [Buckley, David R](#)
Subject: Re: Kekaha Municipal Solid Waste Landfill Phase II Vertical Expansion - Pre-Assessment Consultation for HRS Chapter 343 Environmental Assessment
Date: Monday, February 27, 2023 3:16:14 PM
Attachments: [image001.png](#)
[image002.png](#)
[image003.png](#)
[image004.png](#)
[image006.png](#)

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Hello Kayla,

SHPD does not accept any project submissions for review via email. All submissions must be submitted via SHPD's HICRIS portal (see SHPD website).

Thank you in advance,

Susan

Susan A. Lebo, PhD
SHPD Archaeology Branch Chief
(808) 321-9000 cell

From: Yost, Kayla <KAYLA.YOST@tetrattech.com>
Sent: Monday, February 27, 2023 3:11 PM
To: Yost, Kayla <KAYLA.YOST@tetrattech.com>
Subject: [EXTERNAL] Kekaha Municipal Solid Waste Landfill Phase II Vertical Expansion - Pre-Assessment Consultation for HRS Chapter 343 Environmental Assessment

Aloha,

The County of Kaua'i, Department of Public Works, Solid Waste Division (County) is proposing a vertical expansion of Phase II of the Kekaha Municipal Solid Waste Landfill (KLF) (Proposed Action). KLF is located 1.3 miles northwest of the town of Kekaha on the southwest side of the Island of Kaua'i. The KLF is a municipal solid waste (MSW) landfill comprised of two refuse fill areas identified as Phase I and Phase II. Currently, the Phase II permitted limit-of-waste footprint is approximately 44 acres and the maximum permitted elevation is 120 ft above mean sea level (msl). Phase II is scheduled to reach its waste disposal capacity by October 2026. In order to develop additional air space volume for continued waste disposal, the County proposes to extend the landfill height vertically to a maximum permitted elevation of 171.5 ft above msl.

Pursuant to the requirements of Hawai'i Revised Statutes (HRS) Chapter 343 and Hawai'i

Administrative Rules (HAR) §11-200.1, the County is preparing an Environmental Assessment (EA) to evaluate the potential environmental effects of the Proposed Action. As part of the environmental review process, pre-assessment consultation is being conducted to obtain input on the scope of issues to be considered in the Draft EA. An overview of the Proposed Action and a Location Map are attached. We are requesting input regarding the Proposed Action, including concerns related to particular environmental resources, as well as relevant information that should be considered in the evaluation.

Please provide comments regarding the scope of the EA in writing via U.S. postal mail to Kayla Yost at Tetra Tech (737 Bishop Street, Suite 2000, Honolulu, Hawai'i 96813; Tel: (808) 441-6600; Fax: (808) 536-3953) or kayla.yost@tetrattech.com. Comments must be postmarked by March 29, 2023 to be considered in the Draft EA. Copies of the Draft EA and Final EA will be made available for public review.

Thank you for your participation in the environmental review process for the Proposed Action.

Mahalo,

Kayla Yost | Environmental Planner

Pronouns: she, her, hers

Business **+1 (808) 441-6600** | Mobile **+1 (808) 352-2247** | Fax **+1 (808) 536-3953** | kayla.yost@tetrattech.com

Tetra Tech | *Leading with Science®* | CES

737 Bishop St. Suite 2000 | Mauka Tower | Honolulu, HI 96813-3201 | tetrattech.com

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STATE OF HAWAII
DEPARTMENT OF HEALTH
KA 'OIHANA OLAKINO
P. O. BOX 3378
HONOLULU, HI 96801-3378

In reply, please refer to:
File:

March 20, 2023

S0307GH

Ms. Kayla Yost
Tetra Tech
737 Bishop Street, Suite 2000
Honolulu, Hawaii 96813

Dear Ms. Yost:

The Department of Health (DOH), Solid and Hazardous Waste Branch is providing comments in response to a letter dated February 27, 2023, regarding an environmental assessment pre-assessment consultation for a proposed vertical expansion of Phase II of the Kekaha Municipal Solid Waste Landfill on Kauai.

Municipal solid waste landfills (MSWLF) are regulated by the DOH under Chapter 342H, Hawaii Revised Statutes (HRS) and Chapter 11-58.1, Hawaii Administrative Rules. A vertical expansion of the MSWLF requires a modification of the landfill permit which includes a submission to the DOH of a permit application for the permit modification, an appropriate filing fee accompanying the application submission, and a public notice of the draft permit modification with a 30-day public comment period. The modification must meet all applicable requirements of administrative rules and statutes at the time of the application submission.

Please note, there is a recent amendment to Section 342H-52, HRS that prohibits modification or expansion of an MSWLF or component of an MSWLF without establishing no less than a one-half mile buffer zone (as defined in the section) around the facility. Although the Kekaha MSWLF is an existing facility, it must meet this statutory requirement for the vertical expansion to be permitted.

If you have any questions, please contact Mr. Glenn Haae of the Solid and Hazardous Waste Branch at (808) 586-4226.

Sincerely,

Lene Ichinotsubo

LENE ICHINOTSUBO, P.E., ACTING CHIEF
Solid and Hazardous Waste Branch



DEPARTMENT OF THE NAVY

PACIFIC MISSILE RANGE FACILITY

P.O. Box 128

KEKAHA, HAWAII 96752-0128

IN REPLY REFER TO:

1200

Ser N3A/0242

29 Mar 23

Ms. Kayla Yost
Project Manager and Environmental Planner
Tetra Tech, Inc.
737 Bishop St.
Suite 2000, Mauka Tower
Honolulu, HI 96813

Dear Ms. Yost,

**SUBJECT: PACIFIC MISSILE RANGE FACILITY RESPONSE TO PROPOSED VERTICAL
LANDFILL EXPANSION OF KEKAHA MUNICIPAL SOLID WASTE LANDFILL
PROPOSED ACTION**

Reference: (a) 14 CFR Part 77

This letter is in response to your Tetra Tech letter of February 27, 2023 regarding the vertical expansion of Phase II of the Kekaha Municipal Solid Waste Landfill (KLF) (Proposed Action).

Per reference (a), prior to raise of elevation of the landfill, action will have to be taken by Tetra Tech/County of Kauai, the Federal Aviation Administration (FAA), and Pacific Missile Range Facility (PMRF). In order to provide acceptable obstacle clearance for aircraft utilizing the PMRF Barking Sands Airfield, the FAA requires submission of an FAA Form 7460-1 (Notice of Proposed Construction or Alteration) to the FAA to initiate an Obstacle Evaluation.

The form submission will result in the FAA working with other federal entities and PMRF to conduct a review and determine possible risks to aircraft and evaluate other concerns including Bird Animal Strike Hazard (BASH), Hazard of Electronic Radiation to Ordnance (HERO), Radiation Hazard (RADHAZ), and visibility risks, among others. The final action will result in a Letter of Determination by the FAA on whether the raise in elevation raises an acceptable, or unacceptable, risk.

I have been informed that the landfill elevation has been raised multiple times in the last 10-15 years through this process with no concerns noted from the FAA, PMRF, or other entities.

My team and I look forward to working with you as your project moves forward. Our points of contact for this issue are the PMRF Air Operations Officer, LCDR Sean Castle, sean.c.castle2.mil@us.navy.mil, 808-335-4585, and the PMRF Public Works Officer, LCDR John Kimmel, john.l.kimmel.mil@us.navy.mil, 808-335-4635.

Sincerely,

B. A. STEVENSON
Captain, U.S. Navy
Commanding Officer



United States Department of the Interior

FISH AND WILDLIFE SERVICE
Pacific Islands Fish and Wildlife Office
300 Ala Moana Boulevard, Room 3-122
Honolulu, Hawai'i 96850



In Reply Refer To:
2023-0051423-S7-001

March 27, 2023

Ms. Kayla Yost
Project Manager and Environmental Planner
Tetra Tech, Inc.
737 Bishop St., Suite 2000
Honolulu, Hawai'i 96813

Subject: Technical Assistance for the Kekaha Municipal Solid Waste Landfill Phase II
Vertical Expansion, Kaua'i

Dear Ms. Yost:

Thank you for your March 1, 2023 letter, requesting technical assistance for the Kekaha Municipal Solid Waste Landfill Phase II Vertical Expansion Project, located on the island of Kaua'i. The County of Kaua'i, Department of Public Works, Solid Waste Division (County) is proposing a vertical expansion of the Phase II portion of the Kehaka Municipal Solid Waste Landfill (KLF). The KLF is located 1.3 miles northwest of the town of Kekaha and encompasses approximately 98 acres of land within TMKs 1-2-002:001 (portion) and 1-2-002-009, which is owned by the State of Hawai'i and administered by the Department of Land and Natural Resources. Phase II is an active, lined landfill that began accepting solid waste on October 9, 1993 and was originally permitted to reach a height of 37 ft above mean sea level (msl), but was permitted for vertical expansion in 1998, 2004, and 2013. The current maximum permitted landfill height of Phase II is 120 ft above msl. Phase II was also expanded laterally to include Cell 1 and Cell 2 in 2009 and 2019, respectively, reaching the currently permitted landfill area of 44 acres. Phase II is scheduled to reach its waste disposal capacity by October of 2026. The County proposes to extend the landfill height vertically to a maximum permitted elevation of 171.5 ft above msl to develop additional air space volume for continued waste disposal.

The Phase II vertical expansion would take place within the footprint of the existing Phase II landfill area. The proposed Phase II vertical expansion would extend the existing waste disposal area upwards to a maximum height of 171.5 ft above msl. The limits of the proposed vertical expansion would be approximately 13 acres. The existing landfill gas collection and control system (GCCS) would be expanded by raising or relocating the existing GCCS infrastructure within the footprint of the vertical expansion and installing additional landfill gas extraction

PACIFIC REGION 1

IDAHO, OREGON*, WASHINGTON,
AMERICAN SAMOA, GUAM, HAWAII, NORTHERN MARIANA ISLANDS

*PARTIAL

wells and related lateral piping in the areas of new waste. Existing surface water drainage features that currently divert stormwater away from the refuse area would be modified slightly (i.e., extended upwards) to accommodate the increase in height of the Phase II waste disposal area.

Our letter has been prepared under the authority of and in accordance with provisions of the Endangered Species Act of 1973 (16 U.S.C. 1531 *et seq.*), as amended (ESA). We have reviewed the information you provided and pertinent information in our files, as it pertains to federally listed species in accordance with section 7 of the ESA. Our data indicate the following species may occur or transit through the vicinity of the proposed project area: the endangered ‘ōpe‘ape‘a (Hawaiian hoary bat, *Lasiurus cinereus semotus*); endangered ‘ua‘u (Hawaiian petrel, *Pterodroma sandwichensis*), endangered Hawai‘i distinct population segment (DPS) of the ‘akē‘akē (band-rumped storm-petrel, *Oceanodroma castro*), threatened ‘a‘o (Newell’s shearwater, *Puffinus auricularis newelli*) (hereafter collectively referred to as Hawaiian seabirds); the endangered koloa (Hawaiian duck, *Anas wyvilliana*), endangered ‘alaie ke‘oke‘o (Hawaiian coot, *Fulica alai*), endangered ae‘o (Hawaiian stilt, *Himantopus mexicanus knudseni*), the endangered ‘alaie ‘ula (Hawaiian gallinule, *Gallinula galeata sandvicensis*) (hereafter collectively referred to as Hawaiian waterbirds); and the threatened nēnē (Hawaiian goose, *Branta sandvicensis*). We provide the following to assist you in preparation of your project.

‘Ōpe‘ape‘a

‘Ōpe‘ape‘a roost in both exotic and native woody vegetation across all islands and will leave young unattended in trees and shrubs when they forage. If trees or shrubs 15 feet or taller are cleared during the pupping season, there is a risk that young ‘ōpe‘ape‘a could inadvertently be harmed or killed since they are too young to fly or may not move away. ‘Ōpe‘ape‘a forage for insects from as low as 3 feet to higher than 500 feet above the ground and can become entangled in barbed wire used for fencing.

To avoid and minimize impacts to the endangered ‘ōpe‘ape‘a we recommend you incorporate the following applicable measures into your project:

- Do not disturb, remove, or trim woody plants greater than 15 feet tall during the ‘ōpe‘ape‘a birthing and pup rearing season (June 1 through September 15).
- Do not use barbed wire for fencing.

Hawaiian Seabirds

Hawaiian seabirds may traverse the project area at night during the breeding, nesting and fledging seasons (March 1 to December 15). Outdoor lighting could result in seabird disorientation, fallout, and injury or mortality. Seabirds are attracted to lights and after circling the lights they may become exhausted and collide with nearby wires, buildings, or other structures or they may land on the ground. Downed seabirds are subject to increased mortality due to collision with automobiles, starvation, and predation by dogs, cats, and other predators. Young birds (fledglings) traversing the project area between September 15 and December 15, in their first flights from their mountain nests to the sea, are particularly vulnerable.

To avoid and minimize potential project impacts to Hawaiian seabirds we recommend you incorporate the following applicable measures into your project:

- Fully shield all outdoor lights so the bulb can only be seen from below bulb height and only use when necessary.
- Install automatic motion sensor switches and controls on all outdoor lights or turn off lights when human activity is not occurring in the lighted area.
- Avoid nighttime construction during the seabird fledging period (September 15 through December 15).

Hawaiian Waterbirds

Hawaiian waterbirds are currently found in a variety of wetland habitats including freshwater marshes and ponds, coastal estuaries and ponds, artificial reservoirs, lo'i kalo (taro, *Colocasia esculenta* patches), irrigation ditches, sewage treatment ponds, and in the case of the koloa, montane streams and marshlands. Ae'o may also be found wherever ephemeral or persistent standing water may occur. Threats to these species include non-native predators, habitat loss, and habitat degradation. Koloa are also subject to threats from hybridization with introduced mallards.

To avoid and minimize potential project impacts to Hawaiian waterbirds we recommend you incorporate the following measures into your project:

- In areas where waterbirds are known to be present, post and implement reduced speed limits, and inform project personnel and contractors about the presence of endangered species on-site.
- If water resources are located within or adjacent to the project site, incorporate applicable best management practices regarding work in aquatic environments into the project design.
- Have a biological monitor that is familiar with the species' biology conduct Hawaiian waterbird nest surveys where appropriate habitat occurs within the vicinity of the proposed project site prior to project initiation. Repeat surveys again within 3 days of project initiation and after any subsequent delay of work of 3 or more days (during which the birds may attempt to nest). If a nest or active brood is found:
 - Contact the Service within 48 hours for further guidance.
 - Establish and maintain a 100-foot buffer around all active nests and/or broods until the chicks/ducklings have fledged. Do not conduct potentially disruptive activities or habitat alteration within this buffer.
 - Have a biological monitor that is familiar with the species' biology present on the project site during all construction or earth moving activities until the chicks/ducklings fledge to ensure that Hawaiian waterbirds and nests are not adversely impacted.

In addition, your project may result in the creation of standing water or open water that could attract Hawaiian waterbirds to the project site. Hawaiian waterbirds attracted to sub-optimal habitat may suffer adverse impacts, such as predation and reduced reproductive success, and thus the project may create an attractive nuisance. The ae'o is also known to nest in sub-optimal locations (e.g. any ponding water), if water is present. Therefore, we recommend you work with our office during the project planning phase so that we may assist you in developing measures to avoid impacts to listed species (e.g., fencing, vegetation control, predator management).

Nēnē

Nēnē are found on the islands of Hawai‘i, Maui, Moloka‘i, and Kaua‘i. They are observed in a variety of habitats, but prefer open areas, such as pastures, golf courses, wetlands, natural grasslands and shrublands, and lava flows. Threats to the species include introduced mammalian and avian predators, wind facilities, and vehicle strikes.

To avoid and minimize potential project impacts to nēnē we recommend you incorporate the following measures into your project description:

- Do not approach, feed, or disturb nēnē.
- If nēnē are observed loafing or foraging within the project area during the breeding season (September through April), have a biologist familiar with nēnē nesting behavior survey for nests in and around the project area prior to the resumption of any work. Repeat surveys after any subsequent delay of work of 3 or more days (during which the birds may attempt to nest).
- Cease all work immediately and contact the Service for further guidance if a nest is discovered within a radius of 150 feet of proposed project, or a previously undiscovered nest is found within the 150-foot radius after work begins.
- In areas where nēnē are known to be present, post and implement reduced speed limits, and inform project personnel and contractors about the presence of endangered species on-site.

We appreciate your efforts to conserve protected species. If you have questions regarding this response, please contact Charmian Dang, Fish and Wildlife Biologist (phone: 808-792-9400, email: Charmian_Dang@fws.gov). When referring to this project, please include reference number: 2023-0051423-S7-001.

Sincerely,

Island Team Manager
O‘ahu, Kaua‘i, Northwest Hawaiian Islands and
American Samoa

Enclosures: Service’s Recommended Standard Best Management Practices

U.S. Fish and Wildlife Service Recommended Standard Best Management Practices

The U.S. Fish and Wildlife Service (Service) recommends the following measures to be incorporated into project planning to avoid or minimize impacts to fish and wildlife resources. Best Management Practices (BMPs) include the incorporation of procedures or materials that may be used to reduce either direct or indirect negative impacts to aquatic habitats that result from project construction-related activities. These BMPs are recommended in addition to, and do not over-ride any terms, conditions, or other recommendations prepared by the USFWS, other federal, state or local agencies. If you have questions concerning these BMPs, please contact the USFWS Aquatic Ecosystems Conservation Program at 808-792-9400.

1. Authorized dredging and filling-related activities that may result in the temporary or permanent loss of aquatic habitats should be designed to avoid indirect, negative impacts to aquatic habitats beyond the planned project area.
2. Dredging/filling in the marine environment should be scheduled to avoid coral spawning and recruitment periods, and sea turtle nesting and hatching periods. Because these periods are variable throughout the Pacific islands, we recommend contacting the relevant local, state, or federal fish and wildlife resource agency for site specific guidance.
3. Turbidity and siltation from project-related work should be minimized and contained within the project area by silt containment devices and curtailing work during flooding or adverse tidal and weather conditions. BMPs should be maintained for the life of the construction period until turbidity and siltation within the project area is stabilized. All project construction-related debris and sediment containment devices should be removed and disposed of at an approved site.
4. All project construction-related materials and equipment (dredges, vessels, backhoes, silt curtains, etc.) to be placed in an aquatic environment should be inspected for pollutants including, but not limited to; marine fouling organisms, grease, oil, etc., and cleaned to remove pollutants prior to use. Project related activities should not result in any debris disposal, non-native species introductions, or attraction of non-native pests to the affected or adjacent aquatic or terrestrial habitats. Implementing both a litter-control plan and a Hazard Analysis and Critical Control Point plan (HACCP – see <http://www.haccp-nrm.org/Wizard/default.asp>) can help to prevent attraction and introduction of non-native species.
5. Project construction-related materials (fill, revetment rock, pipe, etc.) should not be stockpiled in, or near aquatic habitats and should be protected from erosion (*e.g.*, with filter fabric, etc.), to prevent materials from being carried into waters by wind, rain, or high surf.
6. Fueling of project-related vehicles and equipment should take place away from the aquatic environment and a contingency plan to control petroleum products accidentally spilled during the project should be developed. The plan should be retained on site with the person responsible for compliance with the plan. Absorbent pads and containment booms should be stored on-site to facilitate the clean-up of accidental petroleum releases.
7. All deliberately exposed soil or under-layer materials used in the project near water should be protected from erosion and stabilized as soon as possible with geotextile, filter fabric or native or non-invasive vegetation matting, hydro-seeding, etc.

Appendix C - Agency Correspondence

Contents

U.S. Fish and Wildlife Service –

Request for Species List and Impact Avoidance Measures¹

State of Hawaiʻi Division of Forestry and Wildlife –

Request for Species List and Impact Avoidance Measures

State Historic Preservation Division –

Request for Concurrence with Project Effect Determination of “No Historic Properties Affected”

Letter of SHPD concurrence of “No Historic Properties Affected”

State of Hawaiʻi Office of Coastal and Conservation Lands –

Request for Concurrence Regarding Conservation District Permit Requirements

Email Response

County of Kauaʻi Planning Department –

Request for Director Determination Regarding County Land Use Permit Requirements

¹ USFWS Response included in Appendix B



March 1, 2023

TTCES-PTLD-2023-019

Pacific Islands Fish and Wildlife Office
U.S. Fish and Wildlife Services
300 Ala Moana Blvd. Room 30122
Honolulu, Hawai'i 96850
pifwo_admin@fws.gov

Subject: Kekaha Municipal Solid Waste Landfill Phase II Vertical Expansion Kekaha, Kaua'i, Hawai'i, TMK 1-2-002:001 (por.) and TMK 1-2-002:009; Request for Species List and Impact Avoidance Measures

Aloha,

The County of Kaua'i, Department of Public Works, Solid Waste Division (County) is proposing a vertical expansion of the Phase II portion of the Kekaha Municipal Solid Waste Landfill (KLF) located in Kekaha, Kaua'i, Hawai'i. KLF is located 1.3 miles northwest of the town of Kekaha on the southwest side of the Island of Kaua'i. The KLF property boundary in its entirety encompasses approximately 98 acres of land within Tax Map Keys (TMK) 1-2-002:001 (por.) and 1-2-002:009 (See Attachment 1: Location Map), which is owned by the State of Hawai'i and administered by the Department of Land and Natural Resources (DLNR). The facility is situated adjacent to Kaumuali'i Highway and is approximately 1,700 feet (ft) from the shoreline of the Pacific Ocean. This Project involves the vertical expansion of the Phase II portion of KLF and will be located entirely within the Phase II portion of the KLF (See Attachment 1: Location Map).

The County is preparing an Environmental Assessment (EA) under Hawaii Revised Statutes (HRS) Chapter 343 for the Proposed Action. As part of the EA process, and in accordance with HAR §11-200.1-18, Tetra Tech is scoped to conduct early consultation with agencies having jurisdiction or expertise related to the Phase II vertical expansion project.

The purpose of this letter is to request information from the U.S. Fish and Wildlife Service (USFWS) regarding the federally listed species that could potentially occur within the KLF site and specific measures to avoid potential impacts to those species. A brief description of the Project and a summary of the biological resources at the KLF site are provided below in support of this request.

Project Description

KLF is the only active, permitted municipal solid waste (MSW) landfill on the island of Kaua'i and is comprised of two distinct refuse fill areas identified as Phase I and Phase II. Phase I is a closed, unlined landfill that began accepting solid waste in 1953 and ceased operations October 8, 1993. Phase II is an active, lined landfill that began accepting solid waste on October 9, 1993. Phase II was originally permitted to reach a height of 37 ft above mean sea level (msl), but was permitted for vertical expansion in 1998, 2004, and 2013; the current maximum permitted landfill height of Phase II is 120 ft above msl. Phase II was also expanded laterally to include Cell 1 and Cell 2 in 2009 and 2019, respectively, reaching the currently permitted landfill area of 44 acres. Phase II is scheduled to reach its waste disposal capacity by October of 2026. In order to develop additional air space volume for continued waste disposal, the County proposes to extend the landfill height vertically to a maximum permitted elevation of 171.5 ft above msl.

The Phase II vertical expansion would take place within the footprint of the existing Phase II landfill area. The major components of the Project include:

- **Vertical Landfill Expansion:** The proposed Phase II vertical expansion would extend the existing waste disposal area upwards to a maximum height of 171.5 ft above msl. The limits of the proposed vertical expansion would be approximately 13 acres.
- **Landfill Gas Collection and Control System (GCCS):** The existing GCCS would be expanded by raising or relocating the existing GCCS infrastructure within the footprint of the vertical expansion and installing additional landfill gas extraction wells and related lateral piping in the areas of new waste.
- **Stormwater Management:** Existing surface water drainage features that currently divert stormwater away from the refuse areas would need to be modified slightly (i.e., extended upwards) to accommodate the increase in height of the Phase II waste disposal area.

Summary of Biological Resources

Plant and wildlife surveys were conducted within the KLF site in 1982 prior to construction of the Phase II landfill (see Attachment 2: Biological Resources Survey Letter). Survey results described the habitat as highly modified, and dominated by non-native plant and animal species. No rare or state or federally listed plant or wildlife species were recorded as occupying the site or having the potential to occur (DLNR 1982)¹. Since then, the KLF site has been subject to further disturbance as a result of construction and operation of Phase II of the landfill and its associated infrastructure; thus, the already marginal habitat at the site for native flora and fauna noted in the 1982 surveys has been further modified.

¹ DLNR. 1982. Fauna and Flora Survey, Kekaha Sanitary Landfill Site.

Bimonthly wildlife surveys were conducted at KLF between August 2014 and August 2015 (SWCA 2016²). During these surveys, two listed bird species—the endangered Hawaiian stilt/ a‘eo (*Himantopus mexicanus knudseni*) and threatened Hawaiian goose/ nēnē (*Branta sandwichensis*)—were recorded within the KLF site. The endangered Hawaiian duck/ koloa (*Anas wyvilliana*), Hawaiian common gallinule/ ‘alae ‘ula (*Gallinula galeata sandvicensis*), and Hawaiian coot/ ‘alae ke‘oke‘o (*Fulica alai*) have also been recorded in the vicinity of KLF. None of these listed birds appear to be attracted to any waste-handling operations within the Phase II portion of KLF, but may be occasionally attracted to the leachate evaporation pond and stormwater infiltration basin within KLF, as well as water features adjacent to (but not associated with) KLF. Further details regarding the potential for listed species at KLF is provided below. Because the Project would take place within the footprint of the existing Phase II area, which has been functioning as a landfill since 1993, and wildlife surveys occurred in 2014-2015, no additional biological surveys will be conducted for the Project.

Listed Waterbirds: Hawaiian stilts have been observed in the leachate evaporation pond at KLF when water was present (SWCA 2016). The Hawaiian duck/ koloa has been observed in ponds and ditches in the immediate vicinity of the KLF. The listed Hawaiian common gallinule and Hawaiian coot also have recorded in the vicinity and have the potential fly over the KLF site. Although listed waterbirds may be attracted to occasional standing water in the leachate evaporation pond or stormwater infiltration basin located at the northeast boundary of the KLF site, these man-made features are typically dry, and therefore do not attract many waterbirds (SWCA 2016). If liquid is present, an aerator system is used. Neither the leachate evaporation pond nor stormwater infiltration basin will be altered as a result of the Project.

Hawaiian Goose: The threatened Hawaiian goose has been observed at KLF, particularly near green waste piles and vegetated areas in the Phase I portion of KLF and at the storm water basin and leachate pond (February 17, 2023, County of Kauai, pers comm); however, there is no indication that Hawaiian geese are attracted to the active area within the Phase II portion or other facilities at KLF (SWCA 2016).

Listed Seabirds: Although the KLF site does not provide suitable nesting or foraging habitat for listed seabirds—the endangered Hawaiian petrel/ ‘ua‘u (*Pterodroma sandwichensis*), the threatened Newell’s shearwater/ a‘o (*Puffinus newelli*), and the endangered band-rumped storm-petrel/ ‘akē‘akē (*Oceanodroma castro*) —these species may fly over the KLF site in transit between the ocean and upland breeding sites during the breeding, nesting, and fledging seasons (March 1–December 15) and may be attracted to operational lights at night. The existing outdoor lighting at the KLF is limited to street lighting and outdoor lights placed above the maintenance shop, employee kitchen, employee restroom, and supervisor’s doors. All outdoor lighting is fully shielded and directed downward. Normal operating hours are 7:00 a.m. to 5:00 p.m. Lighting is generally only needed during early morning or

² SWCA. 2016. Proposed Maala Landfill Project Wildlife Hazard Assessment.

early evening hours during the winter months, when daylight hours are reduced. Outdoor lighting is controlled by timers that automatically turn-off outdoor lights after the facility has closed and site personnel have left. The Project does not include plans to add or alter the existing outdoor lighting. Filling operations would continue to be conducted primarily during daylight hours.

Hawaiian Hoary Bat: The Hawaiian hoary bat/‘ōpe‘ape‘a (*Lasiurus semotus*) is known to occur in the vicinity and may occasionally traverse KLF. However, the number of trees over 15 ft tall at KLF is limited.

Critical Habitat: No critical habitat has been designated by USFWS within the KLF site. The closest critical habitat are two units designated for the endangered grass, lau‘ehu (*Panicum niihauense*), situated along the coastline approximately one mile to the west and south of KLF.

Request for Information

In addition to the species noted above as potentially occurring within or transiting the KLF site, we are requesting input from USFWS regarding any additional listed or rare plant and animal species that could occur within the area and should be considered in the Project development process. As the Project intends to avoid impacts to state and federally listed species, we are also requesting USFWS provide Project-specific avoidance and minimization measures that should be implemented to avoid impacts to listed species. A similar request for information has also been sent to the DLNR Division of Forestry and Wildlife.

We look forward to your response. Should you have any questions or require additional information, please feel free to contact me at (808) 352-2247 or via email at Kayla.Yost@tetrattech.com.

Respectfully,



Kayla Yost, Project Manager and Environmental Planner
Tetra Tech, Inc.

Attachments: 1. Location Map

2. Biological Resources Survey Letter (DLNR 1982)

cc: Troy Tanigawa, Acting County Engineer, County of Kaua'i Department of Public Works

Allison Fraley, Environmental Services Manager, County of Kaua'i Department of Public Works,
Solid Waste Division

Tiffany Agostini, Senior Biologist, Tetra Tech Inc.

P:\GIS PROJECTS\Kauai_County\Kekaha_Landfill_Verical_Expansion\Maps\CIA_20221205\KauaiCounty_KekahaLandfill_CIA_20221205.aprx



Kekaha Landfill Phase II Vertical Expansion

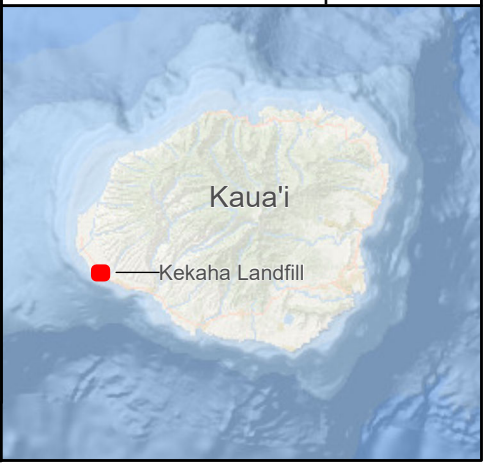
Figure 1
Project Location

KAUA'I COUNTY, HI

- Approximate Extent of the Proposed Vertical Expansion
- TMK Parcel Boundary
- Phase I Limit
- Phase II Limit
- Cell 1 Limit
- Cell 2 Limit

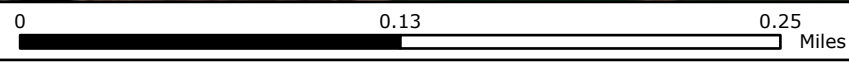


Reference Map



1:4,000

WGS 1984 UTM Zone 4N



NOT FOR CONSTRUCTION

APPENDIX A
FLORA AND FAUNA SURVEY



HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES
DIVISION OF FORESTRY AND WILDLIFE
KAUAI DISTRICT
P. O. BOX 1871
LIHUE, KAUAI, HAWAII 96766

August 6, 1982

Mr. Henry Morita
County Engineer
County of Kauai
Dept. of Public Works
4396 Rice Street
Lihue, Kauai, HI. 96766

The following is in response to your 19 July 1982 request for a flora and fauna survey at the Kumukumu and Kekaha candidate sanitary landfill sites:

A survey was conducted at Kekaha on July 30, 1982 and at Kumukumu on 6 August 1982. The attached list indicates those wildlife species actually seen at the respective areas, as well as those that were not seen, but are likely to be found there.

Both the Kekaha and Kumukumu sites are highly altered from once existing native conditions and are vegetated with exotic plants. I have also attached a list of plants known to occur at the candidate landfill sites; however, the list includes only the prominent plant species and does not constitute a botanically complete list. It is highly unlikely that any uncommon or rare native plants exist within the landfill sites.

No endangered wildlife species are known to occupy any of the candidate sites, although the Hawaiian Duck (koloa) and Hawaiian Gallinule may infrequently use portions of Kumukumu Stream. In my opinion, sanitary landfill use of any of the three proposed sites would not cause significant wildlife habitat degradation.

Please contact me should you desire additional assessment of the wildlife values in the project areas.

Sincerely yours,

Thomas C. Telfer
District Wildlife Biologist

cc: L. Landgraf
R. Daehler

WILDLIFE KNOWN TO EXIST OR LIKELY TO EXIST AT THE
CANDIDATE KEKAHA AND KUMUKUMU SANITARY LANDFILL SITES ON KAUAI

Common Name	Scientific Name	7/30/82	8/6/82
		Kekaha	Kumukumu
Black-Crowned Night Heron	Nycticorax nycticorax hoactli	I	I
Cattle Egret	Bubulcus ibis	EX*	EX
Golden Plover	Pluvialis dominica	I	I
Common Mynah	Acridotheres tristis	EX*	EX*
Barred Dove	Geopelia striata	EX*	EX*
Spotted Dove	Streptopelia chinensis	EX*	EX*
House Sparrow	Passer domesticus	EX	EX*
House Finch	Carpodacus mexicanus	EX*	EX
Mockingbird	Mimus polyglottos	EX	
Spotted Munia	Lonchura punctulata	EX	EX*
Northern Cardinal	Cardinalis cardinalis	EX*	EX
Hawaiian Owl	Asio flammeus sandwichensis	I	I
Barn Owl	Tyto alba	EX	EX
Western Meadowlark	Sturnella neglecta	EX	
Ring-Necked Pheasant	Phasianus colchicus	EX	EX
Black Francolin	Francolinus francolinus	EX	
Hwa-Mei (Chinese Thrush)	Garrulax canorus		EX*
Shama	Copsychus malabaricus		EX*
Japanese White-Eye	Zosterops japonicus		EX
Roof Rat	Rattus rattus	EX	EX
Norway Rat	Rattus norvegicus	EX	EX
Polynesian Rat	Rattus exulans	EX	EX
House Mouse	Mus musculus	EX	EX
House cat (feral)	Felis catus	EX	EX

I = Indigenous, EX = Exotic, * = Actually observed during survey
All other species listed are likely to exist, but were not seen.

List of Common Plants at Kumukumu Sanitary Landfill Site

Java Plum	Eugenia cuminii
Haole Koa	Leucaena glauca
Lantana	Lantana Camara
Ironwood	Casuarina equisetifolia
Christmasberry	Schinus terebinthifolius
Banana	Musa spp.
Passionflower	Passiflora spp.
Mauna Loa Vine	Canavalia cathartica
California grass	Brachiaria mutica

List of Common Plants at Kekaha Sanitary Landfill Site

Kiawe (Mesquite)	Prosopis pallida
Klu	Acacia farnesiana
Lantana	Lantana camara
Indian fleabane	Pluchea indica
Verbesina	Verbesina encelioides
Beach Wiregrass	Dactyloctenium aegyptium
Bermudagrass	Cynodon dactylon
Sandburr	Cenchrus echinatus
Amaranth	Amaranthus spp.
Haole Koa	Leucaena glauca
Cocklebur	Xanthium strumarium



March 1, 2023

TTCES-PTLD-2023-008

David Smith, Administrator
Division of Forestry and Wildlife
State of Hawai'i, Department of Land and Natural Resources
Kalanimoku Building
1151 Punchbowl Street, Room 325
Honolulu, HI 96813
David.G.Smith@hawaii.gov

Subject: Kekaha Municipal Solid Waste Landfill Phase II Vertical Expansion Kekaha, Kaua'i, Hawai'i, TMK 1-2-002:001 (por.) and TMK 1-2-002:009; Request for Species List and Impact Avoidance Measures

Dear Mr. Smith,

The County of Kaua'i, Department of Public Works, Solid Waste Division (County) is proposing a vertical expansion of the Phase II portion of the Kekaha Municipal Solid Waste Landfill (KLF) located in Kekaha, Kaua'i, Hawai'i. KLF is located 1.3 miles northwest of the town of Kekaha on the southwest side of the Island of Kaua'i. The KLF property boundary in its entirety encompasses approximately 98 acres of land within Tax Map Keys (TMK) 1-2-002:001 (por.) and 1-2-002:009 (See Attachment 1: Location Map), which is owned by the State of Hawai'i and administered by the Department of Land and Natural Resources (DLNR). The facility is situated adjacent to Kaumuali'i Highway and is approximately 1,700 feet (ft) from the shoreline of the Pacific Ocean. This Project involves the vertical expansion of the Phase II portion of KLF, and will be located entirely within the Phase II portion of the KLF (See Attachment 1: Location Map).

The County is preparing an Environmental Assessment (EA) under Hawaii Revised Statutes (HRS) Chapter 343 for the Proposed Action. As part of the EA process, and in accordance with HAR §11-200.1-18, Tetra Tech is scoped to conduct early consultation with agencies having jurisdiction or expertise related to the Phase II vertical expansion project.

The purpose of this letter is to request information from the Division of Forestry and Wildlife (DOFAW) regarding the state-listed species that could potentially occur within the KLF site and specific measures to avoid potential impacts to those species. A brief description of the Project and a summary of the biological resources at the KLF site are provided below in support of this request.

Project Description

KLF is the only active, permitted municipal solid waste (MSW) landfill on the island of Kauaʻi and is comprised of two distinct refuse fill areas identified as Phase I and Phase II. Phase I is a closed, unlined landfill that began accepting solid waste in 1953 and ceased operations October 8, 1993. Phase II is an active, lined landfill that began accepting solid waste on October 9, 1993. Phase II was originally permitted to reach a height of 37 ft above mean sea level (msl), but was permitted for vertical expansion in 1998, 2004, and 2013; the current maximum permitted landfill height of Phase II is 120 ft above msl. Phase II was also expanded laterally to include Cell 1 and Cell 2 in 2009 and 2019, respectively, reaching the currently permitted landfill area of 44 acres. Phase II is scheduled to reach its waste disposal capacity by October of 2026. In order to develop additional air space volume for continued waste disposal, the County proposes to extend the landfill height vertically to a maximum permitted elevation of 171.5 ft above msl.

The Phase II vertical expansion would take place within the footprint of the existing Phase II landfill area. The major components of the Project include:

- **Vertical Landfill Expansion:** The proposed Phase II vertical expansion would extend the existing waste disposal area upwards to a maximum height of 171.5 ft above msl. The limits of the proposed vertical expansion would be approximately 13 acres.
- **Landfill Gas Collection and Control System (GCCS):** The existing GCCS would be expanded by raising or relocating the existing GCCS infrastructure within the footprint of the vertical expansion and installing additional landfill gas extraction wells and related lateral piping in the areas of new waste.
- **Stormwater Management:** Existing surface water drainage features that currently divert stormwater away from the refuse areas would need to be modified slightly (i.e., extended upwards) to accommodate the increase in height of the Phase II waste disposal area.

Summary of Biological Resources

Plant and wildlife surveys were conducted within the KLF site in 1982 prior to construction of the Phase II landfill (see Attachment 2: Biological Resources Survey Letter). Survey results described the habitat as highly modified, and dominated by non-native plant and animal species. No rare or state or federally listed plant or wildlife species were recorded as occupying the site or having the potential to occur (DLNR 1982)¹. Since then, the KLF site has been subject to further disturbance as a result of construction and operation of Phase II of the landfill and its associated infrastructure; thus, the already marginal habitat at the site for native flora and fauna noted in the 1982 surveys has been further modified.

¹ DLNR. 1982. Fauna and Flora Survey, Kekaha Sanitary Landfill Site.

Bimonthly wildlife surveys were conducted at KLF between August 2014 and August 2015 (SWCA 2016²). During these surveys, two listed bird species—the endangered Hawaiian stilt/ a‘eo (*Himantopus mexicanus knudseni*) and threatened Hawaiian goose/ nēnē (*Branta sandwichensis*)—were recorded within the KLF site. The endangered Hawaiian duck/ koloa (*Anas wyvilliana*), Hawaiian common gallinule/ ‘alae ‘ula (*Gallinula galeata sandvicensis*), and Hawaiian coot/ ‘alae ke‘oke‘o (*Fulica alai*) have also been recorded in the vicinity of KLF. None of these listed birds appear to be attracted to any waste-handling operations within the Phase II portion of KLF, but may be occasionally attracted to the leachate evaporation pond and stormwater infiltration basin within KLF, as well as water features adjacent to (but not associated with) KLF. Further details regarding the potential for listed species at KLF is provided below. Because the Project would take place within the footprint of the existing Phase II area, which has been functioning as a landfill since 1993, and wildlife surveys occurred in 2014-2015, no additional biological surveys will be conducted for the Project.

Listed Waterbirds: Hawaiian stilts have been observed in the leachate evaporation pond at KLF when water was present (SWCA 2016). The Hawaiian duck/ koloa has been observed in ponds and ditches in the immediate vicinity of the KLF. The listed Hawaiian common gallinule and Hawaiian coot also have recorded in the vicinity and have the potential fly over the KLF site. Although listed waterbirds may be attracted to occasional standing water in the leachate evaporation pond or stormwater infiltration basin located at the northeast boundary of the KLF site, these man-made features are typically dry, and therefore do not attract many waterbirds (SWCA 2016). If liquid is present, an aerator system is used. Neither the leachate evaporation pond nor stormwater infiltration basin will be altered as a result of the Project.

Hawaiian Goose: The threatened Hawaiian goose has been observed at KLF, particularly near green waste piles and vegetated areas in the Phase I portion of KLF and at the storm water basin and leachate pond (February 17, 2023, County of Kauai, pers comm); however, there is no indication that Hawaiian geese are attracted to the active area within the Phase II portion or other facilities at KLF (SWCA 2016).

Listed Seabirds: Although the KLF site does not provide suitable nesting or foraging habitat for listed seabirds—the endangered Hawaiian petrel/ ‘ua‘u (*Pterodroma sandwichensis*), the threatened Newell’s shearwater/ a‘o (*Puffinus newelli*), and the endangered band-rumped storm-petrel/ ‘akē‘akē (*Oceanodroma castro*) —these species may fly over the KLF site in transit between the ocean and upland breeding sites during the breeding, nesting, and fledging seasons (March 1–December 15) and may be attracted to operational lights at night. The existing outdoor lighting at the KLF is limited to street lighting and outdoor lights placed above the maintenance shop, employee kitchen, employee restroom, and supervisor’s doors. All outdoor lighting is fully shielded and directed downward. Normal operating hours are 7:00 a.m. to 5:00 p.m. Lighting is generally only needed during early morning or

² SWCA. 2016. Proposed Maala Landfill Project Wildlife Hazard Assessment.

early evening hours during the winter months, when daylight hours are reduced. Outdoor lighting is controlled by timers that automatically turn-off outdoor lights after the facility has closed and site personnel have left. The Project does not include plans to add or alter the existing outdoor lighting. Filling operations would continue to be conducted primarily during daylight hours.

Hawaiian Hoary Bat: The Hawaiian hoary bat/‘ōpe‘ape‘a (*Lasiurus semotus*) is known to occur in the vicinity and may occasionally traverse KLF. However, the number of trees over 15 ft tall at KLF is limited.

Critical Habitat: No critical habitat has been designated by U.S. Fish and Wildlife Service (USFWS) within the KLF site. The closest critical habitat are two units designated for the endangered grass, lau‘ehu (*Panicum niihauense*), situated along the coastline approximately one mile to the west and south of KLF.

Request for Information

In addition to the species noted above as potentially occurring within or transiting the KLF site, we are requesting input from DOFAW regarding any additional listed or rare plant and animal species that could occur within the area and should be considered in the Project development process. As the Project intends to avoid impacts to state and federally-listed species, we are also requesting DOFAW provide Project-specific avoidance and minimization measures that should be implemented to avoid impacts to listed species. A similar request for information has also been sent to USFWS.

We look forward to your response. Should you have any questions or require additional information, please feel free to contact me at (808) 352-2247 or via email at Kayla.Yost@tetrattech.com.

Respectfully,



Kayla Yost, Project Manager and Environmental Planner
Tetra Tech, Inc.

Attachments: 1. Location Map
2. Biological Resources Survey Letter (DLNR 1982)

cc: Troy Tanigawa, Acting County Engineer, County of Kaua'i Department of Public Works
Allison Fraley, Environmental Services Manager, County of Kaua'i Department of Public Works,
Solid Waste Division
Tiffany Agostini, Senior Biologist, Tetra Tech Inc.

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Kekaha Landfill Phase II Vertical Expansion

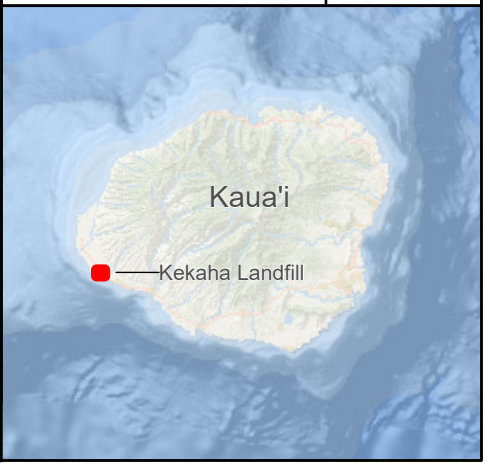
Figure 1
Project Location

KAUA'I COUNTY, HI

- Approximate Extent of the Proposed Vertical Expansion
- TMK Parcel Boundary
- Phase I Limit
- Phase II Limit
- Cell 1 Limit
- Cell 2 Limit

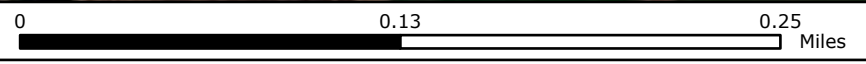


Reference Map



1:4,000

WGS 1984 UTM Zone 4N



NOT FOR CONSTRUCTION

APPENDIX A
FLORA AND FAUNA SURVEY



HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES
DIVISION OF FORESTRY AND WILDLIFE
KAUAI DISTRICT
P. O. BOX 1871
LIHUE, KAUAI, HAWAII 96766

August 6, 1982

Mr. Henry Morita
County Engineer
County of Kauai
Dept. of Public Works
4396 Rice Street
Lihue, Kauai, HI. 96766

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District Wildlife Biologist

cc: L. Landgraf
R. Daehler

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CANDIDATE KEKAHA AND KUMUKUMU SANITARY LANDFILL SITES ON KAUAI

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House Mouse	Mus musculus	EX	EX
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I = Indigenous, EX = Exotic, * = Actually observed during survey
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Amaranth	Amaranthus spp.
Haole Koa	Leucaena glauca
Cocklebur	Xanthium strumarium

SOLID WASTE MANAGEMENT DIVISION

DEPARTMENT OF PUBLIC WORKS

TROY K. TANIGAWA, P.E., COUNTY ENGINEER

BOYD GAYAGAS, DEPUTY COUNTY ENGINEER



DEREK S.K. KAWAKAMI, MAYOR
MICHAEL A. DAHLIG, MANAGING DIRECTOR

March 1, 2023

Dr. Alan S. Downer
Administrator State Historic Preservation Division
Department of Land and Natural Resources
601 Kamokila Boulevard, Suite 555
Kapolei, Hawai'i 96707

Subject: Request for Concurrence with Project Effect Determination of "No Historic Properties Affected" HRS §6E-8/HAR §275-7 for the Kekaha Landfill Phase II Vertical Expansion Project, Waimea Ahupua'a, Waimea District, Kaua'i, TMKs: (4) 1-2-002:009 and 1-2-002:001 (por.).

Dear Dr. Downer:

The County of Kaua'i, Department of Public Works, Solid Waste Division (County) requests the State Historic Preservation Officer's concurrence with the proposed effect determination of "no historic properties effected" for the proposed vertical expansion of Phase II at the Kekaha Municipal Solid Waste Landfill (KLF), located in Waimea Ahupua'a, Waimea District, Kaua'i (Proposed Action). The KLF is situated adjacent to Kaumuali'i Highway, located 1.3 miles northwest of the town of Kekaha on the southwest side of Kaua'i and approximately 1,700 feet (ft) from the shoreline of the Pacific Ocean.

Project Background and Proposed Action

The KLF is a municipal solid waste (MSW) landfill comprised of two distinct refuse fill areas identified as Phase I and Phase II. The Proposed Action would extend Phase II upward from the currently permitted maximum height of 120 ft above mean sea level (msl) to a new permitted maximum height of 171.5 ft above msl. The proposed vertical expansion would be within the existing permitted footprint of the Phase II landfill area. The location and boundaries of the existing KLF and approximate extent of the proposed vertical expansion are delineated on a portion of the 1991 Kekaha U.S. Geological Survey (USGS) 7.5-minute topographic quadrangle (Figure 1), tax map plat (Figure 2), and a 2021 ESRI aerial image (Figure 3).

The KLF site encompasses approximately 98 acres of land within Tax Map Keys (TMK) 1-2-002:009 and 1-2-002:001 (por.), which are owned by the State of Hawai'i and administered by the Department of Land and Natural Resources (DLNR). Executive Order 1558 (signed April 27, 1953) and Executive Order 2872 (signed October 6, 1977) places the control and management of the lands underlying the KLF to the County of Kaua'i.

History of KLF

As discussed above, the KLF is comprised of two distinct refuse fill areas: Phase I and Phase II (Figure 3). The KLF Phase I is a closed, unlined landfill that began accepting solid waste in 1953 and ceased operations October 8, 1993. The KLF Phase II is an active, lined landfill¹ that began accepting solid waste on October 9, 1993 and is predicted to reach its capacity in October of 2026. The current permitted landfill area of Phase II is approximately 44 acres.

KLF Phase II has undergone three vertical expansions and two lateral expansions since the initial permitting of the refuse area. Phase II was originally permitted to reach a height of 37 ft above mean sea level (msl), but was permitted for vertical expansion in 1998, 2004, and 2013; the current maximum permitted landfill height of Phase II is 120 ft above msl. Phase II was also expanded laterally to include Cell 1 and Cell 2 in 2009 and 2019, respectively, reaching the currently permitted landfill area of 44 acres.

Purpose and Need

KLF is Kaua'i Island's only permitted MSW landfill and is predicted to reach its capacity in October of 2026. However, the planning, permitting, and implementation of any potential long-term landfill capacity solution is anticipated to require more than five years (i.e., would not be available for MSW disposal until after October 2026). Therefore, there is a need to provide landfill capacity beyond October 2026 while a long-term landfill capacity solution is planned, permitted, and implemented. The purpose of the vertical expansion of the Phase II portion of the KLF is to add landfill capacity to the existing landfill while a long-term landfill capacity solution is implemented.

Proposed Action

The major components of the Proposed Action would include:

- **Vertical Landfill Expansion:** The proposed Phase II vertical expansion would extend the existing waste disposal area upwards to a maximum height of 171.5 ft above msl, without expanding the existing permitted footprint. The approximate extent of the proposed vertical expansion is shown in Figure 3. The proposed vertical expansion would be designed for slope stability, positive drainage off the landfill surface, and to maximize disposal capacity. New, access roads would be constructed to access the upper reaches of the landfill area.
- **Landfill Gas Collection and Control System (GCCS):** Modern MSW facilities require GCCSs to collect and properly dispose of landfill gases. KLF's existing GCCS consists of a network of high-density polyethylene (HDPE) pipes, gas collection devices (i.e., gas wells), and an enclosed landfill gas flare that is designed to minimize and control emissions. The existing GCCS would be expanded to accommodate the increased height of Phase II by raising or relocating the existing GCCS infrastructure within the footprint of the vertical expansion and installing additional landfill gas extraction wells and related lateral piping in the areas of new waste.

¹ The Phase II portion of the landfill was constructed with Resource Conservation and Recovery Act (RCRA) Subtitle D base liner which protects the underlying soils and aquifer from landfill leachate.

- **Stormwater Management:** Current design and operation of KLF includes stormwater management that diverts stormwater away from the active refuse areas to infiltration ditches around the perimeter of the landfill and to an existing stormwater infiltration basin. Under the Proposed Action, existing surface water drainage features that currently divert stormwater away from the refuse areas would need to be modified slightly (i.e., extended upwards) to accommodate the increase in height of the Phase II waste disposal area.

In addition to the GCCS and stormwater management infrastructure, KLF currently incorporates engineering and operational controls to minimize and avoid adverse impacts to the environment and public. These controls include, but are not limited to, groundwater and leachate monitoring, litter control, dust control, odor control, and vector control. KLF also implements a spill prevention, control, and countermeasures plan, emergency management procedures, and other operational plans. KLF would continue to implement its operational controls and plans under the Proposed Action. No substantial changes to KLF's operations are proposed. Operation of the Phase II vertical expansion would begin once all approvals are received.

Previous Archeological Studies in the Vicinity of the KLF

Previous archaeological studies in and in the vicinity of the KLF are summarized in Table 1 and shown in Figure 4.

Table 2 lists the historic properties documented in the vicinity of the KLF and shown in Figure 5. A description of the two archaeological studies conducted in the KFL follows.

Table 1. Previous archaeological studies in the vicinity of the KLF

Reference	Type of Study	Location	Results
Bordner 1977	Reconnaissance survey	Kekaha Beach Park	No significant findings
Ching 1982	Reconnaissance survey	Proposed landfill near Barking Sands	No significant findings
McMahon 1988	Field inspection	Mānā near land fill; TMK: (4) 1-2-002:040	No significant findings
González et al. 1990	Archaeological inventory survey with subsurface testing	Kauai Test Facility (KTF) at PMRF	Recent trash scatter, bone fragments of unknown species, porcelain fragments, and one <i>Cypraea</i> sp. discovered
Walker and Rosendahl 1990	Archaeological inventory survey	Three areas at PMRF and four areas in Kōke'e Park Geophysical Observatory	No significant findings
Kennedy 1991a	Archaeological subsurface testing	Family housing area at PMRF	No significant findings
Kennedy 1991b	Supplemental to archaeological subsurface testing	Family housing area at PMRF	Further discussion of historic ditch (State Inventory of Historic Places [SIHP] # 50-30-05-00754) and testing of low sand mounds discussed in Kennedy 1991a
Spear 1992	Archaeological monitoring	West of Kekaha Town	No significant findings
Folk and Hammatt 1993	Inventory survey with subsurface testing	Proposed landfill expansion near Barking Sands; TMK: (4) 1-2-002:009	No significant findings
Hammatt and Ida 1993	Archaeological assessment	Two separate parcels; <i>makai</i> (seaward) of Kaumuali'i Hwy and <i>mauka</i> (inland) parcel located on Kaleinamanu Ridge in Kekaha	No significant findings

Reference	Type of Study	Location	Results
Folk and Hammatt 1994	Archaeological inventory survey with subsurface testing	National Guard Rifle Range, Barking Sands	No significant findings
Masterson et al. 1994	Inventory survey with subsurface testing	Proposed agricultural park near Barking Sands	SIHP # 50-30-05-03650, two human burials identified
Drolet et al. 1999	Archaeological monitoring	Site of Project H-134 in PMRF	No significant findings
Dye and Dye 2008	Archaeological monitoring	PMRF <i>makai</i> of Kekaha Landfill	No significant findings
engineering-environmental Management 2009	Survey and evaluation of historic buildings	Hanapēpē Armory and adjacent to SE boundary of PMRF	TS Kekaha WETS at PMRF, a single building (Building 00001) documented; Hanapēpē Armory is modern with exception of one building: flammable material storage building (Building 29) built in 1963
Altzer and Hammatt 2010	Archaeological inventory survey	Access roads from Mānā Rd NE through agricultural fields and encompasses portions of New and Old Government roads	Eight historic properties identified: SHIP #s 50-30-05-02107, portions of New and Old Government Rd and associated structural remnants; -02108 and -02112, habitation terraces; -02109, wall remnant; -02110 and -02111, mounds; -02113, historic house site; and -02114, <i>heiau</i> (temple structure)
Coward and Hammatt 2011	Archaeological literature review and field inspection	10-acre Agricultural Field Office, TMK: (4) 1-2-002:001	No significant findings
Hammatt and Shideler 2011	Literature review	Eight possible locations for Kaua‘i Municipal Solid Waste Landfill: Kekaha-Mauka, TMK: (4) 1-2-002	Discusses history of area, previous archaeological studies, and historic properties identified during previous studies
Fong 2012	Archaeological monitoring	Central and southern segments of PMRF	No significant findings

Reference	Type of Study	Location	Results
Hammatt and Shideler 2013	Archaeological monitoring	Kaumuali'i Hwy, Vicinity of Kekaha, MP 27	No significant findings
Watanabe et al. 2014	Archaeological monitoring	Mānā Drag Racing Strip, TMKs: (4) 1-2-002:001, 009, 035, 036, 040	No significant findings
Clark et al. 2015	Archaeological inventory survey with subsurface testing	Mānā Drag Racing Strip, TMKs: (4) 1-2-0-2:009, 036, and 040	No significant findings

Table 2. Historic properties identified in the vicinity of the KLF

State Inventory of Historic Places Number (SIHP) # 50-30-05-	Type	Reference
00754	Drainage ditch	Kennedy 1991a, b
02107	Portions of New and Old Government Rd and associated structural remnants	Altizer and Hammatt 2010
02109	Basalt stacked wall remnants	Altizer and Hammatt 2010
03650	Human skeletal remains	Masterson et al. 1994b
Site 14	<i>Heiau</i>	Bennett 1931
No SIHP	Kekaha ditch	Thrum 1908:158–159; 1910 USGS topo map; 1963 USGS topo map; 1970 USGS topo map; Altizer and Hammatt 2010:20–23; Lyman and Dega 2015
No SIHP	Bone fragments of unknown origin	González et al. 1990

Ching (1982) conducted an archaeological reconnaissance survey for a proposed landfill site on a parcel adjacent to the south side of Barking Sands military installation. At the time of the reconnaissance, part of the area was already utilized as a “sanitary land fill” and the other part was used as a dump site for bagasse for Kekaha Plantation (Ching 1982:2). He noted the land prior to being a land fill and a dump site was once pasture lands owned by Kekaha Plantation. Holding pens for cattle and horses were also once there. The area, he stated had “been bulldozed countless of times” (Ching 1982:2). There were no historic properties present.

Cultural Surveys Hawaii (1993) conducted an archaeological inventory survey with subsurface testing for the proposed Phase II of the existing landfill. The proposed Phase II area would extend to the east from the existing landfill toward Kaumuali‘i Highway, what is now the current project area. During the surface survey, an abandoned irrigation canal and a low linear sand mound were observed (Folk and Hammatt 1993:26). Extensive subsurface testing was conducted throughout the proposed Phase II area. A total of 55 backhoe test trenches “were distributed roughly one per acre” and excavated (Folk and Hammatt 1993:25). The typical profile revealed that the area, once a place of sand dunes, was modified by destroying the upper portions for plantation purposes. A weak A horizon was observed across the majority of the area since the removal of the upper portion of the sand dunes, except where it has been disturbed. Beneath the A horizon, loose coralline sand was observed overlaying a layer of cemented coralline sand (Folk and Hammatt 1993:26–27). The linear mound and canal were excavated and revealed that stratigraphically, both features post-date the removal of the sand dunes. Oral resources such as residents and plantation employees revealed the features were constructed in the 1950s for experimental farming (Folk and Hammatt 1993:26, 28).

Archaeological research of KLF and its surrounding area indicates the land was extensively used and much of the physical evidence of the traditional settlement pattern described by Hammatt and Shideler (2011) has been obliterated by commercial agriculture and other operations. The foothills and wetland areas have been extensively planted in cane, livestock has been run up the gulches, and even the beach areas have been much disturbed by massive shoreline stabilization projects as well as the development of PMRF, the Mānā dragstrip, and the KLF.

As part of development to support the population on the island of Kauaʻi, KLF began operations in 1953. Further development and population increase made expansion of the KLF critical, thus the KLF expanded from its original location, extending to the northeast toward the highway. More development and natural disasters occurring on Kauaʻi have once again brought the need to expand the KLF, however, the existing KLF is bounded by the highway, the Mānā dragstrip, and PMRF, thus the County of Kauaʻi is proposing to expand the KLF vertically on the existing landfill surface.

Previous Determination

As described above, Phase II was previously permitted for vertical expansion in 2013. As part of that permitting process, the County requested SHPD's determination of "no historic properties affected" by the vertical expansion of Phase II. SHPD requested additional information (September 9, 2013; Log No. 2013.3334 and 2013.4258, Doc. No. 1309SL06) on two historic properties within Phase II area that were recorded (but not assigned site numbers) by CSH during their 1993 AIS. These two 1950s historic properties were identified as an irrigation canal of mounded sand and a low linear sand mound for irrigation control. In response to SHPD's request, AECOM, on behalf of the County, conducted a document review and field inspection which confirmed the two historic properties are no longer present. Based on this information, SHPD determined that no historic properties will be affected because no historic properties exist within the Phase II project area (October 11, 2013; Log No. 2013.5499; Doc. No. 1310SL09).

Determination of Effect

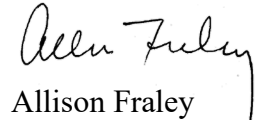
On behalf of the County, CSH conducted an archaeological literature review the results of which are summarized above. This review resulted in no significant findings. Based on this fact, and on SHPD's previous determination of "no historic properties affected" from the last vertical expansion in 2013, and as the Proposed Action will not affect the original ground surface, the County of Kauaʻi requests SHPD concurrence with a project effect determination of "no historic properties affected" under Hawaiʻi Revised Statutes (HRS) §6E-8/Hawaiʻi Administrative Rules (HAR) §275(b) and §275-7 for the Kekaha Landfill Phase II Vertical Expansion Project, Waimea Ahupuaʻa, Waimea District, Kauaʻi, TMKs: (4) 1-2-002:009 and 1-2-002:001 (por.).

We would appreciate a written response within thirty (30) calendar days from receipt of this letter. Please address any written comments you may have in an email to me at AFraley@kauai.gov or the following:

Attention: Allison Fraley
Solid Waste Division
County of Kaua'i Department of Public Works
4444 Rice Street, Suite 295
Līhu'e, Hawai'i 96766
808-241-4837

Thank you for your consideration of the project and your contribution to the HRS §6E process.

Very truly yours,

A handwritten signature in black ink, appearing to read "Allison Fraley". The signature is fluid and cursive, with the first name "Allison" written in a larger, more prominent script than the last name "Fraley".

Allison Fraley
Environmental Services Manager
Solid Waste Division

Attachments:

Attachment 1: HRS 6E Submittal Intake Form

Attachment 2: Design Drawings (90%)

References Cited

Altizer, Kendy and Hallett H. Hammatt

- 2010 *An Archaeological Inventory Survey for a Rock Crushing Project Along Portions of the New and Old Government Roads, Waimea Ahupua'a, District of Waimea, Island of Kaua'i, TMK: [4] 1-2-002:001*. Cultural Surveys Hawai'i, Inc., Kailua, Hawai'i.

Bennett, Wendell C.

- 1931 *The Archaeology of Kaua'i*. Bishop Museum Bulletin 80. Bernice Pauahi Bishop Museum, Honolulu.

Blackwell, Chad and Jeanne Barnes

- 2014 *Historic Building Survey and Evaluation Report at Six Facilities, Hawai'i Army National Guard, Project No. CA-1330*. HDR, Honolulu.

Bordner, Richard M.

- 1977 *Cultural Reconnaissance Report for Kekaha Beach Shore Protection, Kekaha, Kona, Kaua'i, State of Hawaii*. Archaeological Research Center Hawaii, Inc., Lāwa'i, Hawai'i.

Ching, Francis K.W.

- 1982 *Archaeological Reconnaissance of 3 Sites for Proposed Kauai Central Sanitary Landfill Project, Kekaha, Kipu, and Kumukumu, Kauai Island TMK 1-2-02:1, 9, 21, 40; 3-4-06:12; and 4-7-04:1*. Archaeological Research Center Hawaii, Inc., Lāwa'i, Kaua'i.

Clark, Stephen, Katharine A. Shiroma, Melanie A. Mintmier, Jackie Walden, and Sara Collins

- 2015 *Archaeological Inventory Survey and Testing in Support of Lighting and Electrical Improvements at the Mānā Drag Racing Strip Waimea Ahupua'a, Kona District, Island of Kaua'i, Hawai'i, TMK (4) 1-2-02: 009, 036, & 040*. Pacific Consulting Services, Inc., Honolulu.

Coward, Erin and Hallett H. Hammatt

- 2011 *An Archaeological Literature Review and Field Inspection for a 10-acre Agricultural Field Office, Kekaha, Waimea Ahupua'a, District of Waimea, Island of Kaua'i, TMK: [4] 1-2-002:001(por.)*. Cultural Surveys Hawai'i, Inc., Kailua, Hawai'i.

Drolet, Robert, James Powell, and Allan J. Schilz

- 1999 *Archaeological Monitoring at the Site of Project H-134, New Family Housing, Pacific Missile Range Facility (PACMISRANFAC), Kaua'i, Hawai'i*. Ogden Environmental and Energy Services Company, Inc., Honolulu.

Dye, Kekapala and Thomas S. Dye

- 2008 *Archaeological Monitoring Report for the Extended High Accuracy Network Determination System, Pacific Missile Range Facility, Barking Sands, Kaua'i, Hawai'i, TMK:(4)1-2-002:013*. T.S. Dye & Colleagues, Archaeologists, Inc., Honolulu.

engineering---environmental Management, Inc. (e²M)

- 2009 *Historic Buildings Survey and Evaluation Report of Ten Facilities Hawaii Army National Guard.* engineering-environmental Management, Inc. Englewood, Colorado.

ESRI

- 2021 Map Image Layer. Esri, Inc., Redlands, California.

Folk, William H. and Hallett H. Hammatt

- 1993 *Archaeological Inventory Survey and Subsurface Testing at the Kekaha Phase II Landfill Site (TMK 1-2-02:9).* Cultural Surveys Hawai'i, Kailua, Hawai'i.
- 1994 *Archaeological Inventory Survey and Subsurface Testing at the Hawaii Army National Guard Firing Range at Kekaha, Kaua'i (TMK 1-2-02:21), with Historical Research by Gerald K. Ida.* Cultural Surveys Hawai'i, Kailua, Hawai'i.

Fong, Jeffrey W.K.

- 2012 *Archaeological Monitoring Report in Support of the Installation of RFID, Seismic, Microwave/Infrared and LIDAR Sensors, Sensormatic Hawaii Response Technology Group Video Sensors, and Six Runway Markers along Runway 34 at Pacific Missile Range Facility (PMRF), Niihau and Waiawa Ahupua'a, Waimea District, Kaua'i, TMK: [4] 1-2-02: 13, 26.* Naval Facilities Engineering Command Pacific, Pearl Harbor, Hawai'i.

Gonzalez, Tirzo, Judy Berryman, and Daniel Welch

- 1990 *Archaeological Survey and Testing Department of Energy, Kauai Test Facility Barking Sands, Kauai, Hawaii. Prepared as Supplement for the Kauai Test Facility Environmental Assessment.* International Archaeological Research Institute, Inc., Honolulu.

Hammatt, Hallett H.

- 1994 *Burial Treatment Plan for State Site #50-30-05-3650 at a Proposed Kekaha Agricultural Park Pumping Station, Limaloa, Kekaha, Kauai (TMK 1-2-02: por. 1).* Cultural Surveys Hawai'i, Kailua, Hawai'i.

Hammatt, Hallett H. and Gerald K. Ida

- 1993 *Archaeological Assessment of Two Locations for a Proposed State Agricultural Park Waimea, Kaua'i.* Cultural Surveys Hawai'i, Kailua, Hawai'i.

Hammatt, Hallett H. and David W. Shideler

- 2011 *Archaeological Literature Review of Eight Possible Locations for a Kaua'i Municipal Solid Waste Landfill: Kekaha-Mauka, Kekaha Ahupua'a, Pu'u o Pāpa'i, Makaweli Ahupua'a, Umi, Wahiawa Ahupua'a, Kōloa, Pā'ā Ahupua'a, Kīpū, Ha'ikū Ahupua'a, Kālepa, Hanamā'ulu Ahupua'a, Ma'alo, Wailua Ahupua'a, and Kumukumu, Keālia Ahupua'a.* Cultural Surveys Hawai'i, Inc., Kailua, Hawai'i.
- 2013 *Archaeological Monitoring Report for the Kaumualii Highway Emergency Shoreline Improvements, Vicinity of Kekaha, MP 27 Project No. 50A-01-13, Waimea Ahupuaa, Waimea District, Kauai Island TMK: (4) 1-2-002: Kaumualii Highway ROW por. and 007 por.* Cultural Surveys Hawai'i, Inc., Kailua, Hawai'i.

Hawai'i TMK Service

- 2022 Tax Map Key (4) 1-2-002. Hawai'i TMK Service, Honolulu.

Kennedy, Joseph

- 1991a *Archaeological Subsurface Testing Results for the Proposed Family Housing Project Area, Pacific Missile Range Facility, Barking Sands. Island of Kauai, TMK 1-2-02:13, Por.25 Revised October 1991.* Archaeological Consultants of Hawaii Inc., Hale'iwa, Hawai'i.
- 1991b *Supplement to Archaeological Testing Results for the Proposed Family Housing Project Area, Pacific Missile Range Facility, Barking Sands. Island of Kauai, TMK 1-2-02:13, Por.25.* Archaeological Consultants of Hawaii Inc., Hale'iwa, Hawai'i.

Lyman, Kepa and Michael Dega

- 2015 *Archaeological Inventory Survey of a 17-acre Parcel at the Kekaha Ditch Siphon Headwall, Waimea Ahupuaa, Waimea District, Island of Kauai [TMK: (4) 1-5-001:001 por. and 002 por.* Scientific Consultant Services, Inc., Honolulu.

Masterson, Ian A., William H. Folk, and Hallett H. Hammatt

- 1994 *Archaeological Inventory Survey and Sub-surface Testing of the Proposed Kekaha Agricultural Park in 157 Acres at Kekaha, Kaua'i, (TMK 1-2-02:1 portion),* Cultural Surveys Hawaii, Kailua, Hawai'i.

McMahon, Nancy

- 1988 *Field Check of Northrup King Digging, Mana, Waimea, Kauai, TMK 1-2-02:40.* State Historic Preservation Division, Honolulu.

Spear, Robert L.

- 1992 *Letter Report Concerning Monitoring for the Sunkiss Shrimp Co., Ltd., Kekaha, Waimea Kauai (TMK: 1-2-02:22).* Scientific Consultant Services Inc., Honolulu.

Thrum, Thomas G.

- 1908 *Heiaus and Heiau Sites Throughout the Hawaiian Islands: Completing the series which began in the Annual of 1907. Hawaiian Almanac and Annual for 1909:38-43.* Thos. G. Thrum, Honolulu.

USGS (U.S. Geological Survey)

- 1910 *Kekaha USGS 7.5-minute topographic quadrangle.* USGS Information Services, Denver, Colorado.
- 1963 *Kekaha USGS 7.5-minute topographic quadrangle.* USGS Information Services, Denver, Colorado.
- 1970 *Kekaha USGS 7.5-minute topographic quadrangle.* USGS Information Services, Denver, Colorado.
- 1991 *Kekaha USGS 7.5-minute topographic quadrangle.* USGS Information Services, Denver, Colorado.

Walker, Alan T. and Paul H. Rosendahl

- 1990 *Archaeological Inventory Survey USN Radio Telescope Project Area, Land of Waimea, Waimea District, Island of Kauai.* Paul H Rosendahl, Inc., Hilo, Hawai'i.

Watanabe, Tae, Jackie Walden, Stephen D. Clark, Melanie Mintmier, and Sara Collins

- 2014 *Archaeological Monitoring Report in Support of Improvements to the Western Portion of the Mānā Drag Racing Strip in Kekaha, Waimea Ahupua'a, Kona District, Island of Kaua'i. TMK (4) 1-2-002: 001, 009, 035, 036, 040.* Pacific Consulting Services, Inc., Honolulu.

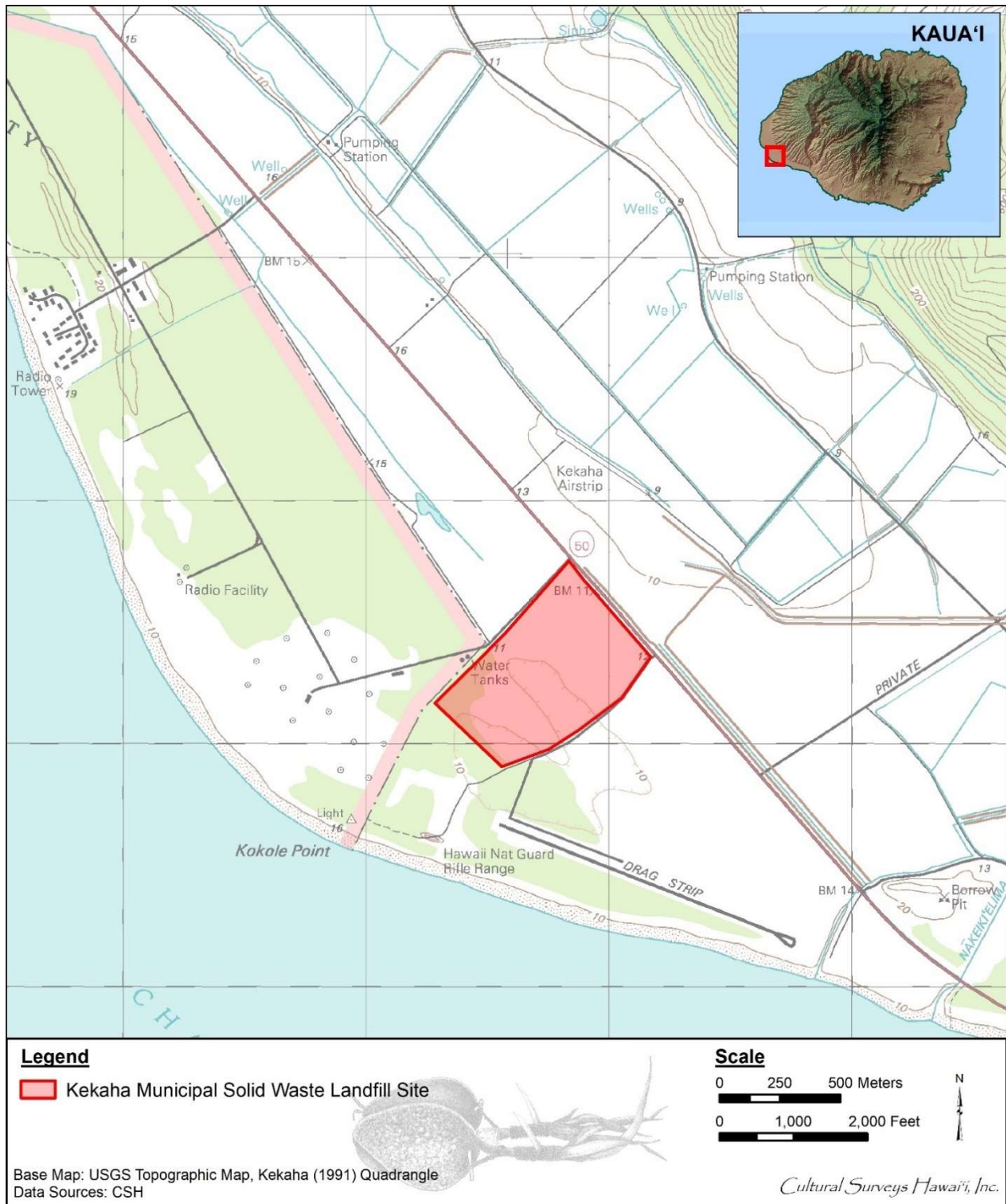


Figure 1. Portion of 1991 Kekaha USGS 7.5-minute-series topographic quadrangle, showing the location of the KLF

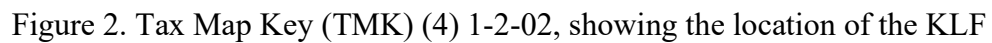


Figure 2. Tax Map Key (TMK) (4) 1-2-02, showing the location of the KLF



Figure 3. 2021 aerial photograph (ESRI Imagery), showing the location of the KLF

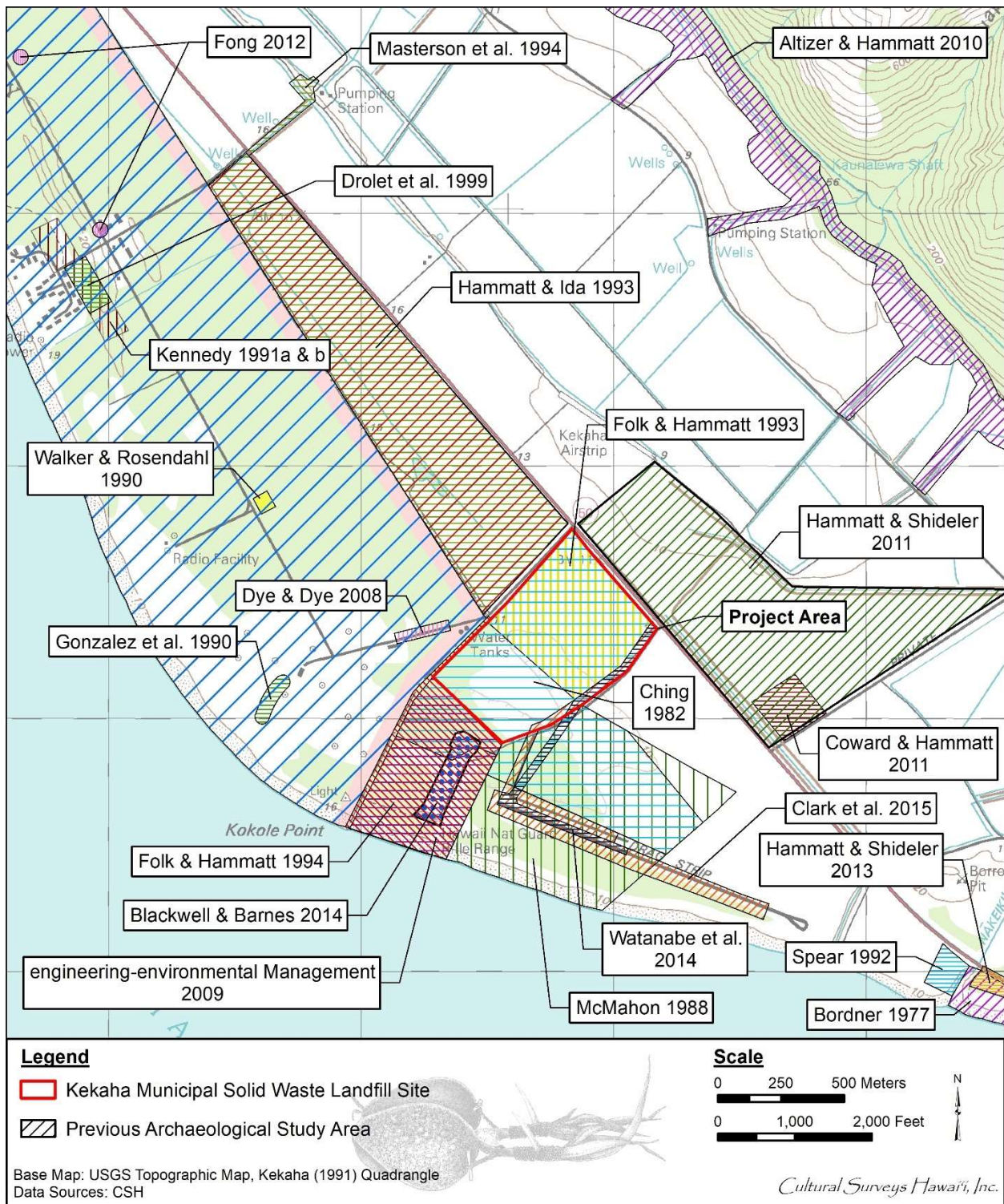


Figure 4. Portion of the 1991 Kekaha USGS 7.5-minute topographic quadrangle showing previous archaeological studies in the vicinity of the KLF

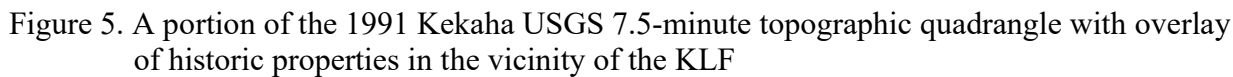


Figure 5. A portion of the 1991 Kekaha USGS 7.5-minute topographic quadrangle with overlay of historic properties in the vicinity of the KLF

JOSH GREEN, M.D.
GOVERNOR | KE KIA'ĀINA

SYLVIA LUKE
LIEUTENANT GOVERNOR | KA HOPE KIA'ĀINA



**STATE OF HAWAII | KA MOKU'ĀINA 'O HAWAI'I
DEPARTMENT OF LAND AND NATURAL RESOURCES
KA 'OIHANA KUMUWAIWAI 'ĀINA**

STATE HISTORIC PRESERVATION DIVISION
KAKUHIHEWA BUILDING
601 KAMOKILA BLVD, STE 555
KAPOLEI, HAWAII 96707

DAWN N.S. CHANG
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

LAURA H.E. KAAKUA
FIRST DEPUTY

M. KALEO MANUEL
DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

May 31, 2023

Troy Tanigawa, County Engineer
County of Kaua'i
Department of Public Works
Solid Waste Division
4444 Rice Street, Suite 295
Līhu'e, Hawai'i 96766
ttanigawa@kauai.gov

IN REPLY REFER TO:
Project No. 2023PR00306
Doc. No. 2305DB01
Archaeology

Dear Mr. Tanigawa:

**SUBJECT: HRS Chapter 6E-8 Historic Preservation Review –
Kekaha Landfill Phase II Vertical Expansion Project
County of Kaua'i DPW Solid Waste Division
Request for Concurrence with Effect Determination
Waimea Ahupua'a, Waimea District, Island of Kaua'i
TMK: (4) 1-2-002:001 por., and 009**

This letter provides the State Historic Preservation Division's (SHPD's) HRS §6E-8 review of the subject project. The SHPD received the submittal on March 1, 2023, which included a HRS 6E Submittal Form, project description and effect determination request letter from the County of Kaua'i dated March 1, 2023, construction plans, and an aerial site photograph.

The project area comprises approximately a 13-acre portion of the 98-acre parcel. Previous ground disturbances associated with the existing Kekaha Landfill include grubbing, grading, excavation, trenching associated with landfill, roads, and buildings.

The County of Kaua'i, Department of Public Works, Solid Waste Division is proposing a vertical expansion of Phase II of the Kekaha Municipal Solid Waste Landfill (KLF). The purpose is to prolong the life of the KLF. The current maximum permitted landfill height of Phase II is 120 ft. above mean sea level (msl). The project will extend the maximum height to 171.5 ft. above msl. In addition, the Landfill Gas Collection and Control System (GCCS) will be expanded to accommodate the increased height by raising and relocating the existing GCCS infrastructure (pipes, gas collection devices, etc.) within the footprint of the vertical expansion, and installing landfill gas extraction wells and related lateral piping in the areas of new waste. Since the proposed project involves the "vertical expansion" of the landfill, no new ground disturbance will occur for this Phase II project.

The archaeological inventory survey (AIS) conducted for the original Phase II KLF project included excavation of 55 test trenches. An abandoned irrigation canal and low-linear sand mound for irrigation control were identified, both of which were subsequently assessed to post-date previous agricultural activity, likely dating from the 1950s. These features were recorded but not assigned State Inventory of Historic Places (SIHP) site numbers. During a 2013 vertical expansion project for the KLF, SHPD requested additional information on these resources. Based on a field inspection

Mr. Troy Tanigawa
May 31, 2023
Page 2

conducted for the Phase II project in 2013, which documented that these resources were no longer present, SHPD concurred with a determination of “No historic properties affected” (October 11, 2013; Log No. 2013.5499, Doc. No. 1310SL09).

The USDA (Foote et. al 1972) identifies the soils within the project area as Jaucus loamy fine sand, 0 to 8 percent slopes (JfB). Although this soil is typically know to have potential for subsurface historic properties and burials, due to the extent of previous ground disturbance, limited potential exists to encounter intact subsurface historic properties if ground distrurbace were to occur.

Based on project information provided, **SHPD concurs** with the County of Kaua‘i DPW Solid Waste Division’s project effect determination of “**No historic properties affected**” for the current project. Pursuant to HAR §13-275-7(e), when the SHPD agrees that the action will not affect any significant historic properties, this is the SHPD’s written concurrence and historic preservation review ends. The historic preservation review process is ended. The permitting and/or project initiation processes may continue.

Please attach to permit: In the unlikely event that subsurface historic resources, including human skeletal remains, structural remains, cultural deposits, artifacts, sand deposits, or sink holes are identified during the demolition and/or construction work, cease work in the immediate vicinity of the find, protect the find from additional disturbance, and contact the State Historic Preservation Division, at (808) 462-3225.

Please contact David Buckley, Kaua‘i Lead Archaeologist, at (808) 462-3225 or at David.Buckley@hawaii.gov for questions regarding this letter.

Mahalo,

Alan Downer

Alan S. Downer, PhD
Administrator, State Historic Preservation Division
Deputy State Historic Preservation Officer

cc: Allison Fraley, DPW Solid Waste Division, AFraley@kauai.gov
Kayla Yost, Tetra Tech, kayla.yost@tetrattech.com
William Folk, CSH, Inc., wfolk@culturalsurveyys.com

May 10, 2023

TTCES-PTLD-2023-036

Mr. Michael Cain, Administrator
State of Hawaii, Department of Land and Natural Resources
Office of Conservation and Coastal Lands
1151 Punchbowl Street, Room 131
Honolulu, Hawaii 96813

Subject: **Request for Concurrence Regarding Conservation District Permit Requirements; Kekaha Municipal Landfill Phase II Vertical Expansion; Tax Map Key (TMK) 1-2-002:001 (portion) and TMK 1-2-002:009, Waimea District, Kauaʻi**

Dear Mr. Cain,

The County of Kauaʻi, Department of Public Works (DPW), Solid Waste Division (County) has received and reviewed the Office of Conservation and Coastal Lands (OCCL) letter dated March 28, 2023, regarding the Kekaha Municipal Solid Waste Landfill Phase II Vertical Expansion (Proposed Action) Pre-Assessment Consultation for HRS 343 Environmental Assessment (EA) (COR: KA 23-133). The County will address OCCL's pre-assessment consultation comments in the draft EA. The purpose of this letter is to request concurrence from OCCL that, as the Proposed Action would not be within the conservation district, no new CDUP (or modifications to the existing CDUP KA-3625) is required. More information on the Proposed Action and the land use permit determination request is provided below.

As detailed in the Tetra Tech's Pre-Assessment Consultation letter dated February 27, 2023, the County is proposing a vertical expansion of Phase II of the Kekaha Municipal Solid Waste Landfill (KLF) (Proposed Action). The KLF encompasses approximately 98 acres of land within Tax Map Keys (TMK) 1-2-002:001 (por.) and 1-2-002:009 and is comprised of two distinct refuse fill areas identified as Phase I and Phase II (see Figure 1). Phase II is an active, lined landfill that began accepting solid waste on October 9, 1993. The current maximum permitted landfill height of Phase II is 120 feet (ft) above mean sea level (amsl) and the currently permitted landfill area is 44 acres, which includes the original waste disposal area (31.2 acres), and two expansion areas, Cell 1 (6.3 acres) and Cell 2 (6.5 acres) (see Figure 1).

As shown in Figure 1, the Phase I area is located within the state conservation land use district (limited subzone). A portion of the Phase II Cell 2 overlaps with the Phase I limits and is also in the conservation land use district. However, no portion of the proposed vertical expansion is within the conservation land use district. The conservation land use district boundary line is located on the boundary of TMK (4) 1-2-002:009 and TMK (4) 1-2-002:001 (F. Talon, Land Use Commission, personal communication – phone, April 3, 2023). As the Phase I landfill began accepting waste in 1953 prior to the advent of the conservation land use district it is considered “non-conforming” (K. Mills, Office of Conservation and Coastal Lands, personal communication – email, April 3, 2023) and therefore does not have an existing Conservation District Use Permit (CDUP). The County obtained CDUP KA-3625 from DLNR for the construction of Cell 2 in 2012. Subsequently, CDUP KA-3625 was modified in April 2014 and May 2016. Cell 2 was approved to reach 85 ft amsl under CDUP KA-3625.

The Proposed Action would extend the Phase II landfill height vertically from the currently permitted maximum height of 120 ft amsl to a maximum elevation of 171.5 ft amsl. The components of the Proposed Action would be located entirely within TMK 4-1-2-002:001 (por.) and therefore outside the conservation district. The components of the Proposed Action include:

- **Vertical Landfill Expansion:** The proposed Phase II vertical expansion would extend the maximum permissible height of the existing waste disposal area upwards to a maximum height of 171.5 ft amsl. As shown in Figure 1, the limits of the proposed vertical expansion would be approximately 13 acres and be located entirely within TMK 4-1-2-002:001.
- **Stormwater Management:** Existing surface water drainage features that divert stormwater away from the refuse areas would be extended upwards to accommodate the increase in height of the Phase II waste disposal area. The expanded drainage features would be located within the limits of the proposed vertical expansion where it would tie into the existing permitted system. No changes to the existing perimeter infiltration ditches or stormwater infiltration basin are proposed.
- **Landfill Gas Collection and Control System (GCCS):** Improvements would maintain gas collection as the vertical expansion is constructed and provide landfill gas collection for new waste placed as part of the vertical expansion. The GCCS improvements would be located entirely within TMK 4-1-2-002:001.

REQUEST FOR DETERMINATION

As described above, the components of the Proposed Action would be located entirely within TMK 4-1-2-002:001 (por.) and outside of the conservation district. Landfilling activities occurring in the Cell 2 area will continue to occur within the limits of the existing CDUP KA-3625 permit and no vertical expansion is proposed for Cell 2. As shown in Figure 2, the maximum elevation of Cell 2 will be between 40 and 75 ft. amsl.. Since Cell 2 was approved to reach 85 ft amsl under CDUP KA-3625 this current proposal for the final cover of Phase II and Cell 2 will not exceed the permitted elevation for the previously approved CDUP.

Therefore, we respectfully request OCCL's concurrence that, as the components of the Proposed Action would be located entirely within TMK 4-1-2-002:001 (por.), no new CDUP or modifications to the existing CDUP KA-3625 is required.

We look forward to your response. Should you have any questions or require additional information, please feel free to contact me at (808) 352-2247 or via email at Kayla.Yost@tetrattech.com.

Respectfully,



Kayla Yost, Project Manager and Environmental Planner
Tetra Tech, Inc.

Attachments: Figure 1: State Land Use Designation
Figure 2: Final Cover Grading Plan

CC: Troy Tanigawa, Kaua'i County Engineer
Suzan Pankenier, Tetra Tech BAS, Inc.

P:\GIS\PROJECTS\Kauai_County\Kekaha_Landfill_Expansion\Maps\CIA_20221205\KauaiCounty_KekahaLandfill_CIA_20221205.aprx



Kekaha Landfill Phase II Vertical Expansion

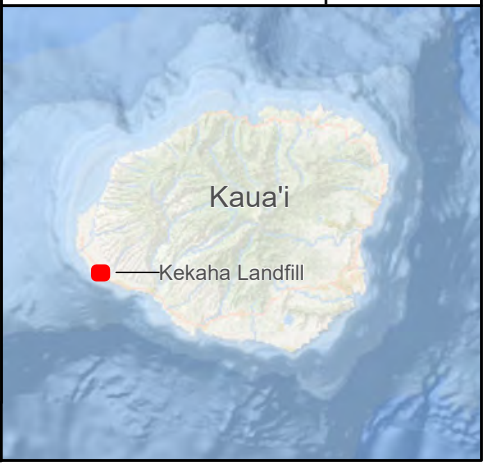
Figure 1
State Land Use
Designations

KAUAI COUNTY, HI

- Cell 1 Limit
- Cell 2 Limit
- Phase II Limit
- Phase I Limit
- TMK Parcel Boundary
- Approximate Extent of the Proposed Vertical Expansion
- State Land Use
 - Agricultural Land Use District
 - Conservation Land Use District



Reference Map



1:4,000

WGS 1984 UTM Zone 4N



0 0.13 0.25 Miles

NOT FOR CONSTRUCTION

Yost, Kayla

From: Cain, Michael <michael.cain@hawaii.gov>
Sent: Wednesday, May 10, 2023 10:19 AM
To: Yost, Kayla
Cc: Pankenier, Suzan; Allison Fraley; Troy Tanigawa; Fitzpatrick, Trevor J
Subject: RE: Kekaha Municipal Solid Waste Landfill Phase II Vertical Expansion

Follow Up Flag: Follow up
Flag Status: Completed

 **CAUTION:** This email originated from an external sender. Verify the source before opening links or attachments. 

Good morning,

If the project is outside the Conservation District then it is outside the jurisdiction of the Office of Conservation and Coastal Lands.

Official determinations of State Land Use boundaries can be sought from the Land Use Commission.

Thank you
Michael Cain

From: Yost, Kayla <KAYLA.YOST@tetrattech.com>
Sent: Wednesday, May 10, 2023 10:04 AM
To: Cain, Michael <michael.cain@hawaii.gov>
Cc: Pankenier, Suzan <Suzan.Pankenier@tetrattech.com>; Allison Fraley <afraley@kauai.gov>; Troy Tanigawa <ttanigawa@kauai.gov>; Fitzpatrick, Trevor J <trevor.j.fitzpatrick@hawaii.gov>
Subject: [EXTERNAL] Kekaha Municipal Solid Waste Landfill Phase II Vertical Expansion

Aloha Mr. Cain,

The County of Kaua`i, Department of Public Works, Solid Waste Division (County) has received and reviewed the Office of Conservation and Coastal Lands (OCCL) letter dated March 28, 2023, regarding the Kekaha Municipal Solid Waste Landfill Phase II Vertical Expansion (Proposed Action) Pre-Assessment Consultation for HRS 343 Environmental Assessment (EA) (COR: KA 23-133). The County will address OCCL's pre-assessment consultation comments in the draft EA.

The purpose of the attached letter is to request concurrence from OCCL that, as the Proposed Action would not be within the conservation district, no new CDUP (or modifications to the existing CDUP KA-3625) is required. More information on the Proposed Action and the land use permit determination request is provided in the attached letter.

We look forward to your response. Should you have any questions or require additional information, please feel free to contact me at (808) 352-2247 or via email at Kayla.Yost@tetrattech.com.

Mahalo,

Kayla Yost | Environmental Planner

Pronouns: she, her, hers

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TETRA TECH

April 4, 2023

TTCES-PTLD-2023-023

Ka'āina S. Hull, Director
Kaua'i County Department of Planning
4444 Rice Street, Suite A473
Lihue, HI 96766

Subject: **Request for Director Determination Regarding County Land Use Permit Requirements; Kekaha Municipal Landfill Phase II Vertical Expansion; Tax Map Key (TMK) 1-2-002:001 (portion) and TMK 1-2-002:009, Waimea District, Kaua'i**

Dear Mr. Hull,

The County of Kaua'i (County), Department of Public Works (DPW), Solid Waste Division is proposing a vertical expansion of Phase II of the Kekaha Municipal Solid Waste Landfill (KLF) located in Kekaha, Kaua'i, Hawai'i (Proposed Action). KLF is located 1.3 miles northwest of the town of Kekaha on the southwest side of the Island of Kaua'i. The KLF encompasses approximately 98 acres of land within Tax Map Keys (TMK) 1-2-002:001 (por.) and 1-2-002:009, which is owned by the State of Hawai'i and administered by the Department of Land and Natural Resources (DLNR). Executive Order 1558 (signed April 27, 1953), Executive Order 2872 (signed October 6, 1977), and Executive Order 3695 (signed December 2, 1996) places the control and management of the lands underlying the KLF to the County. The Proposed Action involves extending the landfill height vertically from the currently permitted maximum height of 120 feet (ft) above mean sea level (msl) to a maximum elevation of 171.5 ft above msl. The Project would be within the existing permitted limit-of-waste footprint of the Phase II landfill area. The location and boundaries of the KLF and limits of the proposed vertical expansion are shown in the attached Figure 1: Location Map. The purpose of this letter is to request the Department of Planning's determination on whether the Proposed Action requires new land use permits or amendments to existing land use permits including the existing county special permit, use permit, and class IV zoning permit, state special use permit (SUP), and special management area (SMA) permit.

As the Proposed Action would be located on state lands and use county funds. Tetra Tech, Inc. was hired by DPW to prepare an Environmental Assessment (EA) to evaluate the potential environmental effects of the Proposed Action in compliance with Hawai'i Revised Statutes (HRS) Chapter 343 and Hawai'i Administrative Rules (HAR) §11-200.1. More information on the Proposed Action, existing land use permits and approvals, and the land use permit determination request is provided below.

PROJECT HISTORY AND DESCRIPTION

KLF is the only active, permitted municipal solid waste (MSW) landfill on the island of Kaua'i and is comprised of two distinct refuse fill areas identified as Phase I and Phase II. Phase I is a closed, unlined landfill that began accepting solid waste in 1953 and ceased operations October 8, 1993. Phase II is an active, lined landfill that began accepting solid waste on October 9, 1993. KLF Phase II has undergone three vertical expansions and two lateral expansions since the initial permitting of the refuse area. Phase II was originally permitted to reach a height of 37 ft above msl, but was permitted for vertical expansion

in 1998, 2004, and 2013; the current maximum permitted landfill height of Phase II is 120 ft above msl. Phase II was also expanded laterally to include Cell 1 and Cell 2 in 2009 and 2019, respectively, reaching the currently permitted landfill area of 44 acres. The purpose of the previous vertical and lateral expansions was to provide additional air space volume for placement of refuse while the siting, design, and construction phases for a new landfill facility or other long-term landfill capacity solutions was completed. The County has attempted to site a new MSW landfill at another location on the island and will continue to evaluate alternative landfill sites and other long-term options for increasing the waste disposal capacity on Kauaʻi.

However, there is an immediate need to provide landfill capacity beyond October of 2026, which is when the currently permitted KLF Phase II is projected to reach capacity. The Phase II vertical expansion would add landfill airspace and provide an additional 3 years of safe disposal capacity in Kauai County while a long-term landfill capacity solution is planned, permitted, and implemented. The major components of the Project would be located entirely within TMK 4-1-2-002:001 (por.) and include:

- **Vertical Landfill Expansion:** The proposed Phase II vertical expansion would extend the existing waste disposal area upwards to a maximum height of 171.5 ft above msl. As shown in Figure 1, the limits of the proposed vertical expansion would be approximately 13 acres. The vertical expansion would provide an additional 400,000 cubic yards of waste disposal volume and provide an estimated 3 years of additional landfill capacity.
- **Stormwater Management:** Existing surface water drainage features that currently divert stormwater away from the refuse areas would need to be modified slightly (i.e., extended upwards) to accommodate the increase in height of the Phase II waste disposal area. The expanded drainage features would be located within the limits of the proposed vertical expansion where it would tie into the existing permitted system. No changes to the existing perimeter infiltration ditches or stormwater infiltration basin are proposed.
- **Landfill Gas Collection and Control System:** Two phases of improvements would maintain gas collection as the vertical expansion is constructed (Figure 2). The first phase would occur prior to placement of fill and includes raising or relocating the existing, permitted Gas Collection and Control System infrastructure within the footprint of the vertical expansion. The second phase would occur when nearing or at the final fill limit and include the addition of vertical landfill gas extraction wells and related lateral piping to provide landfill gas collection for new waste placed as part of the vertical expansion.

EXISTING KLF LAND USE PERMITS AND APPROVALS

As shown in Figure 3, the portion of Phase II located within TMK 1-2-002:001 (por) is designated as state and county agricultural lands. The state Land Use Commission (LUC) issued an SUP to DPW in 1993 (Petition Docket No. SP93-384) to allow 63.18 acres of land within the state agricultural district to be used for landfill purposes (for KLF Phase II). Similarly, the county Kauaʻi County Planning Commission issued special permit SP-93-9, use permit U-93-56, and class IV zoning permit Z-IV-93-64 in 1993 to allow for the construction and operation of the Phase II landfill within county, agriculture zoned land. The existing KLF operates in compliance with the conditions set forth in the SUP SP93-384, special permit SP-93-9, use permit U-93-56, and class IV zoning permit Z-IV-93-64. No expiration date or time limit for use

was established in either the state or county use permits or county zoning permit. Additionally, the vertical and horizontal expansions of the Phase II landfill in 2004, 2009, 2013, and 2019 were determined to meet the conditions of the original permits and no permit modifications were required.

As shown in Figure 3, a portion of the Cell 2 area of KLF Phase II (the portion located within TMK (4) 1-2-002:009) is designated as state conservation district and is within the SMA. An SMA use permit (SMA(U)20-12-4) and CDUP (KA-3625) was obtained for the Phase II, Cell 2 lateral expansion in 2012. As Phase II, Cell 2 is designated as state conservation land; pursuant to Hawaii Revised Statutes (HRS) §205-5, land use is governed by DLNR and it is assumed that no county zoning permits were required for Phase II, Cell 2 (HRS §205-5)¹.

Table 1 summarizes KLF's existing land use entitlements applicable to the Phase II landfill area.

Table 1: Existing Land Use Approvals and Entitlements for the Kekaha Landfill Facility Phase II Area

Agency	Permit / Approval	Permitted Landfill Area / TMK
State Land Use Commission	Special Use Permit (Petition Docket No. SP93-384), Issued July 1993	Phase II; TMK (4) 1-2-002:001(por.)
DLNR Office of Conservation and Coastal Lands (OCCL) and Board of Land and Natural Resources (BLNR)	Conservation District Use Permit (KA-3625), Issued August 2012, modified in April 2014 and May 2016	Phase II, Cell 2; TMK (4) 1-2-002:009 & (4) 1-2-002:001(por.)
County of Kaua'i, Planning Commission	Special Permit SP-93-9 Use Permit U-93-56 Class IV Zoning Permit Z-IV-93-64, Issued May 1993	Phase II; TMK (4) 1-2-002:001 (por.)
County of Kaua'i, Department of Planning and Planning Commission	Special Management Area Use Permit (SMA(U)20-12 4), Issued July 2012	Phase II, Cell 2; TMK (4) 1-2-002:009 & (4) 1-2-002:001(por.)

REQUEST FOR DIRECTOR DETERMINATION – STATE SPECIAL USE PERMIT AND COUNTY SPECIAL PERMIT, USE PERMIT AND CLASS IV ZONING PERMIT

As described above, the state LUC issued a SUP (Petition Docket No. SP93-384) and the county Planning Commission issued special permit SP-93-9, use permit U-93-56, and class IV zoning permit Z-IV-93-64 to allow for the construction and operation of the Phase II landfill within state and county agriculture land. The proposed Project would take place within the existing permitted footprint of the Phase II and would be a continuation of the existing KLF operations. As the proposed Project would not constitute a change in land use and the KLF would continue to comply with the conditions set forth in these permits, we respectfully request the County Department of Planning's concurrence on the determination that the Proposed Action is permissible under KLF's existing SUP (Petition Docket No. SP93-384), special permit

¹ HRS §205-5 Zoning states "(a) Except as herein provided, the powers granted to counties under section 46-4 shall govern the zoning within the districts, other than in conservation districts. Conservation districts shall be governed by the department of land and natural resources pursuant to chapter 183C".

SP-93-9, use permit U-93-56, and class IV zoning permit Z-IV-93-64. As noted above, this determination would be consistent with past determinations made for the vertical and horizontal expansions of the Phase II landfill in 2004, 2009, 2013, and 2019.

REQUEST FOR DIRECTOR DETERMINATION – SPECIAL MANAGEMENT AREA PERMIT

The potential for an SMA permit was discussed during the December 14, 2022 conference call between County Department of Planning, DPW, and Tetra Tech. During that call, DPW and Tetra Tech indicated that the vertical expansion will be outside of the SMA but a portion of the Gas Collection and Capture System for the proposed vertical expansion would extend into TMK 4-1-2-002:009 and, therefore, be within the SMA (i.e. installation of two, 6-inch HDPE lateral pipes to connect three gas wells to the landfill gas header pipe, see yellow highlighted pipes in Figure 2). Upon further discussion, the landfill engineers clarified that the two lateral pipes that extend into TMK 4-1-2-002:009 are a necessary feature of the existing Gas Collection and Capture System and slated for construction in the very near future. Therefore, DPW has determined that the lateral gas pipes within the SMA are not part of the Proposed Action. The design drawings for the Proposed Action were updated to accurately show that no portion of the Gas Collection and Capture System for the proposed vertical expansion would be within the SMA. As the Proposed Action would not be within the SMA, we respectfully request the County Department of Planning's concurrence that no SMA permit will be required.

We look forward to your response. Should you have any questions or require additional information, please feel free to contact me at (808) 352-2247 or via email at Kayla.Yost@tetrattech.com.

Respectfully,



Kayla Yost, Project Manager and Environmental Planner
Tetra Tech, Inc.

Attachments: Figure 1: Location Map
Figure 2: GCCS Improvements
Figure 3: Land Use Designations

CC: Troy Tanigawa, Kaua'i County Engineer
Susan Pankenier, Tetra Tech BAS, Inc.

P:\GIS PROJECTS\Kauai_County\Kekaha_Landfill_Verical_Expansion\Maps\CIA_20221205\KauaiCounty_KekahaLandfill_CIA_20221205.aprx



Kekaha Landfill Phase II Vertical Expansion

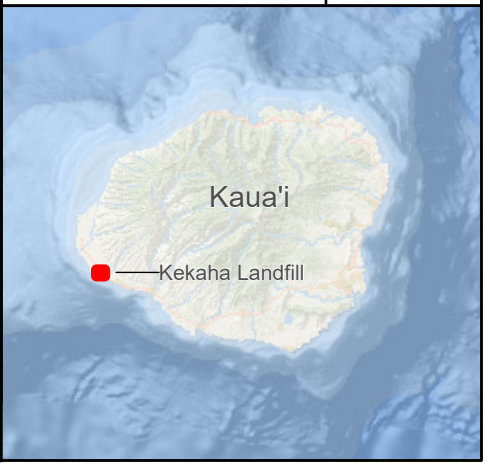
Figure 1
Project Location

KAUA'I COUNTY, HI

- Approximate Extent of the Proposed Vertical Expansion
- TMK Parcel Boundary
- Phase I Limit
- Phase II Limit
- Cell 1 Limit
- Cell 2 Limit

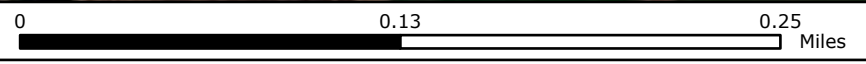


Reference Map



1:4,000

WGS 1984 UTM Zone 4N



NOT FOR CONSTRUCTION

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Kekaha Landfill Phase II Vertical Expansion

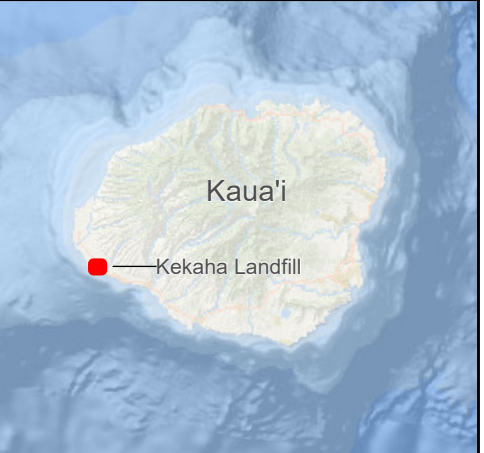
Figure 3
Land Use Designations

KAUA'I COUNTY, HI

- Approximate Extent of the Proposed Vertical Expansion
- TMK Parcel Boundary
- Phase I Limit
- Phase II Limit
- Cell 1 Limit
- Cell 2 Limit
- Agricultural Land Use District
- Conservation Land Use District
- Special Management Area

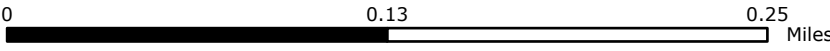


Reference Map



1:4,000

WGS 1984 UTM Zone 4N



NOT FOR CONSTRUCTION

Appendix D - Draft EA Comments and Responses

Contents

Distribution List for the Draft EA

Sample Notice of Availability of Draft EA

Draft EA Comment and Response Matrix

Draft EA Comment Letters/Emails:

- Department of Accounting and General Services (letter dated August 17, 2023)
- Department of Education (letter dated September 5, 2023)
- Department of Land and Natural Resources (DLNR), Engineering Division (letter dated September 7, 2023)
- DLNR, Land Division – Kaua‘i District (letter dated September 7, 2023)
- DLNR, Commission on Water Resource Management (letter dated August 14, 2023)
- DLNR, Division of Forestry and Wildlife (letter dated September 13, 2023)
- DLNR, Office of Conservation and Coastal Lands (letter dated September 6, 2023)
- Department of Health (DOH), Clean Air Branch (letter dated August 30, 2023)
- DOH, Clean Water Branch (letter dated August 8, 2023)
- DOH, Clean Water Branch (letter dated August 9, 2023)
- DOH, Clean Water Branch (Standard comments dated July 28, 2023)
- Department of Transportation, Statewide Transportation Planning Office (letter dated September 13, 2023)
- County of Kaua‘i, Department of Public Works, Engineering Division (letter dated September 25, 2023)
- Nā Kia‘i Kai, Kaunalewa and Earthjustice (letter dated September 7, 2023)
- John Harder (email dated September 5, 2023)
- Ruta Jordans, Zero Waste Kauai (email dated September 7, 2023)
- Zena Dean (email dated September 1, 2023)
- Addison Bulosan (public meeting comment card, August 31, 2023)
- DJ Adams (public meeting comment card, August 31, 2023)
- Pam Adams (public meeting comment card, August 31, 2023)
- Bonnie Bator (public meeting comment card, August 31, 2023)

Distribution List for Draft EA

Stakeholder	Draft EA	
	Notice of Availability	Comment Received
Federal Agencies		
U.S. Geological Survey, Pacific Islands Water Science Center	•	
U.S. Fish and Wildlife Service	•	
National Marine Fisheries Service	•	
National Resources Conservation Service	•	
U.S. Army Corps of Engineers	•	
Department of the Navy - Pacific Missile Range Facility	•	
Federal Aviation Administration	•	
Federal Transit Administration	•	
U.S. Coast Guard	•	
Environmental Protection Agency	•	
State Agencies		
Department of Agriculture	•	
Dept. of Accounting and General Services (DAGS)	•	•
DAGS Archives Division	•	
Dept. of Business, Economic Development and Tourism (DBEDT)	•	
DBEDT Agriculture Development Corporation	•	
DBEDT Environmental Review Program	•	
DBEDT Land Use Commission	•	
DBEDT Office of Planning and Sustainable Development	•	
DBEDT Research and Economic Analysis Division	•	
Department of Defense (DOD), Hawai'i Emergency Management Agency	•	
DOD Hawai'i National Guard	•	
Department of Education	•	•
Department of Hawaiian Homelands	•	
Department of Health (HDOH) Environmental Health Administration	•	
HDOH Clear Air Branch	•	•
HDOH Clean Water Branch	•	•
HDOH Solid and Hazardous Waste Branch	•	
Department of Land and Natural Resources (DLNR), Division of Aquatics	•	
DLNR Commission on Water Resource Management	•	•

Stakeholder	Draft EA	
	Notice of Availability	Comment Received
DLNR Division of Forestry and Wildlife – Kauaʻi District	•	•
DLNR Engineering Division	•	•
DLNR Land Division – Kauaʻi District	•	•
DLNR Office of Conservation and Coastal Lands	•	•
DLNR State Historic Preservation Division	•	
Department of Transportation (HDOT), Administration	•	•
HDOT Airports Division	•	
HDOT Highways Division – Kauaʻi District	•	
University of Hawaiʻi (UH) Water Resources Research Center	•	
UH Environmental Center	•	
Office of Hawaiian Affairs	•	
County of Kauaʻi Agencies		
Department of Parks and Recreation	•	
Department of Planning	•	
Department of Public Works	•	•
Department of Water	•	
Fire Department	•	
Police Department	•	
Transportation Agency	•	
Utilities		
Kauai Island Utility Cooperative	•	
Elected Officials		
U.S. Senator Brian Schatz	•	
U.S. Senator Mazie Hirono	•	
U.S. Representative Jill Tokuda	•	
State Senator Ronald Kouchi	•	
State Representative Dee Morikawa	•	
Kauaʻi County Council		
Mayor Derek Kawakami	•	
Organizations and Interested Individuals		
Kauaʻi Watershed Alliance	•	
West Kauaʻi Watershed Council	•	
Kekaha Landfill Host Community Benefits Citizen’s Advisory Committee	•	

Stakeholder	Draft EA	
	Notice of Availability	Comment Received
E Ola Mau Na Leo O Kekaha	•	
St. Theresa Catholic School Kauai	•	
Kekaha Elementary School	•	
Kekaha Hawaiian Homes Association	•	
West Kauaʻi Business and Professional Association	•	
Kekaha Raceway Park	•	
Kekaha Agriculture Association	•	
Sunrise Capital Inc (Adjacent Lessee)	•	
Syngenta Seeds, Inc. c/o Hartung Brothers, Inc. (Adjacent Lessee)	•	
Kaunalewa	•	•
Nā Kiaʻi Kai		•
Earthjustice		•
John Harder		•
Ruta Jordans, Zero Waste Kauai		•
Zena Dean		•
Addison Bulosan, County Council		•
DJ Adams, Resident		•
Pam Adams, Resident		•
Bonnie P. Bator, Resident		•
Libraries		
Hawaiʻi State Library, Hawaiʻi Documents Center	•	
Hawaiʻi State Library, Lihuʻe Regional Library	•	
Hawaiʻi State Library, Waimea Public Library	•	
University of Hawaiʻi (UH) Thomas H. Hamilton Library	•	
UH West Oʻahu James & Abigail Campbell Library	•	
UH Hilo, Edwin H. Moʻokini Library	•	
UH Maui College Library	•	
Kauai Community College Library	•	
Legislative Reference Bureau Library	•	
News Media		
Honolulu Star Advertiser	•	
Hawaiʻi Tribune Herald	•	
West Hawaiʻi Today	•	
The Garden Island	•	

Stakeholder	Draft EA	
	Notice of Availability	Comment Received
Maui News	•	
Molokai Dispatch	•	
Honolulu Civil Beat	•	
Hawai'i Public Radio	•	



August 8, 2023

Subject: Public Review of the HRS Chapter 343 Draft Environmental Assessment for the Kekaha Municipal Landfill Phase II Vertical Expansion, Tax Map Key (TMK) 1-2-002:001 (portion) and TMK 1-2-002:009, Waimea District, Kaua'i, Hawai'i

Dear Interested Party,

The Draft Environmental Assessment (Draft EA) for the Kekaha Municipal Landfill Phase II Vertical Expansion Project will be published by the Office of Planning and Sustainable Development, Environmental Review Program (ERP) in the August 8, 2023 edition of *The Environmental Notice*. Once published by ERP, the document can be accessed via the link provided below. Hard copies of the Draft EA will be available at the Hawaii State Library, Hawaii Document Center (478 S. King Street, Honolulu), Lihue Regional Library (4344 Hardy Street, Lihue), and Waimea Public Library (9750 Kaumuali'i Hwy, Waimea).

https://files.hawaii.gov/dbedt/erp/Doc_Library/2023-08-08-KA-DEA-Kekaha-Municipal-Landfill-Phase-II-Vertical-Expansion.pdf (An error message may be received if the link is used prior to August 8, 2023)

The County of Kaua'i, Department of Public Works, Solid Waste Division is proposing a vertical expansion of Phase II at the Kekaha Municipal Solid Waste Landfill (KLF) (Proposed Action). The KLF encompasses approximately 98 acres of land within TMK 1-2-002:001 (por.) and TMK 1-2-002:009, which is owned by the State of Hawai'i. KLF Phase II currently receives all municipal solid waste (MSW) generated on the island and is projected to reach capacity in October 2026. The purpose of the Proposed Action is to prolong the life of the KLF prior to exhausting the island's only permitted landfill airspace and to provide safe disposal of MSW in Kaua'i County while a long-term MSW capacity solution can be identified. The Proposed Action would extend Phase II operations upward from the currently permitted maximum elevation of 120 feet (ft) above mean sea level (amsl) to a maximum elevation of 171.5 ft amsl. Surface water drainage features and the landfill gas collection and control system would be modified slightly to accommodate the expanded waste volume. The limits of the proposed vertical expansion would be approximately 13 acres located within the existing, permitted Phase II footprint and would be constructed above the existing subtitle D base liner.

The Draft EA includes a detailed description of the Proposed Action and an evaluation of the potential effects of the Proposed Action, per the requirements of HRS Chapter 343 and HAR 11-200.1. If you would like to submit comments on the Draft EA, they must be postmarked by September 7, 2023 (30-day comment period). Please submit written comments to the parties listed below.

Tetra Tech, Inc.

737 Bishop St., Suite 2000, Mauka Tower, Honolulu, HI 96813
Tel 808.441.6655 www.tetrattech.com

Applicant: County of Kaua'i, Department of Public Works, Solid Waste Division
4444 Rice Street, Mo'ikeha Building, Suite 275, Līhu'e, HI, 96766
Contact: Allison Fraley, AFraley@kauai.gov

Agent: Tetra Tech
737 Bishop Street, Suite 2000, Honolulu, Hawai'i 96813
Contact: Kayla Yost, kayla.yost@tetrattech.com

Thank you for your participation in the environmental review process.

Sincerely,



Kayla Yost
Project Manager and Environmental Planner
Tetra Tech, Inc.

Appendix D

Draft Environmental Assessment - Comments and Responses

	Comment	Response	Corresponding Edit in Final EA or Technical Appendix
1	Department of Accounting and General Services (DAGS) (letter dated August 17, 2023)		
1.1	Thank you for the opportunity to provide comments for the subject project. We have no comments to offer at this time, as the subject project does not appear to directly impact any of the Department of Accounting and General Services' facilities or properties of Kauai.	Thank you for your comment. The County of Kaua'i, Department of Public Works, Solid Waste Division (County) acknowledges and concurs that the Proposed Action will not impact any of the DAGS' facilities or properties on Kaua'i.	No edits required.
2	Department of Education (DOE) (letter dated September 5, 2023)		
2.1	Thank you for your letter dated August 8, 2023. Based on the information provided, the proposed project will not impact Hawaii State Department of Education Facilities.	Thank you for your comment. The County acknowledges and concurs that the Proposed Action will not impact DOE facilities.	No edits required.
3	Department of Land and Natural Resources (DLNR), Engineering Division (letter dated September 7, 2023)		
3.1	We have no comments.	Comment noted.	No edits required.
4	DLNR, Land Division – Kaua'i District (letter dated September 7, 2023)		
4.1	Parcel 009 is in the State conservation district should consult with OCCL to confirm all permits are current and in compliance.	Tetra Tech, on behalf of the County of Kauai, consulted with the Office of Conservation and Coastal Lands (OCCL) during the pre-assessment scoping and draft environmental assessment (EA) comment periods (See Appendix C and Appendix D, respectively). OCCL responded in a letter dated September 6, 2023 (see Comment #7 below) and concluded that the Proposed Action will not involve work or land uses in the Conservation District and is distinct and separate from the actions approved by the Board of Land and Natural Resources (BLNR) and Conservation District Use Permit (CDUP) KA-3625. No modification of the Kekaha Municipal Landfill's (KLF) existing CDUP nor a new CDUP are required.	No edits required.
4.2	Should consult with DOFAW regarding plants and animals in area- Draft refers to plant and wildlife surveys conducted within the KLF site in 1982 that may be outdated.	<p>Tetra Tech, on behalf of the County of Kauai, consulted with the Department of Forestry and Wildlife (DOFAW) during the pre-assessment scoping and draft EA comment periods (See Appendix C and Appendix D, respectively). DOFAW responded in a letter dated September 14, 2023 (see Comment # 6 below). DOFAW concurred with the avoidance and minimization measures for listed species included in the Draft EA and provided additional measures for the County to implement with the Proposed Action. These additional minimization and avoidance measures were integrated into Section 3.2 of the final EA, as appropriate.</p> <p>Because the Project would take place within the footprint of the existing Phase II area, which has been functioning as a landfill since 1993, and wildlife surveys occurred in 1982 and 2014-2015, no additional biological surveys were conducted for the Proposed Action. With implementation of impact avoidance and minimization measures, the Proposed Action is expected to have less than significant adverse impacts to protected wildlife species.</p>	No edits required.
5	DLNR, Commission on Water Resource Management (letter dated August 14, 2023)		
5.1	Thank you for the opportunity to review the subject document. The Commission on Water Resource Management (CWRM) is the agency responsible for administering the State Water Code (Code). Under the Code, all waters of the State are held in trust for the benefit of the	Thank you for your comment. Impacts to water resources are presented in the final EA, Section 3.17. The Proposed Action would be implemented in compliance with	No edits required.

	Comment	Response	Corresponding Edit in Final EA or Technical Appendix
	<p>citizens of the State, therefore all water use is subject to legally protected water rights. CWRM strongly promotes the efficient use of Hawaii's water resources through conservation measures and appropriate resource management. For more information, please refer to the State Water Code, Chapter 174C, Hawaii Revised Statutes, and Hawaii Administrative Rules, Chapters 13-167 to 13-171. These documents are available via the Internet at http://dlnr.hawaii.gov/cwrn.</p> <p>Our comments related to water resources are checked off below.</p>	<p>applicable provisions of the State Water Code, Hawaii Revised Statutes (HRS) Chapter 174C, and Hawaii Administrative Rules (HAR) Chapters 13-167 to 13-171.</p>	
5.2	<p>We recommend the use of best management practices (BMP) for stormwater management to minimize the impact of the project to the existing area's hydrology while maintaining on-site infiltration and preventing polluted runoff from storm events. Stormwater management BMPs may earn credit toward LEED certification. More information on stormwater BMPs can be found at http://planning.hawaii.gov/czm/initiatives/low-impact-development/</p>	<p>Stormwater at the KLF is managed in accordance with the facility's <i>Surface Water Management Plan</i> (Geosyntec 2023a), which includes BMPs to maintain on-site infiltration and preventing polluted runoff from storm events. As described in Section 1.2.1.2 and Section 3.17 of the final EA, runoff from Phase II flows into diversion berms located on the side slopes below the perimeter of the landfill top deck and along the perimeter road, which direct surface water to down drains. The down drains convey runoff to infiltration ditches around the perimeter of the landfill. Runoff then infiltrates, evaporates, or flows to the 2.2-acre stormwater infiltration basin. The stormwater management system was designed to convey runoff from a 25-year, 24-hour storm, as required by the solid waste regulations (HAR § 11-58.1-15(g)). Runoff from other areas of the KLF facility (e.g., parking area, scale house, drop-off area, maintenance building) is diverted through site drainage features to either the infiltration basin or leachate evaporation lagoon. The facility does not discharge water to off-site areas.</p> <p>As described in Section 3.17 of the final EA, Tetra Tech (2022) conducted an engineering analysis of the stormwater management system and concluded that it is adequately sized to accommodate the anticipated increase in stormwater flow and velocities from the Proposed Action. No significant impacts to surface water resources or local hydrology are anticipated from the Proposed Action.</p>	No edits required.
5.3	<p>There may be the potential for ground or surface water degradation/contamination and recommend that approvals for this project be conditioned upon a review by the State Department of Health and the developer's acceptance of any resulting requirements related to water quality.</p>	<p>KLF Phase II operates in accordance with the requirements of KLF's Solid Waste Management Permit (SWMP) No. LF-0042-16 issued by the State of Hawai'i Department of Health (HDOH). The Proposed Action will require a modification to SWMP No. LF-0042-16, which will be processed by the HDOH. The County has and will continue to comply with conditions of its SWMP related to water quality.</p> <p>As described above, Stormwater at the KLF is managed as described in the <i>Surface Water Management Plan</i> (Geosyntec 2023a), and as required by KLF's SWMP No. LF-0042-16 special condition E.5, updates to the plan are required to be prepared and submitted annually to HDOH. No significant impacts to surface water resources are anticipated from the Proposed Action.</p> <p>The Proposed Action would expand the Phase II landfill above the existing Resource Conservation and Recovery Act (RCRA) Subtitle D base liner and Leachate Collection and Removal System (LCRS). An engineering analysis of the LCRS confirmed that the system is adequately sized to accommodate the less than 1 percent increase in leachate generation and that the LCRS piping can structurally withstand the additional load from the Phase II vertical expansion (Tetra Tech 2022). Groundwater monitoring at the KLF would continue to be conducted in accordance with the</p>	<p>More detailed information regarding KLF's SWMP No. LF-0042-16 special condition E.5 required annual updates to the Surface Water Management Plan has been added to Section 1.2.1.2. See additional text added to this section in bold underline.</p> <ul style="list-style-type: none"> Surface Water Management System – Described in the KLF's <i>Surface Water Management Plan</i> (Geosyntec 2023a), stormwater is managed at KLF by controlled grading on the surface of the landfill and by maintaining an engineered system of drainage ditches, channels, pipes, and basins. The surface water system includes diversion berms located on the side slopes below the perimeter of the landfill top deck and along the perimeter road, which direct surface water to down drains. The down drains convey runoff to infiltration ditches around the perimeter of the landfill and to an existing, approximately 2.2-acre stormwater infiltration basin. The stormwater management system was designed to convey runoff from a 25-year, 24-hour storm, as required by the solid waste regulations (HAR § 11-58.1-15(g)). <u>KLF's SWMP No. LF-0042-16 special condition E.5, requires</u>

	Comment	Response	Corresponding Edit in Final EA or Technical Appendix
		facilities <i>Groundwater and Leachate Monitoring Plan</i> (Geosyntec 2023a). Therefore, no significant impacts to groundwater resources are anticipated with implementation of the Proposed Action.	<u>annual updates to KLF <i>Surface Water Management Plan</i> be prepared and filed with HDOT by September 1 of each year. As part of the annual updates, KLF is required to report on its annual inspections of surface water management features and facilities, file updated topographic drawings and surface water drainage paths and conveyances, and drainage system modifications planned for the next year in response to waste filling.</u>
6	DLNR, Division of Forestry and Wildlife (DOFAW) (letter dated September 13, 2023)		
6.1	<p>The Department of Land and Natural Resources, Division of Forestry and Wildlife (DOFAW) has received your request for comments on the Chapter 343 Draft Environmental Assessment for the Kekaha Municipal Landfill Phase II Vertical Expansion. The County of Kaua'i, Department of Public Works, Solid Waste Division is proposing a vertical expansion of Phase II at the Kekaha Municipal Solid Waste Landfill (KLF) (Proposed Action). The KLF encompasses approximately 98 acres of land within TMK (4) 1-2-002:001 (por.) and TMK (4) 1-2-002:009, which is owned by the State of Hawai'i. KLF Phase II currently receives all municipal solid waste (MSW) generated on the island and is projected to reach capacity in October 2026. The purpose of the Proposed Action is to prolong the life of the KLF prior to exhausting the island's only permitted landfill airspace and to provide safe disposal of MSW in Kaua'i County while a long-term MSW capacity solution can be identified. The Proposed Action would extend Phase II operations upward from the currently permitted maximum elevation of 120 feet (ft) above mean sea level (AMSL) to a maximum elevation of 171.5 ft amsl. Surface water drainage features and the landfill gas collection and control system would be modified slightly to accommodate the expanded waste volume. The limits of the proposed vertical expansion would be approximately 13 acres located within the existing, permitted Phase II footprint and would be constructed above the existing Subtitle D baseline.</p> <p>DOFAW concurs with the measures included in the DEA intended to avoid construction and operational impacts to State-listed species including the 'Ope'ape'a or Hawaiian Hoary Bat (<i>Lasiurus cinereus semotus</i>), Koloa Maoli or Hawaiian Duck (<i>Anas wyvilliana</i>), Ae 'o or Hawaiian Stilt (<i>Himantopus mexicanus knudsem</i>), 'Alae ke'oke'o or Hawaiian Coot (<i>Fulica alai</i>), 'Alae 'ula or Hawaiian Common Gallinule (<i>Gallinula chloropus sandvicensis</i>), Nene or Hawaiian Goose (<i>Branta sandvicensis</i>), and seabirds. DOFAW provides the following additional comments regarding the potential for the proposed work to affect listed species in the vicinity of the project area.</p>	Thank you for your comment. The County acknowledges that DOFAW concurs with the measures included in the draft EA intended to avoid construction and operational impacts to State-listed species.	No edits required.
6.2	The endemic pueo or Hawaiian Short-Eared Owl (<i>Asio flammeus sandwichensis</i>) could potentially nest in the project area. Before any potential vegetative alteration, especially ground-based disturbance, we recommend that line transect surveys are conducted during crepuscular hours through the project area. If a pueo nest is	Pueo are not federally listed or state-listed on the island of Kaua'i. This comment was provided by DOFAW in the context of how proposed work would affect listed species in the vicinity of the project area; therefore, this comment is not applicable as pueo is not listed on Kauai.	No edits required because detailed text in the EA is only for listed species.

	Comment	Response	Corresponding Edit in Final EA or Technical Appendix
	discovered, a minimum buffer distance of 100 meters from the nest should be established until chicks are capable of flight.	<p>However, the County does offer the following response regarding the endemic pueo that may be present in the Project Area:</p> <ul style="list-style-type: none">• As described in Section 3.2 of the Final EA, because the Proposed Action would take place within the footprint of the existing Phase II area, which has been functioning as a landfill since 1993, suitable habitat for native wildlife is minimal.• Pueo were observed foraging in the KLF area during the bi-monthly wildlife surveys conducted at KLF between August 2014 and August 2015; however, no pueo nesting has been documented at KLF.• In the unlikely event that a pueo nest is discovered within the Project Area, a 100-meter buffer will be established from the nest until chicks are capable of flight.	
6.3	DOFAW is concerned about impacts on vulnerable birds from nonnative predators such as cats, rodents, and mongooses. We recommend taking action to minimize predator presence; remove cats, place bait stations for rodents and mongoose, and provide covered trash receptacles.	<p>As described in Section 3.2 of the Final EA, because the Proposed Action would take place within the footprint of the existing Phase II area, which has been functioning as a landfill since 1993, suitable habitat for native wildlife, including listed bird species, is minimal. Management of the leachate evaporation pond and stormwater infiltration basin is intended to minimize attraction of listed birds.</p> <p>The Proposed Action would continue to implement the KLF’s <i>Vector Control Plan</i> (Section 6.6 of KLF’s <i>Operations Plan</i>, Geosyntec 2023a) and operational controls to minimize predator presence at the KLF site in accordance with the operating criteria for MSW landfills as detailed in 40 CFR § 258.22 and HAR § 11-58.1-15(c). Vector control activities currently implemented at KLF includes:</p> <ul style="list-style-type: none">• The placement of a minimum of six inches of daily cover or alternative daily cover on the MSW active working face and a minimum of 12 inches of intermediate cover on inactive portions of the KLF Phase II.• KLF Phase II operators are trained annually to promote compliance awareness with operational practices such as proper depth and frequency of cover material placement on the landfill.• Minimizing the size of the active working face is another method utilized at the KLF Phase II to reduce the likelihood of vectors feeding on MSW.• Public health and vector control concerns are addressed at the KLF Phase II through the implementation of inspections and subsequent control and abatement activities. KLF Phase II personnel inspect the facility monthly for any signs of vectors or indications of vector attractants that may cause nuisance or disease. The integrity of the landfill cover material is also inspected as part of the KLF Phase II Vector Control Plan to verify that vectors are not an issue.• If vectors are identified at the landfill, the County will develop and implement a specific plan to control or eradicate the on-site populations. Actions such as removal of cats and placement of bait stations for rodents may be activities incorporated into a specific control and eradication plan if one were identified to be necessary. <p>To date, the KLF Phase II has not experienced any vector problems.</p>	<p>Additional information about the KLF’s <i>Vector Control Plan</i> and operational controls to minimize predator presence at the KLF site (as outlined in the response column) have been added to Section 3.2.2.1.</p> <p>Additionally, the following text has been added to Section 3.12.1.2 (see additional text below in bold underline).</p> <p>3.12.1.2 Vector Control Vectors are organisms, such as rodents, flies, mosquitoes, or other animals, capable of transmitting disease to humans. The <i>Vector Control Plan</i> (Section 6.6 of KLF’s <i>Operations Plan</i>, Geosyntec 2023a) for the KLF Phase II complies with the operating criteria for MSW landfills as detailed in 40 CFR § 258.22 and HAR § 11-58.1-15(c). Pursuant to HAR § 11-58.1-15(c), “Owners or operators of all MSWLF units must prevent or control on site populations of disease vectors using techniques appropriate for the protection of human health and the environment.” Personnel at the KLF are trained to prevent, detect, and manage on-site populations of disease vectors (Geosyntec 2023a). This includes monthly inspections and subsequent control and abatement activities, as needed, and minimizing the size of the active working face of the landfill to reduce the likelihood of vectors feeding on the waste materials. Additionally, a minimum of 6 inches of daily cover or alternative daily cover is placed on the active working face and a minimum of 12 inches of intermediate cover on inactive portions of the KLF Phase II to control vectors. <u>Roll off bins for residential drop-off are emptied regularly to prevent vector issues.</u> The KLF has not received any vector complaints or violations (K. Aki, DPW, personal communication, June 20, 2023). <u>If vectors are identified at the landfill, the County will develop and implement a specific plan to control or eradicate the on-site populations.</u></p>

	Comment	Response	Corresponding Edit in Final EA or Technical Appendix
6.4	DOFAW recommends minimizing the movement of plant or soil material between worksites. Soil and plant material may contain detrimental fungal pathogens (e.g., Rapid 'Ohi'a Death, Coffee Leaf Rust), vertebrate and invertebrate pests (e.g., Coqui Frogs, Little Fire Ants, Coffee Berry Borer, etc.), or invasive plant parts (e.g., Barbados Gooseberry, False Kava, Giant Reed, etc.) that could harm our native species and ecosystems. We recommend consulting the Kaua'i Invasive Species Committee (KISC) at (808) 821-1490 to help plan, design, and construct the project, learn of any high-risk invasive species in the area, and ways to mitigate their spread. All equipment, materials, and personnel should be cleaned of excess soil and debris to minimize the risk of spreading invasive species.	The Proposed Action would be a continuation of existing operations; it would not change the types or quantities of waste received at the KLF, including soil or plant material. Furthermore, soil and plant material disposed at KLF or used as cover would not be transported off-site and equipment used at the KLF Phase II area is typically left on-site. Therefore, detrimental fungal pathogens or invasive pests or plants are unlikely to be transported off-site. The County will consult with the Kaua'i Invasive Species Committee (KISC) to learn of any high-risk invasive species areas and ways to mitigate their spread. In the event that landfill equipment or materials are transported off site, they would be cleaned of excess soil and debris prior to leaving the KLF site to minimize the risk of spreading invasive species.	No edits required.
6.5	DOFAW recommends using native plant species for landscaping that are appropriate for the area; i.e., plants for which climate conditions are suitable for them to thrive, plants that historically occurred there, etc. Please do not plant invasive species. DOFAW also recommends referring to www.plantpono.org for guidance on the selection and evaluation of landscaping plants and to determine the potential invasiveness of plants proposed for use in the project.	As described in Section 3.16.2.1 of the Final EA, the closure plans for the Proposed Action would include a plan for revegetation of the landfill base and slopes and landscaping at the site entrance. Native plant species that are appropriate for the area will be used to the extent practical.	No edits required.
6.6	Due to the arid climate and risks of wildfire to listed species, we recommend coordinating with the Hawai'i Wildfire Management Organization at (808) 850-0900 or admin@hawaiiwildfire.org , on how wildfire prevention can be addressed in the project area.	Section 3.11 of the Final EA and the KLF <i>Emergency Action Plan</i> (Geosyntec 2023a) addresses fire prevention and response at the KLF. A 4,000-gallon water truck, loader, and bulldozer are available 24 hours per day to aid in firefighting. Fire extinguishers are provided in all buildings and site vehicles for use in extinguishing small fires. Additionally, maintenance (e.g., servicing, inspection, and repair) of mechanical, electrical, and fuel systems are conducted on a routine basis to decrease the risk of an emergency, including fire. Grass is regularly cut at KLF to minimize fuel loads. In the event of a fire, the KLF has procedures in place to assess the situation and possible hazards that may result; order evacuations, medical care, and shutdowns (as necessary); notify adjacent property owners and/or tenants (as necessary); and coordinate with emergency response personnel. As part of ongoing operations, the County consults directly with Kauai Fire Department.	No edits required.
6.7	We recommend that Best Management Practices are employed during and after construction to contain any soils and sediment with the purpose of preventing damage to near-shore waters and marine ecosystems.	See response to Comment # 5.2.	No edits required.
6.8	We appreciate your efforts to work with our office for the conservation of our native species. These comments are general guidelines and should not be considered comprehensive for this site or project. It is the responsibility of the applicant to do their own due diligence to avoid any negative environmental impacts. Should the scope of the project change significantly, or should it become apparent that threatened or endangered species may be impacted, please contact our staff as soon as possible.	Thank you. The County will continue to consult with DOFAW to avoid and minimize impacts to native and listed species.	No edits required.
7	DLNR, Office of Conservation and Coastal Lands (letter dated September 6, 2023)		
7.1	The Office of Conservation and Coastal Lands (OCCL) has reviewed the Draft Environmental Assessment (DEA) regarding the subject matter. According to the information in your letter, the County of Kauai Department of Public Works Solid Waste Division (County) is	Thank you for your comment. The County acknowledges that based on the information in the Draft EA, OCCL concluded that the Proposed Action will not involve work or land uses in the Conservation District and is distinct and separate from the actions approved by the BLNR and CDUP KA-3625. No modification of the	No edits required.

	Comment	Response	Corresponding Edit in Final EA or Technical Appendix
	<p>proposing a vertical expansion of Phase II of the Kekaha Municipal Solid Waste Landfill (KLF). The KLF encompasses approximately 98 acres of land within TMK: (4) 1-2-002:009 and a portion of TMK: (4) 1-2-002:001.</p> <p>Executive Orders 1558 (signed April 27, 1953), 2872 (signed October 6, 1977), and 3695 (signed December 2, 1996) placed the control and management of the lands underlying the KLF to the County of Kauai. The KLF is comprised of two (2) refuse fill areas: Phase I and Phase II. Phase I is an unlined landfill that began accepting solid waste in 1953 and ceased operations on October 8, 1993. Phase II is an active lined landfill that began accepting solid waste on October 9, 1993</p> <p>The DEA notes that KLF is Kauai's only permitted municipal solid waste landfill and is predicted to reach its capacity in October of 2026. To address this, the County is proposing to extend Phase II upward from the currently permitted maximum elevation of 120ft above mean sea level (amsl) to a new permitted maximum elevation of 171.5ft amsl and will be confined to the portion of the KLF Phase II that lies on TMK: (4) 1-2-002:001. The DEA notes that the proposed vertical expansion of the Phase II landfill is expected to add an additional 2 to 4 years of capacity to the KLF while the County seeks a long-term landfill capacity solution. On behalf of the County, Tetra Tech is seeking comments the DEA for the project.</p> <p>The OCCL regulates land uses in the State Land Use Conservation District through the issuance of Conservation District Use Permits and Site Plan Approvals to help conserve, protect, and preserve important natural and cultural resources. The OCCL notes that the portion of KLF that occupies TMK: (4) 1-2-002:001 appears to lie the State Land Use Agricultural District and that TMK: (4) 1-2-002:009 appears to lie in the Limited Subzone of the State Land Use Conservation District.</p> <p>Based on the information in the DEA, it appears that the proposed Kekaha Municipal Landfill Phase II Vertical Expansion project will not involve work or land uses in the Conservation District. The OCCL notes that the proposed vertical expansion from 120 ft amsl to 171.5 ft amsl appears to be distinct and separate from the actions approved by the Board of Land and Natural Resources (BLNR) and Conservation District Use Permit (CDUP) KA-3625.</p>	<p>Kekaha Municipal Landfill's (KLF) existing CDUP nor a new CDUP are required for the Proposed Action.</p>	
8	Department of Health (DOH), Clean Air Branch (letter dated August 30, 2023)		
8.1	<p>Thank you for the opportunity to provide comments on the subject DEA/AFONSI for the proposed Kekaha Municipal Landfill Phase II Vertical Expansion Project. The Clean Air Branch (CAB) would like to make the following comments on the subject DEA/AFNSI:</p> <ul style="list-style-type: none">For long-term impacts that may include odor and dust, the applicable provisions in Hawaii Administrative Rules §11-60.1-2 and §11-60.1-33 shall be followed.	<p>Thank you for your comment.</p> <p>As described in Section 3.1 of the Final EA, the applicable provisions in Hawaii Administrative Rules §11-60.1-2 and §11-60.1-33 shall be followed.</p> <p>Response to DOH CAB's standard comments are provided in Comment # 9 below.</p>	<p>No edits required.</p>

	Comment	Response	Corresponding Edit in Final EA or Technical Appendix
	<ul style="list-style-type: none"> The CAB permitting section needs to be contacted at (808) 586-4200 to determine if a permit application for modification is required for the land-fill expansion project. Also, please see our standard comments at: https://health.hawaii.gov/cab/files/2022/05/Standard-Comments-for-Land-Use-Reviews-Clean-Air-Branch-2022-1.pdf 		
9	DOH, Clean Air Branch (Standard Comments for Land Use Reviews, n.d)		
9.1	<p>If your proposed project: Requires an Air Pollution Control Permit:</p> <ul style="list-style-type: none"> You must obtain an air pollution control permit from the Clean Air Branch and comply with all applicable conditions and requirements. If you do not know if you need an air pollution control permit, please contact the Permitting Section of the Clean Air Branch. Permit application forms can be found here: https://health.hawaii.gov/cab/permit-application-forms/ 	The KLF site is being operated under existing air permit No. 0802-01-C issued by the HDOH Clean Air Branch. The Proposed Action would require a modification to CSP Permit No. 0802-01-C. The County of Kauai will work with the HDOH Clean Air Branch to obtain the permit modification upon the conclusion of the HRS Chapter 343 environmental review process.	No edits required.
9.2	<p>Includes demolition of structures or land clearing:</p> <ul style="list-style-type: none"> Department of Health, Administrative Rule: Title 11, Chapter 26, Vector Control, Section 11-26-35, Rodents; Demolition of Structures and Clearing of Sites and Vacant Lots, requires that: <ul style="list-style-type: none"> No person, firm or corporation shall demolish or clear any structure, site, or vacant lot without first ascertaining the presence or absence of rodents which may endanger the public health by dispersal from such premises. Should such inspection reveal the presence of rodents, the person, firm, or corporation shall eradicate the rodents before demolishing or clearing the structure, site, or vacant lot. The Department may conduct an independent inspection to monitor compliance, or request a written report. The purpose of this rule is to prevent rodents from dispersing into adjacent areas from infested buildings or vacant lands during demolition or land clearing. Contractors may either hire a pest control firm or do the job themselves with a qualified employee. Rodenticides must be inspected daily and replenished as necessary to provide a continuous supply for at least one week prior to the start of any work. To submit notifications or for more information, contract the Vector Control Branch: https://health.hawaii.gov/vcb/ 	The Proposed Action does not include demolition of structures or land clearing.	No edits required.
9.3	<p>Has the potential to generate fugitive dust:</p> <ul style="list-style-type: none"> You must reasonably control the generation of all airborne, visible fugitive dust. Note that construction activities that occur near to existing residences, businesses, public areas 	As described in Section 3.1.1.2 of the Final EA, the Proposed Action has the potential to generate fugitive dust during operations. There are no construction activities associated with the Proposed Action. Fugitive dust from KLF operations is managed by KLF personnel in accordance with the Dust Prevention Program	<p>The following text has been added to Section 3.1.1.2 (see additional text below in bold underline).</p> <p>3.1.1.2 Fugitive Dust</p>

	Comment	Response	Corresponding Edit in Final EA or Technical Appendix
	<p>and major thoroughfares exacerbate potential dust concerns. It is recommended that a dust control management plan be developed which identifies and mitigates all activities that may generate airborne, visible fugitive dust. The plan, which does <i>not</i> require Department of Health approval, should help you recognize and minimize potential airborne, visible fugitive dust problems.</p> <ul style="list-style-type: none">Construction activities must comply with the provisions of Hawaii Administrative Rules, §11-60.1-33 on Fugitive Dust. In addition, for cases involving mixed land use, we strongly recommend that buffer zones be established, wherever possible, in order to alleviate potential nuisance complaints.You must provide reasonable measures to control airborne, visible fugitive dust from the road areas and during the various phases of construction. These measures include, but are not limited to, the following:<ul style="list-style-type: none">Planning the different phases of construction, focusing on minimizing the amount of airborne, visible fugitive dust-generating materials and activities, centralizing on-site vehicular traffic routes, and locating potential dust-generating equipment in areas of the least impact;Providing an adequate water source at the site prior to start-up of construction activities; Landscaping and providing rapid covering of bare areas, including slopes, starting from the initial grading phase;Minimizing airborne, visible fugitive dust from shoulders and access roads;Providing reasonable dust control measures during weekends, after hours, and prior to daily start-up of construction activities; andControlling airborne, visible fugitive dust from debris being hauled away from the project site.If you have questions about fugitive dust, please contact the Enforcement Section of the Clean Air Branch	<p>described in the KLF <i>Operations Manual</i> (Geosyntec 2023a). Site operations personnel utilize a 4,000-gallon water truck to apply water to areas that may be potential dust problems, such as access roads, work areas, and stockpiles. The volume of water and frequency of spraying are increased as needed during particularly dry or windy conditions, or during times of increased truck traffic on site.</p> <p>The following precautions and operations are implemented on site to prevent the discharge of visible fugitive dust beyond the site property boundary:</p> <ul style="list-style-type: none">The site’s water truck is used during dry weather to spray water on access roads and other areas that might otherwise generate windblown dust. The volume of water and frequency of spraying is increased as needed during particularly dry and windy conditions.Grading and watering haul roadsPeriodically applying a fine water spray to work areas throughout the day. More frequent applications of water are required during the windy season or when fugitive dust is observed migrating from these areasUsing sprayers on screening operationsApplying water on intermediate soil cover <p>KLF would continue to implement best management practices (BMP) to minimize fugitive dust generated during landfill operations (e.g., water truck used during dry weather). Fugitive dust emissions would be the same as existing conditions and are not anticipated to have a significant adverse effect on air quality.</p>	<p>Fugitive dust is currently managed by KLF personnel <u>in accordance with the Dust Prevention Program described in the KLF <i>Operations Manual</i> (Geosyntec 2023a) and HAR § 11-60.1-33</u>. The site’s water truck is used during dry weather to spray water on access roads and other areas that might otherwise generate windblown dust. The volume of water and frequency of spraying is increased as needed during particularly dry and windy conditions. <u>Site operations personnel utilize a 4,000-gallon water truck to apply water to areas that may be potential dust problems, such as access roads, work areas, and stockpiles. The volume of water and frequency of spraying are increased as needed during particularly dry or windy conditions, or during times of increased truck traffic on site.</u></p> <p><u>The following precautions and operations are implemented on site to prevent the discharge of visible fugitive dust beyond the site property boundary:</u></p> <ul style="list-style-type: none"><u>The site’s water truck is used during dry weather to spray water on access roads and other areas that might otherwise generate windblown dust. The volume of water and frequency of spraying is increased as needed during particularly dry and windy conditions.</u><u>Grading and watering haul roads</u><u>Periodically applying a fine water spray to work areas throughout the day. More frequent applications of water are required during the windy season or when fugitive dust is observed migrating from these areas</u><u>Using sprayers on screening operations</u><u>Applying water on intermediate soil cover</u>
9.4	<p>Increases the population and potential number of vehicles in an area:</p> <ul style="list-style-type: none">The creation of apartment buildings, complexes, and residential communities may increase the overall population in an area. Increasing the population in an area may inadvertently lead to more air pollution via vehicle exhaust. Vehicle exhaust releases molecules in the air that negatively impact human health and air quality, as they are known lung irritants, carcinogens, and greenhouse gases.Ensure that residents keep their vehicle idling time to three (3) minutes or less.Provide bike racks and/or electric vehicle charging stations for residents.Ensure that there are sufficient and safe pedestrian walkways and crosswalks throughout and around the development.	<p>The Proposed Action does not include the creation of apartment buildings, complexes, residential communities or other facilities that may increase the overall population in the Kekaha Region (See Final EA Section 3.13).</p> <p>As described in Section 3.14 of the Final EA, the KLF accounts for a small percentage of the overall traffic volume on Kaumuali’i Highway in the vicinity of the KLF. The Proposed Action would not change the quantity of waste received nor the number of commercial and non-commercial loads accepted at the facility. Therefore, there would not be any significant changes to landfill-related traffic on Kaumuali’i Highway. The Hawai’i Department of Transportation (HDOT) confirmed in a letter dated September 13, 2023 (see Comment # 13 below) that significant adverse impacts to State roadways were not anticipated.</p>	<p>No edits required.</p>

	Comment	Response	Corresponding Edit in Final EA or Technical Appendix
	<ul style="list-style-type: none"> Conduct a traffic study to ensure that the new development does not significantly impact traffic in the area. 		
10	DOH, Clean Water Branch (email dated August 8, 2023)		
10.1	<p>The Department of Health, Clean Water Branch (CWB) revised a memorandum, July 28, 2023, notifying other agencies and project owners that CWB will no longer respond directly to requests for comments on the documents listed in the memo. The memorandum provided CWB's Standard Comments that agencies and project owners may use as CWB's official comments. The memorandum and standard comments can be located at https://health.hawaii.gov/cwb/files/2023/07/Memorandum-for-CWB-Standard-Project-Comments-07016CMHK.23-part-1-signed.pdf.</p>	Thank you for your comment. We acknowledge that HDOH CWB no longer responds directly to requests for comments on EAs. Kindly see Comment # 12 below for our responses to CWB's Standard Comments.	No edits required.
11	DOH, Clean Water Branch (email dated August 9, 2023)		
11.1	<p>Thank you for reaching out to the State of Hawaii, Department of Health (DOH), Environmental Management Division's (EMD) Clean Water Branch (CWB) requesting comments on the Draft Environmental Assessment for the Kekaha Municipal Landfill Phase II Vertical Expansion Project. CWB offers standard comments on Environmental Assessments, Environmental Impact Statements, and other documents on our website at: Clean Water Branch CWB Standard Comments (hawaii.gov). Please click on the link CWB-Standard-Project-Comments-20221007.pdf (hawaii.gov) for CWB's standard project comments.</p>	See response to Comment # 10.1 above.	No edits required.
12	DOH, Clean Water Branch (Standard Project Comments Memo, dated July 28, 2023)		
12.1	<p>This memo is provided for your information and sharing. You are encouraged to share this memo with your project partners, team members, and appropriate personnel. The Department of Health (DOH), Clean Water Branch (CWB) will no longer be responding directly to requests for comments on the following documents (Pre-consultation, Early Consultation, Preparation Notice, Draft, Final, Addendums, and/or Supplements):</p> <ul style="list-style-type: none"> Environmental Impact Statements (EIS) Environmental Assessments (EA) Stream Channel Alteration Permits (SCAP) Stream Diversion Works Permits (SDWP) Well Construction/Pump Installation Permits Conservation District Use Applications (CDUA) Special Management Area Permits (SMAP) Shoreline Setback Areas (SSA) <p>For agencies or project owners requiring DOH-CWB comments for one or more of these documents, please utilize the DOH-CWB Standard Comments below regarding your project's responsibilities to maintain water quality and any necessary permitting. DOH-CWB Standard Comments are also available on the DOH-CWB website located at: http://health.hawaii.gov/cwb/.</p>	We acknowledge that HDOH CWB no longer responds directly to requests for comments on EAs. Kindly see Comment # 12.2 to 12.6 below for our responses to CWB's Standard Comments.	No edits required.
12.2	<p>The following information is for agencies and/or project owners who are seeking comments regarding environmental compliance for their projects with the Hawaii Administrative Rules (HAR), Chapters 11-53, 11-54 and 11-55. You may be responsible for fulfilling additional requirements related to our program.</p>	Comment acknowledged.	No edits required.

	Comment	Response	Corresponding Edit in Final EA or Technical Appendix
12.3	<p>1. Any project and its potential impacts to State waters must meet the following criteria:</p> <p>a. Antidegradation policy (HAR, Section 11-54-1.1), which requires that the existing uses and the level of water quality necessary to protect the existing uses of the receiving State water be maintained and protected.</p> <p>b. Designated uses (HAR, Section 11-54-3), as determined by the classification of the receiving State waters.</p> <p>c. Water quality criteria (HAR, Sections 11-54-4 through 11-54-8).</p>	See response to Comment # 5.3 above.	No edits required.
12.4	<p>2. You may be required to obtain National Pollutant Discharge Elimination System (NPDES) permit coverage for point source water pollutant discharges into State surface waters (HAR, Chapter 11-55). Point source means any discernible, confined, and discrete conveyance from which pollutants are or may be discharged. For NPDES general permit coverage, a Notice of Intent (NOI) form must be submitted at least 30 calendar days before the commencement of the discharge. An application for a NPDES individual permit must be submitted at least 180 calendar days before the commencement of the discharge. To request NPDES permit coverage, you must submit the applicable form (“CWB Individual NPDES Form” or “CWB NOI Form”) through the e-Permitting Portal and the hard copy certification statement with the respective filing fee (\$1,000 for an individual NPDES permit or \$500 for a Notice of General Permit Coverage). Please open the e-Permitting Portal website located at: https://eha-cloud.doh.hawaii.gov/epermit/. You will be asked to do a one-time registration to obtain your login and password. After you register, click on the Application Finder tool and locate the appropriate form. Follow the instructions to complete and submit the form. The DOH, Environmental Health Administration (EHA) e-Permitting Portal received Cross-Media Electronic Reporting Rule (CROMERR) certification by the Environmental Protection Agency (EPA) for electronic signature. Currently, Applicants and Permittees may now certify and submit EHA Electronic Signature Forms electronically through the EHA e-Permitting Portal without the need to physically send in an ink signature and CD/DVD/flash drive. Beginning January 31, 2023, the DOH-CWB will only utilize electronic signature e-Permitting forms and discontinue the hard-copy signature forms. All hard-copy signature certification e-Permitting forms, including compliance forms, will be inactivated. The electronic signature forms will require electronic signature approval to submit a form to the CWB. For details on how to obtain the electronic signature approval please visit CWB website located at: https://health.hawaii.gov/cwb/announcements/cwb-announces-new-requirement-forelectronic-signature-approval-for-all-submissions-beginning-january-31-2023/. The NPDES NOI or application will be processed after the filing fees submitted and</p>	<p>As discussed in Section 1.2.1 of the Final EA, there is no stormwater discharge point from the KLF Phase II, therefore a request for NPDES exclusion was verbally granted by HDOH in July 2021¹. In addition, the KLF Phase II implements a <i>Spill Prevention, Control, and Countermeasure Plan</i> (Geosyntec 2022) to prevent releases of petroleum products used on-site and, if a release occurs, contaminants are not discharged into surface waters.</p> <p>Section 3.17.2.1 discussed potential surface water impacts from the Proposed Action. No construction activities are proposed as part of the Proposed Action. For operational activities, stormwater is currently managed as described in the <i>Surface Water Management Plan</i> (Geosyntec 2023a) and described in Section 3.17.1 of the Final EA. Surface water drainage features within the KLF will be modified slightly (i.e., continued upwards as the expansions are filled in) to accommodate the increase in side slope lengths due to the proposed vertical increase. Tetra Tech (2022) conducted an engineering analysis of the stormwater management system and concluded that it is adequately sized to accommodate the anticipated increase in stormwater flow and velocities from the Proposed Action. Therefore, no stormwater discharge point is anticipated from the implementation of the Proposed Action and no NPDES permit is anticipated to be required (consistent with the exclusion granted by HDOH in July 2021). Therefore, no significant impacts to surface water resources are anticipated with implementation of the Proposed Action and the Proposed Action is anticipated to be compliant with HAR Chapter 11-55.</p>	No edits required.

¹ A request for exclusion under the NPDES General Permit was submitted to the HDOH by the County of Kaua‘i on September 7, 2007, and resubmitted on February 27, 2013. The request for exclusion was verbally granted by HDOH July 1, 2021 (D. Moises, HDOH, personal communication—email to COK, July 6, 2021).

	Comment	Response	Corresponding Edit in Final EA or Technical Appendix
	<p>payable to the "State of Hawaii" in the form of a pre-printed check, cashier's check, money order, or as otherwise specified by the director is received by the CWB. Some of the activities requiring NPDES permit coverage include, but, are not limited to:</p> <p>a. Discharges of Storm Water.</p> <p>i. For Construction Activities Disturbing One (1) or More Acres of Total Land Area. By HAR Chapter 11-55, an NPDES permit is required before the start of the construction activities that result in the disturbance of one (1) or more acres of total land area, including clearing, grading, and excavation. The total land area includes a contiguous area where multiple separate and distinct construction activities may be taking place at different times on different schedules under a larger common plan of development or sale.</p> <p>ii. For Industrial Activities for facilities with primary Standard Industrial Classification (SIC) Codes regulated in the Code of Federal Regulations (CFR) at 40 CFR 122.26(b)(14)(i) through (ix) and (xi). If a facility has more than one SIC code, the activity that generates the greatest revenue is the primary SIC code. If revenue information is unavailable, use the SIC code for the activity with the most employees. If employee information is also unavailable, use the SIC code for the activity with the greatest production.</p> <p>ii. From a small Municipal Separate Storm Sewer System (along with certain non-storm water discharges).</p> <p>b. Discharges to State surface waters from construction activity hydrotesting or dewatering.</p> <p>c. Discharges to State surface waters from cooling water applications.</p> <p>d. Discharges to State surface waters from the application of pesticides (including insecticides, herbicides, fungicides, rodenticides, and various other substances to control pest) to State waters.</p> <p>e. Well-Drilling Activities.</p> <p>Any discharge to State surface waters of treated process wastewater effluent associated with well drilling activities is regulated by HAR Chapter 11-55. Discharges of treated process wastewater effluent (including well drilling slurries, lubricating fluids wastewater, and well purge wastewater) to State surface waters requires NPDES permit coverage.</p> <p>NPDES permit coverage is not required for well pump testing. For well pump testing, the discharger shall take all measures necessary to prevent the discharge of pollutants from entering State waters. Such measures shall include, if necessary, containment of initial discharge until the discharge is essentially free of pollutants. If the discharge is entering a stream or river bed, best management practices (BMPs) shall be implemented to prevent the discharge from disturbing the clarity of the receiving water. If the discharge is entering a storm drain, the discharger must obtain written permission from the owner of the storm drain prior to discharge. Furthermore, BMPs shall be implemented to prevent the discharge from collecting sediments and other pollutants prior to entering the storm drain.</p>		
12.5	3. A Section 401 Water Quality Certification (WQC) may be required if your project/activity:	The Proposed Action does not require a federal license or permit and would not result in a discharge into WOTUS, therefore a Section 401 WQC is not required.	No edits required.

	Comment	Response	Corresponding Edit in Final EA or Technical Appendix
	<p>a. Requires a federal license or permit; and</p> <p>b. May result in a discharge into waters of the United States (WOTUS). "License or permit" means any permit, certificate, approval, registration, charter, membership, statutory exemption, or other form of permission granted by an agency of the federal government to conduct any activity which may result in any discharge.</p> <p>The term "discharge" is defined in Clean Water Act, Subsections 502(16), 502(12), and 502(6).</p> <p>Examples of "discharge" include, but are not limited to, allowing the following pollutants to enter WOTUS from the surface, or in-water: solid waste, rock/sand/dirt, heat, sewage, construction debris, any underwater work, chemicals, fugitive dust/spray paint, agricultural wastes, biological materials, industrial wastes, concrete/sealant/epoxy, and washing/cleaning effluent.</p> <p>Determine if your project/activity requires a federal permit, license, certificate, approval, registration, or statutory exemption by contacting the appropriate federal agencies (e.g. Department of the Army (DA), U.S. Army Corps of Engineers (COE), Pacific Ocean Division Honolulu District Office (POH) Tel: (808) 835-4303; U.S. Environmental Protection Agency, Region 9 Tel: (415) 947-8021; Federal Energy Regulatory Commission Tel: (866) 208-3372; U.S. Coast Guard Office of Bridge Programs Tel: (202) 372-1511). If your project involves work in, over, or under waters of the United States, it is highly recommended that you contact the COE-POH regarding their DA permitting requirements.</p> <p>To request an individual Section 401 WQC, you must complete and submit the Section 401 WQC application together with \$1,000 filing fee made payable to the "State of Hawaii" in the form of a check or other method specified by the department. This application is available on the e-Permitting Portal website located at: https://eha-cloud.doh.hawaii.gov/epermit/.</p> <p>The processing of a Section 401 WQC application will begin after the CWB has received filing fee. The processing of a Section 401 WQC application is also subject to the compliance with 40 CFR §121 requirements.</p> <p>Beginning January 31, 2023, the DOH-CWB will only utilize electronic signature ePermitting forms and discontinue the hard-copy signature forms. All hard-copy signature certification e-Permitting forms, including compliance forms, will be inactivated.</p> <p>The electronic signature forms will require electronic signature approval to submit a form to the CWB. For details on how to obtain the electronic signature approval please visit CWB website located at: https://health.hawaii.gov/cwb/announcements/cwb-announces-new-requirement-forelectronic-signature-approval-for-all-submissions-beginning-january-31-2023/.</p> <p>Please see HAR, Chapters 11-53 and 11-54 for the State's Water Quality Standards and for more information on the Section 401 WQC. HAR, Chapters 11-53 and 11-54 are available on the CWB website at: http://health.hawaii.gov/cwb/.</p>		

	Comment	Response	Corresponding Edit in Final EA or Technical Appendix
12.5	<p>4. Please note that all discharges related to the project construction or operation activities, whether or not NPDES permit coverage and/or Section 401 WQC are required, must comply with the State’s Water Quality Standards. Noncompliance with water quality requirements contained in HAR, Chapters 11-53 and 11-54, and/or permitting requirements, specified in HAR, Chapter 11-55, may be subject to penalties of \$25,000 per day per violation and up to two (2) years in jail.</p>	<p>See the response to Comment #5.3 above.</p> <p>The County will comply with the State Water Quality Standards through onsite management of its stormwater as described in the KLF’s <i>Surface Water Management Plan</i> (Geosyntec 2023a) and Section 1.2.1.2 of the Final EA, and through its existing RCRA Subtitle D base liner and LCRS and groundwater monitoring.</p> <p>No significant impacts to surface water or groundwater resources are anticipated with implementation of the Proposed Action.</p>	No edits required.
12.6	<p>5. It is the State’s position that all projects must reduce, reuse, and recycle to protect, restore, and sustain water quality and beneficial uses of State waters. Project planning should:</p> <p>a. Treat storm water as a resource to be protected by integrating it into project planning and permitting. Storm water has long been recognized as a source of irrigation that will not deplete potable water resources. What is often overlooked is that storm water recharges ground water supplies and feeds streams and estuaries; to ensure that these water cycles are not disrupted, storm water cannot be relegated as a waste product of impervious surfaces. Any project planning must recognize storm water as an asset that sustains and protects natural ecosystems and traditional beneficial uses of State waters, like community beautification, beach going, swimming, and fishing. The approaches necessary to do so, including low impact development methods or ecological bio-engineering of drainage ways must be identified in the planning stages to allow designers opportunity to include those approaches up front, prior to seeking zoning, construction, or building permits.</p> <p>b. Clearly articulate the State’s position on water quality and the beneficial uses of State waters. The plan should include statements regarding the implementation of methods to conserve natural resources (e.g. minimizing potable water for irrigation, gray water re-use options, energy conservation through smart design) and improve water quality.</p> <p>c. Consider storm water Best Management Practice (BMP) approaches that minimize the use of potable water for irrigation through storm water storage and reuse, percolate storm water to recharge groundwater to revitalize natural hydrology, and treat storm water which is to be discharged.</p> <p>d. Consider the use of green building practices, such as pervious pavement and landscaping with native vegetation, to improve water quality by reducing excessive runoff and the need for excessive fertilization, respectively.</p> <p>e. Identify opportunities for retrofitting or bio-engineering existing storm water infrastructure to restore ecological function while maintaining, or even enhancing, hydraulic capacity. Consideration should be given to areas prone to flooding, or where the infrastructure is aged and will need to be rehabilitated.</p>	<p>See the responses to Comments #5.3 and #12.5 above.</p> <p>KLF Phase II operates in accordance with the requirements of KLF’s Solid Waste Management Permit (SWMP) No. LF-0042-16 issued by the State of Hawai’i Department of Health (HDOH). The Proposed Action will require a modification to SWMP No. LF-0042-16, which will be processed by the HDOH. The County has and will continue to comply with conditions of its SWMP related to water quality.</p> <p>As described above, Stormwater at the KLF is managed as described in the <i>Surface Water Management Plan</i> (Geosyntec 2023a). As required by KLF’s SWMP No. LF-0042-16 special condition E.5, updates to the <i>Surface Water Management Plan</i> are required to be prepared and submitted annually to HDOH. No significant impacts to surface water resources are anticipated from the Proposed Action.</p> <p>Any recycling and re-use of stormwater on site for irrigation or dust suppression would need to be considered in context to the SWMP requirements and reviewed by HDOH.</p> <p>No new buildings or impervious areas are proposed as part of the Proposed Action.</p>	No edits required.

	Comment	Response	Corresponding Edit in Final EA or Technical Appendix
13	Department of Transportation (DOT), Statewide Transportation Planning Office (letter dated September 13, 2023)		
13.1	<p>Thank you for your letter, dated August 8, 2023, requesting the Hawaii Department of Transportation's (HDOT) review and comments on the Draft Environmental Assessment (EA) for the subject project. HDOT understands the County of Kauai, Department of Public Works, Solid Waste Division is proposing a vertical expansion of Phase II at the Kekaha Municipal Solid Waste Landfill located in Kekaha, Kauai. The proposed project would provide additional air space volume for the placement of refuse while the new landfill facility or other long-term landfill capacity solutions are completed.</p> <p>The site is adjacent to Kaumualii Highway (State Route 50) with existing access via a private road. Based on the project description and location, HDOT does not anticipate any significant adverse impacts to State roadways, therefore we have no comments to provide.</p> <p>Please submit any subsequent land use entitlement-related requests for review or correspondence to the HDOT Land Use Intake email address at DOT.LandUse@hawaii.gov.</p>	Thank you for your comment. The County acknowledges that based on the information in the Draft EA, DOT does not anticipate any significant adverse impacts to state roadways.	No edits required.
14	County of Kaua'i, Department of Public Works (DPW), Engineering Division (letter dated September 25, 2023)		
14.1	We completed our review of the subject draft environmental assessment that was submitted to our office with your cover letter dated August 8, 2023. Proposed grading work for the subject project is exempt from obtaining a grading permit, since the work is within a government controlled area with active monitoring of activities consistent with the County's Sediment & Erosion Control Ordinance 808. In addition, because the subject project lies within the existing Phase I footprint, we offer no comments with respect to the County of Kaua'i's and Floodplain Management Ordinance 831.	Thank you for your comment. The County acknowledges that the project is exempt from obtaining a grading permit and from Floodplain Management Ordinance 831.	No edits required.
15	Nā Kia'i Kai, Kaunalewa and Earthjustice (letter dated September 7, 2023)		
15.1	<p>Nā Kia'i Kai, Kaunalewa, and Earthjustice hereby submit comments on the Draft Environmental Assessment ("DEA") and Anticipated Finding of No Significant Impact ("AFNSI") for the Kekaha Municipal Landfill Phase II Vertical Expansion.</p> <p>Nā Kia'i Kai is a community-based organization established by West Kaua'i residents, including Native Hawaiian fishers and cultural practitioners, to protect West Kaua'i's coastal waters, humans, and aquatic life from pollution. Kaunalewa is a Native Hawaiian beneficiary-led nonprofit organization dedicated to cleaning up brownfield sites and ending environmental injustice in West Kaua'i. Earthjustice is the premier nonprofit public interest environmental law organization and has a Mid-Pacific Office in Honolulu. For years, Earthjustice has represented West Kaua'i community groups, including Nā Kia'i Kai, in numerous matters to combat environmental injustices on the west side, such as stream diversions, toxic pesticide use, and ocean water pollution.</p>	Thank you for your comment. Each of the major comment sections to your letter have been separated into separate lines in this comment matrix to facilitate comprehensive responses. Kindly see Comments # 15.2 to 15.11 below for responses to your letter.	No edits required.


	Comment	Response	Corresponding Edit in Final EA or Technical Appendix
15.2	<p>The County of Kaua‘i (“County”) proposes to expand the Kekaha Landfill for a fifth time since 1998, which would represent the landfill’s greatest height increase to date of more than 50 feet. The Kekaha Landfill is the island’s <i>only</i> landfill. The landfill is located close to the shoreline in a low-elevation, former wetland area prone to heavy rains and other coastal hazards.</p> <p>Portions of the Kekaha Landfill remain unlined and groundwater monitoring wells downgradient from both the unlined and lined portions are contaminated with elevated levels of arsenic. Over the years, the landfill has been a dumping site for toxic substances including pesticides, asbestos, disaster debris, and hazardous waste.</p>	<p>The County acknowledges that the Kekaha Municipal Solid Waste Landfill (KLF) is the island of Kaua‘i’s only landfill.</p> <p>The County also acknowledges the KLF location in proximity to the shoreline however, would like to clarify that KLF is located near Kekaha on the leeward side of the island and as described in Section 3.3.1 of the Final EA, the mean annual rainfall in Kekaha is approximately 18.2 inches and range from less than 1 inch in the summer months to 2 to 3 inches in the winter. This would indicate the area is not prone to heavy rains but rather is an area with some of the lowest average rainfall on the island (Giambelluca et. al 2013).</p> <p>As discussed in Section 3.17.1.2 of the Final EA, Groundwater monitoring has identified several statistically significant increases (SSIs) of monitored parameters, including ammonia as nitrogen (N), arsenic (As), calcium (Ca), potassium (K), and total organic carbon (TOC) (Geosyntec 2023b). Alternative source demonstration (ASD) reports have indicated that the elevated levels may be due to sources other than the landfill including fertilizer application on agricultural land upgradient of the KLF, biodegradation of organic material prior to construction of Phase II, the unlined Phase I site, and impacts from the adjacent aquaculture facility (Geosyntec 2023b). Naturally occurring arsenic in the volcanic soils was also cited as a possible source (Geosyntec 2023b).</p> <p>The HDOH, Solid and Hazardous Waste Branch (SHWB), in a letter dated 22 May 2014, responded to the previously mentioned ASDs with the following acceptance of ASD findings:</p> <ul style="list-style-type: none">• The ammonia as N SSIs is not related to Phase II landfill releases, but due to fertilizer compounds associated with upgradient agricultural activities and biodegradation of organic fill materials.• The TOC SSIs are likely from the Phase I landfill. SHWB noted that the Phase I wells identified TOC at significantly greater concentrations and earlier than the detection of TOC in well MWII-6.• SHWB agreed that the calcium and potassium SSIs observed at MWII-7 are not related to Phase II landfill releases but are associated with impacts from the adjacent Aquaculture Facility (Geosyntec 2023b). <p>The County is currently working with the HDOH to conduct the following: approve an updated monitoring plan; install new monitoring wells; further investigate arsenic in groundwater and background values for detection monitoring parameters; and reevaluate intra-well statistics.</p> <p>As discussed in Section 3.6.1.1 of the Final EA, the KLF does not accept materials designated as hazardous waste under 40 CFR Part 261, polychlorinated biphenyl wastes as defined in 40 CFR Part 761, regulated hazardous waste as defined in HAR 11-261 through 268, radioactive materials, insecticides and poisons, untreated infectious waste, or explosive materials. In accordance with HAR § 11-58.1-65(b) and (c), scrap vehicles, tires, compressed gas tanks, vehicle batteries, and chlorofluorocarbon (i.e., freon)-containing appliances (e.g., white goods, such as</p>	No edits required.

	Comment	Response	Corresponding Edit in Final EA or Technical Appendix
		<p>refrigerators, freezers, and air conditioners) may not be disposed of at the KLF Phase II. Operating procedures currently in place to prevent, detect, and manage wastes not acceptable for disposal at the facility are outlined in the <i>Operations Manual</i> (Geosyntec 2023a). The Hazardous Waste Exclusion Program procedures include customer notification, scale house monitoring and inspection, random load checks, and landfill working face inspections. If hazardous wastes are discovered during inspections, KLF personnel will reject the load and document the incident in the Daily Logbook. If hazardous waste has been unloaded, KLF personnel will transport the waste to the temporary storage area, and the waste will be identified, logged, placed in bins or separated onto pallets, labeled, and stored until a licensed contractor transports the waste off site for proper disposal, as required by federal and state regulations (Geosyntec 2023a).</p> <p>As the only permitted MWS landfill of the island, the KLF has historically and would continue to accept non-hazardous disaster debris.</p> <p>The types of waste materials accepted at the KLF would not change under the Proposed Action and current permitted procedures to prevent disposal of hazardous waste at the facility would be maintained.</p>	
15.3	The proposed height increase would merely serve as a quick fix to a long-term problem.	<p>The Proposed Action is not intended to be a “quick fix to a long-term problem” but rather to utilize existing infrastructure to manage the County’s MSW while the County continues to work on the long-term solution. Section 1.2.3 of the Final EA discusses the County’s history of activities to develop a long-term municipal solid waste capacity solution for the island of Kaua’i. These include recycling and waste diversion programs, the siting of a new landfill site, and potential lateral expansion of a Phase II, Cell three at KLF.</p> <p>The County’s long-term waste management strategy is presented in the County’s 2021 update to its Integrated the Solid Waste Management Plan (ISWMP, Jacobs 2021). A key component of that plan is solid waste reduction and recycling which is discussed in Section 1.2.3.1 of the Final EA. Since the Zero Waste Resolution was passed by the County in 2011, the County’s recycling and waste diversion program has achieved 40% diversion of waste generated on island. Furthermore, the County is currently exploring further options to increase diversion efforts including food residual composting, construction and demolition recycling, and possibly curbside recycling.</p> <p>Although the County continues to evaluate options to increase its landfill diversion rate, implementation of recycling and waste diversion programs cannot eliminate the need for landfill capacity and as stated in Section 1.3 of the Final EA, the currently permitted KLF Phase II (the island’s only MSW landfill) is projected to reach capacity in June 2027². The County understands there is a critical need to identify a long-term MSW capacity solution for the Island of Kaua’i. However, the planning, permitting, and implementation of any potential long-term MSW capacity solution is anticipated to require more than 5 years (i.e., would occur after June</p>	See additional text added to Section 1.2.3.1 describing the County’s waste diversion efforts.

² The anticipated capacity reached date of the currently permitted Phase II landfill was disclosed as October 2026 in the KLF Phase II Vertical Expansion Draft EA published on August 8, 2023. However, since the Draft EA was published, the KLF 2023 Annual Operating Report (Geosyntec 2023c) was published and based on the updated landfill waste mass density and daily waste disposal rates, Geosyntec updated the anticipated capacity reached date to June 2027. This slight increase in timeline to the anticipated capacity date does not change the Project’s purpose and need which is to prolong the life of the KLF prior to exhausting the island’s only permitted landfill airspace and to provide safe disposal capacity of MSW in Kaua’i County while a long-term MSW capacity solution can be identified.


	Comment	Response	Corresponding Edit in Final EA or Technical Appendix
		<p>2027, See Section 2.6.2.1 of the Final EA), at which time the Island of Kauaʻi would be without a landfill for the safe disposal of MSW. The lack of a permitted MSW landfill would result in adverse effects on the environment and public health. The proposed vertical expansion of the Phase II landfill is expected to add an additional 2 to 4 years of capacity to the KLF, depending on future waste intake rates and potential waste diversion strategies, thus providing landfill capacity until a long-term MSW capacity solution can be implemented.</p>	
15.4	<p>The County has its eyes set on constructing a <i>new landfill</i> just north of the current landfill on Mānā Plain agricultural lands. Both landfill developments would perpetuate and deepen environmental injustices that these largely Native Hawaiian, low-income communities have been enduring for many decades.</p>	<p>As discussed in Section 1.2.3.2 of the Final EA, the County has attempted to site a new MSW landfill in locations other than the Mānā Plain agricultural lands. The County has completed 3 siting studies (2000, 2007, and 2012). In summary, the outcome of extensive community consultation and siting studies was the selection of a new landfill site at Maʻalo, a 270-acre state owned parcel north of Līhuʻe. The basis for this decision was that it was the only site with a willing landowner, that allowed for the longest site life (estimated 264 years), was centrally located, had the least annual cost, and was the highest ranking on the Community Criteria Evaluation of the sites evaluated (AECOM 2012). The details of this 2013 siting effort are included in Section 3.2.1 of the 2018 Final EIS that was prepared for the proposed Maʻalo site (available for review at: https://files.hawaii.gov/dbedt/erp/EA_EIS_Library/2018-08-08-KA-FEIS-New-Kauai-Landfill.pdf). Although the County completed the HRS 343 review process for the proposed Maʻalo landfill site, during the permitting process, the County had to abandon its plans to develop a new MSW landfill and resource recovery park at Maʻalo because the Federal Aviation Administration (FAA) and the State of Hawaiʻi Department of Transportation’s (HDOT) Airports Division opposed the project due to the potential for the landfill to increase bird strikes at Līhuʻe Airport. More details regarding the FAA and HDOT opposition is provided in the response to Comment #15.7 below.</p> <p>As stated in Section 1.2.3.2 of the Final EA, all eight original potential landfill sites evaluated in the 2001 to 2002, 2007, and 2012 siting studies are infeasible or problematic to develop.</p> <p>The Final EA references that the County has identified another possible site on a parcel owned by the Agriculture Development Corporation (ADC) in Kekaha. The County is in the early stages of assessing the site and planning for the new landfill and considerations of potential environmental impacts and environmental injustice from a new landfill would be fully reviewed as part of the HRS Chapter 343 review process. The Proposed Action under review here does not include the siting or construction of a new landfill and therefore the environmental impact review and consideration of environmental justice is limited to the Proposed Action (the vertical expansion of KLF Phase II) and no-action alternative.</p> <p>As the issue of Environmental Justice relates to the existing landfill operations in KLF Phase II and the Proposed Action, the County’s Host Community Benefits Fund was founded in 2008 to “balance the need for safe disposal of solid waste with the sacrifices borne by the host community” (Kekaha HCB 2023). This community</p>	<p>See additional text added to Section 1.2.3.2 of the Final EA describing the County’s previous attempts to site and permit a new landfill.</p> <p>See also minor updates to the discussion of the Host Community Benefits Fund in Section 3.13.1.3 of the Final EA</p>

	Comment	Response	Corresponding Edit in Final EA or Technical Appendix
		benefit fund is managed by the Citizens Advisory Committee which funds projects that directly benefit the Kekaha Community and include community improvements, economic revitalization, and various environmental sustainability, educational, cultural, art, and health and wellness programs. The Host Community Benefits Program would continue with the approval of the vertical expansion, thereby extending this benefit to the community for 3-5 years and would continue to offset the community's burden of hosting the landfill. Please see the Kekaha Host Community Benefits Program's 2023 report for more details regarding the program and the various projects funded by the program: http://www.kekahahcb.net/khcb-document-library.html .	
15.5	<p>Under the Hawai'i Environmental Policy Act ("HEPA"), Hawai'i Revised Statutes ("HRS") chapter 343, an environmental assessment ("EA") must openly assess "whether an action <i>may have a significant effect</i>" on the environment, <i>id.</i> § 343-1 (emphasis added), thereby requiring preparation of a full environmental impact statement ("EIS"), <i>id.</i> § 343-5(b). <i>See also</i> HRS § 343-5(c)(4).</p> <p>There can be no question that expanding landfill capacity in this sensitive coastal area at the very least meets the minimum threshold for a full EIS, which must include full disclosure of harmful effects as well as an updated and comprehensive analysis of non-west side alternatives. Without this information, the County will be ill-equipped to "ensure that environmental concerns are given appropriate consideration" in these critical decisions about the island's waste management. HRS § 343-1.</p>	<p>The Draft and Final EA have been prepared in compliance with HRS chapter 343 and HAR Section 11-200.1-18. Per HRS Chapter 343-5(c)(4) an environmental impact statement shall be required if the agency finds that the proposed action may have a significant effect on the environment. HAR Section 11-200.1-13 provides the significance criteria agencies must use when considering the significance of potential environmental effects of the proposed action on the quality of the environment. This significance criteria are analyzed in Section 5.1 of the Final EA in accordance with HAR Section 11-200.1-13. Based upon the analysis and findings presented in the Final EA, implementation of the Proposed Action is not expected to result in a significant adverse direct, indirect, or cumulative impact on the quality of the environment. As such, the County DPW anticipates issuing a Finding of No Significant Impact (FONSI) in accordance with HRS Chapter 343.</p> <p>As discussed in section 2.6 of the Final EA, an alternative considered but not carried forward through the EA was the siting and construction of a new landfill facility. This would encompass the "non-west side alternatives" referenced in this comment. The siting and construction of a new landfill facility was not analyzed in the Draft and Final EA because that alternative would not meet the Project's purpose and need which is to provide safe disposal capacity of MSW in Kaua'i County while a long-term MSW capacity solution can be identified. As discussed in the response to Comment # 15.4 and as discussed in Section 2.6.2.1 of the Final EA, the task of siting a new landfill facility on Kaua'i, involves numerous steps and substantial time which cannot be accomplished prior to 2027, when the KLF Phase II is projected to reach capacity. Therefore, this alternative does not meet the Project purpose of providing permitted landfill airspace before the existing permitted landfill airspace is exhausted and was not carried forward in the EA analysis.</p> <p>As noted in the Final EA, the County is proceeding with plans to site a new landfill as part of its long-term planning objectives. This would include completion of a full review under HRS Chapter 343 for any proposed new landfill site.</p>	No edits required.
15.6	<p>I. HISTORY OF ENVIRONMENTAL INJUSTICE IN KEKAHA</p> <p>For more than a century, Kekaha and surrounding areas in West Kaua'i have borne the brunt of the island's environmental and cultural injustices. Beginning in the late 1800s, sugar plantations filled and channelized the Mānā Plain—once home to a thriving network of wetlands and freshwater springs—to artificially lower the groundwater table and create dry land suitable for sugar cultivation. These dewatering efforts resulted in forty miles of unlined drainage</p>	<p>The County acknowledges the history of land uses within the Mānā Plain that may have contributed to changes in the landscape including changes to historic wetlands, freshwater springs, and the groundwater table. However, the Proposed Action does not propose to impact, use, or divert surface or groundwater and therefore would not contribute to the effects prior and existing land uses may have on the Mānā Plain's historic hydrology.</p>	No edits required.

	Comment	Response	Corresponding Edit in Final EA or Technical Appendix
	<p>ditches, two pumping stations, and at least six ocean outfalls that span the Mānā Plain and the West Kauaʻi coastline from Kekaha to Polihale. The sugar plantations also dammed and drained the Waimea River and its tributaries to irrigate their crops. This water pumping and water diversion infrastructure is still in operation today and has all but destroyed the complex stream, wetland, and reef ecosystems along West Kauaʻi from mauka to makai.</p> <p>After Kekaha Sugar Company—the last sugar plantation on Kauaʻi—closed in 2000, it did little to clean up and remediate the land it had once occupied, leaving the soil and water contaminated with long-lasting pesticides like atrazine, and the Sugar Mill and related facilities and infrastructure left abandoned and deteriorating. Sediment samples from these sites have shown elevated levels of arsenic, dioxins/furans, and mercury. There are minimal barriers between this dilapidated infrastructure and nearby homes (including state elderly housing and a Department of Hawaiian Homelands affordable housing subdivision), a church, a Native Hawaiian charter school, drainage ditches leading to the ocean, and beaches. The Sugar Mill site also contains eleven underground storage tanks, transformers and capacitors that are suspected to release polychlorinated biphenyls (“PCB”), and pulverized asbestos in buildings.</p> <p>Fig. 1. Former Kekaha Sugar Mill (Source: County of Kauaʻi Office of Economic Development FY2021 US EPA Brownfield Community-Wide Assessment Grant Application for Kekaha Kauaʻi)</p>  <p>With the end of the plantation era, the biotech industry saw an opening to seize upon agricultural lands on and along the Mānā Plain and quickly transformed West Kauaʻi into ground zero for agrochemical operations. Rampant pesticide use on the west side came to a head in 2006 and 2008, when students and staff at Waimea Canyon Middle School were taken to the hospital suffering symptoms of pesticide exposure. Restricted use pesticide applications on the island and in the state continue to be substantially concentrated in West Kauaʻi.</p>	<p>The County acknowledges the history of sugar plantations, sugar mills, and other industrial development within the Mānā Plain that may have contributed to environmental pollution including pesticides. However, as discussed in Section 3.17.2 and in 3.18.18 of the Final EA, the Proposed Action is not anticipated to significantly impact groundwater or surface water resources. Groundwater monitoring at the KLF would continue to be conducted under the Proposed Action. Generally, water quality may be affected by the development in the Mānā Plain region; however, potential impacts from the Proposed Action are to be minor and would not cause a cumulative impact to water resources when combined other proposed developments in the area.</p> <p>The Proposed Action would allow for continued safe and environmentally-sound disposal of MSW on the island of Kauaʻi while a long-term waste capacity solution is implemented. During the extended operational lifespan of the facility, the KLF would contribute direct, indirect, and induced economic benefits to the Kauaʻi economy. The Proposed Action under review in this EA does not include the siting or construction of a new landfill and therefore the environmental impact review and consideration of environmental justice is limited to the Proposed Action (the vertical expansion of KLF Phase II) and no-action alternative.</p> <p>As noted in the Final EA, the County is proceeding with plans to site a new landfill as part of its long-term planning objectives. This would include completion of a full review under HRS Chapter 343 for any proposed new landfill site.</p> <p>The Host Community Benefit program is anticipated to mitigate significant socio-economic impacts by providing continued fiscal support to the community. Potential impacts from the Proposed Action are anticipated to be less than significant and would not cause a cumulative impact to socioeconomic resources when combined other proposed developments in the area.</p>	

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	<p>Meanwhile, a host of industrial uses have cropped up in and around Kekaha, including a gravel and asphalt plant (located on county lands), a municipal wastewater treatment plant, a shrimp farm that discharges its wastewater to the ocean, a (now abandoned) sand and rock mining operation, a proposed hydroelectric facility that will exacerbate stream diversions and ocean pollution in the region, and a U.S. Navy base that occupies a vast stretch of coastline. This proposed <i>fifth</i> expansion of the Kekaha Landfill, as well as the County’s plan to construct a new landfill on the Mānā Plain on Agribusiness Development Corporation (“ADC”) lands, are the latest in a long line of developments that have relegated West Kaua’i to the island’s dumping grounds.</p> <p>The DEA openly admits that the Kekaha-Waimea census tract is home to higher proportions of Native Hawaiians and Pacific Islanders and lower proportions of white people than the county as a whole. The percentages of families and individuals living below the poverty line in Kekaha-Waimea are higher than the county averages.</p> <p>Now that the County has backed the public into a corner of needing to quickly expand landfill capacity on the island, it comes as little surprise—but with much frustration and outrage—that the County’s final choice is (again) Kekaha.</p>		
15.7	<p>II. FAILURE TO CONSIDER ALTERNATIVES</p> <p>The County must immediately and thoroughly assess alternatives to both the Kekaha Landfill’s proposed expansion and its future plan to site and construct a new landfill on the Mānā Plain. An EA must include “[i]dentification and analysis of . . . alternatives considered.” Haw. Admin. R. (“HAR”) § 11-200.1-18(d)(7). The DEA’s analysis of alternatives falls short for several reasons.</p> <p>First, the County’s assessment of locations for siting and constructing a new landfill facility is based on outdated information. The County identified the eight potential new landfill sites considered in this DEA 23 years ago in 2000, and the list has only narrowed since then. Relying on decades-old information to inform these landfill decisions of grave and long-lasting consequences fails to satisfy the “hard look” standard HEPA requires. <i>See Sierra Club v. Dep’t of Transp.</i>, 115 Hawai’i 299, 342, 167 P.3d 292, 335 (2007) (Under HEPA, courts “must ensure that the agency has taken a ‘hard look’ at environmental factors.”).</p> <p>Second, the County’s decision to dismiss the Ma’alo, Kālepa, and Kīpū sites, but not the Kekaha Landfill or the proposed ADC site, due to concerns about “airport proximity,” lacks any logical support. The DEA lacks any mention of a formal determination by the Federal Aviation Administration (“FAA”) or the Hawai’i Department of Transportation</p>	<p>As discussed in section 2.6 of the Final EA, two other alternatives to the Proposed Action were considered but dismissed from further consideration. Although technically feasible, these two alternatives did not satisfy the purpose of and need for the action. One of the alternatives considered but not carried forward through the EA was the siting and construction of a new landfill facility. This alternative does not meet the Project’s purpose and need because it would not provide safe disposal capacity of MSW in Kaua’i County prior to 2026, when the KLF Phase II is projected to reach capacity. The other alternative considered but not carried forward through the EA was off-island MSW disposal. This alternative does not meet the Project’s purpose and need for multiple reasons, further discussed below.</p> <p>As the Proposed Action and Alternatives under review in the Draft and Final EA do not include the siting or construction of a new landfill, the comments regarding the County’s assessment of locations for siting and constructing a new landfill are not relevant to this environmental review. However, the County will consider these comments during its environmental review of any proposed new landfill in Kaua’i County.</p> <p>Regarding the comment: “The County’s decision to dismiss the Ma’alo, Kālepa, and Kīpū sites, but not the Kekaha Landfill or the proposed ADC site, due to concerns about “airport proximity,” lacks any logical support.” Please consider the following:</p> <ul style="list-style-type: none"> • The record of FAA and HDOT’s written opposition of the Ma’alo site is included in Appendix H to the 2018 FEIS and Section 10.3.2 of the FEIS for the Ma’alo site (R.M. Towhill 2018)³. The FAA and HDOT’s opposition to the 	<p>See additional text added to Section 1.2.3.1 describing the County’s waste diversion efforts.</p> <p>See additional text added to Section 1.2.3.2 of the Final EA describing the County’s previous attempts to site and permit a new landfill.</p> <p>See additional text added to Section 2.6.2 of the Final EA describing the alternatives considered but not carried forward through the EA.</p>


³ The 2018 Final EIS that was prepared for the proposed Ma’alo site is available for review at: https://files.hawaii.gov/dbedt/erp/EA_EIS_Library/2018-08-08-KA-FEIS-New-Kauai-Landfill.pdf.

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	<p>("HDOT") on the aviation impacts of siting a new landfill at the Kālepa or Kīpū sites. Preemptively striking these two sites without any formal determination by FAA or HDOT is unreasonable. Moreover, both the Kekaha Landfill and the proposed ADC site are located in close proximity to the Pacific Missile Range Facility, where aviation occurs. It is conceivable that increasing the Kekaha Landfill's height by more than 40% (<i>i.e.</i>, 51.5 feet), or siting a new landfill at the ADC site, will pose risks to aviation. The County must exhaustively consider all available options, particularly those outside of West Kauaʻi, to avoid expanding and further entrenching environmental injustices in the region.</p> <p>Fig. 2. Current and Proposed Landfill Sites (Source: https://www.facebook.com/zerowastekauai/videos/6293650144003758/) (last visited September 2023)</p> <div><p>New Landfill Site in Relation to Existing Kekaha Landfill</p><p>10:11 / 1:28:35</p></div> <p>Third, the DEA lacks any consideration or assessment of distributing waste disposal throughout the island on an ahupuaʻa, moku, or other community-based level. Before the Kekaha Landfill was expanded to become the island's only landfill, waste disposal facilities were</p>	<p>site is due to the concern of the landfill attracting avian wildlife species (including the endangered nēnē or Hawaiian Goose) within five miles of the Lihue Airport thereby increasing the potential for bird-strikes, coupled with the concern that the Lihue Airport is Kauai's primary public commercial airport which is busy with daily commercial flights and increase potential for bird-strikes would create dangerous conditions for aircraft.</p> <ul style="list-style-type: none">• In its correspondence, the FAA points to the prohibitions set forth in Title 49, United States Code, Section 44718(d) which prohibits new landfill sites within 6 nautical miles of a public airport. Although the County argued in a December 18, 2013 letter (also included in the appendices to the 2018 FEIS³) that the referenced code prohibition does not apply to the Lihue airport (and therefore does not apply to the proposed landfill at Maʻalo), the FAA states in its February 26, 2014 response letter that it maintains its opposition to landfill proposals to be built within 6 nautical miles of an airport that primarily serves commercial air carrier aircraft.• As the Kālepa or Kīpū sites are also located within 6 nautical miles of Lihue airport, the same concerns for proximity to a public commercial airport would apply.• In its February 26, 2014 response letter, the FAA urged county and state official to develop an effective wildlife mitigation plan if the construction of the Maʻalo landfill were to proceed. The County developed a detailed Landfill Wildlife Hazard Assessment (LWHA) (included in Appendix G to the 2018 FEIS³) and Landfill Wildlife Management Plan (LWMP) (included in Appendix H of the 2018 FEIS³) in an attempt to mitigate the FAA and HDOT's concerns for wildlife hazards. However, ultimately the County was unable to reach a mitigated agreement with HDOT (see HDOT letter dated May 23, 2018 on page 10-222 of the 2018 FEIS³) and permits were not attainable for the Maʻalo site as HDOT opposed state authorizations and approvals for the proposed Maʻalo site.• In summary, the County invested many years and significant effort in identifying a new landfill site outside of the Kekaha-Waimea community and completed the necessary environmental review for the site but was unable to negotiate a mitigation plan with HDOT Airports and permits were not attainable for the Maʻalo site as HDOT opposed state authorizations and approvals for the proposed Maʻalo site. <p>Regarding the comment on the KLF's proximity to the Pacific Missile Range Facility, there are two primary facts that make the KLF vertical expansion relative to the Pacific Missile Range different from the Maʻalo site (or the Kālepa or Kīpū sites) relative to the Lihue airport:</p> <ul style="list-style-type: none">• The Pacific Missile Range Facility is not a public commercial airport.• The proposed action to increase the height of the Kekaha Phase II area – is not a new landfill. <p>Therefore, the FAA/HDOT rules regarding siting of new landfills near public airports do not apply in this case.</p> <p>Furthermore, as evidenced by the March 29, 2023 letter from Captain Stevenson of the US Navy (included in Appendix B of the Kekaha Vertical Expansion Draft and</p>	

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	<p>distributed throughout the island. The County should consider implementing a modernized system of distributed waste management, rather than forcing this one community to bear 100% of these burdens. A distributed waste disposal system could also incentivize each community to be more mindful and conservative regarding their own waste generation.</p> <p>Fourth, the DEA lacks thorough analysis of off-island disposal options. The DEA mentions this option in passing but then dismisses it out-of-hand, without any detailed analysis of costs and benefits compared to other alternatives. Aside from H-POWER on O‘ahu, landfills on the continent with more modernized recycling capabilities could provide a viable alternative. Offisland options could fulfill short-term landfill capacity needs while the County assesses other longer-term, on-island solutions outside of West Kaua‘i.</p>	<p>Final EA), the Navy does not anticipate concerns regarding the proposed action from either the Pacific Missile Range Facility, FAA, or other entities.</p> <p>Regarding the comment suggesting the County consider and assess an alternative where waste disposal is distributed throughout the island, this alternative is not feasible as it would not meet the Project’s purpose and need because it would not provide safe disposal capacity of MSW in Kaua‘i County prior to 2027, when the KLF Phase II is projected to reach capacity. Any alternative landfill site, regardless of whether there are multiple sites throughout the island, would involve numerous steps and substantial time as described in Table 2-4 of the Final EA. The County expects that a single new landfill or multiple new landfills cannot reasonably be sited in less than 10 years. If there are significant regulatory, technical, or community issues to overcome, siting a new facility could take much longer (e.g., greater than 10 years). Because this alternative does not meet the Project purpose of providing permitted landfill airspace before the existing permitted landfill airspace is exhausted, it was not carried forward in the Final EA analysis.</p> <p>Regarding the comment concerning the DEA’s lack of through analysis of off-island disposal options, as noted above, this alternative was discussed in Section 2.6.2 of the Draft EA and not carried forward through the analysis because it did not meet the Project’s purpose and need to provide safe disposal capacity of MSW in Kaua‘i County. This alternative was considered in detail in the <i>Alternatives Analysis - Proposed New Kaua‘i Landfill and Resource Recovery Park</i> (AECOM, et. al. 2017) conducted to evaluate potential alternatives to the proposed new Municipal Solid Waste Landfill (MSWLF) and Resource Recovery Park (RRP) on the island of Kaua‘i. A copy of this analysis is included as Appendix I to the 2018 FEIS⁴. Candidates for disposal facilities considered in the analysis included the H-POWER facility on O‘ahu and U.S. mainland landfills. The Alternatives Analysis (AECOM, et. al. 2017) concluded that transshipment of MSW to H-POWER on O‘ahu or to a U.S. mainland landfill would not avoid the need for on-island landfill capacity due to laws prohibiting certain MWS from transshipment to the mainland (i.e. MSW that has more than 3% yard, agricultural waste, industrial waste, infectious waste, loads of predominantly C&D waste, and hazardous waste). On-island landfill capacity would also be needed in the event of disasters (such as hurricane Iniki). Furthermore, continued waste acceptance at the receiving facility (whether H-POWER or on mainland) would be out of the County’s control, could be interrupted by natural disasters, public policy decisions, or contract or labor issues, and therefore may not allow the County to continue to satisfy its mandate to manage Kaua‘i’s waste stream. For these reasons, off-island disposal was not considered a viable alternative to a new MSW landfill on Kauai.</p> <p>Although off-island disposal could be a temporary measure to extend the life of the KLF Phase II landfill, transshipment would be much more costly than on-island disposal, and the high cost associated with off-island disposal would raise waste disposal facility costs and fees and could result in widespread illegal disposal of MSW throughout rural Kaua‘i. Transporting solid waste off-island would also</p>	

⁴The 2018 Final EIS that was prepared for the proposed Ma‘alo site is available for review at: https://files.hawaii.gov/dbedt/erp/EA_EIS_Library/2018-08-08-KA-FEIS-New-Kauai-Landfill.pdf.

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		proportionally increase the likelihood of accidental releases during transport. For these reasons, the off-island disposal alternative was considered to not meet the Project’s purpose and need to provide safe disposal capacity of MSW in Kaua’i County.	
15.8	<p>III. FAILURE TO CONSIDER CUMULATIVE IMPACTS TO WATER QUALITY</p> <p>The DEA fails to disclose and analyze the cumulative impacts that expanding the Kekaha Landfill will have on water quality, when added to past, current, and future water quality impacts along the Mānā Plain. An EA must assess impacts, HAR § 11-200.1-18(d)(7), including “cumulative impacts,” which include “the impact on the environment that results from the incremental impact of the action <i>when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes the other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time,” id. § 11-200.1-2 (emphasis added).</i> The DEA acknowledges that the water table underlying the Mānā Plain is artificially lowered by ADC’s pumping stations, which discharge pumped groundwater and surface water runoff into the nearshore ocean waters. Yet, the DEA does not acknowledge or discuss how dramatically expanding the Kekaha Landfill will exacerbate water contamination, when added to pollution from past, current, and future land uses on the Mānā Plain.</p> <p>The Kekaha Landfill accepts waste including wastewater treatment sludge, septic tank and cesspool pumping, petroleum-contaminated soil, treated medical waste, dead animals, asbestos containing materials, and construction/demolition debris. It has also accepted pesticide contaminated soils from former sugar cane lands located within and outside of Kekaha, as well as disaster debris from Hurricane Iniki. The Kekaha Landfill has been subject to illegal dumping of hazardous waste, including when the landfill was completely unlined.</p> <p>Groundwater monitoring locations along both the unlined and lined portions of the Kekaha Landfill have consistently shown elevated levels of arsenic, in addition to the presence of other contaminants such as cyanide. Sediment at the Sugar Mill ditch has confirmed mercury and arsenic at concentrations above action levels. Water quality testing of drainage ditch waters throughout the Mānā Plain have repeatedly indicated the presence of pesticides. Runoff from the gravel and asphalt plant contains aggregate, oil, and fuel. The shrimp farm is a known source of nutrient pollution and has been associated with fish kill incidents along the coastline. These various contaminants flow into drainage ditches that lead to the ocean. The County should openly acknowledge and disclose the various past, present, and future sources of water pollution in the area, and analyze how adding additional waste at the facility will increase or otherwise affect water contamination within and along the Mānā Plain.</p>	<p>Cumulative impacts, including impacts on the environment that result from the incremental effect of an action when added to other past, present, and reasonably foreseeable future actions, is considered in the Final EA in Section 3.18.</p> <p>The Proposed Action would expand the Phase II landfill above the existing RCRA Subtitle D base liner and LCRS and does not include any expansion of the unlined Phase 1 area. As discussed in Section 3.17.1 of the Draft and Final EA, storm water would continue to be managed on site and no impacts to surface waters from the Proposed Action are anticipated and therefore would not incrementally contribute to the effects from other past, present, and reasonably foreseeable future actions.</p> <p>Regarding groundwater concerns, an engineering analysis of the LCRS piping in the center of the Phase II area confirmed that the piping can structurally withstand the additional load from the Phase II vertical expansion and the Proposed Action would change both the peak day and average annual leachate generation by less than 1 percent (Tetra Tech 2022). The Proposed Action would not change the current KLF groundwater monitoring program or alter existing impacts to groundwater.</p> <p>As discussed in Section 3.6.1.1 of the Final EA, the KLF does not accept materials designated as hazardous waste under 40 CFR Part 261, polychlorinated biphenyl wastes as defined in 40 CFR Part 761, regulated hazardous waste as defined in HAR 11-261 through 268, radioactive materials, insecticides and poisons, untreated infectious waste, or explosive materials. See the response to Comment #15.2 for more details regarding concerns for hazardous waste disposal at KLF.</p> <p>As discussed in Section 3.17.1.2 of the Final EA, Groundwater monitoring has identified several statistically significant increases (SSIs) of monitored parameters, including ammonia as nitrogen (N), arsenic (As), calcium (Ca), potassium (K), and total organic carbon (TOC) (Geosyntec 2023b). Alternative source demonstration (ASD) reports have indicated that the elevated levels may be due to sources other than the landfill including fertilizer application on agricultural land upgradient of the KLF, biodegradation of organic material prior to construction of Phase II, the unlined Phase I site, and impacts from the adjacent aquaculture facility (Geosyntec 2023b). Naturally occurring arsenic in the volcanic soils was also cited as a possible source (Geosyntec 2023b).</p> <p>The County does acknowledge and disclose the various past, present, and future sources of water pollution in the area in the Draft and Final EA; however, as the Proposed Action would not significantly change the leachate generation of the lined KLF facility and the existing LCRS would prevent contamination of soils beneath the landfill, the Proposed Action would not incrementally contribute to the effects from other past, present, and reasonably foreseeable future actions.</p> <p>Therefore, adding additional waste at the KLF will not increase or otherwise affect water contamination within and along the Mānā Plain.</p>	No edits required.

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15.9	<p>IV. FAILURE TO CONSIDER COASTAL HAZARDS</p> <p>The DEA fails to disclose and mitigate potentially devastating impacts from tsunami, hurricanes, severe storms, and other coastal hazards. HEPA includes a baseline requirement that an EA “[i]dentif[y]” and “analy[ze]” impacts, HAR § 11-200.1-18(d)(7), and propose “mitigation measures” to minimize impacts, <i>id.</i> § 11-200.1-18(d)(8). Here, the entire Kekaha Landfill—both the unlined and lined portions—is located within the designated tsunami evacuation zone. Indeed, the entire Mānā Plain is located within the designated tsunami evacuation zone, including the proposed ADC site for a new landfill. The base elevation for Phase II ranges from 6 to 16 feet above mean sea level.</p> <p>Kekaha is also prone to hurricanes, flash flooding, and severe rainfall events that could flood the landfill property. Yet, the DEA contains no analysis of what would happen to the unlined and lined portions of the Kekaha Landfill if a tsunami or other severe wet weather event were to inundate the property and breach the landfill’s drainage systems, or of the combined impacts from the many polluting land uses on the Mānā Plain. It is conceivable that toxic releases from these facilities would individually or in combination render Kekaha uninhabitable, and the nearshore ecosystems destroyed, which is why state law places certain restrictions on siting and expanding landfills in tsunami-prone areas in the first place. <i>See</i> HAR § 11-58.1-12(g). The DEA must fully disclose these potential impacts and propose mitigation measures to inform the County’s decision making.</p>  <p>Fig. 3. West Kaua'i Tsunami Evacuation Zone (Source: https://dod.hawaii.gov/hiema/public-resources/tsunami-evacuation-zone/) (last v Sept. 6, 2023)</p>	<p>Coastal hazards including tsunamis, hurricanes, and sea level rise are discussed in Section 3.9 of the Draft and Final EA.</p> <p>See the following information regarding various coastal hazards provided in Section 3.9.2 of the Draft and Final EA:</p> <ul style="list-style-type: none"> • Tsunamis: “The Proposed Action would take place at elevations ranging from approximately 120 to 171.5 ft amsl, far above the projected and observed tsunami run-up heights. In the unlikely event that a destructive tsunami came ashore in the area of the KLF, the energy of any tsunami would be diminished when it encounters the coastal dune barrier prior to reaching the KLF. The proposed vertical expansion area as well as KLF’s operational infrastructure would also be protected against tsunami wave action by the Phase I landfill feature. The potential for tsunami-related damage is low.” • Hurricanes and Severe Storms: “High winds and flooding could adversely impact KLF infrastructure and buildings. However, as described in Section 3.9.1, the KLF’s Emergency Action Plan (Geosyntec 2023a) provides detailed procedures to be implemented prior to, during, and after a large storm event or hurricane to prevent injuries and minimize property damage. The Emergency Action Plan would continue to be implemented with the Proposed Action. With implementation of these procedures, the Proposed Action is anticipated to have less than significant short- and long-term impacts from tropical cyclones and severe storms. • Sea Level Rise: “The KLF is outside of the 3.2-ft sea level rise exposure area, which is predicted to be met or exceeded by year 2100 (Hawai’i Climate Change Mitigation and Adaptation Commission 2021). Therefore, the KLF is not expected to be impacted by sea level rise during the operational period of the Proposed Action (Years 2026 to 2029) nor the 30-year period of post-closure care thereafter. The potential for adverse impacts from sea level rise is low.” 	No edits required.
15.10	<p>V. FAILURE TO CONSIDER CULTURAL IMPACTS</p> <p>The DEA fails to disclose and mitigate impacts to Native Hawaiian traditional and customary practices. HEPA defines “effects” to include “cultural effects.” HAR § 11-200.1-2. Although the DEA acknowledges that “cultural practices such as burial practices, fishing, and recreational activities” occur in the vicinity of the Kekaha Landfill, the DEA declares in conclusory fashion that “no impacts to these cultural practices are anticipated,” and, therefore, “no mitigation actions are necessary.” This conclusion lacks any merit. For example, Native</p>	<p>On behalf of the County, Cultural Surveys Hawai’i (CSH) conducted a Cultural Impact Assessment (CIA) for the Proposed Action which is included in the FEA as Appendix E. As discussed in Section 3.4.1 of the Draft and Final EA, CSH identified the following cultural practices within Waimea Ahupua’a: fishing, farming (kalo [taro], rice, and sugarcane), limu (seaweed) gathering, hunting, salt production, canoe production, recreational activities, weaving practices, hula, mo’olelo (stories), wahi pana (storied places), mele (songs), and religious activities and burial practices. No ongoing cultural practices were identified within the KLF site during background</p>	Additional discussion of potential effects from the Proposed Action to concerns related to the environment and broader community added to Section 3.4.2.1 of the Final EA.

	Comment	Response	Corresponding Edit in Final EA or Technical Appendix
	<p>Hawaiian fishers and cultural practitioners fish and gather limu along the West Kaua‘i coastline. Because groundwater underlying the Kekaha Landfill ultimately flows to the ocean, groundwater contamination from both the unlined and lined portions of the landfill could significantly and adversely affect Native Hawaiian fishing, gathering, and ceremonial practices along the coastline, particularly when added to other sources of water pollution on the Mānā Plain. The County should consider, disclose, and mitigate these impacts to fulfill its constitutional duties to protect Native Hawaiian traditional and customary rights under article XII, section 7 of the Hawai‘i Constitution.</p>	<p>research and community consultation. However, the KLF is in the general vicinity of ongoing cultural practices such as burial practices, fishing, and recreational activities.</p> <p>Section 3.4.2 of the Final EA has been expanded to discuss the Proposed Action’s potential impacts to marine resources.</p>	
15.11	<p>VI. A FINDING OF NO SIGNIFICANT IMPACT IS UNWARRANTED; A FULL EIS IS REQUIRED</p> <p>Based on the foregoing, the County’s proposal to expand the Kekaha Landfill not only “<i>may</i> have a significant effect” on the environment but <i>will</i> have lasting impacts on West Kaua‘i communities, thus necessitating a full EIS. HRS § 343-4(c)(4) (emphasis added).</p> <p>The minimum threshold for preparation of an EIS is low. The Hawai‘i Supreme Court has made clear that under the “may have a significant effect” standard, “plaintiffs need not show that significant effects will in fact occur but instead need only raise substantial questions whether a project may have a significant effect.” <i>Unite Here! Local 5 v. City & Cnty. of Honolulu</i>, 123 Hawai‘i 150, 178, 231 P.3d 423, 451 (2010) (cleaned up).</p> <p>Preparing an EIS would require, among other things, “a rigorous exploration and objective evaluation of the environmental impacts of all such alternative actions,” with particular attention to “alternatives that might enhance environmental quality or avoid, reduce, or minimize some or all of the adverse environmental effects, costs, and risks of the action,” HAR §11-200.1-24(h), which is seriously lacking in the current DEA.</p> <p>The County must act with urgency to fulfill its legal obligations under HEPA and do right by West Kaua‘i communities today and for generations to come.</p>	<p>The Draft and Final EA have been prepared in compliance with HRS chapter 343 and HAR Section 11-200.1-18. Per HRS Chapter 343-5(c)(4) an environmental impact statement shall be required if the agency finds that the proposed action may have a significant effect on the environment. HAR Section 11-200.1-13 provides the significance criteria agencies must use when considering the significance of potential environmental effects of the proposed action on the quality of the environment. This significance criteria are analyzed in Section 5.1 of the Final EA in accordance with HAR Section 11-200.1-13. Based upon the analysis and findings presented in the Final EA, implementation of the Proposed Action is not expected to result in a significant adverse direct, indirect, or cumulative impact on the quality of the environment. As such, the County DPW anticipates issuing a Finding of No Significant Impact (FONSI) in accordance with HRS Chapter 343.</p>	No edits required.
16	John Harder (email dated September 5, 2023)		
16.1	<p>My name is John Harder and among other positions I was Kauai County’s first Solid Waste Manager. My work in that area has been recognized by the County (see the attached proclamation), the State of Hawaii, and the USEPA.</p> <p>In addition to managing Solid Waste for the County of Kauai and the State of Hawaii, I also was Solid Waste Coordinator for Maui County and the Commonwealth of the Northern Mariana Islands.</p> <p>While the Draft Environmental Assessment appears to adequately address the basic environmental issues involved in the proposed vertical expansion of the Kekaha Landfill (I use the term “appears”</p>	<p>Thank you for your comments.</p> <p>The County is currently County is currently assessing the feasibility of a curbside recycling program as described in the ISWMP Section 4.4.1.2 (Jacobs 2021). The County also recently completed a feasibility study for alternative technologies to landfilling and will be entering into a two-stage Request for Proposals process to determine if there are viable bidders for an alternative system to manage waste and create energy. The County will also conduct a construction and demolition waste diversion pilot next fiscal year (A. Fraley, DPW, personal communication, March 12, 2023).</p>	See additional text added to Section 1.2.3.1 of the Final EA describing the County’s waste diversion efforts.

	Comment	Response	Corresponding Edit in Final EA or Technical Appendix
	<p>because due to its length and complexity it is almost impossible to completely digest the document even in multiple sittings) it fails to take advantage of this opportunity to include proposals for making some significant improvements in Kauai’s Solid Waste System.</p> <p>Even with the extensive examination of the potential environmental impacts of the proposed expansion, the Draft EA is little more than a discussion of how the proposal would fit within the existing Waste Management System, rather than taking the opportunity to look at what we could do if we were to address the environmental impacts of waste generation and disposal more aggressively.</p> <p>The Draft EA is basically a document providing a minimum assessment of a proposed multi-million-dollar infrastructure project. When the County is looking at investing a significant amount of the public’s money, there is a need and a responsibility to do more, to demand more. If we are ever going to be able to get off the buy-use-bury roller coaster, now is the opportunity to include diversion options in our examination of our waste disposal infrastructure.</p> <p>Solutions that could increase the life of the proposed Landfill expansion, thus increasing the value of the public’s investment in the needed infrastructure, should be part of the discussion.</p> <p>In addition, there is an entirely inadequate discussion of “preparing for Climate Change” looking only at how the proposed structure would hold up under the impacts of a warming climate, instead of discussing how the County’s investment in a waste management infrastructure project could help address/mitigate some of the impacts of the coming changes in our climate.</p> <p>There is also brief discussion of how the proposed project does not conflict with the existing State and County Environmental goals and policies, but no mention of how the investment in infrastructure could help support and advance those goals and policies, such as waste reduction and diversion.</p> <p>Currently the County has made significant strides in waste disposal alternatives, with a diversion rate of over 40% through a combination of simple, publicly supported programs such as recycling and greenwaste drop sites, and commercial landfill bans and restrictions addressing materials such as greenwaste, cardboard, and scrap metal.</p> <p>In the short term, even without implementing more extensive efforts such as curbside recycling or commercial foodwaste diversion we could increase the life and value of our investment in landfill infrastructure by implementing some simple policy changes.</p> <p>As conserving valuable and limited landfill capacity and minimizing the potential for releases are definitely environmental concerns,</p>	<p>The County is also working at a state level to enact Extended Producer Responsibility (EPR) legislation that will require manufacturers to take financial responsibility for the end life of the products they produce (A. Boyd, DPW, personal communication, September 14, 2023). Currently, the County is focusing on EPR legislation concerning single use plastic packaging. Future EPR legislation will focus on Solar Photovoltaic panels, mattresses, and consumer electronics.</p> <p>Further, the County provides grant opportunities to help with waste diversion. Currently, the County has two grants, one focusing on community-based food residual composting and the other working toward on-island plastic recycling (A. Boyd, DPW, personal communication, September 14, 2023). Food residuals contribute over 10% of waste going to our landfill every year and plastics over 11%. The County will continue to research options and educate residents to employ reduce and reuse practices.</p>	

	Comment	Response	Corresponding Edit in Final EA or Technical Appendix
	<p>these types of issues, including a commitment to expanded diversion efforts, should be part of the discussion of the environmental impacts of expanding the landfill.</p> <p>One of the possible inclusions could be the commitment to the construction of a Materials Processing Facility (a MRF) in coordination with the landfill expansion.</p> <p>Another simple diversion idea could be implementing a phased-in ban on certain types of Construction / Demolition debris, concurrent with support for a privately operated facility to process it.</p> <p>Mahalo for the opportunity to comment on the project and your time and consideration of my input. Should you have additional questions I would be glad to respond.</p>		
17	Ruta Jordans, Zero Waste Kauai (email dated September 7, 2023)		
17.1	<p>Thank you for the opportunity to comment on the landfill expansion environmental assessment. As the current Kekaha Landfill has a short remaining life span and the new landfill is still in the planning stages, I believe the largest environmental issue is to divert as much as possible from the current and upcoming expanded Kekaha landfill.</p> <p>With 43% diversion rate Kauai has done much diversion with little legislative help. However, in order to survive the period between when one landfill is expected to be full and the other not yet ready, we need to do as much diversion as possible starting now, thus cutting down as much as possible on trash sent to the landfill.</p> <p>Looking at the 2016 landfill waste characterization study, there are many more divertable materials in the landfill. It is time for gradual bans on construction and demolition, organics and food waste and recyclables in the landfill, together with grants or other enablers to have regional composting around the island, a material recovery facility (MRF) and curbside recycling pick up (while increasing the fee for trash pickup), and an organized plan for reuse of construction and deconstruction debris.</p> <p>Visitors and residents need to be made aware of our precarious position and how they can help. If we all work together on the above suggestions we can not only make it safely through to the next landfill, but also make Kauai a more sustainable and healthy island.</p>	<p>Thank you for your comments. Kindly see the response to Comment #16.1.</p>	<p>See additional text added to Section 1.2.3.1 of the Final EA describing the County's waste diversion efforts.</p>
18	Zena Dean (email dated September 1, 2023)		
18.1	<p>There are ways to slow down the insane amount of trash generated on our small island. Building a vertical landfill would be a last option after we address the multiple avenues that generate so much waste. Mahalo.</p>	<p>Thank you for your comments. Kindly see response to Comment #16.1</p>	<p>No edits required.</p>
	Written Comments Received during the August 31, 2023 Public Meeting		
19	Addison Bulosan, County Council		
19.1	<p>Are there any concerns about birds and flights due to increased height of the landfill due to PMRF airport nearby?</p>	<p>As evidenced by the March 29, 2023 letter from Captain Stevenson of the US Navy (included in Appendix B of the Kekaha Vertical Expansion Draft and Final EA), the</p>	<p>No edits required.</p>

	Comment	Response	Corresponding Edit in Final EA or Technical Appendix
		Navy does not anticipate concerns regarding the proposed action from either the Pacific Missile Range Facility, FAA, or other entities. See also the response to Comment #15.7.	
20	DJ Adams, Resident		
20.1	What are the considerations and planning for continued high volume of industrial traffic to and from the landfill?	Transportation and traffic impacts area evaluated in Section 3.14 of the Draft and Final EA. The KLF accepts, on average, approximately 33 commercial loads and 97 non-commercial loads per day, which includes loads consisting of both recyclable and non-recyclable material (A. Fraley, DPW, personal communication, July 18, 2023). Therefore, on average, landfill-related traffic accounts for approximately 4 percent of the traffic volume on Kaumuali'i Highway in the vicinity of the KLF. Traffic volumes at the landfill are generally highest on Saturdays when the facility is open to receive beverage containers under the HI-5 program. The KLF accounts for a small percentage of the overall traffic volume on Kaumuali'i Highway in the vicinity of the KLF. The Proposed Action would not change the quantity of waste received nor the number of commercial and non-commercial loads accepted at the facility. Therefore, there would not be any significant changes to landfill-related traffic on Kaumuali'i Highway and no significant adverse impacts to roadways or traffic are anticipated from implementation of the Proposed Action.	No edits required.
20.2	When the next major hurricane arrives and destroys the current landfill, what will be the plan to restore beautiful Kekaha? Who will accept responsibility?	Thank you for your comments. Kindly see response to Comment #15.9	No edits required.
21	Pam Adams, Resident		
21.1	Wonderful starting points for “incentive” monies for the Community Benefit Program. However, to date these initiatives have been “soft”. What about permanent structures to serve the community? Sidewalks, walkways, safe beach accesses?	The Proposed Action is not anticipated to impact the amount allocated annually to the Host Community Benefits (HCB) funds and will extend the annual contributions for the additional 2 to 4 years of operations associated with the Proposed Action anticipates. The Citizens Advisory Committee will continue to distribute HCB funds and would be the appropriate party to discuss different investments funded by these funds.	No edits required.
21.2	The Community Benefit Program must begin to address infrastructure issues in Kekaha. Seniors, Keiki, and other citizens are put in peril walking along highway 50 in Kekaha as speeding County dump truck <u>speed</u> by them why may I has a light and a speed bump system. The citizens of Kekaha deserve similar attention to their safety.	Thank you for your comments. Kindly see response to Comment #19.1.	No edits required.
22	Bonnie P. Bator, Resident (letter dated August 31, 2023)		
22.1	We appreciate the opportunity to comment on the Proposed Action to extend Phase II operations upward of the Kekaha Municipal Solid Waste Landfill (KLF) in Kekaha. Regarding the existing Subtitle D base liner - please provide the design of Subtitle D base liner- exactly how will it protect the' aina of Kekaha in the proposed increase height in the final Environmental Assessment (final EA) description of what constitutes Subtitle D ? " ... Under normal conditions the geomembrane is almost certainly the crucial liner component, while the mineral component guarantees failure tolerance and redundancy. An integrated research programme has suggested alternative solutions such as a geomembrane with a	The design criteria for a Subtitle D base liner can be found in 40 CRF Part 258.40 (https://www.ecfr.gov/current/title-40/chapter-I/subchapter-I/part-258/subpart-D). Per 40 CRF Part 258.40 and HAR § 11-58.1, a Subtitle D base liner requires a <i>composite liner</i> , meaning a system consisting of two components; the upper component must consist of a minimum 30-mil flexible membrane liner (FML), and the lower component must consist of at least a two-foot layer of compacted soil with a hydraulic conductivity of no more than 1×10^{-7} cm/sec. FML components consisting of high density polyethylene (HDPE) shall be at least 60-mil thick. The	No edits required.

	Comment	Response	Corresponding Edit in Final EA or Technical Appendix
	<p><i>geosynthetic clay liner, a geomembrane with a leakage detection system and a geomembrane with a capillary barrier. However, if such systems were used, the monitoring and assessment and, possibly, repair of the liner components would represent an almost endless after-care programme. Thus the design of suitable liner materials is the need of hour as the ground water pollution is increasing day by day ...</i> "A COMPREHENSIVE REVIEW ON LANDFILL LINER International Research Journal of Engineering and Technology (IRJET) e-ISSN: 2395-0056 Volume: 05 Issue: 11 Nov 2018 www.i1jet.net p-ISSN: 2395-0072 - page 627 https://www.i1jet.net/archives/V5/i1/IRJET-V5I11122.pdf</p>	<p>FML component must be installed in direct and uniform contact with the compacted soil component.</p> <p>In addition to the liner, the federal and state rules require a leachate collection system that is designed and constructed to maintain less than a thirty-centimeter depth of leachate over the liner. The existing composite liner and leachate collection and removal system (LCRS) for the KLF Phase II is further described in Section 1.2.1.2 of the Draft and Final EA.</p> <p>As discussed in Section 3.17.2.1 of the Draft and Final EA, the Proposed Action would expand the Phase II landfill above the existing Subtitle D base liner and LCRS. An engineering analysis of the LCRS piping in the center of the Phase II area confirmed that the piping can structurally withstand the additional load from the Phase II vertical expansion and would be sufficient to collect and remove leachate under the Proposed Action (Tetra Tech 2022). Further, groundwater monitoring at the KLF would continue to be conducted in accordance with applicable regulations and in consultation with the HDOH. The Proposed Action would not change the current KLF groundwater monitoring program or alter existing impacts to groundwater. Therefore, no significant impacts to groundwater resources are anticipated with implementation of the Proposed Action.</p>	
22.2	<p>An astronomical amount of solid waste produced by enormous population growth on Kaua'i & visitor industry - We are deeply concerned as Mount Kekaha grows ever taller - the final EA must provide imminent solutions to divert the solid waste stream that is bringing Mount Kekaha to 171.5 ft above sea-level.</p> <p>Accountability is severely lacking in the management of solid waste on Kaua'i. Big Box stores are a major attributing factor & must contribute to help with solid waste diversion - profits of their stockholders need to be diverted into solutions for the trashing of Kaua'i.</p>	<p>Thank you for your comments. Kindly see response to Comment #16.1</p>	No edits required.
22.4	<p>Poho, millions of dollars wasted during the Environmental Impact Statement (EIS) process for ill-conceived proposal Ma'alo MSWLF in August 21, 2017. According to an article published by "Honolulu Civil Beat" (https://www.civilbeat.org/2017/08/brittany-lyte-has-kauai-final-ly-found-a-site-for-a-new-landfill/) by Brittany Lyte: " ... <i>Has Kauai Finally Found A Site For A New Landfill?</i>" it stated: " ... <i>After a decade of effort, the county has located a preferred site for a new \$65 million facility. But the plan will likely face NIMBY opposition. " ... the bulging Kekaha landfill approaches maximum capacity, county officials are sleuthing to find the island's 86,900 tons of annual waste a new final resting place. A replacement municipal landfill is expected to cost taxpayers \$65 million, plus another \$20 million for an access road ...</i> "</p> <p>In 2017 dollars it'd cost \$20 million to close KLF- today's inflation it's double that amount- where will current County of Kauai, Department</p>	<p>Thank you for your comments. Kindly see response to Comment #16.1 regarding the County's efforts to reduce and divert the waste stream.</p> <p>As noted in the Final EA, the County is proceeding with plans to site a new landfill as part of its long-term planning objectives. This would include completion of a full review under HRS Chapter 343 for any proposed new landfill site.</p>	No edits required.

	Comment	Response	Corresponding Edit in Final EA or Technical Appendix
	of Public Works, Solid Division top dogs be when it's time to close KLF and deal with a looming at least \$150 million cost to construct a new Municipal Solid Waste Landfill (MSWLF) According to Mayor Kawakami, back in May 11, 2022 in "Honolulu Civil Beat" (by Brittany Lyte) " ... <i>The biggest bang for our buck right now that would probably make the biggest difference as far as diversion would be creating a construction and demolition reclamation center so that we're not sending construction waste to the landfill because that takes up a lot of space and that space equates to the amount of time that the landfill has left to be operational, ... "</i> (https://www.civilbeat.org/2022/05/the-kauai-landfill-conundrum-could-quickly-become-a-public-health-hazard/)		
22.5	Most resorts here on Kaua' i have accomplished multi-million dollar renovations, they contribute to the waste stream that ends up contributing to Mount Kekaha - they're owned by muti-national consortiums - Aue -	Comment acknowledged.	No edits required.

References cited:

AECOM. 2012. New Kaua’i Landfill Siting Study Report, Kekaha, Kaua’i, Hawai’i. July.

AECOM, Pacific Waste Consulting Group, R.M. Towill Corporation. 2017. Alternatives Analysis, Proposed New Kaua’i Landfill and Resource Recovery Park, Ma’alo, Kaua’i, HI.. August 2017.

Geosyntec. 2022. Spill Prevention, Control, and Countermeasures Plan, Kekaha Municipal Solid Waste Landfill, Kekaha, Kaua’i, Hawai’i. September

Geosyntec. 2023a. Kekaha Municipal Solid Waste Landfill Operations Manual, Kekaha Municipal Solid Waste Landfill – Phase II, Kekaha, Kaua’i, Hawai’i. February.

Geosyntec. 2023b. 4th Quarter 2022 Groundwater and Leachate Monitoring Report, Kekaha Landfil Phase I and Phase II, Kekaha, Kaua’i, Hawai’i. April.

Geosyntec. 2023c. Kekaha Municipal Solid Waste Landfill and Kekaha Materials Drop-off Facility Annual Operating Report, July 1, 2022 Through June 30, 2023, Kekaha, Kaua’i, Hawai’i. July 31, 2023.

Giambelluca, T.W., Q. Chen, A.G. Frazier, J.P. Price, Y.-L. Chen, P.-S. Chu, J.K. Eischeid, and D.M. Delparte, 2013: Online Rainfall Atlas of Hawai’i. Bull. Amer. Meteor. Soc. 94, 313-316, doi: 10.1175/BAMS-D-11-00228.1.

Hawai’i State Climate Commission. 2022. Hawai’i Sea Level Rise Vulnerability and Adaptation Report 2022 Update. Report to the Thirty-second Legislature 2023 Regular Session. Prepared by the State of Hawai’i Department of Land and Natural Resources, Office of Conservation and Coastal Lands in Response to Act 32 of the Regular Session of 2017. December.

Kekaha HCB (Kekaha Host Community Benefit Program). 2023. Kekaha Host Community Benefit Program 2023 Report. Prepared by Yvonne Hosaka, Facilitator and Kekaha HCB Citizen Advisory Committee. March 28, 2023. Available at: https://users.neo.registeredsite.com/2/5/9/15584952/assets/KHCB_Project_Update_-_032923_.pdf

R.M. Towhill. 2018. Final Environmental Impact Statement New Kaua’i Landfill Ma’alo, Kaua’i, Hawai’i. July. https://files.hawaii.gov/dbedt/erp/EA_EIS_Library/2018-10-23-KA-FEIS-Acceptance-New-Kauai-Landfill.pdf (accessed December 2022).

Tetra Tech. 2022. Engineering Report – 90%. Kekaha Sanitary Landfill, Phase II Vertical Expansion, Kekaha, Kaua’i, Hawai’i. December.

JOSH GREEN, M.D.
GOVERNOR
KE KIA'ĀINA



KEITH A. REGAN
COMPTROLLER
KA LUNA HO'OMALU HANA LAULĀ

MEOH-LENG SILLIMAN
DEPUTY COMPTROLLER
KA HOPE LUNA HO'OMALU HANA LAULĀ

STATE OF HAWAI'I | KA MOKU'ĀINA O HAWAI'I
DEPARTMENT OF ACCOUNTING AND GENERAL SERVICES | KA 'OIHANA LOIHELU A LAWELAWÉ LAULĀ
P.O. BOX 119, HONOLULU, HAWAII 96810-0119

(P)23.128

AUG 17 2023

Ms. Kayla Yost
Tetra Tech, Inc.
737 Bishop Street
Mauka Tower, Suite 2000
Honolulu, Hawaii 96813

Dear Ms. Yost:

Subject: Public Review of the HRS Chapter 343 Draft Environmental Assessment for the
Kekaha Municipal Landfill Phase II Vertical Expansion
TMK: 1-2-002:001 (portion) and TMK: 1-2-002:009
Waimea District, Kauai, Hawaii

Thank you for the opportunity to provide comments for the subject project. We have no comments to offer at this time, as the subject project does not appear to directly impact any of the Department of Accounting and General Services' facilities or properties on Kauai.

If you have any questions, your staff may call Dennis Chen of the Planning Branch at (808) 586-0491

Sincerely,

A blue ink signature of Christine L. Kinimaka, written in a cursive style.

CHRISTINE L. KINIMAKA
Public Works Administrator

DYKC:mo

c: Ms. Allison Fraley, County of Kauai, Department of Public Works, Solid Waste Division

JOSH GREEN, M.D.
GOVERNOR



KEITH T. HAYASHI
SUPERINTENDENT

STATE OF HAWAII
DEPARTMENT OF EDUCATION
KA 'OIHANA HO'ONA'AUAO
P.O. BOX 2360
HONOLULU, HAWAII 96804

OFFICE OF FACILITIES AND OPERATIONS

September 5, 2023

Kayla Yost
Tetra Tech
737 Bishop Street, Suite 200
Honolulu, Hawaii 96813

Re: Public Review of the HRS Chapter 343 Draft Environmental Assessment for the
Kekaha Municipal Landfill Phase II Vertical Expansion, TMK: 1-2-002:001 (portion)
and TMK 1-2-002:009, Waimea District, Kauai, Hawaii

Dear Ms. Yost:

Thank you for your letter dated August 8, 2023. Based on the information provided, the
proposed project will not impact Hawaii State Department of Education Facilities.

Should you have any questions, please contact Cori China of the Facilities Development
Branch, Planning Section, at (808) 784-5080 or via email at cori.china@k12.hi.us.

We appreciate the opportunity to comment.

Sincerely,

A handwritten signature in black ink, appearing to read "Roy Ikeda", with a stylized flourish extending from the end.

Roy Ikeda
Interim Public Works Manager
Planning Section

RI:ctc

c: Allison Fraley, County of Kauai, Department of Public Works, Solid Waste Division
Facilities Development Branch

AN AFFIRMATIVE ACTION AND EQUAL OPPORTUNITY EMPLOYER

JOSH GREEN, M.D.
GOVERNOR | KE KIA'ĀINA

SYLVIA LUKE
LIEUTENANT GOVERNOR | KA HOPE KIA'ĀINA



DAWN N. S. CHANG
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE
MANAGEMENT

STATE OF HAWAII | KA MOKU'ĀINA 'O HAWAI'I
DEPARTMENT OF LAND AND NATURAL RESOURCES
KA 'OIHANA KUMUWAIWAI 'ĀINA
LAND DIVISION

P.O. BOX 621
HONOLULU, HAWAII 96809

September 7, 2023

LD 0116

Kayla Yost
Project Manager and Environmental Planner
737 Bishop Street, Suite 2000

Via email: kayla.yost@tetrattech.com

Greetings:

**SUBJECT: Draft Environmental Assessment for Kekaha Municipal Landfill Phase II
Vertical Expansion, Waimea District, Island of Kauai, Hawaii,
TMK: (4) 1-2-002:001 (por.) and 1-2-002:009**

Thank you for the opportunity to review and comment on the subject project. The Land Division of the Department of Land and Natural Resources (DLNR) distributed copies of your request to DLNR's various divisions for their review and comment.

Enclosed are responses/comments received from our Engineering Division and the Land Division. Should you have any questions, please feel free to contact Timothy Chee via email at timothy.chee@hawaii.gov. Thank you.

Sincerely,

A handwritten signature in black ink, appearing to read "Russell Y. Tsuji".

Russell Y. Tsuji
Land Administrator

Attachments

cc: Central Files

JOSH GREEN, M.D.
GOVERNOR | KE KĀʻĀINA

SYLVIA LUKE
LIEUTENANT GOVERNOR | KA HOPE KĀʻĀINA



DAWN N. S. CHANG
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE
MANAGEMENT

STATE OF HAWAII | KA MOKUʻĀINA ʻO HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

P.O. BOX 621
HONOLULU, HAWAII 96809

August 8, 2023

LD 0116

MEMORANDUM

FROM: ~~TO:~~

DLNR Agencies:

- ☐ Div. of Aquatic Resources (via email: kendall.l.tucker@hawaii.gov)
- ☐ Div. of Boating & Ocean Recreation (via email: richard.t.howard@hawaii.gov)
- ☒ **Engineering Division** (via email: DLNR.Engr@hawaii.gov)
- ☒ Div. of Forestry & Wildlife (via email: Rubyrosa.T.Terrago@hawaii.gov)
- ☐ Div. of State Parks
- ☒ Commission on Water Resource Management (via email: DLNR.CWRM@hawaii.gov)
- ☐ Office of Conservation & Coastal Lands
- ☒ Land Division – Kauaʻi District (via email: alison.neustein@hawaii.gov)
- ☒ Aha Moku (via email: leimana.k.damate@hawaii.gov)

Russell Tsuji

TO: ~~FROM:~~ Russell Y. Tsuji, Land Administrator
SUBJECT: Request for Comments-Draft DEA for Kehaha Municipal Landfill Phase II Vertical Expansion Project
LOCATION: Waimea District, Island of Kauaʻi, Hawaii
APPLICANT: TMK: (4) 1-2-002:001 (por.), and 1-2-002:009
Tetra Tech


Transmitted for your review and comment is information on the above-referenced subject. The Draft [DEA](#) was published on August 08, 2023 by the State Environmental Review Program at the Office of Planning and Sustainable Development in their periodic bulletin, [The Environmental Notice](#), available at the following link:

https://files.hawaii.gov/dbedt/erp/Doc_Library/2023-08-08-KA-DEA-Kekaha-Municipal-Landfill-Phase-II-Vertical-Expansion.pdf

Please submit any comments to timothy.chee@hawaii.gov at the Land Division by the internal deadline of **September 5, 2023**. If no response is received by this date, we will assume your agency has no comments. If you have any questions, please contact Timothy Chee at the above email address. Thank you.

BRIEF COMMENTS:

- ☐ We have no objections.
- ☒ We have no comments.
- ☐ We have no additional comments.
- ☐ Comments are included/attached.

Signed: 
Print Name: Carty S. Chang, Chief Engineer

Attachments
Cc: Central Files

Division:	<u>Engineering Division</u>
Date:	<u>Sep 5, 2023</u>

JOSH GREEN, M.D.
GOVERNOR | KE KIA'ĀINA

SYLVIA LUKE
LIEUTENANT GOVERNOR | KA HOPE KIA'ĀINA



DAWN N. S. CHANG
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE
MANAGEMENT

STATE OF HAWAII | KA MOKU'ĀINA 'O HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

P.O. BOX 621
HONOLULU, HAWAII 96809

August 8, 2023

LD 0116

MEMORANDUM

TO: DLNR Agencies:
___ Div. of Aquatic Resources (via email: kendall.l.tucker@hawaii.gov)
___ Div. of Boating & Ocean Recreation (via email: richard.t.howard@hawaii.gov)
X Engineering Division (via email: DLNR.Engr@hawaii.gov)
X Div. of Forestry & Wildlife (via email: Rubyrosa.T.Terrago@hawaii.gov)
___ Div. of State Parks
X Commission on Water Resource Management (via email: DLNR.CWRM@hawaii.gov)
___ Office of Conservation & Coastal Lands
X Land Division – Kaua'i District (via email: alison.neustein@hawaii.gov)
X Aha Moku (via email: leimana.k.damate@hawaii.gov)

FROM: Russell Y. Tsuji, Land Administrator *Russell Tsuji*

SUBJECT: Request for Comments-Draft DEA for Kehaha Municipal Landfill Phase II Vertical Expansion Project

LOCATION: Waimea District, Island of Kaua'i, Hawaii
TMK: (4) 1-2-002:001 (por.), and 1-2-002:009

APPLICANT: Tetra Tech

Transmitted for your review and comment is information on the above-referenced subject. The Draft [DEA](#) was published on August 08, 2023 by the State Environmental Review Program at the Office of Planning and Sustainable Development in their periodic bulletin, [The Environmental Notice](#), available at the following link:

https://files.hawaii.gov/dbedt/erp/Doc_Library/2023-08-08-KA-DEA-Kekaha-Municipal-Landfill-Phase-II-Vertical-Expansion.pdf

Please submit any comments to timothy.chee@hawaii.gov at the Land Division by the internal deadline of **September 5, 2023**. If no response is received by this date, we will assume your agency has no comments. If you have any questions, please contact Timothy Chee at the above email address. Thank you.

BRIEF COMMENTS:

Parcel 009 is in the State conservation district- should consult with OCCL to confirm all permits are current and in compliance.
Should consult with DOFAW regarding plants and animals in area- Draft refers to plant and wildlife surveys conducted within the KLF site in 1982 that may be outdated.

- () We have no objections.
() We have no comments.
() We have no additional comments.
(X) Comments are included/attached.

Signed:

Alison Neustein

Print Name:

Alison Neustein

Attachments
Cc: Central Files

Division:	<u>DLNR, Land Division</u>
Date:	<u>8/22/23</u>




STATE OF HAWAII | KA MOKU'ĀINA 'O HAWAI'I
DEPARTMENT OF LAND AND NATURAL RESOURCES | KA 'ŌIHANA KUMUWAIWAI 'ĀINA
COMMISSION ON WATER RESOURCE MANAGEMENT | KE KAHUWAI PONO
P.O. BOX 621
HONOLULU, HAWAII 96809

Aug 14, 2023

REF: RFD.6053.2

TO: Kayla Yost, Project Manager and Environmental Planner
Tetra Tech, Inc.

FROM: Dean D. Uyeno, Acting Deputy Director 
Commission on Water Resource Management

SUBJECT: Kekaha Municipal Landfill Phase II Vertical Expansion

FILE NO.: RFD.6053.2
TMK NO.: (4) 1-2-002:001, (4) 1-2-002:009

Thank you for the opportunity to review the subject document. The Commission on Water Resource Management (CWRM) is the agency responsible for administering the State Water Code (Code). Under the Code, all waters of the State are held in trust for the benefit of the citizens of the State, therefore all water use is subject to legally protected water rights. CWRM strongly promotes the efficient use of Hawaii's water resources through conservation measures and appropriate resource management. For more information, please refer to the State Water Code, Chapter 174C, Hawaii Revised Statutes, and Hawaii Administrative Rules, Chapters 13-167 to 13-171. These documents are available via the Internet at <http://dlnr.hawaii.gov/cwrm>.

Our comments related to water resources are checked off below.

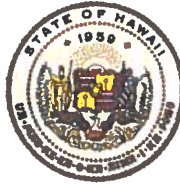
- ☐ 1. We recommend coordination with the county to incorporate this project into the county's Water Use and Development Plan. Please contact the respective Planning Department and/or Department of Water Supply for further information.
- ☐ 2. We recommend coordination with the Engineering Division of the State Department of Land and Natural Resources to incorporate this project into the State Water Projects Plan.
- ☐ 3. We recommend coordination with the Hawaii Department of Agriculture (HDOA) to incorporate the reclassification of agricultural zoned land and the redistribution of agricultural resources into the State's Agricultural Water Use and Development Plan (AWUDP). Please contact the HDOA for more information.
- ☐ 4. We recommend that water efficient fixtures be installed and water efficient practices implemented throughout the development to reduce the increased demand on the area's freshwater resources. Reducing the water usage of a home or building may earn credit towards Leadership in Energy and Environmental Design (LEED) certification. More information on LEED certification is available at <http://www.usgbc.org/leed>. A listing of fixtures certified by the EPA as having high water efficiency can be found at <http://www.epa.gov/watersense>.
- ☒ 5. We recommend the use of best management practices (BMP) for stormwater management to minimize the impact of the project to the existing area's hydrology while maintaining on-site infiltration and preventing polluted runoff from storm events. Stormwater management BMPs may earn credit toward LEED certification. More information on stormwater BMPs can be found at <http://planning.hawaii.gov/czm/initiatives/low-impact-development/>
- ☐ 6. We recommend the use of alternative water sources, wherever practicable.
- ☐ 7. We recommend participating in the Hawaii Green Business Program, that assists and recognizes businesses that strive to operate in an environmentally and socially responsible manner. The program description can be found online at <http://energy.hawaii.gov/green-business-program>.
- ☐ 8. We recommend adopting landscape irrigation conservation best management practices endorsed by the Landscape Industry Council of Hawaii. These practices can be found online at http://www.hawaiiscape.com/wp-content/uploads/2013/04/LICH_Irrigation_Conservation_BMPs.pdf.

- ☒ 9. There may be the potential for ground or surface water degradation/contamination and recommend that approvals for this project be conditioned upon a review by the State Department of Health and the developer's acceptance of any resulting requirements related to water quality.
- ☐ 10. The proposed water supply source for the project is located in a designated water management area, and a Water Use Permit is required prior to use of water. The Water Use Permit may be conditioned on the requirement to use dual line water supply systems for new industrial and commercial developments.
- ☐ 11. The Hawaii Water Plan is directed toward the achievement of the utilization of reclaimed water for uses other than drinking and for potable water needs in one hundred per cent of State and County facilities by December 31, 2045 (§174C-31(g)(6), Hawaii Revised Statutes). We strongly recommend that this project consider using reclaimed water for its non-potable water needs, such as irrigation. Reclaimed water may include, but is not limited to, recycled wastewater, gray water, and captured rainwater/stormwater. Please contact the Hawai'i Department of Health, Wastewater Branch, for more information on their reuse guidelines and the availability of reclaimed water in the project area.
- ☐ 12. A Well Construction Permit(s) is (are) required before the commencement of any well construction work.
- ☐ 13. A Pump Installation Permit(s) is (are) required before ground water is developed as a source of supply for the project.
- ☐ 14. There is (are) well(s) located on or adjacent to this project. If wells are not planned to be used and will be affected by any new construction, they must be properly abandoned and sealed. A permit for well abandonment must be obtained.
- ☐ 15. Ground-water withdrawals from this project may affect streamflows, which may require an instream flow standard amendment.
- ☐ 16. A Stream Channel Alteration Permit(s) is (are) required before any alteration can be made to the bed and/or banks of a stream channel.
- ☐ 17. A Stream Diversion Works Permit(s) is (are) required before any stream diversion works is constructed or altered.
- ☐ 18. A Petition to Amend the Interim Instream Flow Standard is required for any new or expanded diversion(s) of surface water.
- ☐ 19. The planned source of water for this project has not been identified in this report. Therefore, we cannot determine what permits or petitions are required from our office, or whether there are potential impacts to water resources.
- ☐ OTHER:

If you have any questions, please contact Katie Roth of the Planning Branch at (808) 587-0216 or Ryan Imata of the Regulation Branch (808) 587-0225.

JOSH GREEN, M.D.
GOVERNOR | KE KIA'ĀINA

SYLVIA LUKE
LIEUTENANT GOVERNOR | KA HOPE KIA'ĀINA



DAWN N. S. CHANG
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE
MANAGEMENT

STATE OF HAWAII | KA MOKU'ĀINA 'O HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
KA 'OIHANA KUMUWAIWAI 'ĀINA
LAND DIVISION

P.O. BOX 621
HONOLULU, HAWAII 96809

September 14, 2023

LD 0116

Kayla Yost
Project Manager and Environmental Planner
737 Bishop Street, Suite 2000
Honolulu, HI 96813

Via email: kayla.yost@tetrattech.com

Greetings:

SUBJECT: **Draft Environmental Assessment for Kekaha Municipal Landfill Phase II Vertical Expansion, Waimea District, Island of Kauai, Hawaii, TMK: (4) 1-2-002:001 (por.) and 1-2-002:009**

Thank you for the opportunity to review and comment on the subject project. In addition to previous comments sent to you from the Department of Land and Natural Resources (DLNR), enclosed are also comments received from DLNR's Division of Forestry and Wildlife.

Should you have any questions, please feel free to contact Timothy Chee at timothy.chee@hawaii.gov. Thank you.

Sincerely,

A handwritten signature in black ink, appearing to read "Russell Y. Tsuji".

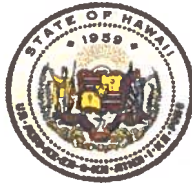
Russell Y. Tsuji
Land Administrator

Attachments

cc: Central Files

JOSH GREEN, M.D.
GOVERNOR | KE KIA'ĀINA

SYLVIA LUKE
LIEUTENANT GOVERNOR | KA HOPE KIA'ĀINA



DAWN N. S. CHANG
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE
MANAGEMENT

STATE OF HAWAII | KA MOKU'ĀINA 'O HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

P.O. BOX 621
HONOLULU, HAWAII 96809

August 8, 2023

LD 0116

MEMORANDUM

FROM: **DLNR Agencies:**
___ Div. of Aquatic Resources (via email: kendall.l.tucker@hawaii.gov)
___ Div. of Boating & Ocean Recreation (via email: richard.t.howard@hawaii.gov)
X Engineering Division (via email: DLNR.Engr@hawaii.gov)
X Div. of Forestry & Wildlife (via email: Rubyrosa.T.Terrago@hawaii.gov)
___ Div. of State Parks
X Commission on Water Resource Management (via email: DLNR.CWRM@hawaii.gov)
___ Office of Conservation & Coastal Lands
X Land Division – Kaua'i District (via email: alison.neustein@hawaii.gov)
X Aha Moku (via email: leimana.k.damate@hawaii.gov)

TO: Russell Y. Tsuji, Land Administrator *Russell Tsuji*

SUBJECT: **Request for Comments-Draft DEA for Kehaha Municipal Landfill Phase II Vertical Expansion Project**

LOCATION: Waimea District, Island of Kaua'i, Hawaii

APPLICANT: TMK: (4) 1-2-002:001 (por.), and 1-2-002:009
Tetra Tech

Transmitted for your review and comment is information on the above-referenced subject. The Draft DEA was published on August 08, 2023 by the State Environmental Review Program at the Office of Planning and Sustainable Development in their periodic bulletin, The Environmental Notice, available at the following link:

https://files.hawaii.gov/dbedt/erp/Doc_Library/2023-08-08-KA-DEA-Kekaha-Municipal-Landfill-Phase-II-Vertical-Expansion.pdf

Please submit any comments to timothy.chee@hawaii.gov at the Land Division by the internal deadline of **September 5, 2023**. If no response is received by this date, we will assume your agency has no comments. If you have any questions, please contact Timothy Chee at the above email address. Thank you.

BRIEF COMMENTS:

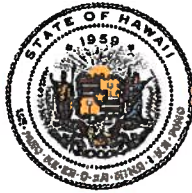
- () We have no objections.
() We have no comments.
() We have no additional comments.
(☒) Comments are included/attached.

Signed: *JM*

Print Name: Jason C. Misaki, Acting Wildlife Program Mgr.

JOSH GREEN, M.D.
GOVERNOR | KE KIA'ĀINA

SYLVIA LUKE
LIEUTENANT GOVERNOR | KA HOPE KIA'ĀINA



STATE OF HAWAII | KA MOKU'ĀINA 'O HAWAII'
DEPARTMENT OF LAND AND NATURAL RESOURCES
KA 'OIHANA KUMUWAIWAI 'ĀINA

DIVISION OF FORESTRY AND WILDLIFE
1151 PUNCHBOWL STREET, ROOM 325
HONOLULU, HAWAII 96813

September 13, 2023

DAWN N.S. CHANG
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE
MANAGEMENT

LAURA H.E. KAKUA
FIRST DEPUTY

M. KALEO MANUEL
DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
COMMISSION ON WATER RESOURCE
MANAGEMENT
CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES
ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

Log no. 4229

MEMORANDUM

TO: Russell Y. Tsuji, Administrator
Land Division

FROM: Jason C. Misaki, Acting Wildlife Program Manager
Division of Forestry and Wildlife

SUBJECT: Review of the HRS Chapter 343 Draft Environmental Assessment for the Kekaha Municipal Landfill Phase II Vertical Expansion

The Department of Land and Natural Resources, Division of Forestry and Wildlife (DOFAW) has received your request for comments on the Chapter 343 Draft Environmental Assessment for the Kekaha Municipal Landfill Phase II Vertical Expansion. The County of Kaua'i, Department of Public Works, Solid Waste Division is proposing a vertical expansion of Phase II at the Kekaha Municipal Solid Waste Landfill (KLF) (Proposed Action). The KLF encompasses approximately 98 acres of land within TMK (4) 1-2-002:001 (por.) and TMK (4) 1-2-002:009, which is owned by the State of Hawai'i. KLF Phase II currently receives all municipal solid waste (MSW) generated on the island and is projected to reach capacity in October 2026. The purpose of the Proposed Action is to prolong the life of the KLF prior to exhausting the island's only permitted landfill airspace and to provide safe disposal of MSW in Kaua'i County while a long-term MSW capacity solution can be identified. The Proposed Action would extend Phase II operations upward from the currently permitted maximum elevation of 120 feet (ft) above mean sea level (AMSL) to a maximum elevation of 171.5 ft amsl. Surface water drainage features and the landfill gas collection and control system would be modified slightly to accommodate the expanded waste volume. The limits of the proposed vertical expansion would be approximately 13 acres located within the existing, permitted Phase II footprint and would be constructed above the existing Subtitle D baseline.

DOFAW concurs with the measures included in the DEA intended to avoid construction and operational impacts to State-listed species including the 'Ōpe'ape'a or Hawaiian Hoary Bat (*Lasiurus cinereus semotus*), Koloa Maoli or Hawaiian Duck (*Anas wyvilliana*), Ae 'o or Hawaiian Stilt (*Himantopus mexicanus knudseni*), 'Alae ke'oke'o or Hawaiian Coot (*Fulica alai*), 'Alae 'ula or Hawaiian Common Gallinule (*Gallinula chloropus sandvicensis*), Nēnē or Hawaiian Goose (*Branta sandvicensis*), and

seabirds. DOFAW provides the following additional comments regarding the potential for the proposed work to affect listed species in the vicinity of the project area.

The endemic pueo or Hawaiian Short-Eared Owl (*Asio flammeus sandwichensis*) could potentially nest in the project area. Before any potential vegetative alteration, especially ground-based disturbance, we recommend that line transect surveys are conducted during crepuscular hours through the project area. If a pueo nest is discovered, a minimum buffer distance of 100 meters from the nest should be established until chicks are capable of flight.

DOFAW is concerned about impacts on vulnerable birds from nonnative predators such as cats, rodents, and mongooses. We recommend taking action to minimize predator presence; remove cats, place bait stations for rodents and mongoose, and provide covered trash receptacles.

DOFAW recommends minimizing the movement of plant or soil material between worksites. Soil and plant material may contain detrimental fungal pathogens (e.g., Rapid 'Ōhi'a Death, Coffee Leaf Rust), vertebrate and invertebrate pests (e.g., Coqui Frogs, Little Fire Ants, Coffee Berry Borer, etc.), or invasive plant parts (e.g., Barbados Gooseberry, False Kava, Giant Reed, etc.) that could harm our native species and ecosystems. We recommend consulting the Kaua'i Invasive Species Committee (KISC) at (808) 821-1490 to help plan, design, and construct the project, learn of any high-risk invasive species in the area, and ways to mitigate their spread. All equipment, materials, and personnel should be cleaned of excess soil and debris to minimize the risk of spreading invasive species.

DOFAW recommends using native plant species for landscaping that are appropriate for the area; i.e., plants for which climate conditions are suitable for them to thrive, plants that historically occurred there, etc. Please do not plant invasive species. DOFAW also recommends referring to www.plantpono.org for guidance on the selection and evaluation of landscaping plants and to determine the potential invasiveness of plants proposed for use in the project.

Due to the arid climate and risks of wildfire to listed species, we recommend coordinating with the Hawai'i Wildfire Management Organization at (808) 850-0900 or admin@hawaiiwildfire.org, on how wildfire prevention can be addressed in the project area.

We recommend that Best Management Practices are employed during and after construction to contain any soils and sediment with the purpose of preventing damage to near-shore waters and marine ecosystems.

We appreciate your efforts to work with our office for the conservation of our native species. These comments are general guidelines and should not be considered comprehensive for this site or project. It is the responsibility of the applicant to do their own due diligence to avoid any negative environmental impacts. Should the scope of the project change significantly, or should it become apparent that threatened or endangered species may be impacted, please contact our staff as soon as possible.

If you have any questions, please contact Myrna N. Giraldo Pérez, Protected Species Habitat Conservation Planning Coordinator at (808) 265-3276 or myrna.giraldo-perez@hawaii.gov.

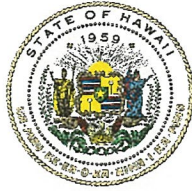
Sincerely,

A handwritten signature in blue ink, appearing to read 'JCM'.

Jason C. Misaki
Acting Wildlife Program Manager

JOSH GREEN, M.D.
GOVERNOR | KE KIA'ĀINA

SYLVIA LUKE
LIEUTENANT GOVERNOR | KA HOPE KIA'ĀINA



STATE OF HAWAII | KA MOKU'ĀINA 'O HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
KA 'OIHANA KUMUWAIWAI 'ĀINA
Office of Conservation and Coastal Lands
P.O. BOX 621
HONOLULU, HAWAII 96809

DAWN N.S. CHANG
CHAIRPERSON
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LAURA H.E. KAAKUA
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ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

REF: OCCL: TF

COR: KA 24-23

Kayla Yost
Tetra Tech, Inc.
737 Bishop Street, Suite 2000 Mauka Tower
Honolulu, HI 96813

Sep 6, 2023

SUBJECT: Public Review of the HRS Chapter 343 Draft Environmental Assessment for the
Kekaha Municipal Landfill Phase II Vertical Expansion
Located at 6900 Kaumualii Highway #A
Por. Kekaha, Waimea, Kauai
Tax Map Keys (TMKs): (4) 1-2-002:001 (por.) and (4) 1-2-002:009

Dear Kayla Yost:

The Office of Conservation and Coastal Lands (OCCL) has reviewed the Draft Environmental Assessment (DEA) regarding the subject matter. According to the information in your letter, the County of Kauai Department of Public Works Solid Waste Division (County) is proposing a vertical expansion of Phase II of the Kekaha Municipal Solid Waste Landfill (KLF). The KLF encompasses approximately 98 acres of land within TMK: (4) 1-2-002:009 and a portion of TMK: (4) 1-2-002:001.

Executive Orders 1558 (signed April 27, 1953), 2872 (signed October 6, 1977), and 3695 (signed December 2, 1996) placed the control and management of the lands underlying the KLF to the County of Kauai. The KLF is comprised of two (2) refuse fill areas: Phase I and Phase II. Phase I is an unlined landfill that began accepting solid waste in 1953 and ceased operations on October 8, 1993. Phase II is an active lined landfill that began accepting solid waste on October 9, 1993.

The DEA notes that KLF is Kauai's only permitted municipal solid waste landfill and is predicted to reach its capacity in October of 2026. To address this, the County is proposing to extend Phase II upward from the currently permitted maximum elevation of 120ft above mean sea level (amsl) to a new permitted maximum elevation of 171.5ft amsl and will be confined to the portion of the KLF Phase II that lies on TMK: (4) 1-2-002:001. The DEA notes that the proposed vertical expansion of the Phase II landfill is expected to add an additional 2 to 4 years of capacity to the

Kayla Yost
Tetra Tech, Inc.

KLF while the County seeks a long-term landfill capacity solution. On behalf of the County, Tetra Tech is seeking comments the DEA for the project.

The OCCL regulates land uses in the State Land Use Conservation District through the issuance of Conservation District Use Permits and Site Plan Approvals to help conserve, protect, and preserve important natural and cultural resources. The OCCL notes that the portion of KLF that occupies TMK: (4) 1-2-002:001 appears to lie the State Land Use Agricultural District and that TMK: (4) 1-2-002:009 appears to lie in the Limited Subzone of the State Land Use Conservation District.¹

Based on the information in the DEA, it appears that the proposed Kekaha Municipal Landfill Phase II Vertical Expansion project will not involve work or land uses in the Conservation District. The OCCL notes that the proposed vertical expansion from 120ft amsl to 171.5ft amsl appears to be distinct and separate from the actions approved by the Board of Land and Natural Resources (BLNR) and Conservation District Use Permit (CDUP) KA-3625.

Should you have any questions, feel free to contact Trevor Fitzpatrick of the Office of Conservation and Coastal Lands at (808) 798-6660 or trevor.j.fitzpatrick@hawaii.gov.

Sincerely,

S Michael Cain

Michael Cain, Administrator
Office of Conservation and Coastal Lands

CC: *Kauai Division Land Office
County of Kauai, Planning Department*

¹ According to the Land Use Commission and DEA, the state land use district boundary between the Agricultural and Conservation District is located on the boundary of TMKs: (4) 1-2-002:009 and (4) 1-2-002:001.

Yost, Kayla

From: DOH.CABPDTSS <DOH.CABPDTSS@doh.hawaii.gov>
Sent: Wednesday, August 30, 2023 2:39 PM
To: Yost, Kayla
Subject: DEA/AFNSI for Kekaha Landfill Expansion Project Comment

Follow Up Flag: Follow up
Flag Status: Flagged

You don't often get email from doh.cabpdtss@doh.hawaii.gov. [Learn why this is important](#)

⚠ CAUTION: This email originated from an external sender. Verify the source before opening links or attachments. **⚠**

Subject: The Draft Environmental Assessment and Anticipated Finding of No Significant Impact (DEA/AFNSI); Kekaha Municipal Landfill Phase II Vertical Expansion

Agency: Allison Fraley
AFraley@kauai.gov
(808) 241-4837
4444 Rice Street
Mo'ikeha Building, Suite 275
Lihue, Hawaii 96766
United States

Consultant: Tetra Tech, Inc.
Kayla Yost
kayla.yost@tetratech.com
(808) 441-6600
737 Bishop Street, Suite 2000
Honolulu, Hawaii 96813
United States

Aloha,

Thank you for the opportunity to provide comments on the subject DEA/AFONSI for the proposed Kekaha Municipal Landfill Phase II Vertical Expansion Project. The Clean Air Branch (CAB) would like to make the following comments on the subject DEA/AFNSI:

- For long-term impacts that may include odor and dust, the applicable provisions in Hawaii Administrative Rules §11-60.1-2 and §11-60.1-33 shall be followed.
- The CAB permitting section needs to be contacted at (808)-s586-4200 to determine if a permit application for modification is required for the land-fill expansion project.
- Also, please see our standard comments at:

<https://health.hawaii.gov/cab/files/2022/05/Standard-Comments-for-Land-Use-Reviews-Clean-Air-Branch-2022-1.pdf>

Please let us know if you have any questions or concerns.

Sincerely,

Standard Comments for Land Use Reviews
Clean Air Branch
Hawaii State Department of Health

If your proposed project:

Requires an Air Pollution Control Permit

- You must obtain an air pollution control permit from the Clean Air Branch and comply with all applicable conditions and requirements. If you do not know if you need an air pollution control permit, please contact the Permitting Section of the Clean Air Branch.
- Permit application forms can be found here: <https://health.hawaii.gov/cab/permit-application-forms/>

Includes construction, demolition, or renovation activities that involve potential asbestos and lead containing materials:

- Asbestos may be present in any existing structure. Prior to demolition, you must contact the Indoor and Radiological Health Branch, Asbestos-Lead Section. Testing may be required to determine if building materials may contain asbestos, such as: drywall, vinyl floor tile, mastic, caulking, roofing materials, insulation, special coatings, etc.
- Structures built prior to 1980 may also contain lead paint. Prior to demolition, contact the Indoor and Radiological Health Branch, Asbestos-Lead Section. Testing may need to be conducted to determine if building materials contain lead.
- Some construction activities have the potential to create excessive noise and may require noise permits. For DOH Noise Permits and/or Variances and for more information on the Indoor and Radiological Health Branch, please visit: <https://health.hawaii.gov/irhb/>

Includes demolition of structures or land clearing

- Department of Health, Administrative Rule: Title 11, Chapter 26, Vector Control, Section 11-26-35, Rodents; Demolition of Structures and Clearing of Sites and Vacant Lots, requires that:
 - No person, firm or corporation shall demolish or clear any structure, site, or vacant lot without first ascertaining the presence or absence of rodents which may endanger the public health by dispersal from such premises.
 - Should such inspection reveal the presence of rodents, the person, firm, or corporation shall eradicate the rodents before demolishing or clearing the structure, site, or vacant lot.
 - The Department may conduct an independent inspection to monitor compliance, or request a written report.
- The purpose of this rule is to prevent rodents from dispersing into adjacent areas from infested buildings or vacant lands during demolition or land clearing.
- Contractors may either hire a pest control firm or do the job themselves with a qualified employee. Rodenticides must be inspected daily and replenished as necessary to provide a continuous supply for at least one week prior to the start of any work.

- To submit notifications or for more information, contact the Vector Control Branch:
<https://health.hawaii.gov/vcb/>

Has the potential to generate fugitive dust

- You must reasonably control the generation of all airborne, visible fugitive dust. Note that construction activities that occur near to existing residences, businesses, public areas and major thoroughfares exacerbate potential dust concerns. It is recommended that a dust control management plan be developed which identifies and mitigates all activities that may generate airborne, visible fugitive dust. The plan, which does *not* require Department of Health approval, should help you recognize and minimize potential airborne, visible fugitive dust problems.
- Construction activities must comply with the provisions of Hawaii Administrative Rules, §11-60.1-33 on Fugitive Dust. In addition, for cases involving mixed land use, we strongly recommend that buffer zones be established, wherever possible, in order to alleviate potential nuisance complaints.
- You must provide reasonable measures to control airborne, visible fugitive dust from the road areas and during the various phases of construction. These measures include, but are not limited to, the following:
 - Planning the different phases of construction, focusing on minimizing the amount of airborne, visible fugitive dust-generating materials and activities, centralizing on-site vehicular traffic routes, and locating potential dust-generating equipment in areas of the least impact;
 - Providing an adequate water source at the site prior to start-up of construction activities; Landscaping and providing rapid covering of bare areas, including slopes, starting from the initial grading phase;
 - Minimizing airborne, visible fugitive dust from shoulders and access roads;
 - Providing reasonable dust control measures during weekends, after hours, and prior to daily start-up of construction activities; and
 - Controlling airborne, visible fugitive dust from debris being hauled away from the project site.
- If you have questions about fugitive dust, please contact the Enforcement Section of the Clean Air Branch

Increases the population and potential number of vehicles in an area:

- The creation of apartment buildings, complexes, and residential communities may increase the overall population in an area. Increasing the population in an area may inadvertently lead to more air pollution via vehicle exhaust. Vehicle exhaust releases molecules in the air that negatively impact human health and air quality, as they are known lung irritants, carcinogens, and greenhouse gases.
- Ensure that residents keep their vehicle idling time to three (3) minutes or less.
- Provide bike racks and/or electric vehicle charging stations for residents.
- Ensure that there are sufficient and safe pedestrian walkways and crosswalks throughout and around the development.
- Conduct a traffic study to ensure that the new development does not significantly impact traffic in the area.



Clean Air Branch (808) 586-4200 cab@doh.hawaii.gov	Indoor Radiological Health Branch (808) 586-4700	Vector Control Branch (808) 586-4400
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Yost, Kayla

From: Maruoka, Colin <Colin.Maruoka@doh.hawaii.gov>
Sent: Tuesday, August 8, 2023 2:56 PM
To: Yost, Kayla
Cc: Allison Fraley
Subject: RE: Public Review of the HRS Chapter 343 Draft Environmental Assessment for the Kekaha Municipal Landfill Phase II Vertical Expansion

Follow Up Flag: Follow up
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You don't often get email from colin.maruoka@doh.hawaii.gov. [Learn why this is important](#)

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Dear Ms. Yost

The Department of Health, Clean Water Branch (CWB) revised a memorandum, July 28, 2023, notifying other agencies and project owners that CWB will no longer respond directly to requests for comments on the documents listed in the memo. The memorandum provided CWB's Standard Comments that agencies and project owners may use as CWB's official comments. The memorandum and standard comments can be located at <https://health.hawaii.gov/cwb/files/2023/07/Memorandum-for-CWB-Standard-Project-Comments-07016CMHK.23-part-1-signed.pdf>. If you require further information, feel free to contact me.

Sincerely,

Colin T. Maruoka

Clean Water Branch
State of Hawaii Department of Health
2827 Waimano Home Road, #225
Pearl City, Hawaii 96782
Phone: (808) 586-4309

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From: Yost, Kayla <KAYLA.YOST@tetrattech.com>
Sent: Tuesday, August 8, 2023 11:25 AM
To: Yost, Kayla <KAYLA.YOST@tetrattech.com>
Cc: Allison Fraley <afraley@kauai.gov>
Subject: [EXTERNAL] Public Review of the HRS Chapter 343 Draft Environmental Assessment for the Kekaha Municipal Landfill Phase II Vertical Expansion

Aloha,

The Draft Environmental Assessment (Draft EA) for the Kekaha Municipal Landfill Phase II Vertical Expansion Project was published by the Office of Planning and Sustainable Development, Environmental Review Program (ERP) in the August 8, 2023 edition of *The Environmental Notice*. The document can be accessed via the link provided below. Hard copies of the Draft EA are available at the Hawaii State Library, Hawaii Document Center (478 S. King Street, Honolulu), Lihū'e Regional Library (4344 Hardy Street, Lihū'e), and Waimea Public Library (9750 Kaumuali'i Hwy, Waimea).

https://files.hawaii.gov/dbedt/erp/Doc_Library/2023-08-08-KA-DEA-Kekaha-Municipal-Landfill-Phase-II-Vertical-Expansion.pdf

The County of Kaua'i, Department of Public Works, Solid Waste Division is proposing a vertical expansion of Phase II at the Kekaha Municipal Solid Waste Landfill (KLF) (Proposed Action). The KLF encompasses approximately 98 acres of land within TMK 1-2-002:001 (por.) and TMK 1-2-002:009, which is owned by the State of Hawai'i. KLF Phase II currently receives all municipal solid waste (MSW) generated on the island and is projected to reach capacity in October 2026. The purpose of the Proposed Action is to prolong the life of the KLF prior to exhausting the island's only permitted landfill airspace and to provide safe disposal of MSW in Kaua'i County while a long-term MSW capacity solution can be identified. The Proposed Action would extend Phase II operations upward from the currently permitted maximum elevation of 120 feet (ft) above mean sea level (amsl) to a maximum elevation of 171.5 ft amsl. The limits of the proposed vertical expansion would be approximately 13 acres located within the existing, permitted Phase II footprint and would be constructed above the existing subtitle D base liner.

The Draft EA includes a detailed description of the Proposed Action and an evaluation of the potential effects of the Proposed Action, per the requirements of HRS Chapter 343 and HAR 11-200.1. If you would like to submit comments on the Draft EA, they must be postmarked by September 7, 2023 (30-day comment period). Please submit written comments to the parties listed below.

Applicant: County of Kaua'i, Department of Public Works, Solid Waste Division
4444 Rice Street, Mo'ikeha Building, Suite 275, Lihū'e, HI, 96766
Contact: Allison Fraley, AFraley@kauai.gov

Agent: Tetra Tech
737 Bishop Street, Suite 2000, Honolulu, Hawai'i 96813
Contact: Kayla Yost, kayla.yost@tetrattech.com

Thank you for your participation in the environmental review process.

Sincerely,

Kayla Yost | Environmental Planner

Pronouns: she, her, hers

Business +1 (808) 441-6600 | Mobile +1 (808) 352-2247 | Fax +1 (808) 536-3953 | kayla.yost@tetrattech.com

Tetra Tech | *Leading with Science*® | CES

737 Bishop St. Suite 2000 | Mauka Tower | Honolulu, HI 96813-3201 | tetrattech.com

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Please consider the environment before printing. [Read more](#)

Yost, Kayla

From: Kaneshiro, Michael <michael.kaneshiro@doh.hawaii.gov>
Sent: Wednesday, August 9, 2023 10:35 AM
To: Allison Fraley; Yost, Kayla
Subject: CWB Response to Request for Comments on the Kekaha Municipal Landfill Phase II Vertical Expansion Project DEA

Follow Up Flag: Follow up
Flag Status: Flagged

You don't often get email from michael.kaneshiro@doh.hawaii.gov. [Learn why this is important](#)

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Aloha Allison Fraley and Kayla Yost,

Thank you for reaching out to the State of Hawaii, Department of Health (DOH), Environmental Management Division's (EMD) Clean Water Branch (CWB) requesting comments on the **Draft Environmental Assessment for the Kekaha Municipal Landfill Phase II Vertical Expansion Project**. CWB offers standard comments on Environmental Assessments, Environmental Impact Statements, and other documents on our website at: [Clean Water Branch | CWB Standard Comments \(hawaii.gov\)](#). Please click on the link [CWB-Standard-Project-Comments-20221007.pdf \(hawaii.gov\)](#) for CWB's standard project comments.

Please let us know if you have any further questions.

Mahalo,
Mike Kaneshiro
Clean Water Branch
State of Hawaii Department of Health
Phone: (808) 586-4309

Notice: This information and attachments are intended only for the use of the individual(s) or entity to which it is addressed, and may contain information that is privileged and/or confidential. If the reader of this message is not the intended recipient, any dissemination, distribution, or copying of this communication is strictly prohibited and may be punishable under state and federal law. If you have received this communication and/or attachments in error, please notify the sender via e-mail immediately and destroy all electronic and paper copies.

JOSH GREEN, M.D.
GOVERNOR OF HAWAII
KE KĀʻĀINA O KA MOKULĀINA O HAWAII



KENNETH S. FINK, MD, MGA, MPH
DIRECTOR OF HEALTH
KA LUNA HO'OKOLE

STATE OF HAWAII
DEPARTMENT OF HEALTH
KA 'OIHANA OLAKINO
P. O. BOX 3378
HONOLULU, HI 96801-3378

In reply, please refer to:
File:

07016CMHK.23

July 28, 2023

MEMORANDUM

SUBJECT: Clean Water Branch Standard Project Comments

TO: Agencies and Project Owners

FROM: DARRYL LUM, P.E., CHIEF *Darryl Lum*
Clean Water Branch

This memo is provided for your information and sharing. You are encouraged to share this memo with your project partners, team members, and appropriate personnel.

The Department of Health (DOH), Clean Water Branch (CWB) will no longer be responding directly to requests for comments on the following documents (Pre-consultation, Early Consultation, Preparation Notice, Draft, Final, Addendums, and/or Supplements):

- Environmental Impact Statements (EIS)
- Environmental Assessments (EA)
- Stream Channel Alteration Permits (SCAP)
- Stream Diversion Works Permits (SDWP)
- Well Construction/Pump Installation Permits
- Conservation District Use Applications (CDUA)
- Special Management Area Permits (SMAP)
- Shoreline Setback Areas (SSA)

For agencies or project owners requiring DOH-CWB comments for one or more of these documents, please utilize the DOH-CWB Standard Comments below regarding your project's responsibilities to maintain water quality and any necessary permitting. DOH-CWB Standard Comments are also available on the DOH-CWB website located at: <http://health.hawaii.gov/cwb/>.

DOH-CWB Standard Comments

The following information is for agencies and/or project owners who are seeking comments regarding environmental compliance for their projects with the Hawaii Administrative Rules (HAR), Chapters 11-53, 11-54 and 11-55. You may be responsible for fulfilling additional requirements related to our program.

1. Any project and its potential impacts to State waters must meet the following criteria:
 - a. Antidegradation policy (HAR, Section 11-54-1.1), which requires that the existing uses and the level of water quality necessary to protect the existing uses of the receiving State water be maintained and protected.
 - b. Designated uses (HAR, Section 11-54-3), as determined by the classification of the receiving State waters.
 - c. Water quality criteria (HAR, Sections 11-54-4 through 11-54-8).
2. You may be required to obtain National Pollutant Discharge Elimination System (NPDES) permit coverage for point source water pollutant discharges into State surface waters (HAR, Chapter 11-55). Point source means any discernible, confined, and discrete conveyance from which pollutants are or may be discharged.

For NPDES general permit coverage, a Notice of Intent (NOI) form must be submitted at least 30 calendar days before the commencement of the discharge. An application for a NPDES individual permit must be submitted at least 180 calendar days before the commencement of the discharge. To request NPDES permit coverage, you must submit the applicable form ("CWB Individual NPDES Form" or "CWB NOI Form") through the e-Permitting Portal and the hard copy certification statement with the respective filing fee (\$1,000 for an individual NPDES permit or \$500 for a Notice of General Permit Coverage). Please open the e-Permitting Portal website located at: <https://eha-cloud.doh.hawaii.gov/epermit/>. You will be asked to do a one-time registration to obtain your login and password. After you register, click on the Application Finder tool and locate the appropriate form. Follow the instructions to complete and submit the form.

The DOH, Environmental Health Administration (EHA) e-Permitting Portal received Cross-Media Electronic Reporting Rule (CROMERR) certification by the Environmental Protection Agency (EPA) for electronic signature. Currently, Applicants and Permittees may now certify and submit EHA Electronic Signature Forms electronically through the EHA e-Permitting Portal without the need to physically send in an ink signature and CD/DVD/flash drive.

Beginning January 31, 2023, the DOH-CWB will only utilize electronic signature e-Permitting forms and discontinue the hard-copy signature forms. All hard-copy signature certification e-Permitting forms, including compliance forms, will be inactivated.

The electronic signature forms will require electronic signature approval to submit a form to the CWB. For details on how to obtain the electronic signature approval please visit CWB website located at:

<https://health.hawaii.gov/cwb/announcements/cwb-announces-new-requirement-for-electronic-signature-approval-for-all-submissions-beginning-january-31-2023/>.

The NPDES NOI or application will be processed after the filing fees submitted and payable to the "State of Hawaii" in the form of a pre-printed check, cashier's check, money order, or as otherwise specified by the director is received by the CWB.

Some of the activities requiring NPDES permit coverage include, but, are not limited to:

a. Discharges of Storm Water.

i. For Construction Activities Disturbing One (1) or More Acres of Total Land Area.

By HAR Chapter 11-55, an NPDES permit is required before the start of the construction activities that result in the disturbance of one (1) or more acres of total land area, including clearing, grading, and excavation. The total land area includes a contiguous area where multiple separate and distinct construction activities may be taking place at different times on different schedules under a larger common plan of development or sale.

ii. For Industrial Activities for facilities with primary Standard Industrial Classification (SIC) Codes regulated in the Code of Federal Regulations (CFR) at 40 CFR 122.26(b)(14)(i) through (ix) and (xi). If a facility has more than one SIC code, the activity that generates the greatest revenue is the primary SIC code. If revenue information is unavailable, use the SIC code for the activity with the most employees. If employee information is also unavailable, use the SIC code for the activity with the greatest production.

iii. From a small Municipal Separate Storm Sewer System (along with certain non-storm water discharges).

- b. Discharges to State surface waters from construction activity hydrotesting or dewatering.
- c. Discharges to State surface waters from cooling water applications.
- d. Discharges to State surface waters from the application of pesticides (including insecticides, herbicides, fungicides, rodenticides, and various other substances to control pest) to State waters.
- e. Well-Drilling Activities.

Any discharge to State surface waters of treated process wastewater effluent associated with well drilling activities is regulated by HAR Chapter 11-55. Discharges of treated process wastewater effluent (including well drilling slurries, lubricating fluids wastewater, and well purge wastewater) to State surface waters requires NPDES permit coverage.

NPDES permit coverage is not required for well pump testing. For well pump testing, the discharger shall take all measures necessary to prevent the discharge of pollutants from entering State waters. Such measures shall include, if necessary, containment of initial discharge until the discharge is essentially free of pollutants. If the discharge is entering a stream or river bed, best management practices (BMPs) shall be implemented to prevent the discharge from disturbing the clarity of the receiving water. If the discharge is entering a storm drain, the discharger must obtain written permission from the owner of the storm drain prior to discharge. Furthermore, BMPs shall be implemented to prevent the discharge from collecting sediments and other pollutants prior to entering the storm drain.

- 3. A Section 401 Water Quality Certification (WQC) may be required if your project/activity:
 - a. Requires a federal license or permit; and
 - b. May result in a discharge into waters of the United States (WOTUS).

"License or permit" means any permit, certificate, approval, registration, charter, membership, statutory exemption, or other form of permission granted by an agency of the federal government to conduct any activity which may result in any discharge.

The term "discharge" is defined in Clean Water Act, Subsections 502(16), 502(12), and 502(6).

Examples of "discharge" include, but are not limited to, allowing the following pollutants to enter WOTUS from the surface, or in-water: solid waste, rock/sand/dirt, heat, sewage, construction debris, any underwater work, chemicals, fugitive dust/spray paint, agricultural wastes, biological materials, industrial wastes, concrete/sealant/epoxy, and washing/cleaning effluent.

Determine if your project/activity requires a federal permit, license, certificate, approval, registration, or statutory exemption by contacting the appropriate federal agencies (e.g. Department of the Army (DA), U.S. Army Corps of Engineers (COE), Pacific Ocean Division Honolulu District Office (POH) Tel: (808) 835-4303; U.S. Environmental Protection Agency, Region 9 Tel: (415) 947-8021; Federal Energy Regulatory Commission Tel: (866) 208-3372; U.S. Coast Guard Office of Bridge Programs Tel: (202) 372-1511). If your project involves work in, over, or under waters of the United States, it is highly recommended that you contact the COE-POH regarding their DA permitting requirements.

To request an individual Section 401 WQC, you must complete and submit the Section 401 WQC application together with \$1,000 filing fee made payable to the "State of Hawaii" in the form of a check or other method specified by the department. This application is available on the e-Permitting Portal website located at: <https://eha-cloud.doh.hawaii.gov/epermit/>.

The processing of a Section 401 WQC application will begin after the CWB has received filing fee. The processing of a Section 401 WQC application is also subject to the compliance with 40 CFR §121 requirements.

Beginning January 31, 2023, the DOH-CWB will only utilize electronic signature e-Permitting forms and discontinue the hard-copy signature forms. All hard-copy signature certification e-Permitting forms, including compliance forms, will be inactivated.

The electronic signature forms will require electronic signature approval to submit a form to the CWB. For details on how to obtain the electronic signature approval please visit CWB website located at: <https://health.hawaii.gov/cwb/announcements/cwb-announces-new-requirement-for-electronic-signature-approval-for-all-submissions-beginning-january-31-2023/>.

Please see HAR, Chapters 11-53 and 11-54 for the State's Water Quality Standards and for more information on the Section 401 WQC. HAR, Chapters 11-53 and 11-54 are available on the CWB website at: <http://health.hawaii.gov/cwb/>.

4. Please note that all discharges related to the project construction or operation activities, whether or not NPDES permit coverage and/or Section 401 WQC are required, must comply with the State's Water Quality Standards. Noncompliance with water quality requirements contained in HAR, Chapters 11-53 and 11-54, and/or permitting requirements, specified in HAR, Chapter 11-55, may be subject to penalties of \$25,000 per day per violation and up to two (2) years in jail.
5. It is the State's position that all projects must reduce, reuse, and recycle to protect, restore, and sustain water quality and beneficial uses of State waters. Project planning should:
 - a. Treat storm water as a resource to be protected by integrating it into project planning and permitting. Storm water has long been recognized as a source of irrigation that will not deplete potable water resources. What is often overlooked is that storm water recharges ground water supplies and feeds streams and estuaries; to ensure that these water cycles are not disrupted, storm water cannot be relegated as a waste product of impervious surfaces. Any project planning must recognize storm water as an asset that sustains and protects natural ecosystems and traditional beneficial uses of State waters, like community beautification, beach going, swimming, and fishing. The approaches necessary to do so, including low impact development methods or ecological bio-engineering of drainage ways must be identified in the planning stages to allow designers opportunity to include those approaches up front, prior to seeking zoning, construction, or building permits.
 - b. Clearly articulate the State's position on water quality and the beneficial uses of State waters. The plan should include statements regarding the implementation of methods to conserve natural resources (e.g. minimizing potable water for irrigation, gray water re-use options, energy conservation through smart design) and improve water quality.
 - c. Consider storm water Best Management Practice (BMP) approaches that minimize the use of potable water for irrigation through storm water storage and reuse, percolate storm water to recharge groundwater to revitalize natural hydrology, and treat storm water which is to be discharged.

- d. Consider the use of green building practices, such as pervious pavement and landscaping with native vegetation, to improve water quality by reducing excessive runoff and the need for excessive fertilization, respectively.
- e. Identify opportunities for retrofitting or bio-engineering existing storm water infrastructure to restore ecological function while maintaining, or even enhancing, hydraulic capacity. Consideration should be given to areas prone to flooding, or where the infrastructure is aged and will need to be rehabilitated.

JOSH GREEN, M.D.
GOVERNOR



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
869 PUNCHBOWL STREET
HONOLULU, HAWAII 96813-5097

EDWIN H. SNIFFEN
DIRECTOR

Deputy Directors
FORD N. FUCHIGAMI
DREANALEE K. KALILI
TAMMY L. LEE
ROBIN K. SHISHIDO

IN REPLY REFER TO:

DIR 0623
STP 8.3656

September 7, 2023

VIA EMAIL: kayla.yost@tetrattech.com

Ms. Kayla Yost
Project Manager and Environmental Planner
Tetra Tech, Inc.
737 Bishop Street, Suite 2000
Honolulu, Hawaii 96813

Dear Ms. Yost:

Subject: Draft Environmental Assessment
Kekaha Municipal Landfill Phase II Vertical Expansion
Kekaha, Kauai, Hawaii
Tax Map Key: (4) 1-2-002: 001 (por.) and 009

Thank you for your letter, dated August 8, 2023, requesting the Hawaii Department of Transportation's (HDOT) review and comments on the Draft Environmental Assessment (EA) for the subject project. HDOT understands the County of Kauai, Department of Public Works, Solid Waste Division is proposing a vertical expansion of Phase II at the Kekaha Municipal Solid Waste Landfill located in Kekaha, Kauai. The proposed project would provide additional air space volume for the placement of refuse while the new landfill facility or other long-term landfill capacity solutions are completed.

The site is adjacent to Kaunualii Highway (State Route 50) with existing access via a private road. Based on the project description and location, HDOT does not anticipate any significant adverse impacts to State roadways, therefore we have no comments to provide.

Please submit any subsequent land use entitlement-related requests for review or correspondence to the HDOT Land Use Intake email address at DOT.LandUse@hawaii.gov.

If there are any questions, please contact Mr. Blayne Nikaido, Planner, Land Use Section of the HDOT Statewide Transportation Planning Office at (808) 831-7979 or via email at blayne.h.nikaido@hawaii.gov.

Sincerely,

A handwritten signature in black ink, appearing to read "Ed Sniffen", is written over a horizontal line.

EDWIN H. SNIFFEN
Director of Transportation

c: Allison Fraley – County of Kauai, Department of Public Works, Solid Waste Division
(VIA Email: AFraley@kauai.gov)

ENGINEERING DIVISION

DEPARTMENT OF PUBLIC WORKS

TROY K. TANIGAWA, P.E., COUNTY ENGINEER

BOYD GAYAGAS, DEPUTY COUNTY ENGINEER



DEREK S.K. KAWAKAMI, MAYOR
REIKO MATSUYAMA, MANAGING DIRECTOR

September 25, 2023

Tetra Tech Inc.
737 Bishop St. Suite 2000, Mauka Tower
Honolulu, HI 96813-3201
Attention: Ms. Kayla Yost (kayla.yost@tetrattech.com)

Subject: Public Review of the HRS Chapter 343 Draft Environmental Assessment for the Kekaha
Municipal Landfill Phase II Vertical Expansion. TMK: (4)1-2-002:001Por & TMK: (4)1-2-002:009

Dear Ms. Yost:

We completed our review of the subject draft environmental assessment that was submitted to our office with your cover letter dated August 8, 2023. Proposed grading work for the subject project is exempt from obtaining a grading permit, since the work is within a government controlled area with active monitoring of activities consistent with the County's Sediment & Erosion Control Ordinance 808. In addition, because the subject project lies within the existing Phase I footprint, we offer no comments with respect to the County of Kaua'i's and Floodplain Management Ordinance 831.

Should you have any questions, please contact Paul Togioka at (808) 241-4889 or ptogioka@kauai.gov.

Sincerely,

Michael Moule, P.E.
Chief, Engineering Division

MM/PT

Copy: Alison Fraley (afraley@kauai.gov)



September 7, 2023

Via Email

Allison Fraley
County of Kauaʻi, Department of Public Works
4444 Rice Street
Moʻikeha Building, Suite 275
Līhuʻe, HI 96813
afraley@kauai.gov

Re: Kekaha Municipal Landfill Phase II Vertical Expansion – Draft EA/AFNSI

Dear Ms. Fraley,

Nā Kiaʻi Kai, Kaunalewa, and Earthjustice hereby submit comments on the Draft Environmental Assessment (“DEA”) and Anticipated Finding of No Significant Impact (“AFNSI”) for the Kekaha Municipal Landfill Phase II Vertical Expansion.

Nā Kiaʻi Kai is a community-based organization established by West Kauaʻi residents, including Native Hawaiian fishers and cultural practitioners, to protect West Kauaʻi’s coastal waters, humans, and aquatic life from pollution. Kaunalewa is a Native Hawaiian beneficiary-led non-profit organization dedicated to cleaning up brownfield sites and ending environmental injustice in West Kauaʻi. Earthjustice is the premier nonprofit public interest environmental law organization and has a Mid-Pacific Office in Honolulu. For years, Earthjustice has represented West Kauaʻi community groups, including Nā Kiaʻi Kai, in numerous matters to combat environmental injustices on the west side, such as stream diversions, toxic pesticide use, and ocean water pollution.

The County of Kauaʻi (“County”) proposes to expand the Kekaha Landfill for a fifth time since 1998, which would represent the landfill’s greatest height increase to date of more than 50 feet. The Kekaha Landfill is the island’s *only* landfill. The landfill is located close to the shoreline in a low-elevation, former wetland area prone to heavy rains and other coastal hazards. Portions of the Kekaha Landfill remain unlined and groundwater monitoring wells downgradient from both the unlined and lined portions are contaminated with elevated levels of arsenic. Over the years, the landfill has been a dumping site for toxic substances including pesticides, asbestos, disaster debris, and hazardous waste.

The proposed height increase would merely serve as a quick fix to a long-term problem. The County has its eyes set on constructing a *new landfill* just north of the current landfill on Mānā Plain agricultural lands. Both landfill developments would perpetuate and deepen environmental injustices that these largely Native Hawaiian, low-income communities have been enduring for many decades.

Under the Hawai‘i Environmental Policy Act (“HEPA”), Hawai‘i Revised Statutes (“HRS”) chapter 343, an environmental assessment (“EA”) must openly assess “whether an action *may have a significant effect*” on the environment, *id.* § 343-1 (emphasis added), thereby requiring preparation of a full environmental impact statement (“EIS”), *id.* § 343-5(b). *See also* HRS § 343-5(c)(4).

There can be no question that expanding landfill capacity in this sensitive coastal area at the very least meets the minimum threshold for a full EIS, which must include full disclosure of harmful effects as well as an updated and comprehensive analysis of non-west side alternatives. Without this information, the County will be ill-equipped to “ensure that environmental concerns are given appropriate consideration” in these critical decisions about the island’s waste management. HRS § 343-1.

I. HISTORY OF ENVIRONMENTAL INJUSTICE IN KEKAHA

For more than a century, Kekaha and surrounding areas in West Kaua‘i have borne the brunt of the island’s environmental and cultural injustices. Beginning in the late 1800s, sugar plantations filled and channelized the Mānā Plain—once home to a thriving network of wetlands and freshwater springs—to artificially lower the groundwater table and create dry land suitable for sugar cultivation. These dewatering efforts resulted in forty miles of unlined drainage ditches, two pumping stations, and at least six ocean outfalls that span the Mānā Plain and the West Kaua‘i coastline from Kekaha to Polihale. The sugar plantations also dammed and drained the Waimea River and its tributaries to irrigate their crops. This water pumping and water diversion infrastructure is still in operation today and has all but destroyed the complex stream, wetland, and reef ecosystems along West Kaua‘i from mauka to makai.

After Kekaha Sugar Company—the last sugar plantation on Kaua‘i—closed in 2000, it did little to clean up and remediate the land it had once occupied, leaving the soil and water contaminated with long-lasting pesticides like atrazine, and the Sugar Mill and related facilities and infrastructure left abandoned and deteriorating. Sediment samples from these sites have shown elevated levels of arsenic, dioxins/furans, and mercury.¹ There are minimal barriers

¹ *See, e.g.*, County of Kaua‘i Office of Economic Development, FY2021 US EPA Brownfield Community-Wide Assessment Grant Application for Kekaha, Kaua‘i (appended hereto as Attachment A); U.S. Environmental Protection Agency Region 9, Site Reassessment

between this dilapidated infrastructure and nearby homes (including state elderly housing and a Department of Hawaiian Homelands affordable housing subdivision), a church, a Native Hawaiian charter school, drainage ditches leading to the ocean, and beaches.² The Sugar Mill site also contains eleven underground storage tanks, transformers and capacitors that are suspected to release polychlorinated biphenyls (“PCB”), and pulverized asbestos in buildings.³

Fig. 1. Former Kekaha Sugar Mill (Source: County of Kaua‘i Office of Economic Development, FY2021 US EPA Brownfield Community-Wide Assessment Grant Application for Kekaha, Kaua‘i)



With the end of the plantation era, the biotech industry saw an opening to seize upon agricultural lands on and along the Mānā Plain and quickly transformed West Kaua‘i into ground zero for agrochemical operations.⁴ Rampant pesticide use on the west side came to a head in 2006 and 2008, when students and staff at Waimea Canyon Middle School were taken to

Report, Kekaha Sugar Co., Ltd., EPA ID No.: HID000875203 (Sept. 2013) (appended hereto as Attachment B).

² County of Kaua‘i Office of Economic Development, FY2021 US EPA Brownfield Community-Wide Assessment Grant Application for Kekaha, Kaua‘i.

³ County of Kaua‘i Office of Economic Development, FY2021 US EPA Brownfield Community-Wide Assessment Grant Application for Kekaha, Kaua‘i.

⁴ See, e.g., The Moms On a Mission Hui and Pō‘ai Wai Ola Title VI Complaint Against State of Hawai‘i Department of Agriculture and Agribusiness Development Corporation, Sept. 14, 2016 (appended hereto as Attachment C).

the hospital suffering symptoms of pesticide exposure. Restricted use pesticide applications on the island and in the state continue to be substantially concentrated in West Kaua‘i.

Meanwhile, a host of industrial uses have cropped up in and around Kekaha, including a gravel and asphalt plant (located on county lands), a municipal wastewater treatment plant, a shrimp farm that discharges its wastewater to the ocean, a (now abandoned) sand and rock mining operation, a proposed hydroelectric facility that will exacerbate stream diversions and ocean pollution in the region, and a U.S. Navy base that occupies a vast stretch of coastline. This proposed *fifth* expansion of the Kekaha Landfill,⁵ as well as the County’s plan to construct a new landfill on the Mānā Plain on Agribusiness Development Corporation (“ADC”) lands,⁶ are the latest in a long line of developments that have relegated West Kaua‘i to the island’s dumping grounds.

The DEA openly admits that the Kekaha-Waimea census tract is home to higher proportions of Native Hawaiians and Pacific Islanders and lower proportions of white people than the county as a whole.⁷ The percentages of families and individuals living below the poverty line in Kekaha-Waimea are higher than the county averages.⁸

Now that the County has backed the public into a corner of needing to quickly expand landfill capacity on the island, it comes as little surprise—but with much frustration and outrage—that the County’s final choice is (again) Kekaha.

II. FAILURE TO CONSIDER ALTERNATIVES

The County must immediately and thoroughly assess alternatives to both the Kekaha Landfill’s proposed expansion and its future plan to site and construct a new landfill on the Mānā Plain. An EA must include “[i]dentification and analysis of . . . alternatives considered.” Haw. Admin. R. (“HAR”) § 11-200.1-18(d)(7). The DEA’s analysis of alternatives⁹ falls short for several reasons.

First, the County’s assessment of locations for siting and constructing a new landfill facility is based on outdated information. The County identified the eight potential new landfill sites considered in this DEA 23 years ago in 2000, and the list has only narrowed since then.¹⁰ Relying on decades-old information to inform these landfill decisions of grave and long-lasting

⁵ DEA at 1-5 & tbl. 1-1.

⁶ See DEA at 1-8 n.10.

⁷ DEA at 3-47 & tbl. 3-2.

⁸ DEA at 3-47 & tbl. 3-2.

⁹ See DEA at 2-4 to 2-5.

¹⁰ DEA at 1-7 to 1-8.

consequences fails to satisfy the “hard look” standard HEPA requires. *See Sierra Club v. Dep’t of Transp.*, 115 Hawai’i 299, 342, 167 P.3d 292, 335 (2007) (Under HEPA, courts “must ensure that the agency has taken a ‘hard look’ at environmental factors.”).

Second, the County’s decision to dismiss the Ma’alo, Kālepa, and Kīpū sites, but not the Kekaha Landfill or the proposed ADC site, due to concerns about “airport proximity,”¹¹ lacks any logical support. The DEA lacks any mention of a formal determination by the Federal Aviation Administration (“FAA”) or the Hawai’i Department of Transportation (“HDOT”) on the aviation impacts of siting a new landfill at the Kālepa or Kīpū sites. Preemptively striking these two sites without any formal determination by FAA or HDOT is unreasonable. Moreover, both the Kekaha Landfill and the proposed ADC site are located in close proximity to the Pacific Missile Range Facility, where aviation occurs. It is conceivable that increasing the Kekaha Landfill’s height by more than 40% (*i.e.*, 51.5 feet), or siting a new landfill at the ADC site, will pose risks to aviation. The County must exhaustively consider all available options, particularly those outside of West Kaua’i, to avoid expanding and further entrenching environmental injustices in the region.

Fig. 2. Current and Proposed Landfill Sites (Source: <https://www.facebook.com/zerowastekauai/videos/6293650144003758/>) (last visited Sept. 6, 2023)



¹¹ See DEA at 1-8 & n.10.

Third, the DEA lacks any consideration or assessment of distributing waste disposal throughout the island on an ahupua'a, moku, or other community-based level. Before the Kekaha Landfill was expanded to become the island's only landfill, waste disposal facilities were distributed throughout the island. The County should consider implementing a modernized system of distributed waste management, rather than forcing this one community to bear 100% of these burdens. A distributed waste disposal system could also incentivize each community to be more mindful and conservative regarding their own waste generation.

Fourth, the DEA lacks thorough analysis of off-island disposal options. The DEA mentions this option in passing but then dismisses it out-of-hand, without any detailed analysis of costs and benefits compared to other alternatives.¹² Aside from H-POWER on O'ahu, landfills on the continent with more modernized recycling capabilities could provide a viable alternative. Off-island options could fulfill short-term landfill capacity needs while the County assesses other longer-term, on-island solutions outside of West Kaua'i.

III. FAILURE TO CONSIDER CUMULATIVE IMPACTS TO WATER QUALITY

The DEA fails to disclose and analyze the cumulative impacts that expanding the Kekaha Landfill will have on water quality, when added to past, current, and future water quality impacts along the Mānā Plain. An EA must assess impacts, HAR § 11-200.1-18(d)(7), including "cumulative impacts," which include "the impact on the environment that results from the incremental impact of the action *when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes the other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time,*" *id.* § 11-200.1-2 (emphasis added). The DEA acknowledges that the water table underlying the Mānā Plain is artificially lowered by ADC's pumping stations,¹³ which discharge pumped groundwater and surface water runoff into the nearshore ocean waters. Yet, the DEA does not acknowledge or discuss how dramatically expanding the Kekaha Landfill will exacerbate water contamination, when added to pollution from past, current, and future land uses on the Mānā Plain.

The Kekaha Landfill accepts waste including wastewater treatment sludge, septic tank and cesspool pumping, petroleum-contaminated soil, treated medical waste, dead animals, asbestos-containing materials, and construction/demolition debris.¹⁴ It has also accepted pesticide-contaminated soils from former sugar cane lands located within and outside of Kekaha,¹⁵ as

¹² See DEA at 2-5.

¹³ See DEA at 3-56.

¹⁴ DEA at 1-2.

¹⁵ See, e.g., State of Hawai'i Department of Health, The Facts about the disposal of contaminated soils from the EPA Cleanup Action in Kilauea at the Kekaha Landfill, Aug. 9,

well as disaster debris from Hurricane Iniki.¹⁶ The Kekaha Landfill has been subject to illegal dumping of hazardous waste, including when the landfill was completely unlined.¹⁷

Groundwater monitoring locations along both the unlined and lined portions of the Kekaha Landfill have consistently shown elevated levels of arsenic, in addition to the presence of other contaminants such as cyanide.¹⁸ Sediment at the Sugar Mill ditch has confirmed mercury and arsenic at concentrations above action levels.¹⁹ Water quality testing of drainage ditch waters throughout the Mānā Plain have repeatedly indicated the presence of pesticides.²⁰ Runoff from the gravel and asphalt plant contains aggregate, oil, and fuel.²¹ The shrimp farm is a known source of nutrient pollution and has been associated with fish kill incidents along the coastline.²² These various contaminants flow into drainage ditches that lead to the ocean. The County

2012 (appended hereto as Attachment D), <https://eha-cloud.doh.hawaii.gov/iheer/api/documents/172251/download#:~:text=Special%20wastes%20include%20petroleum%20and,necessary%20to%20prevent%20dust%20generation> (last visited Sept. 6, 2023).

¹⁶ DEA at 3-35.

¹⁷ See, e.g., Letter from State of Hawai'i Deputy Director for Environmental Health Administration to Kaua'i County Engineer, Department of Public Works, re: Kekaha Landfill incident, May 26, 1989 (appended hereto as Attachment E).

¹⁸ See, e.g., Letter from State of Hawai'i Department of Health, Solid and Hazardous Waste Branch to County of Kaua'i Department of Public Works, re: Kekaha Sanitary Landfill, Oct. 3, 2022 (appended hereto as Attachment F).

¹⁹ County of Kaua'i Office of Economic Development, FY2021 US EPA Brownfield Community-Wide Assessment Grant Application for Kekaha, Kaua'i.

²⁰ See, e.g., State of Hawai'i Department of Health and State of Hawai'i Department of Agriculture, 2013-14 State Wide Pesticide Sampling Pilot Project Water Quality Findings, May 2014 (appended hereto as Attachment G), *available at* <https://health.hawaii.gov/heer/files/2019/11/Draft-Final-2013-14-State-Wide-Pesticide-Sampling-Pilot-Project-Water-Quality-Findings-5-21-14-0305-1.pdf> (last visited Sept. 6, 2023); U.S. Geological Survey, Summary File for Dissolved Pesticide Concentrations in Discrete Surface-Water Samples Collected on the Islands of Kaua'i and O'ahu, Hawai'i, November 2016-April 2017, Mar. 14, 2018 (appended hereto as Attachment H), *available at* <https://www.sciencebase.gov/catalog/item/5a5fda0de4b06e28e9bfc63a> (last visited Sept. 6, 2023).

²¹ See, e.g., State of Hawai'i Department of Health, Notice of Violation and Order to Maui Asphalt, Jan. 28, 2022 (appended hereto as Attachment I), *available at* <https://health.hawaii.gov/news/files/2022/02/Maui-Asphalt-NOVO-Docket-No.-2021-CW-EO-26.pdf> (last visited Sept. 6, 2023).

²² State of Hawai'i Department of Health, Notice of Proposed Water Pollution Control Permit for Sunrise Capital, Inc., Dkt. No. HI 0021654, Sept. 9, 2021 (appended hereto as Attachment J).

should openly acknowledge and disclose the various past, present, and future sources of water pollution in the area, and analyze how adding additional waste at the facility will increase or otherwise affect water contamination within and along the Mānā Plain.

IV. FAILURE TO CONSIDER COASTAL HAZARDS

The DEA fails to disclose and mitigate potentially devastating impacts from tsunami, hurricanes, severe storms, and other coastal hazards. HEPA includes a baseline requirement that an EA “[i]dentif[y]” and “analy[ze]” impacts, HAR § 11-200.1-18(d)(7), and propose “mitigation measures” to minimize impacts, *id.* § 11-200.1-18(d)(8). Here, the entire Kekaha Landfill—both the unlined and lined portions—is located within the designated tsunami evacuation zone.²³ Indeed, the entire Mānā Plain is located within the designated tsunami evacuation zone, including the proposed ADC site for a new landfill. The base elevation for Phase II ranges from 6 to 16 feet above mean sea level. Kekaha is also prone to hurricanes, flash flooding, and severe rainfall events that could flood the landfill property. Yet, the DEA contains no analysis of what would happen to the unlined and lined portions of the Kekaha Landfill if a tsunami or other severe wet weather event were to inundate the property and breach the landfill’s drainage systems, or of the combined impacts from the many polluting land uses on the Mānā Plain. It is conceivable that toxic releases from these facilities would individually or in combination render Kekaha uninhabitable, and the nearshore ecosystems destroyed, which is why state law places certain restrictions on siting and expanding landfills in tsunami-prone areas in the first place. *See* HAR § 11-58.1-12(g). The DEA must fully disclose these potential impacts and propose mitigation measures to inform the County’s decision-making.



Fig. 3. West Kaua'i Tsunami Evacuation Zone
(Source: <https://dod.hawaii.gov/hiema/public-resources/tsunami-evacuation-zone/>) (last visited Sept. 6, 2023)

²³ *See* DEA at 3-34.

V. FAILURE TO CONSIDER CULTURAL IMPACTS

The DEA fails to disclose and mitigate impacts to Native Hawaiian traditional and customary practices. HEPA defines “effects” to include “cultural effects.” HAR § 11-200.1-2. Although the DEA acknowledges that “cultural practices such as burial practices, fishing, and recreational activities” occur in the vicinity of the Kekaha Landfill, the DEA declares in conclusory fashion that “no impacts to these cultural practices are anticipated,” and, therefore, “no mitigation actions are necessary.”²⁴ This conclusion lacks any merit. For example, Native Hawaiian fishers and cultural practitioners fish and gather limu along the West Kaua‘i coastline. Because groundwater underlying the Kekaha Landfill ultimately flows to the ocean, groundwater contamination from both the unlined and lined portions of the landfill could significantly and adversely affect Native Hawaiian fishing, gathering, and ceremonial practices along the coastline, particularly when added to other sources of water pollution on the Mānā Plain. The County should consider, disclose, and mitigate these impacts to fulfill its constitutional duties to protect Native Hawaiian traditional and customary rights under article XII, section 7 of the Hawai‘i Constitution.²⁵

VI. A FINDING OF NO SIGNIFICANT IMPACT IS UNWARRANTED; A FULL EIS IS REQUIRED

Based on the foregoing, the County’s proposal to expand the Kekaha Landfill not only “*may* have a significant effect” on the environment but *will* have lasting impacts on West Kaua‘i communities, thus necessitating a full EIS. HRS § 343-4(c)(4) (emphasis added).

The minimum threshold for preparation of an EIS is low. The Hawai‘i Supreme Court has made clear that under the “may have a significant effect” standard, “plaintiffs need not show that significant effects will in fact occur but instead need only raise substantial questions whether a project may have a significant effect.” *Unite Here! Local 5 v. City & Cnty. of Honolulu*, 123 Hawai‘i 150, 178, 231 P.3d 423, 451 (2010) (cleaned up).

²⁴ DEA at 3-22.

²⁵ See *Ka Pa‘akai O Ka ‘Aina v. Land Use Comm’n*, 94 Hawai‘i 31, 477 P.3d 1068, 1084 (2000) (requiring the County to make “specific findings” regarding (1) “the identity and scope of ‘valued cultural, historical, or natural resources’ in [the project] area, including the extent to which traditional and customary native Hawaiian rights are exercised in the [project] area; (2) the extent to which those resources—including traditional and customary Native Hawaiian rights—will be affected or impaired by the proposed action; and (3) the feasible action, if any, to be taken by the [County] to reasonably protect native Hawaiian rights if they are found to exist.”).

Allison Fraley

Kekaha Municipal Landfill Phase II Vertical Expansion – Draft EA/AFNSI

September 7, 2023

Page 10

Preparing an EIS would require, among other things, “a rigorous exploration and objective evaluation of the environmental impacts of all such alternative actions,” with particular attention to “alternatives that might enhance environmental quality or avoid, reduce, or minimize some or all of the adverse environmental effects, costs, and risks of the action,” HAR § 11-200.1-24(h), which is seriously lacking in the current DEA.

The County must act with urgency to fulfill its legal obligations under HEPA and do right by West Kaua‘i communities today and for generations to come.

Sincerely,

/s/ Kylie W. Wager Cruz

Kylie W. Wager Cruz

Earthjustice

/s/ Kawai Warren

Kawai Warren

Nā Kia‘i Kai

/s/ Sean Andrade

Sean Andrade

Kaunalewa

Attachments

cc:

kayla.yost@tetrattech.com



OFFICE OF ECONOMIC DEVELOPMENT
THE COUNTY OF KAUAI

DEREK S. K. KAWAKAMI, MAYOR
MICHAEL A. DAHLIG, MANAGING DIRECTOR

NALANI K. KAAUWAI BRUN
DIRECTOR

Kauai County, Hawaii
FY2021 US EPA Brownfield Community-Wide Assessment Grant Application
Narrative Information Sheet

1. Applicant Identification:

Kauai County, 4444 Rice Street, Suite 200, Lihue, HI 96766

2. Funding Requested:

(a) Assessment Grant Type: Community-wide

(b) Federal Funds Requested:

(i) Requested Amount: \$300,000

(ii) Site-specific Assessment Grant Waiver: *not applicable*

3. Location:

(a) City: Kekaha (a census-designated place)

(b) County: Kauai

(c) State or Reservation: Hawaii



4. Property Information for Site-Specific Proposals:

Not Applicable

5. Contacts:

(a) Project Director:

Name: Nalani Brun, Office of Economic Development - Director

Phone: (808) 241-4952 | Email: nbrun@kauai.gov

Mailing Address: 4444 Rice Street, Suite 200, Lihue, HI 96766

(b) Chief Executive/Highest Ranking Elected Official:

Name: Derek S.K. Kawakami, Mayor

Phone: (808) 241-4900 | Email: mayor@kauai.gov

Mailing Address: 4444 Rice St., Suite 235, Lihue, HI 96766

www.kauai.gov

4444 Rice Street Suite 200 • Lihue, Hawai'i 96766 • (808) 241-4946 (b) • (808) 241-6399 (f)

An Equal Opportunity Employer

ATTACHMENT A
Page 1 of 2



6. Population: Kekaha – 3,394
Kauai County - 71,377



Former Kekeha Sugar Mill

7. Other Factors Checklist:

Other Factors	Page #
Community population is 10,000 or less.	1, 4
Applicant is, or will assist, a federally recognized Indian tribe or United States territory.	
The priority brownfield site(s) is impacted by mine-scarred land.	
The priority site(s) is adjacent to a body of water (i.e., the border of the priority site(s) is contiguous or partially contiguous to the body of water or would be contiguous or partially contiguous with a body of water but for a street, road, or other public thoroughfare separating them).	
The priority brownfield site(s) is in a federally designated flood plain.	1
The reuse of the priority site(s) will facilitate renewable energy from wind, solar, or geothermal energy; or will incorporate energy efficiency measures.	3
30% or more of the overall project budget will be spent on eligible reuse planning activities for priority brownfield site(s) within the target area.	

8. Letter from the State or Tribal Environmental Authority: A letter of acknowledgement from the Hawaii Department of Health is attached.

DAVID Y. IGE
GOVERNOR OF HAWAII



ELIZABETH A. CHAR, M.D.
DIRECTOR OF HEALTH

STATE OF HAWAII
DEPARTMENT OF HEALTH
P. O. BOX 3378
HONOLULU, HI 96801-3378

In reply, please refer to:
File: 2020-221 FG

October 21, 2020

Ms. Nalani Kathleen Kaaui Brun
Director, Office of Economic Development
County of Kauai
4444 Rice Street
Lihue, HI 96766

Subject: **LETTER ACKNOWLEDGING THE COUNTY OF KAUAI
APPLICATION FOR THE 2021 U.S. ENVIRONMENTAL PROTECTION
AGENCY (USEPA) BROWNFIELDS COMMUNITY-WIDE
ASSESSMENT GRANT FOR PROPERTIES WITHIN THE KEKAHA
TOWN.**

Dear Ms. Brun:

I am writing as the environmental authority for the State of Hawaii to acknowledge and support County of Kauai's intent to apply for the Community-Wide Assessment Grant. This letter is required by the USEPA's Fiscal Year 2021 Guidelines for Brownfields Assessment Grants.

The State of Hawaii, Department of Health (HDOH) is very pleased to offer its support to your application and I would like to urge those on the USEPA Selection Committee to give it their favorable consideration. I believe your efforts to assess, cleanup and redevelop contaminated property within the Kekaha Town is commendable. The State's vision is to establish an economically and socially viable unity that can provide a range of public benefits. In addition, your work is a major contribution to the statewide Hawaii Brownfields Program that the DOH is implementing jointly with the State Office of Planning; the Department of Business, Economic Development and Tourism; and the counties.

The Target Areas for the community-wide application are properties in the Kekaha town that have the potential for hazardous substances and/or petroleum contamination including the former Kekaha Sugar Mill site. Once assessment and, if necessary, clean-up of these brownfield sites has been completed, revitalization will be able to proceed. This will result in economic development badly needed in an area of Kauai County that needs additional family-wage jobs. The Kekaha Sugar Mill site is posing health risk to the people of Kauai considering possible exposure to lead based paint and asbestos.

Kauai County is requesting \$300,000 for several assessments, reuse planning and community engagement activities. HDOH encourages the US Environmental Protection Agency to fund Kauai County's brownfield community-wide assessment grant application.

Ms. Nalani Brun
October 21, 2020
Page 2

The HDOH applauds the County of Kauai for implementing the revitalization and redevelopment of Kekaha Town. We realize that the County of Kauai application for the EPA Brownfields Community-Wide Assessment grant is a high priority for the State of Hawaii and that a proper assessment and cleanup of the areas within the Kekaha Town is needed before further development of the property can continue.

In the event that the County of Kauai is awarded this grant, HDOH commits to providing ongoing technical assistance and oversight to assure that the assessment and cleanup is done in accordance with all the State and Federal requirements and that grant funds are properly managed to successfully complete the assessment and cleanup.

The State of Hawaii's vision is to establish and invigorate the Kekaha Town which will benefit a mix of people within a wide spectrum of activities and commerce. The revitalization of the Kekaha Town will eliminate blight and promote housing and commercial development while protecting natural landscapes, agricultural capacity and its tourism market. We look forward to supporting your efforts.

Should there be any questions, or for further assistance, please contact our Brownfields Coordinator, Melody Calisay, Ph.D. of the Department of Health, Hazard Evaluation and Emergency Response Office at 586-4249.

Sincerely,



Fenix Grange, Acting Program Manager
Hazard Evaluation and Emergency Response Office

1. PROJECT AREA DESCRIPTION & PLANS FOR REVITALIZATION:

1.a. Target Area and Brownfields:

1.a.i. Background and Description of Target Area: The Hawaiian island of Kauai was first inhabited by Polynesians from the Marquesas Islands as early as 200 A.D. James Cook was the first European to arrive on Kauai in 1778 and opened the doors to an influx of westerners. The native Hawaiian population was decimated by western diseases. At the turn of the 19th century, the native population was more than 250,000, but by the 1870s was only 60,000. The first sugar plantation was started by Ladd and Company at Koloa, Kauai in 1835, and brought huge changes to the island. The sugar industry became the foundation of the Hawaiian economy for more than 150 years and attracted waves of immigrants from Asia and Europe to work the plantations. In 1959, sugar plantations employed 1 of 12 people in the state. Its agricultural workers were among the highest-paid in the world. Three of the last four Hawaiian sugar plantation operations were located on Kauai, including the Kekaha sugar mill/plantation, which closed in November 2000, succumbing to the collapse of Hawaii's sugar industry. The mill closure resulted in the loss of 240 jobs and caused a ripple effect of economic decline resulting in a proliferation of brownfields. Today, agriculture accounts for only 3.5% of employment in Kauai County. The largest employment sector is hospitality (19.6%), with retail (10.8%) a distant second. Manufacturing accounts for only 2.1% of employment. As these employment data indicate, the economy in Kauai County today is driven by tourism. In 2017, Kauai received 1,276,603 visitors according to the Kauai Visitors Bureau.

Kauai County, the only unit of local government on Kauai is seeking \$300K to address brownfield in Kekaha Town (the Target Area), a 1.0-square-mile census designated place (population 3,394) on the southwest side of Kauai on the shores of the Pacific Ocean. Kekaha's origins are directly related to the Kekaha Sugar Co., established in 1898, and the town literally grew up around the sugar mill. In 1948, the mill/plantation employed 850 workers. The mill was last expanded and modernized in 1954. The number of mill/plantation workers decreased over time due primarily to improved production methods and technology. By 1997, 240 workers were employed at the mill/plantation. The Kekaha mill ceased operations on November 17, 2000 laying off all workers, some of whom were the fourth generation of their family to work for Kekaha Sugar. Today, Kekaha is a bedroom community with most residents traveling more than 30 minutes each way for work and basic services. Due in part to tourism's impact on housing demand, housing/transportation in Kekaha is a cost burden for residents who on average spend 46% of household income on housing and transportation. Due to the rural nature of Kauai, limited goods are produced locally. Instead, most goods are shipped from around the world to Honolulu and from there must be barged to Kauai, resulting in high prices for even basic goods.

1.a.ii. Description of Priority Brownfield Sites: The former Kekaha Sugar Mill shutdown in 2000 and is the highest priority brownfield site in the Target Area. It consists of two contiguous parcels: a 10.7-acre parcel occupied by the former circa 1954 mill; and a 10.2-acre parcel formerly occupied by a seed dipping plant (sugar cane cuttings were treated with mercury prior to planting) and homes, now largely vacant and overgrown with vegetation. A drainage ditch flows across the site near the seed dipping plant and exits the site to the south, travels approximately 500 feet, and discharges into the Pacific Ocean on a public beach. Sampling of sediments in this ditch has confirmed mercury and arsenic concentrations above action levels. Access to the ditch and public beach is not restricted.

The Sugar Mill is in the middle of Kekaha. Residential properties border the site on three sides. Limited piecemeal environmental assessment work has been completed, which detected mercury, arsenic and dioxin/furan concentrations in soil and ditch sediment above action levels. Records indicate that 11 underground storage tanks (USTs) that contained petroleum products are present on the site. Their condition and location are unknown. A former gas station is in the northwest corner of the site where fuel dispensers and hydraulic lifts remain. Fuel reportedly was dispensed from several aboveground tanks located across Kekaha Road and assessment for potential leaks along several hundred feet of subsurface piping has not been conducted. Polychlorinated biphenyl (PCB) releases from transformers and capacitors strewn about the site is suspected. Most disconcerting is the presence of pulverized asbestos-containing thermal insulation observed in mill buildings as asbestos fibers can easily be transported via wind, potentially contaminating nearby properties, and exposing local residents to asbestos. The Sugar Mill site, and all other high priority brownfields described below (except the Former Herbicide Mixing and Wood Treatment Plant site) are located within a Federal Emergency Management Agency Flood Zone.

Other high priority Target Area brownfields include the following: *Former Herbicide Mixing Area* – This site is located across Kekaha Road from the former Sugar Mill. Limited soil sampling has confirmed arsenic and dioxins/furans above action levels in soil. Further assessment is needed to adequately delineate the nature, extent, and concentration of contamination. This site is of particular concern as it is located adjacent to the KANAKA K-12 Public Charter School. *Former Carpenter Shop Area* – This site also is located across Kekaha Road from the former Sugar Mill. Soil sampling has confirmed arsenic

concentrations above action levels in this area, but additional characterization is needed to adequately characterize this area. **Former Herbicide Mixing and Wood Treatment Plant** – This site is located 1.1 miles north of Kekaha, near Kokee Road. This facility was associated with former Kekaha Sugar Co. operations. Suspected contaminants include pesticides, metals, dioxins/furans, and petroleum hydrocarbons. A Native Hawaiian business is operating an agricultural enterprise (taro and mango orchard) near this site and has concerns regarding how the contamination may impact their enterprise.

Kekaha Road, past the Sugar Mill and through the core of Kekaha, has long been the commercial hub for the community. Over time multiple gas stations, auto service facilities and herbicide distributors have come and gone. Additional work is needed to identify and assess these potential brownfields where suspected contaminants include metals, herbicides, petroleum hydrocarbons and solvents.

1.b Revitalization of the Target Area:

1.b.i. Reuse Strategy and Alignment with Revitalization Plans: The reuse plan for the former Kekaha Mill is to create workforce housing, a smart farming enterprise, tourist and cultural center, community sunshine market, community greenhouse, and community manufacturing and incubator facility. Collaboratively, the County and Kauai communities have completed several revitalization plans for established island towns. These plans emphasize local goals/strategies for adaptive reuse and site redevelopment activities on abandoned properties/brownfields in existing towns.

Kauai General Plan (2018): The County recently updated its General Plan to establish a policy for growth management, historic preservation, and redevelopment priorities. The island has an immediate housing need for 9,883 units (390 in Kekaha and nearby Waimea). Adopted policies direct growth to established towns, where creation of infill housing and commercial services limit urban expansion, sprawl, and encroachment into rural areas/farmland. The former Kekaha Sugar Mill is specifically identified in the plan as a reuse site vital to achieving growth capacity.

Draft West Kauai Community Plan (WKCP, 2020): The WKCP guides 20-year land use policy; its goals aim to focus development within town centers, grow local businesses and protect rural areas. Adaptive reuse and brownfield redevelopment are key strategies. A town plan for Kekaha is included in the document. Primary plan themes include improving mobility, celebrating heritage sites, and creating supportive environments for startup businesses. In Kekaha, redeveloping the former Sugar Mill site and redeveloping Kekaha Road as a “Main Street” are key priorities. The Sugar Mill site remains abandoned since its 2000 closure but through community-based master planning the site can be repurposed for badly needed local-serving uses (e.g., housing, jobs, services, civic). The plan envisions Kekaha Road being revitalized with refurbished buildings and infill development. Creating new housing, protecting its historic core, and enhancing multimodal access are priorities.

Kauai Comprehensive Economic Development Strategy (CEDS, 2016): The County’s Economic Development Board collaborated with community stakeholders to create the CEDS which addresses a need for housing, infrastructure improvements and growth management as major issues. The CEDS stresses a need for economic diversity (e.g., growth in technology, health, recreation, and arts/culture). Supporting small businesses is a priority: current and anticipated future island jobs are projected to be primarily at 1-4 person firms. The CEDS documents that the community needs to attract and retain a talented workforce to ensure local businesses thrive and employment opportunities increase. Attracting and retaining this workforce requires quality affordable housing, public infrastructure, and a desirable community setting. Redevelopment of area brownfields is vital to achieving economic well-being, creating a “Main Street” along Kekaha Road, and redeveloping the former Sugar Mill site.

1.b.ii. Outcomes & Benefits of Reuse Strategy: Economic Benefits: The planned town center revitalization initiatives in Kekaha will help transform brownfields into mixed-use catalyst projects with services, new businesses, and housing. This will increase property values and tax revenues. The current assessed value of the sugar mill site is only \$1.4M, which does not account for the cost of environmental assessment and cleanup needed to bring it back into productive use. Improving the property value through assessment, cleanup, and reuse will generate tax revenue to fund social services and infrastructure improvement projects. If the town center area redevelops at a modest 0.5 floor area ratio, Kekaha will experience 400,000 square feet of new/revived development space, and up to 332 construction and 298 permanent jobs. The former Sugar Mill site alone could provide 260,000 square feet of mixed-used development. The Kekaha Road “Main Street” plan will create improved access between new development on the former Sugar Mill, and revitalized areas of the town core. These revitalization activities will attract tourists (Kekaha is located near Waimea Canyon State Park, Kauai’s most popular tourist destination) which is viewed as vital to improving the economy of Kekaha. While not within an opportunity zone, economic development within Kekaha will catalyze economic growth within the nearby towns of Koloa and Poipu that are located within an opportunity zone.

Non-Economic Benefits: Brownfield redevelopment adaptive reuse projects would provide the following additional benefits.

Placemaking: Town center revitalization activities involve streetscape enhancements, park amenities, and redevelopment projects that strengthen community character for residents and tourists. Quality placemaking will improve community vitality and resident retention. Reviving Kekaha's heritage buildings and the former Sugar Mill site, with its iconic smokestack, are key strategies highly desired by local residents.

Agriculture: Reuse ideas put forth by the community for the former Sugar Mill site include a smart farming enterprise, a community greenhouse, and host site for the weekly community farmers market. Fresh produce is expensive and hard to come by in Kekaha. These reuse ideas will expand access to healthy food options improving public health.

Quality Housing: The County has identified a near-term need for 390 new housing units in Kekaha/Waimea. Adaptive reuse, infill, and redevelopment projects in its established town boundaries can accommodate the community's housing demand in proximity to commercial and social services.

Adaptive Reuse: The community prioritizes projects that add housing and revive commercial tenant spaces in existing buildings. The sustainable reuse of existing buildings will promote historic preservation, fill vacant storefronts, and create relatively low-cost tenant spaces.

Energy Efficiency: Brownfield redevelopment and adaptive reuse projects will meet current building codes including insulation, windows and appliances that improve energy efficiency and lessen the utility costs which are very high relative to the continental US (many of Kekaha's households are utility cost burdened.)

Renewable Energy: Out of necessity (Hawaii's power has been largely generated by oil-fired power plants and power rates are 3X the US average), Hawaii is a leader in renewable energy. For example, since 2008, new buildings have been required to install solar water heaters. A recent renewable energy project in Kekaha provided solar panels to more than 50 homes occupied by elderly residents.

1.c. Strategy for Leveraging Resources:

1.c.i. Resources Needed for Site Reuse: On October 6, 2020, the County awarded a \$145,000 economic development grant to non-profit project partner Kaunalewa (Section 2.b.i) to support redevelopment of the former Sugar Mill in Kekaha. The grant period is October 1, 2020 through September 30, 2021. The workplan for the grant includes: 1) stakeholder engagement, financial planning, and site reuse planning.

Kauai County is eligible for the following funding resources: *1) EPA Region 9 Targeted Brownfield Assessment (TBA) Program* - EPA provides contractor assistance to research historical property uses, conduct environmental sampling, identify cleanup options, and estimate associated cleanup costs at brownfield properties. Eligible applicants can access up to \$100,000 worth of technical assistance per eligible property. A TBA was completed on the former Sugar Mill site in 2010/2011, so its eligibility for additional TBA funding would need to be explored, but other brownfield sites within the Target Area are eligible for an EPA TBA. *2) Community Development Block Grant (CDBG) Funding* - The federal CDBG program provides grants to states and local governments to provide decent housing and a suitable living environment, and to expand economic opportunities, principally for low- and moderate-income persons. Kauai County is an entitlement community, meaning it receives annual CDBG funding. Funding received for 2020 totaled \$2,054,582. Use of CDBG funds to facilitate brownfield redevelopment projects is encouraged by the US Department of Housing and Urban Development (HUD).

Other key funding resources that may be sought to support the completion of assessment, remediation, and reuse planning of priority Target Area brownfields include: *1) Kekaha Host Community Benefits Fund (HCB)* - In June 2008, Kauai County established the HCB Fund with an initial allocation of \$650,000 for the purpose of compensating the Kekaha Community for hosting Kauai's landfill. An advisory committee was formed to recommend projects for funding in accordance with the consensus of the Kekaha community. HCB funding has historically been utilized for former Sugar Mill redevelopment-related projects and future such requests would likely be viewed favorably. *2) Special Purpose Revenue Bond (SPRB)* - In 2019, the Hawaii state legislature passed House Bill 1413 authorizing the issuance of SPRBs to assist the financing, acquisition, remediation, construction, and redevelopment of the former Kekaha Sugar Mill. SPRBs are sold to private investors, who provide the actual funds and invest their funds in exchange for tax-exempt or taxable interest payments. SPRBs are a way to facilitate loans for private business projects that serve and protect the public. *3) Hawaii Brownfields Cleanup Revolving Loan Fund* - This program currently provides loans for environmental cleanup on brownfields that would be available to the owner or prospective purchaser of a priority brownfield. It is anticipated that the \$1.5M currently in the fund will be made available as grants in July of 2021. *4) Enterprise Zone* - Kekaha is located wholly within an Enterprise Zone, which provides property tax incentives for new business investments.

Other infrastructure, renewable energy and business funding programs include US Department of Agriculture Rural Development program and US Economic Development Administration (EDA) Public Works and Economic Adjustment Assistance Program (the CARES Act has bolstered funding available via

this program). The County will utilize the Council of Development Finance Agencies (CDFA) as a resource in identifying additional funding sources.

1.c.ii. Use of Existing Infrastructure: Kekaha Town is served by utility (water and electrical), bridge, culvert, road, school, and park infrastructure. Existing infrastructure is of sufficient quality and capacity to handle an increase in development density and improvements to existing infrastructure are constantly being made (\$4.56M is budgeted for improvements to the Waimea-Kekaha Water System during fiscal years 2020/2021). There are multiple internet service providers in the area, two (Spectrum and Hawaiian Telcom) that offer high-speed services. It is recognized that additional investments in transportation infrastructure are needed island wide. Kekaha and Kauai County understand that public investment likely will go hand-in-hand with private investment as redevelopment projects are undertaken and is willing to do its part. There are many financing tools available such as the Hawaii Dept. of Health Clean Water State Revolving Fund, several US Dept. of Agriculture water/wastewater financing and grant programs, and the Hawaii Statewide Transportation Improvement Program, in addition to the sources mentioned in Section 1.c.i.

2. COMMUNITY NEED & COMMUNITY ENGAGEMENT:

2.a.i. The Community's Need For Funding: Because of its economic dependence on tourism, Hawaii has been second only to Nevada in employment losses due to COVID-19. For example, Hawaii's unemployment rate in May 2020 was 23.5%, second to Nevada's 25.3%. Visitor arrivals during the second quarter of 2020 totaled 30,748, a decrease of 98.8% from the same quarter in 2019.

The State of Hawaii and its counties derive much of their operating revenue from income, sales, and property taxes. While the impacts of COVID-19 on these revenue sources is still speculative, clearly they will be negatively impacted. While state unemployment decreased to 12.5% by August 2020, this is still 5X higher than pre-COVID-19 levels. With few visitors to Kauai, sales tax revenues also are down significantly. Property tax revenues are not as volatile, but property tax rates in Hawaii are relatively low, ranking 31st amongst U.S. states. In May 2020, Kauai Mayor Kawakami submitted a supplemental budget reducing the proposed 2021 operating budget by \$10M in response to revenue projections^a.

Even prior to COVID-19, Kauai County's needs for funding were substantial. The island is rural in nature. With a small regional population base, tax revenues used to fund local government are very limited. This is further exacerbated by the fact that the largest island landowner is the State of Hawaii, which owns 136,159 acres (38% of island) and pays no property taxes.

Data Type¹	Kekaha	West Kauai²	Kauai County	Hawaii	U.S.
Total Population	3,394	9,573	71,377	1,422,029	1,422,029
Poverty Rate	6.4%	6.6%	8.5%	9.9%	14.1%
Per Capita Income (Dollars)	\$29,097	\$29,253	\$31,674	\$34,035	\$32,621

¹2014-2018 American Community Survey (ACS). ²Includes Census Tracts (CTs) 408 and 409. **Bold** indicates results exceed Hawaii average. *Shading* indicates results exceed US average.

The rate of poverty in Hawaii and in Kauai County, on the surface, appears low. However, Hawaii has by far the highest cost of living index (1.93) of any U.S. state. California is a distant second with an index of 1.52. The Census Bureau's supplemental poverty measure (SPM) considers cost of living. The latest SPM report indicates a poverty rate for Hawaii of 13.7%, the 13th highest rate in the US. Per capita incomes in Kekaha are 11% lower than the US average, yet overall, goods/services/housing costs are nearly double the US average. Despite the high cost of living in Hawaii, in 2020, 15 states had a higher minimum wage than Hawaii.

2.a.ii. Threats to Sensitive Populations:

(1) Health or Welfare of Sensitive Populations: Native Hawaiians/Pacific Islanders (NHPI) are a sensitive population that is struggling in the Target Area where their population is more than three times the state average. NHPI youth more often live in low-income households, demonstrate lower reading proficiency, and higher rates of substance abuse, suicide attempts and obesity than their peers^b.

Data Type¹	Kekaha	West Kauai²	Kauai County	Hawaii	U.S.
Minority Population	89.6%	85.6%	63.3%	77.9%	38.9%
Native Hawaiian Population	23.5%	17.2%	8.0%	6.3%	0.1%
Child Population (<18 years)	22.6%	19.9%	19.9%	21.6%	22.8%
SNAP Benefit Households	14.0%	10.5%	9.5%	11.1%	12.2%

¹2014-2018 ACS. ²Includes CTs 408 and 409. **Bold** indicates results exceed Hawaii average. *Shading* indicates results exceed US average.

^a <https://www.thegardenisland.com/2020/05/11/hawaii-news/mayor-tightens-budget-belt/>

^b 2018 Kauai Youth Report – Indicators of Health, Well-Being, and Achievement

Pregnant NHPI women and fetus health and welfare are poor as compared to other races largely due to poverty and limited access to medical care, resulting in cumulative health impacts when brownfield contaminant exposures are added to the equation.

Attribute	NHPI	Non-Hispanic White
Preconception Obesity	20.2%	13.9%
Infant Mortality	7.6%	5.8%
Received Prenatal Care (1 st Trimester)	52.5%	82.4%
Received Late or No Prenatal Care	19.6%	4.5%

Source: <https://minorityhealth.hhs.gov/omh/browse.aspx?lvl=4&lvlid=83>

Data (see table above) indicate substantial child poverty with 14% of Kekaha households receiving Supplemental Nutrition Assistance Program (SNAP) benefits. Kekaha Elementary School is one of only two schools in Kauai County participating in the Community Eligibility Provision program, which allows the US's highest poverty schools to serve breakfast and lunch at no cost to all enrolled students. Of the five largest race groups in Hawaii, NHPI have the highest poverty rate for families and individuals at 12.6% and 15.5%, respectively, as compared to 7.7% for families and 11.2% for individuals for the state, and also the lowest median household income (6% below the state average) ^c. Assessment activities performed using grant funding will prioritize areas near schools and homes to identify high priority cleanup areas and to ensure that appropriate land uses are stipulated in reuse plans.

(2) Greater Than Normal Incidence of Disease & Adverse Health Conditions: Kauai consistently has greater than normal incidence of disease when compared to the State of Hawaii. Exposure to

Attribute	Kauai	Hawaii
Cancer Mortality	155	144
Heart Disease Mortality	92	80
Stroke Mortality	45	41
HIV Incidence	235	203
Suicide Rate	14	10

Source: Kauai's Community Health Needs Assessment, July 2013

brownfield site contaminants is certainly a contributing factor to higher incidences of cancer mortality. Incidence of disease is compounded by the fact that the NHPI population in Kekaha is three times the state average, and the fact that native Hawaiians have a greater than normal incidence of adverse health conditions as compared to other populations. Adult obesity amongst NHPI is 44.4% as compared to the state average of 23.6%.

Diabetes prevalence amongst NHPI is 84.4 per 1,000 as compared to 59.9 per 1,000 for the state. The incidence of asthma amongst NHPI is 152 per 1,000 as compared to 115 per 1,000 for the state. 44.8% of all children diagnosed with asthma in the state are NHPI despite NHPI constituting only 6.3% of the state population^d.

Many Kekaha NHPI residents live adjacent and west of the property in state housing authority homes, which includes elderly housing, and in a Hawaiian Homelands (state agency formed to support native Hawaiians) affordable housing subdivision (51 homes) located approximately 4,500 feet west-northwest of the former Sugar Mill. The prevailing wind direction is to the west throughout the year at an average velocity of 13.6 miles per hour, so these concentrated NHPI populations are downwind of the former Sugar Mill, and thus more likely to be exposed to wind-blown asbestos and contaminated soil. Sampling completed with this grant will help address asbestos and other contaminants that may be migrating to and impacting this sensitive population.

(3) Disproportionately Impacted Populations: Kauai County's high cost of living and limited availability of fresh vegetables and fruit (largely due to its degree of isolation from the rest of the world) results in poor nutrition and the over-consumption of cheap, unhealthy food, which in turn leads to the obesity/diabetes noted above. Homes adjacent and south of the former Sugar Mill on Mahiko Place are some of the oldest homes in Kekaha, built in the 1920s and 1930s for Sugar Mill/Plantation workers. These "camp homes" are generally small (1,000 square feet or less) and of low quality. Most are occupied by renters with household incomes well below the Kekaha median. These homes are likely to contain asbestos and lead-based paint based on their age. Homes in this neighborhood are adjacent to the ditch in which contamination has been confirmed that flows from the former Sugar Mill to the Pacific Ocean.

Environmental justice indices obtained using the EPA's online Environmental Justice Screening Tool for the immediate vicinity of the former Sugar Mill are summarized in the table to the right. These data indicate that Sugar Mill vicinity receptors, including a minority population of 90% (23% of which are NHPI) and 28% of which are low-income, are disproportionately impacted by the indicated environmental factors.

Environmental Justice Indices	Percentile in US
Air Toxics Cancer Risk	63
Respiratory Hazard	62
Lead Paint	77
Haz. Waste Proximity	81
Wastewater Discharge	75

Assessment, cleanup, and redevelopment of the former Sugar Mill site will help provide local jobs for Kekaha residents that are currently on average commuting nearly 30 minutes each way, reducing

^c Demographic, Social, Economic, and Housing Characteristics for Selected Race Groups in Hawaii

^d Native Hawaiian Health Fact Sheet 2015

vehicle emissions and reducing air toxics cancer risk and respiratory hazards. Shorter commutes will also improve public health. The grant will be used to identify legacy soil/groundwater toxins and asbestos, and conduct remedial planning to mitigate the contaminants most likely to be impacting vicinity receptors, thereby reducing cumulative lead and other hazardous substance exposures and the resultant risk to human health.

2.b. Community Engagement:

2.b.i. Project Partners/2.b.ii Roles: As part of recent West Kauai Community Plan, the County has very recently been engaging with Kekaha community members. The County will leverage the relationships already established in Kekaha to continue to effectively engage all community members with emphasis on those located near the former Sugar Mill, and that are economically disadvantaged. Two community partners are particularly well suited to assist in helping the County achieve its community engagement goals: Kaunalewa and E Ola Mau Na Leo O Kekaha (forever live on the voices of Kekaha). Kaunalewa is led by Mayrose Munar. She and two prior generations of her family lived and worked in Kekaha and her connections with the community run deep. She is currently spearheading redevelopment activities being funded by the Kauai County grant described in Section 1.c.i. E Ola Mau Na Leo O Kekaha is a nonprofit whose purpose and mission is to: 1) provide the residents of Kekaha an organization in which they can be inspired, committed and involved with a sense of American/Hawaiian pride and citizenship to strive towards civic consciousness, responsibility, leadership and sportsmanship through community projects, programs and activities; 2) promote, publicize and actively participate in the civic, social, cultural and recreational activities of Kekaha and 3) secure and disseminate information relating to the general welfare of the community and to aid in the enactment of just and beneficial agreements, arrangements, and policies and procedures as requested and approved by the residents of Kekaha.

Community members have been dreaming about redevelopment of the former Sugar Mill for years and are easy to engage on this subject. On October 26, 2020, a virtual meeting was held to inform community partners and other stakeholders of efforts to obtain this EPA brownfield grant funding. All who participated in the meeting expressed their support for the application and indicated their continued interest in being involved in the initiative. Beginning in December, Kaunalewa will be conducting outreach as part of the grant awarded by Kauai County that will flow smoothly into the community engagement planned for this grant.

The following project partners, nearly all of whom attended the October meeting, have indicated their interest in collaborating with the County to address high priority brownfields in the Target Area. As part of the engagement plan for the project, an advisory committee will be formed comprised of many of these project partners. This advisory committee will be key to providing feedback on County project plans and connecting the County with a large and diverse group of local stakeholders.

Partner Name (Type)	Contact Person; Email, Phone #	Specific Role in the Project
HDOH (State Regulatory Agency)	Melody Calisay; melody.calisay@doh.hawaii.gov; 808-586-4249	Melody manages the Hawaii Dept. of Health (HDOH) Brownfield Program. She and her staff will assist with petroleum eligibility and provide technical support.
Kaunalewa (Community-based)	Mayrose Munar; mayrosemunar@gmail.com; 605-670-7331	As the County's local revitalization lead, will assist in project management, community outreach, and reuse planning.
E Ola Mau Na Leo O Kekaha (Community-Based)	Duke Lang; dukelang80@hotmail.com, 808-651-0958	Will promote the project through civic, educational, social, cultural, and recreational activities to the residents of Kekaha.
Kekaha Credit Union (Local Lender)	Ursuline Munar; ursuline.munar@alohapacific.com, 808-337-1433	Board members are leaders in the community and will facilitate communications and assist with community engagement.
KANAKA School (NHPI Organization)	Steven Sullivan; kaana@hawaii.r.com, 808-337-2022	Located adjacent to former Sugar Mill. Engage students and their families in project activities and issues.
Hui O Laka (Natural History)	Christine Faye; director@kokee.org, 808-335-9975	A volunteer organization that operates the Kokee Museum that will publicize the project at its two annual festivals. Also, Ms. Faye's family owned/operated the Sugar Mill and as such, she is a prominent community member.
EAH Housing (Affordable Housing)	Marian Gushiken; 808-523-8826	Connect team with the residents of Kekaha Plantation Elderly Apartments owned/operated by EAH Housing.

2.b.iii. Incorporating Community Input: The County and its partners believe that effective community engagement is imperative to the success of this project. During the first quarter, the Coalition will develop a Community Involvement Plan (CIP), which will build on channels of communication and stakeholder relationships created by Kaunalewa outreach activities.

Press Releases, Fact Sheets and Webpages: The County will develop press releases, fact sheets, Phase I/II ESA process diagrams and site nomination forms. These documents will be available via a project-specific webpage that is operated/maintained by the County. The webpage will be linked to Coalition

partner websites and social media pages to ensure information is readily available to a diverse stakeholder group.

Meetings with Property/Business Owners and Developers: The County and/or project partners will regularly conduct meetings with Kekaha Town property/business owners and will leverage these relationships to solicit interest and participation in the project within the Target Area. We are prepared for meetings needing to be held virtually due to COVID-19 concerns.

Social Media: The County and its partners have established social media channels that will be utilized to ensure that residents and stakeholders stay informed and are included in the decision-making process. The County will use social media outlets to engage with students and younger audiences to secure input during the project.

Email, Postcards & Newsletters: A comprehensive stakeholder distribution list will be created using sign-up sheets from recent West Kauai Community Plan public engagement events, and Kekaha Host Benefits Community Fund and E Ola Mau No Leo O Kekaha meetings. Emails, postcards, and newsletters will be sent periodically to the distribution list. Project partners will communicate progress to their constituents via regular meetings and articles in organizational newsletters.

Community Events: The County and community partners will periodically have a presence at community events (assuming that these will resume during the project period as COVID-19 restrictions are lifted) such as the weekly Kekaha Sunshine Market, monthly Kekaha E Ola Mau No Leo O Kekaha meetings, and Kekaha's annual Fourth of July Celebration to engage full-time workers, busy parents, business owners and residents without regular access to the internet or emails.

This variety of community engagement methods will allow stakeholders to provide meaningful input that will influence each work phase. Robust involvement by those most affected by the former Sugar Mill and other brownfields will lead to strong community buy-in that will maximize the success of the project. Comments regarding reuse vision received will be considered by the County for incorporation into reuse planning deliverables.

3. TASK DESCRIPTION, COST ESTIMATES & MEASURING PROGRESS:

3.a. Description of Tasks (i. Implementation Activities; ii. Schedule; iii. Leads; and iv. Outputs): The scope of work has been organized into the five primary tasks described in this section.

Task 1: Cooperative Agreement (CA) Management and Reporting
i. Implementation: The County will manage all aspects of the project, including coordination with the EPA, community partners and Qualified Environmental Professional (QEP). The County will procure a QEP in accordance with 2 CFR 200.317–200.326 immediately following notification of project award. We will strive to have our selected QEP under contract by October 1, 2021. Reporting will include: 1) Quarterly Progress Reports (QPRs); 2) Property Profiles/ACRES Updates; 3) Annual Disadvantaged Business Enterprise (DBE) and Federal Financial Reports (FFRs); and 4) a Final Performance Report documenting accomplishments, outputs, outcomes, & successes. The County will attend two brownfield conferences.
ii. Schedule: Management/Reporting will be ongoing throughout the project. We anticipate completing all work in 2 years and not needing the final year of the 3-year grant implementation period. A State/Regional Workshop/Conference and National Brownfield Conference are anticipated in 2022-2023.
iii. Leads: The County will lead this task with support from the QEP.
iv. Outputs: Agendas/minutes from stakeholder meetings; 8 QPRs; 2 DBE/FFR Reports; ACRES Updates (ongoing); one Final Performance Report; and one brownfield conference attended by two people.
Task 2: Community Engagement
i. Implementation: Detailed plans for engaging the community are provided in Section 2.b., including: 1) Community Involvement Plan (CIP); 2) fact sheets & press releases; 3) project webpage; 4) six project or other community meetings.
ii. Schedule: The CIP, fact sheets and webpage will be developed during the first quarter of the project. A project kick-off meeting will be held during the second quarter (Q2). Subsequent meetings will be convened periodically at key project junctures and opportunistically at community events attended by Kekaha residents and other project stakeholders.
iii. Leads: The County will lead this task with support from community partners and the QEP.
iv. Outputs: CIP; fact sheets; press releases/articles; webpage content (updated regularly); and six meetings (including presentations, agendas, display materials, attendee lists, minutes, etc.).
Task 3: Kekaha Road Brownfield Inventory/Corridor Phase I Env. Site Assessments (ESAs)
i. Implementation: A brownfield inventory will be completed for the Kekaha Road commercial corridor from Pueo Road west to Amakihi Road. The inventory in essence will be a corridor focused Phase I ESA completed in general accordance with the All Appropriate Inquiries (AAI) Final Rule and the ASTM

International (ASTM) E1527-13 standard. This work will serve to identify any potential brownfields that may be a barrier to the "Main Street" revitalization plan along a 4,500-foot section of the Kekaha Road corridor.	
ii. <u>Schedule</u> : The inventory will be completed by the end of the third quarter of fiscal year 2022.	
iii. <u>Lead</u> : The QEP will lead this task, with support from the County and community partners.	
iv. <u>Outputs</u> : Inventory/Corridor Phase I ESA report.	
Task 4: Phase II ESAs and Regulated Building Material (RBM) Surveys	
i. <u>Implementation</u> : Planned EPA funded activities for Task 4 will include: 1) completing an eligibility determination (ED) and access agreement for our highest priority brownfield, the Kekaha Sugar Mill site; 2) preparing an integrated Sampling and Analysis Plan (SAP, anticipated to include both a Phase II ESA and RBM Survey)/Quality Assurance Project Plan (QAPP) and Health and Safety Plan (HSP) for the site concurrently with the conduct of National Historic Preservation Act (NHPA) §106 and Endangered Species Act (ESA) §7(a)(2) activities; 3) implementation of Phase II ESA and RBM Survey work. These same activities will be completed for 1-2 additional high priority brownfield sites. The selection of these site(s) will be made by the County with substantial input from community partners and Kekaha residents.	
ii. <u>Schedule</u> : Kekaha Sugar Mill assessment activities will be initiated during Q2 of the first year of the project and completed in approximately 9 months. Assessment activities at one to two additional sites will require approximately 7 months to complete, anticipated from Q1 of year two to Q3 of year two.	
iii. <u>Lead</u> : The QEP will lead this task under the direction of the County, who will help secure site access.	
iv. <u>Outputs</u> : 1-3 ED Forms; access agreements; NHPA/ESA; SAPs/QAPPs; HSPs; Phase II ESAs; RBM Surveys.	
Task 5: Site-Specific Remedial and/or Reuse Planning	
i. <u>Implementation</u> : Remedial/Reuse Plan(s) will be completed for the former Kekaha Sugar Mill site to inform cleanup and/or redevelopment strategies.	
ii. <u>Schedule</u> : This project element will be initiated on the heels of Sugar Mill assessment, and completion is anticipated by end of year two, Q3.	
iii. <u>Lead</u> : The QEP will lead remedial planning, and the County will lead reuse planning with support from community partners and the QEP.	
iv. <u>Outputs</u> : One remedial and/or reuse plan(s).	

3.b. Cost Estimates: The overall budget is summarized in the following table. Tasks 3 and 4 include Phase I/II ESAs and RBM Surveys and constitute 65% of the total grant budget.

Line #	Budget Categories	Task 1	Task 2	Task 3	Task 4	Task 5	Totals
		CA Management and Reporting	Community Engagement	Inventory/Corridor Study	Phase II ESAs and RBM Surveys	Remedial/Reuse Planning	
1	Personnel + Fringe	\$8,000	\$14,000	\$400	\$500	\$10,000	\$32,900
2	Travel	\$9,600	\$0	\$0	\$0	\$0	\$9,600
3	Supplies	\$0	\$0	\$0	\$0	\$0	\$0
4	Contractual	\$14,000	\$10,000	\$7,500	\$186,000	\$40,000	\$257,500
5	Total Direct Costs	\$31,600	\$24,000	\$7,900	\$186,500	\$50,000	\$300,000

CA = Cooperative Agreement; ESA = Environmental Site Assessment; RBM = Regulated Building Material

The following tables provide a summary of the estimated costs for project outputs by task and budget category. The formula for personnel/fringe is 62% personnel and 38% fringe.

Task 1 – CA Management and Reporting: Total Budget = \$31,600	
Personnel + Fringe of \$8,000 are budgeted (80 hrs @ \$100/hr) for reporting and project management.	
Travel Costs of \$9,600 are budgeted for two County personnel to attend one national and one regional brownfield conference (airfare to conferences [\$800/person = \$3,200]; conference fees, hotel, meal, rental car and incidental costs (\$400 per day per person – 2 days per conference, 16 total days = \$6,400).	
Contractual Costs of \$14,000 are budgeted (112 hrs @ \$125/hr) for work by the QEP to assist with reporting.	
Task 2 – Community Engagement: Total Budget = \$24,000 (plus \$25,000 leveraged through Kaunalewa/Kauai County grant)	
Personnel + Fringe of \$14,000 are budgeted (140 hrs @ \$100/hr) for leading engagement activities.	
Contractual Costs of \$10,000 are budgeted (80 hrs @ \$125/hr) for assisting with engagement activities.	

Task 3: Kekaha Road Brownfield Inventory/Corridor Phase I ESA: Total Budget = \$7,900
Personnel + Fringe of \$400 are budgeted (4 hrs @ \$100/hr) to support inventory/corridor assessment work. Contractual Costs of \$7,500 are budgeted (60 hrs @ \$125/hr) for work by the QEP developing a brownfield inventory for the Kekaha Road corridor.
Task 4 – Phase II ESAs and RBM Surveys: Total Budget = \$186,500
Personnel + Fringe of \$500 are budgeted (5 hrs @ \$100/hr) to support assessment activities. Contractual Costs of \$186,000 include costs for the following: 1) \$135,000 for Kekaha Sugar Mill site – \$35K (280 hrs @ \$125/hr) for labor, \$75K for drilling services and \$25K for lab testing; 2) \$51,000 for 1-2 other Phase II ESAs - \$28K (224 hrs @ \$125/hr) labor and \$23K for lab testing (assumes no drill rig, sampling done with hand-held equipment).
Task 5 – Site-Specific Remedial and/or Reuse Planning: Total Budget = \$50,000 (plus \$50,000 leveraged through Kaunalewa/Kauai County grant)
Personnel + Fringe of \$10,000 are budgeted (100 hrs @ \$100/hr) to support remedial planning activities and lead site reuse planning activities. Contractual Costs of \$40,000 are estimated. This includes \$25,000 (200 hrs @ \$125/hr) to lead remedial planning activities and \$15,000 (120 hrs at \$125/hr) to support reuse planning at the Kekaha Sugar Mill site.

3.c. Measuring Environmental Results: The status and date of outputs and anticipated short- and long-term outcomes will be tracked and reported to EPA via QPRs, ACRES and the Final Performance Report. QPRs will list goals accomplished and activities planned for the next quarter. Any significant deviations in schedule will be discussed with the EPA Project Officer and, if appropriate, corrective actions developed. Between meetings and QPRs outputs will be tracked using the table provided below. The County will further refine the project schedule/milestones as part of the Cooperative Agreement (CA) Work Plan to ensure activities are completed within the 3-year period (it is anticipated that the project will be completed in 2 years). The County will continue to update ACRES beyond the project end date to ensure redevelopment outcomes continue to be captured.

OUTPUT Categories	Work Plan Goal	# this Quarter	# to Date	# Outstanding	Next Steps / Corrective Measures
Inventory/Corridor Study	1				
Phase II ESAs	2-3				
Remedial/ Reuse Plans	1-2				
Number of Outreach Events	6				
OUTCOME Tracking Categories					Result
Number of Recognized Environmental Conditions Resolved					
Number of Properties/Acres Cleared of Environmental Concerns					
Number of Jobs Directly and Indirectly Created					
Number of Properties where Blight was Eliminated					
Amount of Funding Leveraged					

4. PROGRAMMATIC CAPABILITY & PAST PERFORMANCE:

4.a. Programmatic Capability:

4.a.i and 4.a.ii Organizational Structure and Description of Key Staff: The organizational structure for the project will consist of a project manager responsible for all administrative and technical grant requirements, a financial lead who will work closely with the project manager to complete project financial requirements, and a project director, who will 1) facilitate access to additional technical resources within the County, 2) lead efforts to replace the project manager or finance lead should they leave the County, and 3) oversee the project manager, and assist in keeping County management and council member informed regarding the project. Brief biographies for key staff are provided below.

Nalani Brun - Project Director: Nalani Brun is the Director for the County Office of Economic Development and has worked with the department for over 25 years managing grants from different sources for different sectors of the economy. She currently oversees approximately \$10.2 million in grants including Workforce Investment Opportunity Federal Funding. She also has historically managed Economic Development Administration grant funding.

Martin Amaro - Project Manager: Mr. Amaro, Agricultural Economic Development Specialist for the Office of Economic Development, will be the day-to-day project manager and technical lead for the project. He will manage all contractors and agreements and will coordinate with the EPA and other agencies as required for the project. Mr. Amaro is currently managing approximately \$3 million in

funding from various grants. He previously worked as a Grants Administrator for the Kauai Emergency Management Agency handling approximately \$2 million in grant awards.

Kent Hirokawa - Financial Lead: Mr. Hirokawa has been the Accounting Manager for the Office of Economic Development for over 15 years where he routinely manages county, state, and federal grants. He will assist the Project Manager with financial management, tracking, reporting and drawdowns for the grant assisted by the team at the County of Kauai Finance Department.

4.a.iii. Acquiring Additional Resources: The County has substantial resources, including additional technical and support staff to assist with grant implementation activities. The County also has proactive succession planning if staff changes are required. Succession plans will eliminate project delays and ensure staff who are reassigned to the project have appropriate qualifications and experience. The County routinely contracts with consultants and has established equal opportunity procurement procedures for ensuring a fair bidding process. The County is familiar with federal procurement rules (2 CFR 200.317–200.326) and will abide by these rules in selecting a QEP for project implementation.

4.b. Past Performance & Accomplishments:

4.b.i. Has Previously Received an EPA Brownfields Grant: The County received an EPA \$200,000 fiscal year 2004 Brownfield Community-Wide Assessment Grant. Because the grant award occurred 16 years ago, no current County staff involved in the project remain. Further, the project is well past the EPA's required record retention period of 3 years after project closure, and the County's record retention period of 10 years. Therefore, the County has no records regarding the project. Finally, the project period preceded creation and use of the ACRES database, so no information is archived there either. For these reasons, we have elected to complete Section 4.b.ii below.

4.b.ii. Has Not Received an EPA Brownfields Grant but Has Received Other Federal or Non-Federal Assistance Agreements: Kauai County is currently completing work under a \$15M US Department of Transportation (USDOT) Transportation Investment Generating Economic Recovery (TIGER) grant awarded in 2015. Kauai is also a HUD entitlement community and receives and successfully manages annual funding. During the 2018/2019 program year, Kauai received \$1.4M in funding.

(1) Purpose and Accomplishments: USDOT TIGER Grant: The project included multiple improvements to the transportation infrastructure of the Lihue Town Core making it safer and more inviting to drive, walk, bike or take transit, and connecting residential neighborhoods with shops, social services, government, schools, and parks. The project leverages transportation improvements as a catalyst for private investment within the town core, providing the transportation infrastructure to support increased density, mixed use development, and historic building renovation. Through this project the County is already seeing increased interest in private redevelopment of underutilized properties. The project includes a new transit hub on Eiwa Street, better connecting Lihue to the rest of the island, revitalization of Rice Street, Lihue's "Main Street," a new shared use path connecting parking resources at the civic center and War Memorial Convention Hall, improvements fronting Kalena Park and new bike and pedestrian facilities connecting Lihue Town with Vidinha Stadium.

HUD 2019 CDBG Funding: Three CDBG outcomes achieved during the 2018/2019 program year include: *Availability/Accessibility:* Public facility projects were completed to improve safety conditions and extend the life of the island's only homeless shelter; improvements to increase accessibility and use to a park located in low- to moderate-income area. *Affordability:* Through the County's homebuyer programs utilizing revolving loan funds and the Homeownership Education and Counseling Project, low- to moderate-income individuals and families have increased their opportunity to become first-time homebuyers. *Sustainability:* Public service projects funded by CDBG not only meet the goal of sustainability, but more importantly, individuals: 1) acquired education and skills to become first-time homeowners; 2) gained knowledge and resources to develop small homes on their property to increase housing stock.

(2) Compliance with Grant Requirements: To date, the County has maintained compliance with the workplan, schedule and terms and conditions of its USDOT TIGER grant assistance agreement. All reporting requirements have been fulfilled.

Kauai County has effectively administered its CDBG grant program for more than three decades and has been successful in implementing activities that meet the four priority concerns of HUD: housing and special needs housing, homelessness, community development and fair housing.

Kauai County, Hawaii
FY2021 US EPA Brownfield Community-Wide Assessment Grant Application
Threshold Criteria Response

1. Applicant Eligibility: Kauai County is a “general purpose unit of local government” as defined in 2 Code of Federal Regulations 200.64.

2. Community Involvement: Kauai County has extensive previous experience incorporating community involvement into comprehensive planning and other projects and has successfully engaged residents and stakeholder groups during a wide variety of projects. The County will inform and involve the public during all grant program activities.



In support of this grant application, the County hosted a virtual public informational meeting on October 26, 2020. The meeting was attended by community partners and the public. During the meeting, the County informed all attendees

regarding information included in the EPA grant application, and anticipated outputs and outcomes that will be achieved with grant funding. Broad support for the application was received from all in attendance.

To inform and involve the community and other stakeholders in the planning and implementation of the program described in our application, we will:

- Hold a minimum of six project meetings. Preference will be given to in-person meetings, but meetings will continue to be held virtually if required by COVID-19 restrictions. These meetings will include a presentation regarding project progress and interactive exercises to engage attendees in providing input regarding our brownfield program. At all meetings accommodations will be made available to facilitate the participation of people with disabilities and non-English speakers. Organizations local to Kekaha (Kaunalewa and E Ola Mau Na Leo O Kekaha) will lead these meetings.
- Develop a brownfield webpage hosted on the Kauai County website where project information is available. Links to community partner websites will also be included.
- The County and its partners have established social media channels that will be utilized to ensure that residents and stakeholders stay informed and feel included in the decision-making process. The County will use social media outlets to engage with students and younger audiences to secure input during the project.
- Use of local print/online media (The Garden Island) to report project progress and publicize upcoming public meetings.



Kauai County, Hawaii
FY2021 US EPA Brownfield Community-Wide Assessment Grant Application
Threshold Criteria Response

- Present information (in-person or virtually) regarding the project at community events and festivals, approximately two per year over the life of the project.



3. Expenditure of Assessment Grant Funds: Kauai County affirms that it does not have an active EPA brownfield assessment grant.

**Site Reassessment Report
Kekaha Sugar Co., Ltd.
Kekaha, Kauai County, Hawaii**

**EPA ID No.: HID000875203
USACE Contract No.: W91238-06-F-0083
Document Control Nos.:
20074.063.038.1015; 20074.064.116.1220**

September 2013

**Prepared for:
U.S. Environmental Protection Agency
Region 9**

**Prepared by:
Weston Solutions, Inc.
1340 Treat Boulevard, Suite 210
Walnut Creek, California 94597**

ATTACHMENT B

TABLE OF CONTENTS

Section	Page
1.0 INTRODUCTION.....	1
1.1 Apparent Problem	1
2.0 SITE DESCRIPTION.....	3
2.1 Location	3
2.2 Site Description.....	3
2.3 Operational History.....	9
2.4 Regulatory Involvement.....	11
2.4.1 U.S. Environmental Protection Agency	11
2.4.2 Hawaii Department of Health	17
2.4.3 Hawaii Department of Agriculture	20
3.0 HAZARD RANKING SYSTEM FACTORS	23
3.1 Sources of Contamination.....	23
3.2 Groundwater Pathway.....	23
3.3 Surface Water Pathway.....	24
3.4 Soil Exposure and Air Pathways.....	24
3.4.1 Physical Conditions	25
3.4.2 Soil Exposure and Air Targets	25
3.4.3 Soil Exposure and Air Pathway Conclusion.....	25
4.0 EMERGENCY RESPONSE CONSIDERATIONS.....	27
5.0 SUMMARY	28
6.0 REFERENCE LIST.....	30

LIST OF FIGURES

- Figure 2-1: Site Location Map
Figure 2-2: Site Layout Map
Figure 2-3: Site Parcel Map
Figure 2-4: Former Cane Sugar Mill Layout Map
Figure 2-5: 2011 Targeted Brownfields Assessment - Former Herbicide Mixing Area (FHMA) Decision Unit Locations
Figure 2-6: 2011 Targeted Brownfields Assessment - Mill Ditch Area (MDA) Decision Unit Locations
Figure 2-7: Hawaii Department of Health October 2011 Investigation - Decision Unit Locations
Figure 2-8: Hawaii Department of Agriculture October 2010 Investigation - Sample Location Map

LIST OF TABLES

- Table 2-1: Selected Soil and Sediment Sample Results from the April 2011 Targeted Brownfields Assessment
Table 2-2: Selected Soil and Sediment Sample Results from the October 2011 Hawaii Department of Health's Main Office Building Sampling Event
Table 2-3: Selected Soil and Sediment Sample Results from the October 2010 Hawaii Department of Agriculture's Phase II Environmental Site Assessment

APPENDICES

- Appendix A: Transmittal List
Appendix B: Site Reconnaissance Interview and Observation Report/Photographic Documentation
Appendix C: Contact Log and Contact Reports
Appendix D: Latitude and Longitude Calculations Worksheet
Appendix E: EPA Quick Reference Fact Sheet
Appendix F: References

LIST OF ACRONYMS

1,2,3,7,8-PeCDD	1,2,3,7,8-pentachlorodibenzo-p-dioxin
2,3,7,8-TCDD	2,3,7,8-tetrachlorodibenzo-p-dioxin
ADC	State of Hawaii, Agribusiness Development Corporation
aka	also known as
AOC	Analyte of Concern
bgs	below ground surface
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CERCLIS	Comprehensive Environmental Response, Compensation, and Liability Information System
DU	Decision Unit
EAL	Established Action Level
EPA	United States Environmental Protection Agency
ESA	Environmental Site Assessment
FHMA	Former Herbicide Mixing Area
ft ²	square-foot
HDOH	Hawaii Department of Health
HRS	Hazard Ranking System
KANAKA	Kula Aupuni Niihau A Kahelelani Aloha
Kekaha Sugar	Kekaha Sugar Co., Ltd. site
KSC	Kekaha Sugar Company
MDA	Mill Ditch Area
mg/kg	milligrams per kilogram
MIS	Multi-Increment Sample
ng/kg	nanograms per kilogram
NPL	National Priorities List
PA	Preliminary Assessment
PCB	Polychlorinated Biphenyl
RCRAInfo	Resource Conservation and Recovery Act Information
RSL	Regional Screening Level
SARA	Superfund Amendments and Reauthorization Act
SI	Site Inspection
SR	Site Reassessment
SVOC	Semi-volatile Organic Compound
TBA	Targeted Brownfields Assessment
TEQ	Toxicity Equivalent Quotient
TMK	Tax Map Key
TRIS	Toxic Release Inventory System
WESTON	Weston Solutions, Inc.

1.0 INTRODUCTION

Under the authority of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) and the Superfund Amendments and Reauthorization Act of 1986 (SARA), Weston Solutions, Inc. (WESTON®) has been tasked to conduct a Site Reassessment (SR) of the Kekaha Sugar Co., Ltd. (Kekaha Sugar) site, Kekaha, Kauai County, Hawaii.

The Kekaha Sugar site was identified as a potential hazardous waste site and entered into the Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) on November 16, 2001 (EPA ID No.: HID000875203). A Preliminary Assessment/ Site Inspection (PA/SI) was completed for the site in September 2005. The purpose of the PA/SI was to review existing information on the site and its environs to assess the threat(s), if any, posed to public health, welfare, or the environment, and to determine if further investigation under CERCLA/SARA is warranted. In April 2011, a Targeted Brownfields Assessment (TBA) was completed at the site to characterize conditions for the purposes of potential property redevelopment and reuse (EPA, 2012; WESTON, 2011).

After reviewing the TBA, the United States Environmental Protection Agency (EPA) decided that a SR of the Kekaha Sugar site would be necessary to incorporate the new data and evaluate the site using the EPA's Hazard Ranking System (HRS) criteria. The HRS assesses the relative threat associated with actual or potential releases of hazardous substances at the site. The HRS has been adopted by the EPA to help set priorities for further evaluation and eventual remedial action at hazardous waste sites. The HRS is the primary method of determining a site's eligibility for placement on the National Priorities List (NPL). The NPL identifies sites at which the EPA may conduct remedial response actions. This report summarizes the results of the Site Reassessment for the Kekaha Sugar site.

More information about the Superfund program is available on the EPA web site at <http://www.epa.gov/superfund>. The attached fact sheet describes EPA's site assessment process (Appendix E).

1.1 Apparent Problem

The apparent problems at the Kekaha Sugar site, which contributed to EPA's determination that a Site Reassessment was necessary, are as follows:

- The site was historically used for the production and processing of cane sugar. The on-site facility included a processing mill, an herbicide mixing area, and a seed treatment plant (WESTON, 2011).
- In July 2003, environmental sampling associated with the 2005 PA/SI was conducted at the site to identify potential sources of contamination. The investigation identified several

areas, primarily within the Former Herbicide Mixing Area (FHMA) and the Mill Ditch Area (MDA), that exhibited concentrations of one or more hazardous substances significantly above background levels. Identified substances included: dioxins, semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), arsenic, and mercury (HDOH, 2005).

- In July 2010, environmental sampling was conducted within the FHMA portion of the site as part of a proposed emergency generator installation project. The investigation identified on-site soil concentrations that were significantly above background for arsenic, dioxins, and mercury (TEC, 2010b).
- In November and December 2010, environmental sampling was conducted at the site as part of the TBA. The investigation identified on-site soil concentrations within the FHMA that were significantly above background levels for arsenic and dioxins. The investigation also identified mercury concentrations within the MDA sediments that were significantly above background (WESTON, 2011).
- A public charter school is located on site within the Main Office building, which is situated at the northwestern portion of the site directly adjacent to the FHMA. In October 2011, environmental sampling was conducted in the vicinity of the building to evaluate the potential risks to students of the school. The investigation identified on-site soil concentrations in areas adjacent to the Main Office building and FHMA that were significantly above background levels for mercury and arsenic (HDOH, 2011).

2.0 SITE DESCRIPTION

2.1 Location

The Kekaha Sugar site is located at 8315 Kekaha Road in the town of Kekaha, Kauai County, Hawaii. The geographic coordinates for the approximate center of the site are 21° 58' 5.0" North latitude and 159° 42' 36.0" West longitude. The site location is presented in Figure 2-1 (EPA, 2012; Google, 2012; HDOH, 2005).

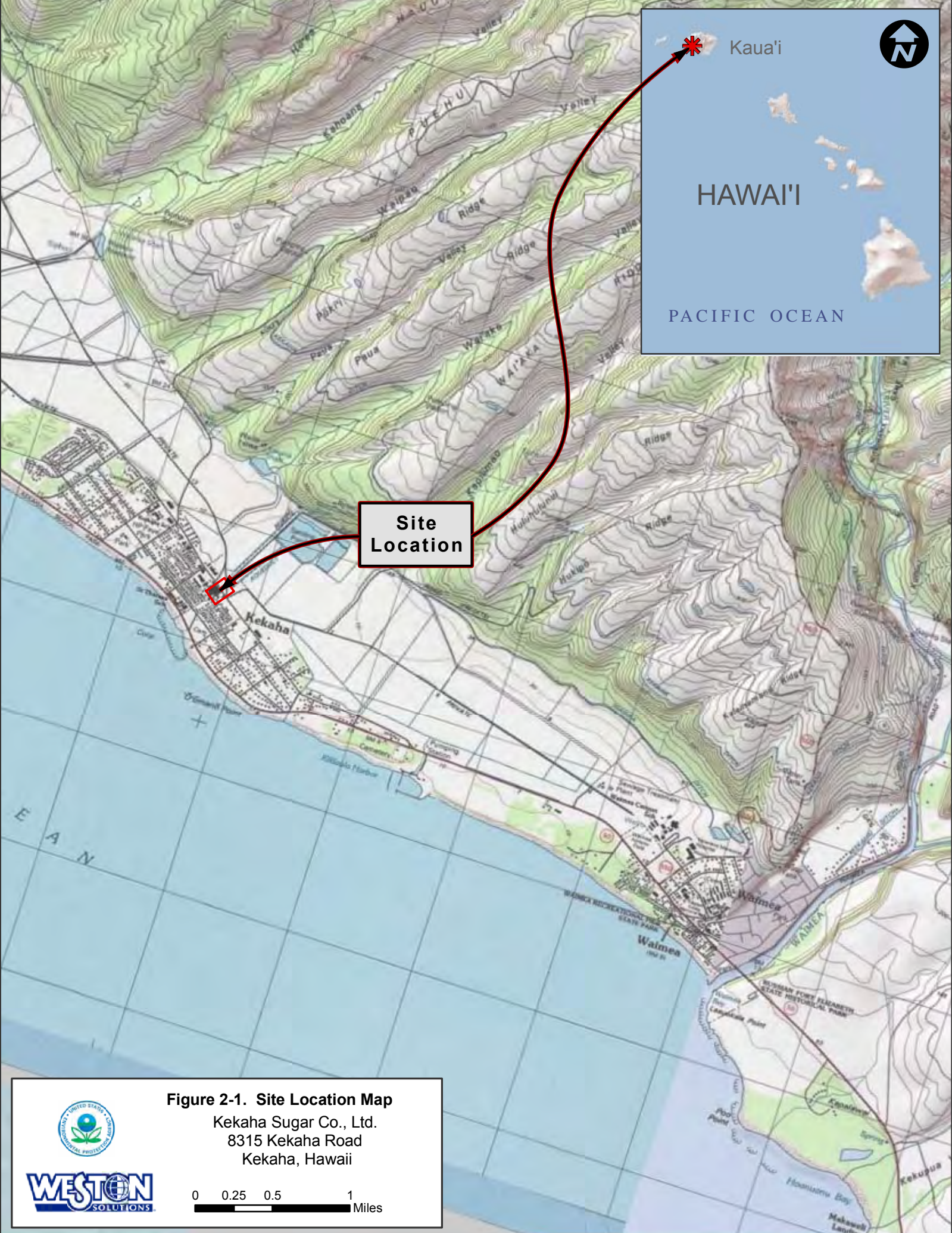
2.2 Site Description

The Kekaha Sugar site occupies approximately 36.8 acres and is located in a mixed agricultural, commercial, and residential area within the town of Kekaha. The site includes the entirety of four county parcels, identified by Tax Map Key (TMK) numbers: 413009001 (1.94 acres); 413011039 (0.27 acres); 413011006 (10.71 acres); and 413007104 (10.15 acres). In addition, approximately 13.7 acres of parcel 412002001, which has a total area of 12,997 acres, is included within the site boundaries. The site is bound to the northeast by agricultural land, and to the southeast, southwest, and northwest by primarily residential properties with some intermixed commercial areas. The Pacific Ocean is located approximately 450 feet southwest of the site. A site layout map is presented in Figure 2-2 and a site parcel map is presented in Figure 2-3 (Google, 2012; HDOH, 2005; RPAD, 2012; WESTON, 2011; Appendix C-1).

The Kekaha Sugar site is transected from approximately southeast to northwest by Kekaha Road with parcels 413009001, 413011039, and 412002001 located northeast of the road and parcels 413011006 and 413007104 located southwest of the road. The northern and northeastern boundaries of the site are generally defined by the irrigation ditches that separate the former mill operational areas from the adjacent agricultural fields and/or former settling ponds. The eastern, western, and southern boundaries of the site are generally defined by the county parcel boundaries (Google, 2012, RPAD, 2012).

The portion of the Kekaha Sugar site located northeast of Kekaha Road includes: the approximately 12,500 square-foot (ft²) Main Office building [also known as (aka) the Kauai Sugar Company (KSC) Office Building, Kekaha Plantation Office, and the former Amfac Office Building] to the east, the FHMA near the center, and the former Carpenter/Paint Shop to the west. In addition, four aboveground fuel tanks, which include two 10,000-gallon gasoline tanks and two 15,000-gallon diesel tanks, are located at the northwestern portion of the area. A proposed approximately 3-acre Agribusiness Development Corporation (ADC) emergency generator site is located in the central portion of this area, between the Main Office and Carpenter/Paint buildings. The ADC is a State of Hawaii agency that was established in 1994 and is responsible for control and management of various, large tract agricultural land and water projects in the state of Hawaii, including the Kekaha Agricultural Lands in west Kauai (Google, 2012; TEC, 2010a; WESTON, 2011).

The portion of the Kekaha Sugar site located southwest of Kekaha Road primarily includes the former cane sugar mill at the northeast and the former seed dipping plant near the center. Notable structures/features in this area associated with the former mill include, but are not limited to: the former automotive shop and motor pool, electrical shop, metal shop, machine shop, boiler house, transformer area, bagasse house, and drum storage area. An intermittently flowing drainage ditch, generally identified as Mill Ditch, is located between the mill and the seed dipping plant. The northern portion of the ditch is routed through the subsurface and is reportedly connected to the settling ponds to the northeast of the site. The drum storage area is located directly adjacent to Mill Ditch. The ditch flows in a generally southwesterly direction through the site and receives surface water runoff from the former sugar mill, seed dipping plant, and off-site settling ponds. The site extends along Mill Ditch through a residential neighborhood for approximately 300 feet southwest (downstream) of the mill. Mill Ditch discharges to the Pacific Ocean, approximately 450 feet southwest of the site. A layout of the former sugar mill and its associated structures is presented in Figure 2-4 (Google, 2012; HDOH, 2005; WESTON, 2011; App. C-1, C-2).



**Site
Location**

Figure 2-1. Site Location Map
Kekaha Sugar Co., Ltd.
8315 Kekaha Road
Kekaha, Hawaii



0 0.25 0.5 1
Miles



Legend

-  Site Boundary
-  Intermittent Stream

0 500 Feet



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Restoring Resource Efficiency

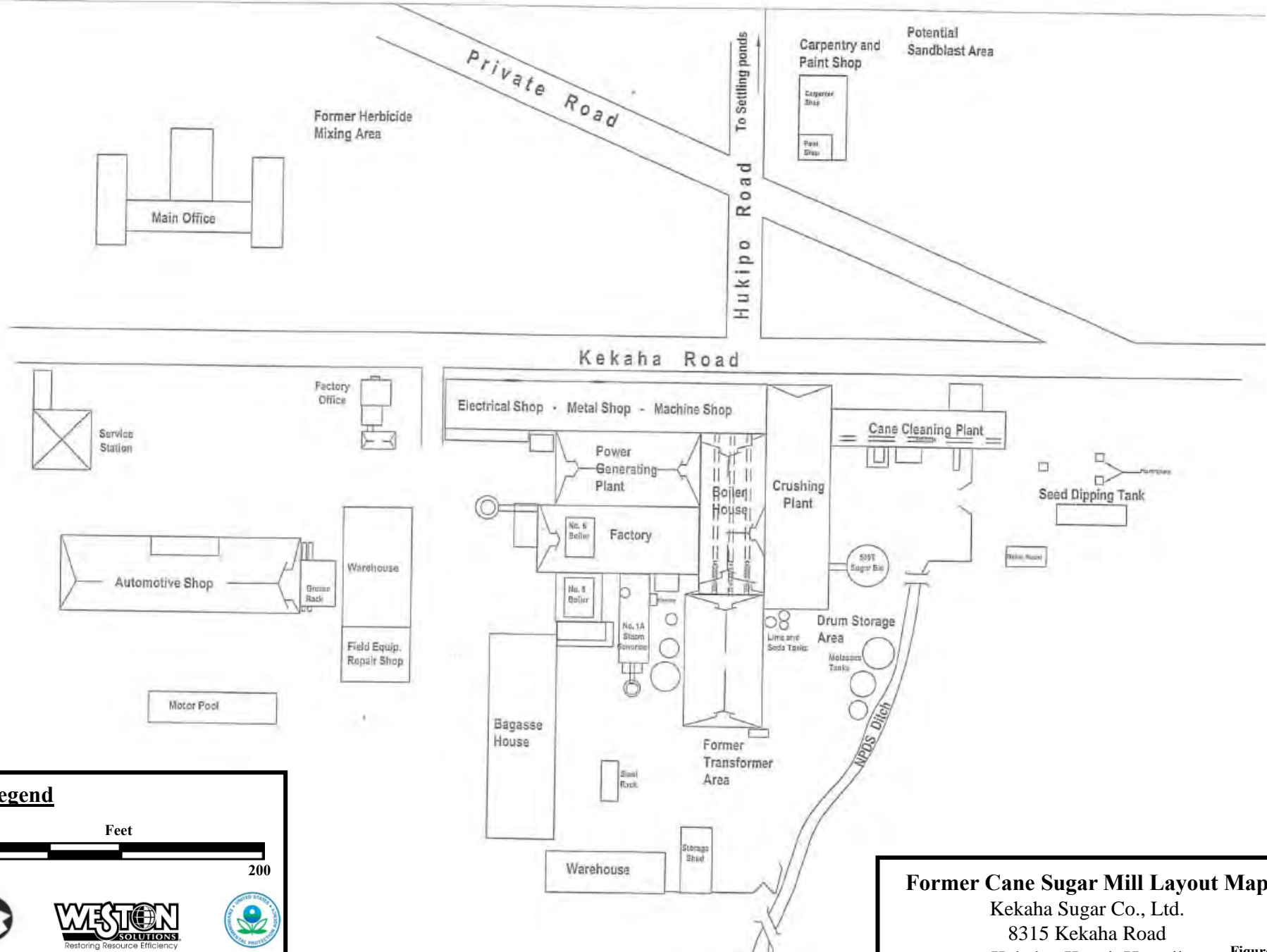


Site Layout Map

Kekaha Sugar Co., Ltd.
8315 Kekaha Road
Kekaha, Kauai, Hawaii

Figure
2-2

Reference: Google Earth; 21° 58' 04.21" N, 159° 42' 35.81" W; imagery date unknown; <http://earth.google.com>; data extracted 20 January 2012.



Legend

Feet



WESTON
SOLUTIONS
Restoring Resource Efficiency



Reference: State of Hawaii, Department of Health, Hazard Evaluation and Emergency Response Office; Site Inspection Report, Kekaha Sugar Company, LTD; 09 August 2005.

Former Cane Sugar Mill Layout Map

Kekaha Sugar Co., Ltd.

8315 Kekaha Road

Kekaha, Kauai, Hawaii

Figure
2-4

2.3 Operational History

The Kekaha Sugar site has multiple property owners. Parcel 413009001, which includes the Main Office building, is owned by Wray Enterprises, LLC. Parcel 413011039, which includes the Carpentry/Paint building, is owned by Stuart and Phyllis Wellington. Parcel 412002001, which includes the remaining portion of the site northeast of Kekaha Road as well as approximately 13,000 off-site acres, is owned by the ADC. Parcels 413011006 and 413007104; which include the former cane sugar mill and the former seed dipping plant, respectively; are owned by Kekaha MS LLC. The drainage ditch that transects the site, commonly referred to as Mill Ditch, is defined as a 12-foot wide state-reserved drainage ditch that is owned and managed by the State of Hawaii, Department of Land and Natural Resources. The drainage ditch does not have an assigned TMK parcel identification number (DLNR, 2010; RPAD, 2012).

From approximately 1898 to 1999, the Kekaha Sugar site was operated as a cane sugar processing and production facility. Potential sources of contamination associated with historic on-site operations include, but are not limited to:

- Carpenter/Paint Shop – The shops were housed in the same building structure and shared a concrete pad. A wood drying rack was located at the northwest corner of the carpentry shop. In addition, an area potentially used for sand blasting was identified approximately 20 yards northeast of the carpenter shop. It is not known what activities, if any, are currently conducted within this structure. The Carpenter/Paint Shop is located on parcel 413011039 (HDOH, 2005).
- Former Kekaha Herbicide Mixing Plant – Herbicide mixing operations were reportedly conducted on site within the FHMA from the 1800s to 1960. In 1960, all on-site mixing operations were transferred to Waiawa Valley due to complaints by the neighboring community. The Waiawa Valley mixing area is being addressed under CERCLA as a separate site [EPA ID No.: HIN000906089 (Kekaha Sugar Co., LTD - Former Herbicide Mixing Plant/Former Wood Treatment Plant)]. The FHMA is located on parcel 412002001 (HDOH, 2005).
- Automated Fueling Station - The two diesel and two gasoline tanks located to the northeast of the Main Office building are owned by the State of Hawaii and leased to a private petroleum distribution company. The automated fueling station is primarily used by local commercial businesses. The installation date of these tanks is not known. Unaltered petroleum products are excluded from consideration under CERCLA (TEC, 2010a).
- Kekaha Cane Sugar Mill - The mill's laboratory facility was located inside the lime storage area of the boiler house. Drums labeled "used oil" and transformers labeled "non-PCB certified oil" were stored inside the boiler area. Stained soils have been observed in numerous areas surrounding the mill. In 2000, a total of 77 drums were collected from

the mill area. These drums contained various hazardous substances that included: used oil, waste oil, grease, asbestos-containing material, non-PCB transformer oil, and creosote waste sludge. The drums were disposed off site and copies of the waste manifests were submitted to the Hawaii Department of Health (HDOH). The former cane sugar mill is located on parcel 413011006. Unaltered petroleum products are excluded from consideration under CERCLA (HDOH, 2005).

- Seed Dipping Plant – The former seed dipping plant is located approximately 0.35 mile from the Pacific Ocean with a ground elevation of 57 feet above mean sea level. Phenyl mercury acetate was reportedly used as a fungicide in the seed dipping process. Subsequent to the closure of the plant in July 1999, sludge and stagnant water were observed inside the dipping tank. The plant is located on parcel 413007104 (HDOH, 2005).
- Mill Ditch – Surface water runoff from the cane sugar mill, the seed dipping plant, and the off-site settling ponds reportedly drained into Mill Ditch and was subsequently discharged to the Pacific Ocean. Mill Ditch is a 12-foot wide state-reserved drainage ditch and does not have a designated TMK; however, the ditch is the boundary between parcels 413011006 and 413007104 (HDOH, 2005).
- Settling Ponds - Approximately 10 acres of land to the northeast of the Kekaha Sugar site was formerly used as settling ponds for wastewater generated at the mill. The wastewater from mill operations was pumped to the pond and the effluent was used for irrigation. At least some portion of the effluent from the pond was reportedly discharged to Mill Ditch. For the purposes of this report, the settling ponds were not considered to be part of the site (DEG, 2006; HDOH, 2005).

Since approximately 1999, the portion of the Kekaha Sugar site southwest of Kekaha Road has been unoccupied. In the mid-2000s, the Main Office building was renovated and the western portion of the building was leased to a public charter school. The remaining portions of the building were leased to various businesses including, but not limited to: a self-service laundry facility, a graphic design office, a salon, a seed company, and an air-conditioning repair facility (HDOH, 2005; MWK, 2012).

2.4 Regulatory Involvement

2.4.1 U.S. Environmental Protection Agency

The Kekaha Sugar site is listed in the Resource Conservation and Recovery Act Information (RCRAInfo) database as a small quantity generator (EPA ID: HID000875203) (EPA, 2011b).

The Kekaha Sugar site is listed in the Toxic Release Inventory System (TRIS) (TRI ID: 96752KKHSG8315K). The following chemicals are listed as being released into the environment from the Kekaha Sugar site: 2,4-dichloro-phenoxyacetic acid, ammonium sulfate, and trifluralin (EPA, 2011c).

Preliminary Assessment/Site Inspection, August 2005

In 2005, HDOH conducted a PA/SI on the Kekaha Sugar site for EPA. Environmental sampling was conducted in July 2003 as part of the investigation and included the collection of soil, sediment, groundwater, and surface water samples. Analytical results indicated that elevated concentrations of mercury, dioxins, and arsenic were present in surface soils located at the former off-site settling ponds, the FHMA, and the drum storage area. In addition, elevated concentrations of mercury were identified in sediment samples collected from Mill Ditch, downstream of the former operational areas. Analytical results also indicated that elevated concentrations of mercury and arsenic were present in groundwater beneath the site. Based on the sampling results, the EPA determined that further assessment under CERCLA was warranted. In addition, the EPA was concerned about the elevated levels of mercury detected in the sediments of Mill Ditch; which transects a residential area and discharges into the Pacific Ocean, a recreational area and commercial fishery (EPA, 2012; HDOH, 2005).

Phase I/II Investigation, Targeted Brownfields Assessment, April 2011

In April 2011, a TBA was performed at the Kekaha Sugar site. The EPA Region 9 TBAs are intended to characterize conditions at Brownfields Sites being considered for planned redevelopment or reuse. To evaluate environmental concerns, soil samples were collected from six locations, or Decision Units (DUs), in the FHMA, and sediment samples were collected from four DUs in the MDA. Sampling activities were conducted in November and December 2010. The FHMA soil samples were collected at each location from an interval of 0-6 inches below ground surface (bgs) and were analyzed for SVOCs; pesticides; metals; and dioxins-Toxicity Equivalent Quotients (TEQs). The dioxin-TEQ is a weighted value that describes how toxic each dioxin is relative to the most toxic members of the category, specifically 2,3,7,8-tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD) and 1,2,3,7,8-penta-chlorodibenzo-p-dioxin (1,2,3,7,8-PeCDD). The MDA sediment samples were collected from a total depth of no greater than 18 inches bgs and were analyzed for metals and pesticides. The DU locations are presented in Figure 2-5 and Figure 2-6 (WESTON, 2011).

The shallow soil samples collected during the investigation were prepared by collecting a minimum of 30 small increments of surface soil (0-6 inches bgs) from the specified decision unit and combining these increments into a single sample, referred to as the Multi-Increment Sample (MIS). A total of six MISs were collected from the six designated DUs in the FHMA. Two MIS field-duplicate samples were collected from DU FHMA-06. Samples were collected using a drill with an 18-inch long drill bit and a paper plate. Obvious twigs, roots, and large rocks were excluded from the incremental sample. To produce the MIS, increment samples were placed into a gallon-sized, double-lined plastic bag prior to submission to the laboratory. FHMA DU locations are illustrated in Figure 2-5 and selected analytical results are presented in Table 2-1 (WESTON, 2011).

Analytical results indicated that none of the soil samples exhibited SVOC or pesticide analytes of concern at concentrations above the established HDOH Residential/Unrestricted environmental action levels (EALs). In addition, with the exception of arsenic, no metals exceeded the established HDOH Residential/Unrestricted EALs. Concentrations of arsenic that exceeded the HDOH Tier I EAL of 20 milligrams per kilogram (mg/kg) were identified in three of the MIS soil samples including: FHMA-02 (22.7 mg/kg), FHMA-05 (97.5 mg/kg), and FHMA-06 (69.8 mg/kg). The Regional Screening Level (RSL) for arsenic in residential soils is 0.39 mg/kg. Background samples were not collected during the investigation; however, arsenic concentrations in the samples that did not exceed the EAL ranged from 12.2 mg/kg to 16.8 mg/kg. In addition, designated background soil samples collected during the 2005 PA/SI established a total arsenic background concentration of 14.7 mg/kg (HDOH, 2005; WESTON, 2011).

Concentrations of total dioxin-TEQs that exceeded the HDOH Tier II Residential/Unrestricted EAL of 240 nanograms per kilogram (ng/kg) were identified in three of the MIS soil samples including: FHMA-03 (1,800 ng/kg), FHMA-05 (620 ng/kg), and FHMA-06 (770 ng/kg). The HDOH Commercial/Industrial EAL for dioxin-TEQ is 1,500 ng/kg. The RSL for dioxin-TEQ (i.e., 2,3,7,8-TCDD) in residential soils is 4.5 ng/kg. Background samples were not collected during the investigation; however, dioxin-TEQ concentrations in the samples that did not exceed the EALs ranged from 120 ng/kg to 130 ng/kg. In addition, designated background soil samples collected during the 2005 PA/SI established a total dioxin-TEQ background concentration of 48.53 ng/kg (HDOH, 2005; WESTON, 2011).

The sediment samples collected during the investigation were prepared by collecting a minimum of 30 increments of sediment (0-18 inches bgs) from within the specified DU and combining these increments into a single MIS. A total of four MISs were collected from the four designated DUs in the MDA. MIS sampling within the MDA DUs was generally conducted using a grid system. Two MIS field-duplicate samples were collected from DU MDA-10. Samples were collected using a polyvinyl chloride pipe with an attached aluminum sampling tube and sediment coring device. Subsequent to collection, the increment samples were allowed to settle and were then decanted. The decanted water was discharged through a coffee filter to collect the fines, which were then added back to the increment sample. To produce the MIS, increment samples

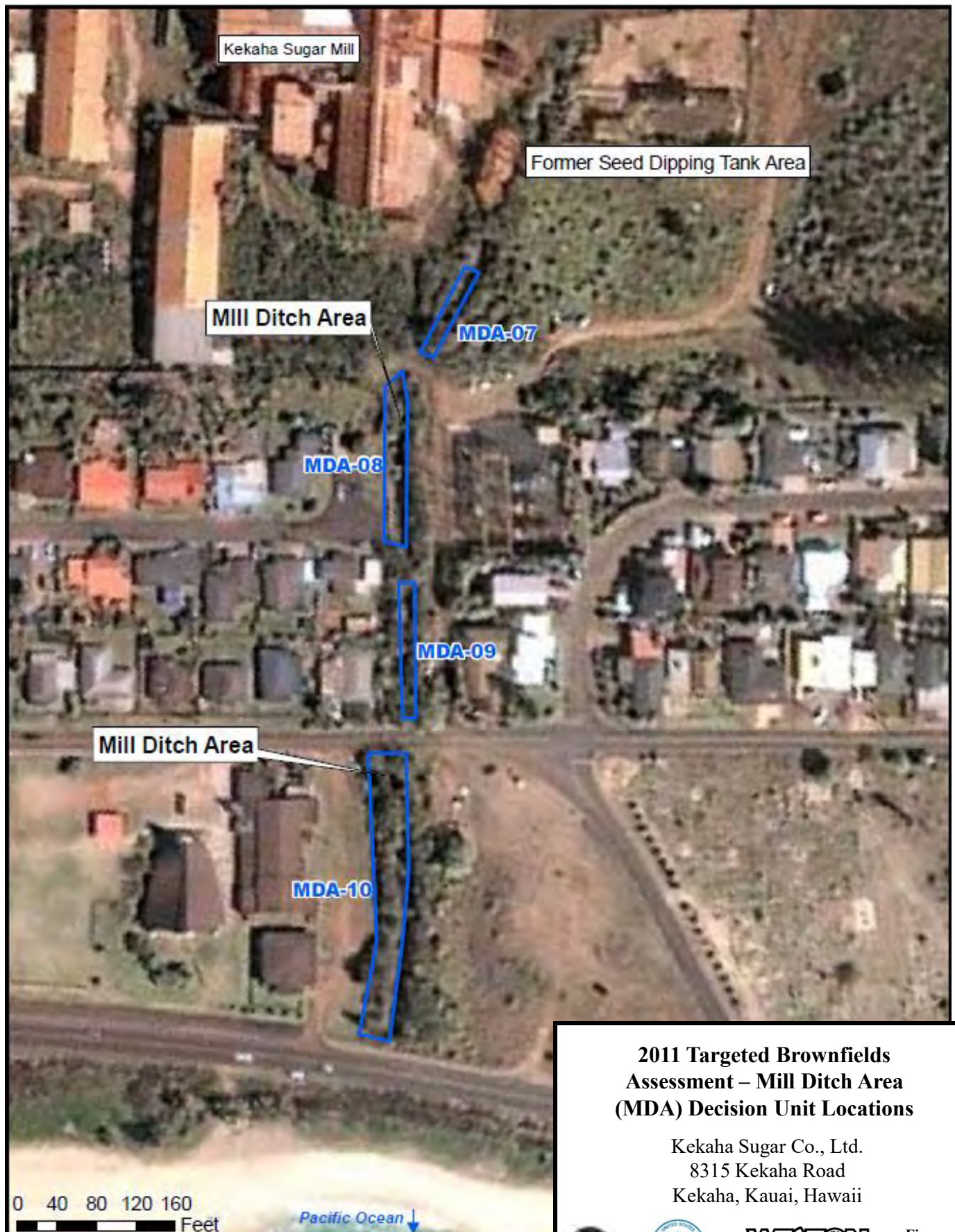
were placed into a gallon-sized, double-lined plastic bag prior to submission to the laboratory. MDA DU locations are illustrated in Figure 2-6 selected analytical results are presented in Table 2-1 (WESTON, 2011).

Analytical results indicated that none of the sediment samples exhibited pesticide analytes of concern at concentrations above the established HDOH Residential/Unrestricted EALs. In addition, with the exception of arsenic, no metals exceeded the established HDOH Residential/Unrestricted EALs. Concentrations of arsenic that exceeded the HDOH Tier I EAL of 20 mg/kg were identified in three of the MIS samples including: MDA-08 (20.1 mg/kg), MDA-09 (41.6 mg/kg), and MDA-10 (22.8 mg/kg). The RSL for arsenic in residential soils is 0.39 mg/kg. Background samples were not collected during the investigation; however, arsenic concentrations in the samples that did not exceed the established action level ranged from 14.6 mg/kg to 15.3 mg/kg. In addition, a designated background sediment sample collected during the 2005 PA/SI established a total arsenic background concentration of 17.2 mg/kg (HDOH, 2005; WESTON, 2011).



Reference: Weston Solutions, Inc.; Phase I/II Investigation, Targeted Brownfield's Assessment; April 2011.

Figure
2-5



**2011 Targeted Brownfields
Assessment – Mill Ditch Area
(MDA) Decision Unit Locations**

Kekaha Sugar Co., Ltd.
8315 Kekaha Road
Kekaha, Kauai, Hawaii



Figure
2-6

Table 2-1: Selected Soil and Sediment Sample Results from the April 2011 Targeted Brownfields Assessment

Action Levels		Total Arsenic (mg/kg)	BA Arsenic (mg/kg)	Dioxin-TEQ (ng/kg)	Mercury (mg/kg)
Unrestricted/Residential EAL		20 ^a	23 ^b	240	4.7
Commercial/Industrial EAL		20 ^a	23 ^b	1,500	10
EPA Residential RSL		0.39	--	4.5 ^c	10 ^d
Soil					
Background Concentration ^e		14.7	--	48.53	0.0500
Background Conc. x 3		44.1	--	145.59	0.1500
Site Area	Sample Identification	Sample Results			
FHMA	FHMA-01	13.0	--	120	0.0303
	FHMA-02	(22.7)	8.05	130	0.0432
	FHMA-03	16.8	--	(1,800)	0.0465
	FHMA-04	12.2	--	130	0.0182
	FHMA-05	(97.5)	(47.3)	(620)	0.1200
	FHMA-06	(69.8)	(25.4)	(770)	0.0813
	FHMA-11 ^f	(50.4)	15.7	(600)	0.0545
	FHMA-12 ^f	(40.8)	11.8	(610)	0.0647
Sediment					
Background Concentration ^e		17.2	--	--	0.0500
Background Conc. x 3		51.6	--	--	0.1500
MDA	MDA-07	15.3	--	--	0.1090
	MDA-13 ^g	15.3	--	--	0.0745
	MDA-14 ^g	14.6	--	--	0.0714
	MDA-08	(20.1)	6.52	--	0.1060
	MDA-09	(41.6)	21.6	--	0.2040
	MDA-10	(22.8)	4.28	--	0.1670
BA = Bioaccessible EAL = Hawaii Department of Health Environmental Action Level EPA = Environmental Protection Agency FHMA = Former Herbicide Mixing Area MDA = Mill Ditch Area mg/kg = milligrams per kilogram ng/kg = nanograms per kilogram RSL= Regional Screening Level TEQ = Toxic Equivalent Quotient			Bold = Exceeded three times background concentration (value) = exceeded Unrestricted/Residential EAL -- = not analyzed or not applicable a = 2009 EAL b = 2008 EAL c = RSL for 2,3,7,8-tetrachlorodibenzo-p-dioxin d = RSL for elemental mercury e = Background data from 2005 PA/SI Report f= field duplicate sample of FHMA-06 g = field duplicate sample of MDA-07		
References: HDOH, 2005; WESTON, 2011					

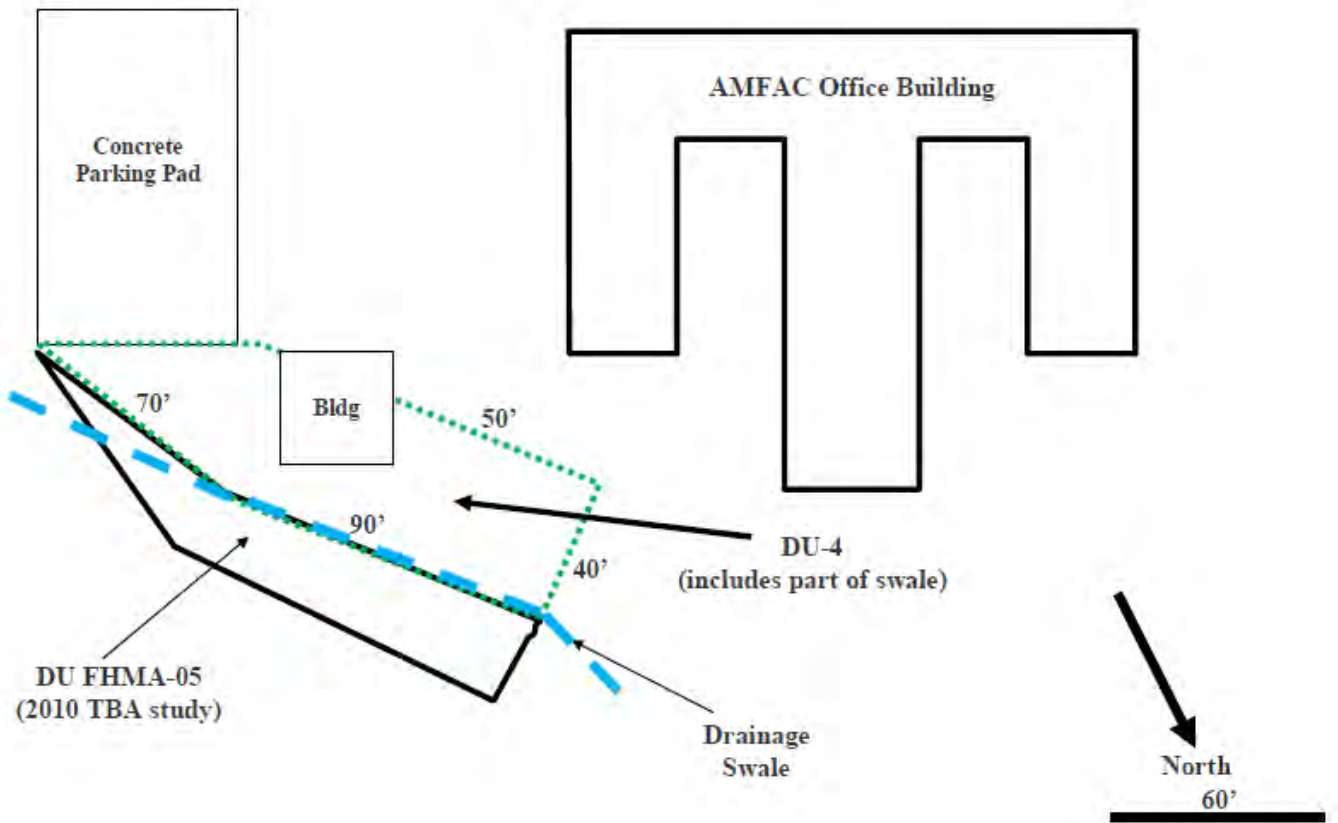
2.4.2 Hawaii Department of Health

In 2005, the HDOH conducted a PA/SI on the Kekaha Sugar site for EPA. Details of the assessment are provided in Section 2.4.1 (HDOH, 2005).

In October 2011, the HDOH conducted shallow soil sampling at the Kekaha Sugar site in the vicinity of the FHMA and the Main Office building. This sampling was primarily conducted due to concern that soil contamination may be present in areas frequented by students of the public charter school operating within the western portion of the Main Office building. Samples were collected using MIS methodology from three designated DUs, identified as: DU-1, DU-2/DU-3, and DU-4. All of the samples were reportedly collected from parcel 413009001. DU-1 was defined as the approximately 2,400 ft² grassy area located between the central and western wings of the Main Office building. DU-2/DU-3 was defined as an approximately 4,000 ft² area of primarily bare soil that is located adjacent north of DU-1 and the west wing of the Main Office building. Both DU-1 and DU-2/DU-3 are commonly used by staff and students of the public charter school. DU-4 is defined as an approximately 4,500 ft² area that is generally northeast of the Main Office building. DU-4 includes a portion of the drainage swale that was sampled during the 2010 TBA investigation as FHMA-05. One MIS sample was collected from each DU and analyzed for arsenic, mercury, dioxins, and pesticides. In addition, one field-duplicate sample was collected from DU-2/DU-3. Designated background samples were not collected during the investigation. A sample location map for the October 2011 HDOH investigation is presented in Figure 2-7 selected analytical results are presented in Table 2-2 (HDOH, 2011).

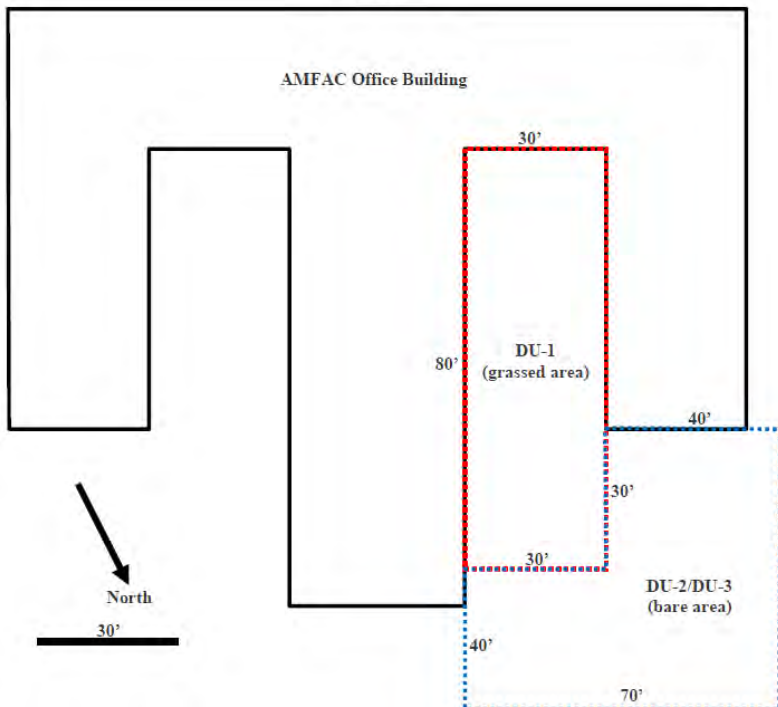
Analytical results from the October 2011 HDOH on-site sampling event indicated concentrations of total arsenic that ranged from 11 mg/kg in DU-1 to 51 mg/kg in DU-4. The HDOH Tier I EAL for arsenic is 20 mg/kg and the RSL for arsenic in residential soils is 0.39 mg/kg. The 2005 PA/SI established a background concentration for arsenic of 14.7 mg/kg. Analytical results indicated concentrations of total dioxin-TEQ that ranged from 29 ng/kg in DU-2/DU-3 to 110 ng/kg in DU-4. The HDOH Tier II Residential/Unrestricted EAL for dioxin-TEQ is 240 ng/kg and the RSL for dioxin-TEQ (i.e., 2,3,7,8-TCDD) in residential soils is 4.5 ng/kg. The 2005 PA/SI established a background concentration for dioxin-TEQ of 48.53 ng/kg. Analytical results indicated concentrations of mercury that ranged from 0.073 mg/kg in DU-2/DU-3 to 0.41 mg/kg in DU-4. The HDOH Tier I Residential/Unrestricted EAL for mercury is 4.7 mg/kg and the RSL for elemental mercury is 10 mg/kg. The 2005 PA/SI established a background concentration for mercury of 0.05 mg/kg (HDOH, 2005; HDOH, 2011).

HDOH is currently overseeing site investigation and cleanup. The cleanup remedy for the Agricultural Diesel Generator Site includes dividing the site into two portions: a) a 3-acre portion of the project site where the former pesticide and mixing area was located and the planned location of the proposed generators; and b) the soil removal area, which is the portion of the perimeter area outside of the 3-acre portion of the site (which includes the drainage swale outside of the Amfac building). Soil inside the 3-acre portion of the site with levels of contaminants above the commercial action level will be excavated and buried under the



Kehaka Road

Reference: Brewer, Roger, State of Hawaii, Department of Health, Hazard Evaluation and Emergency Response Office; Letter addressed to Melody Calisay, Site Discovery, Assessment and Remediation Section, HEER Office, Subject: Review of soil sample data results for former AMFAC Office Building in Kekaha, Kaua'i; 22 November 2011.



Hawaii Department of Health
October 2011 Investigation –
Decision Unit Locations
 Kekaha Sugar Co., Ltd.
 8315 Kekaha Road
 Kekaha, Kauai, Hawaii



WESTON
 SOLUTIONS
 Restoring Resource Efficiency

Figure
 2-7

generator pad. This area will be graded, with vegetation maintained and fenced off to restrict access to the site. The soil outside the 3-acre perimeter area or soil removal area with levels of contaminants above the residential action level will be excavated and backfilled with clean fill material.

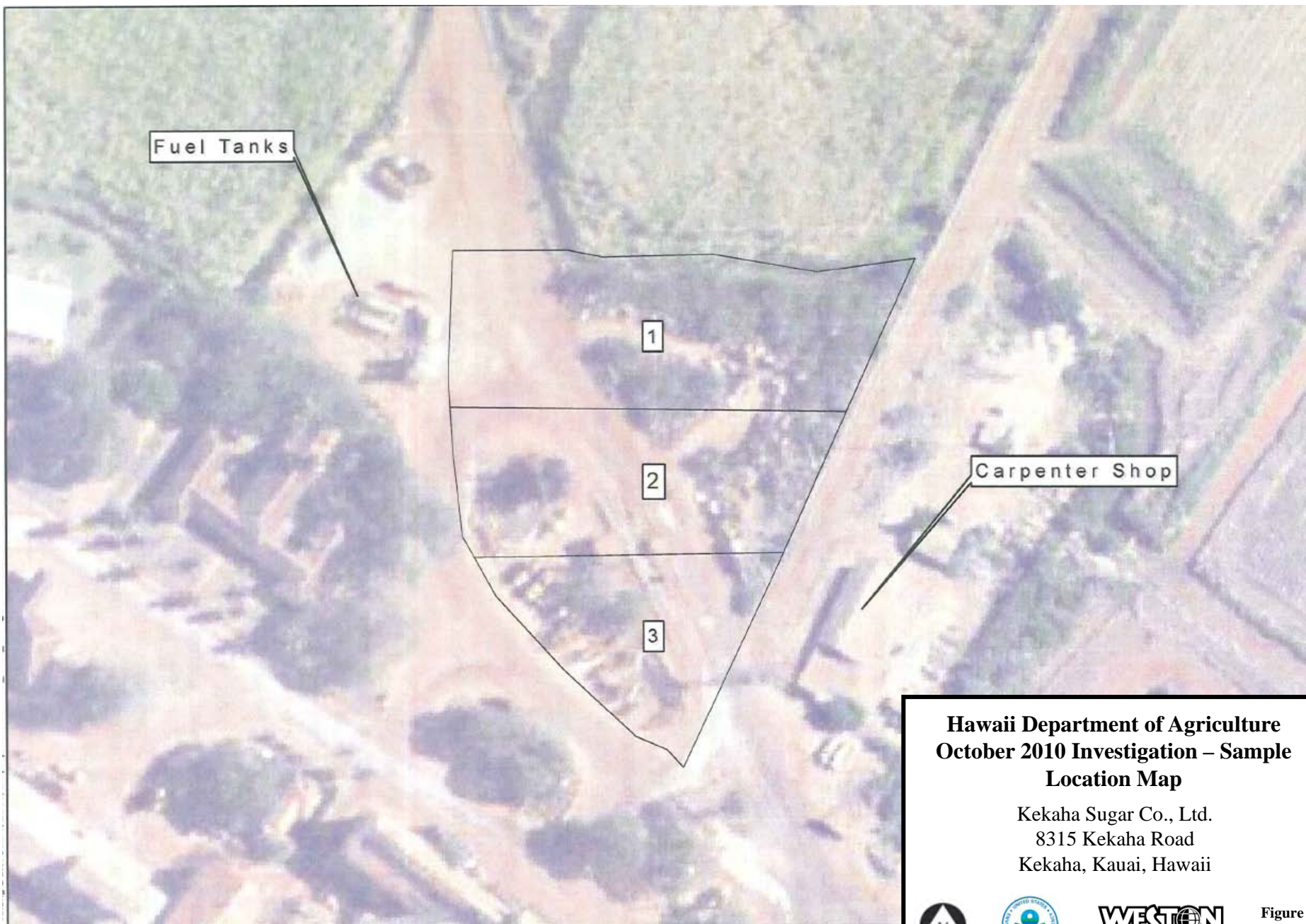
Table 2-2: Selected Analytical Results from the October 2011 Hawaii Department of Health's Main Office Building Sampling Event

Action Levels		Total Arsenic (mg/kg)	BA Arsenic (mg/kg)	Dioxin-TEQ (ng/kg)	Mercury (mg/kg)
Unrestricted/Residential EAL		20 ^a	23 ^b	240	4.7
Commercial/Industrial EAL		20 ^a	23 ^b	1,500	10
EPA Residential RSL		0.39	--	4.5 ^c	10 ^d
Background Concentration ^e		14.7	--	48.53	0.0500
Background Conc. x 3		44.1	--	145.59	0.1500
Site Area	Sample Identification	Sample Results			
Main Office Building Parcel	DU-1	11	--	30	0.2100
	DU-2	15	--	29	0.0730
	DU-3 ^f	14	--	36	0.0730
	DU-4	(51)	18	110	0.4300
BA = Bioaccessible EAL = Hawaii Department of Health Environmental Action Level EPA = Environmental Protection Agency mg/kg = milligrams per kilogram ng/kg - nanograms per kilogram RSL= Regional Screening Level TEQ = Toxic Equivalent Quotient			Bold = Exceeded three times background concentration (value) = exceeded Unrestricted/Residential EAL -- = not analyzed or not applicable a = 2009 EAL b = 2008 EAL c = RSL for 2,3,7,8-tetrachlorodibenzo-p-dioxin d = RSL for elemental mercury e = Background data from 2005 PA/SI Report f= field duplicate sample of DU-2		
References: HDOH, 2005; HDOH, 2011					

2.4.3 Hawaii Department of Agriculture

In October 2010, the Agribusiness Development Corporation, Hawaii Department of Agriculture completed a Phase II Environmental Site Assessment (ESA) as part of the State of Hawaii's environmental review process for the installation of three containerized diesel-powered generator units. These generator units would provide back-up power to operate the existing drainage and irrigation system of the Kekaha Agricultural Lands. The proposed generator site occupies approximate 3 acres of the north-central portion of the Kekaha Sugar site, adjacent west to the Carpenter/Paint Shop. A sample location map for the October 2010 Phase II ESA is presented in Figure 2-8 and selected analytical results are presented in Table 2-3 (TEC, 2010).

As part of the Phase II ESA, three MIS surface soil samples were collected from the proposed installation site and were analyzed for dioxin-TEQs, chlorinated herbicides, and metals. Sample activities were conducted in July 2010. The investigation area was divided equally into three DUs, identified as: DU1 (north), DU2 (center), and DU3 (south). One MIS sample was collected from each DU. In addition, two field-duplicate samples were collected from DU2. Analytical results indicated that arsenic was detected in soils at concentrations that ranged from 13.1 mg/kg at DU2 to 90 mg/kg at DU3. The HDOH Tier I EAL for arsenic is 20 mg/kg and the RSL for arsenic in residential soils is 0.39 mg/kg. Analytical results for total dioxin-TEQ indicated concentrations that ranged from 265 ng/kg at DU2 to 1,225 ng/kg at DU1. The HDOH Tier II Residential/Unrestricted EAL for dioxin-TEQ is 240 ng/kg and the RSL for dioxin-TEQ (i.e., 2,3,7,8-TCDD) in residential soils is 4.5 ng/kg. With the exception of a very low concentration identified in one of the duplicate samples, chlorinated herbicides were not detected in any of the analyzed samples. Background samples were not collected during the investigation (TEC, 2010).



Reference: TEC, Inc.; *Site Investigation Report, Phase II Environmental Site Assessment*; October 2010.



Figure
2-8

Table 2-3: Selected Analytical Results from the October 2010 Hawaii Department of Agriculture's Phase II Environmental Site Assessment

Action Levels		Total Arsenic (mg/kg)	BA Arsenic (mg/kg)	Dioxin-TEQ (ng/kg)	Mercury (mg/kg)
Unrestricted/Residential EAL		20 ^a	23 ^b	240	4.7
Commercial/Industrial EAL		20 ^a	23 ^b	1,500	10
EPA Residential RSL		0.39	--	4.5 ^c	10 ^d
Background Concentration ^e		14.7	--	48.53	0.0500
Background Conc. x 3		44.1	--	145.59	0.1500
Site Area	Sample Identification	Sample Results			
FHMA	KSS01 (DU-1)	(21.2)	ND	(1,225)	0.1650
	KSS02 (DU-2)	13.8	--	(265)	0.0626
	KSS04 (DU-2) ^f	13.2	--	--	0.0525
	KSS05 (DU-2) ^f	13.1	--	--	0.0648
	KSS03 (DU-3)	(90)	(47.5)	(738)	0.3640
BA = Bioaccessible EAL = Hawaii Department of Health Environmental Action Level EPA = Environmental Protection Agency FHMA = Former Herbicide Mixing Area mg/kg = milligrams per kilogram ng/kg - nanograms per kilogram RSL= Regional Screening Level TEQ = Toxic Equivalent Quotient			Bold = Exceeded three times background concentration (value) = exceeded Unrestricted/Residential EAL -- = not analyzed or not applicable a = 2009 EAL b = 2008 EAL c = RSL for 2,3,7,8-tetrachlorodibenzo-p-dioxin d = RSL for elemental mercury e = Background data from 2005 PA/SI Report f= field duplicate sample KSS02		
References: HDOH, 2005; TEC, 2010b					

3.0 HAZARD RANKING SYSTEM FACTORS

3.1 Sources of Contamination

For HRS purposes, a source is defined as an area where a hazardous substance has been deposited, stored, disposed, or placed, plus those soils that have become contaminated from migration of a hazardous substance.

Potential hazardous substance sources associated with the Kekaha Sugar site include, but may not be limited to:

- On-site soils contaminated with arsenic, mercury, and/or dioxins; which are potentially the result of historic on-site operations (HDOH, 2011: TEC, 2010b; WESTON, 2011).

3.2 Groundwater Pathway

In determining a score for the groundwater migration pathway, the HRS evaluates: 1) the likelihood that sources at a site actually have released, or potentially could release, hazardous substances to groundwater; 2) the characteristics of the hazardous substances that are available for a release (i.e., toxicity, mobility, and quantity); and 3) the people (targets) who actually have been, or potentially could be, impacted by the release. For the targets component of the evaluation, the HRS focuses on the number of people who regularly obtain their drinking water from wells that are located within 4 miles of the site. The HRS emphasizes drinking water usage over other uses of groundwater (e.g., food crop irrigation and livestock watering), because, as a screening tool, it is designed to give the greatest weight to the most direct and extensively studied exposure routes.

The Kekaha Sugar site is located within the Kekaha Aquifer System of the Waimea Aquifer Sector. Surface drainage in the sector is characterized by small intermittent streams that drain to the Mana Plain, which is a mile-wide coastal plain of terrestrial and marine sediments. The majority of the Mana Plain has been drained for the purposes of agricultural development. The region is part of the southwest volcanic flank, where the Napali lavas terminate against the Mana Plain. The Mana Plain is characterized by a lower basal aquifer that is confined by the overlying caprock. The average annual rainfall in the vicinity of the site is approximately 21.8 inches per year, which is one of the driest areas on the island of Kauai (WESTON, 2011; WRCC, 2011).

Public drinking water systems in the vicinity of the Kekaha Sugar site are generally located inland and hydraulically upgradient from the site, where the basal aquifer is not confined by caprock. There are five known drinking water wells within four miles of the site, all of which are located within this unconfined portion of the basal aquifer. These wells are all part of the Kauai Department of Water's Waimea-Kekaha system, which includes a total of six wells and serves an estimated population of 5,200. The confined portion of the basal aquifer is reportedly not used for drinking water purposes; however, this aquifer is used for agricultural irrigation. The

confined portion of the aquifer has been described as having an upward vertical gradient that results in leakage of fresh water into the surface aquifer sediments and ultimately results in a near-surface water system that is saline-to-brackish. In addition, this upward vertical gradient may reduce the potential for the downward migration of many potential surface contaminants into the lower freshwater system (DOW, 2001; DOW, 2012; EPA, 2011a; WESTON, 2011).

3.3 Surface Water Pathway

In determining the score for the surface water pathway, the HRS evaluates: 1) the likelihood that sources at a site actually have released, or potentially could release, hazardous substances to surface water (e.g., streams, rivers, lakes, and oceans); 2) the characteristics of the hazardous substances that are available for a release (i.e., toxicity, persistence, bioaccumulation potential, and quantity); and 3) the people or sensitive environments (targets) who actually have been, or potentially could be, impacted by the release. For the targets component of the evaluation, the HRS focuses on drinking water intakes, fisheries, and sensitive environments associated with surface water bodies within 15 miles downstream of the site.

Surface water runoff from the portion of the Kekaha Sugar site northeast of Kekaha Street typically flows into one or more of the adjacent irrigation ditches or infiltrates directly to the ground. Surface water runoff from the portion of the site southwest of Kekaha Street typically drains into Mill Ditch, which is an intermittent drainage ditch that transects the site and receives water from the former sugar mill area, the seed dipping area, and the former off-site settling ponds. Mill Ditch discharges into the Pacific Ocean approximately 450 feet southwest of the site. During the 2010 TBA sampling, some portions of Mill Ditch did not contain water. There are no known drinking water intakes associated with the Pacific Ocean; however, the Pacific Ocean is used both for consumption fishing and recreational purposes. No known surface water and/or sediment sampling has been conducted in the Pacific Ocean adjacent to the discharge location of Mill Ditch. The average annual rainfall in the vicinity of the site is approximately 21.8 inches per year. Based upon this information, Mill Ditch, which is an intermittent stream located in an area that receives more than 20 inches of annual rainfall per year, is not considered to be an eligible HRS surface water body. Therefore, the Pacific Ocean, which is used both for consumption fishing and recreational purposes, is the nearest surface water body to the site (Google, 2012; HDOH, 2005; WESTON, 2011; WRCC, 2011).

3.4 Soil Exposure and Air Pathways

In determining the score for the soil exposure pathway, the HRS evaluates: 1) the likelihood that there is surficial contamination associated with the site (e.g., contaminated soil that is not covered by pavement or at least 2 feet of clean soil); 2) the characteristics of the hazardous substances in the surficial contamination (i.e., toxicity and quantity); and 3) the people or sensitive environments (targets) who actually have been or potentially could be, exposed to the contamination. For the targets component of the evaluation, the HRS focuses on populations that are regularly and currently present on or within 200 feet of surficial contamination. The four

populations that receive the most weight are residents, students, daycare attendees, and terrestrial sensitive environments.

In determining the score for the air migration pathway, the HRS evaluates: 1) the likelihood that sources at a site actually have released, or potentially could release, hazardous substances to ambient outdoor air; 2) the characteristics of the hazardous substances that are available for a release (i.e., toxicity, mobility, and quantity); and 3) the people or sensitive environments (targets) who actually have been, or potentially could be, impacted by the release. For the targets component of the evaluation, the HRS focuses on regularly occupied residences, schools, and workplaces within 4 miles of the site. Transient populations, such as customers and travelers passing through the area, are not counted.

3.4.1 Physical Conditions

The Kekaha Sugar site is located in the town of Kekaha, on the island of Kauai, Hawaii. The site consists of multiple structures associated with a former sugar mill facility. A portion of the site is currently being used for commercial activities as well as a public charter school. A majority of the property is unpaved. Reportedly, the portion of the site southwest of Kekaha Road is partially fenced; however, in previous investigations, the gates were observed to be open. In addition, the portion of the site northeast of Kekaha Road is not fenced and is accessible to the public (HDOH, 2005; App. C-1).

3.4.2 Soil Exposure and Air Targets

The Main Office building, which is located at the northwestern portion of the Kekaha Sugar site, is occupied by several commercial businesses as well as a public charter school, identified as the Kula Aupuni Niihau A Kahelelani Aloha (KANAKA) Public Charter School. According to the State of Hawaii, Charter School Administrative Office, the KANAKA charter school has a total enrollment of 51 students. In addition, it is estimated that between 10 and 20 individuals work within the various units of the Main Office building. No residences are located on the site; however, the site is bound by residential areas to the east, west, and south. There are approximately 2,861 individuals living or attending school within one mile of the site. The nearest known terrestrial sensitive environments are associated with the Hawaiian duck (*anas wyvilliana*), Hawaiian gallinule (*gallinule chloropus sandvicensis*), Hawaiian Coot (*fulica alai*), and Hawaiian Stilt (*himantopus mexicanus knudseni*). Documented habitats for these species are located approximately 0.5 mile from the site; however, there is the potential that these species also utilize the on-site irrigation ditches (CSAO, 2011; EPA, 2011a; Google, 2012; HDOH, 2005; TEC, 2010a).

3.4.3 Soil Exposure and Air Pathway Conclusions

Multiple soil sampling events have been conducted at the Kekaha Sugar site since approximately 2003. In addition, several of these investigations have also included the sampling of sediments

within the intermittent drainage ditches associated with the site. On-site investigations have identified several areas where surficial soils contain hazardous substances at concentrations significantly above background levels. Based on the analytical data collected during the 2010 proposed generator Phase II ESA, the 2011 TBA, and the 2011 HDOH Main Office Building sampling event; these substances include: arsenic, mercury, and dioxins. The only known on-site investigation that included the collection of designated background samples was the 2005 PA/SI sampling event. For HRS purposes, the background concentration data from this event is used to compare concentrations from all of the subsequent sampling events (HDOH, 2005; HDOH, 2011; TEC, 2010b; WESTON, 2011).

Concentrations of arsenic that are significantly above background have been identified within the on-site surficial soils at the southern portion of the FHMA. The arsenic-impacted near-surface soils are primarily located on parcel 412002001 but extend to the northeastern portion of parcel 413009001, which is occupied by the Main Office building. In addition, concentrations of dioxins that are significantly above background have been identified in surficial soils across the majority of the FHMA; although they have not been identified on the parcel occupied by the Main Office building. Mercury concentrations at levels significantly above background have been identified in surficial soils on the Main Office building parcel, specifically within the grassy area between the western and central wings of the building and in the swale area located adjacent northeast of the building. Sediment sampling of Mill Ditch has identified concentrations of mercury significantly above background levels in portions of the ditch that are downstream of the cane sugar mill and seed dipping plant (HDOH, 2005; HDOH, 2011; TEC, 2010b; WESTON, 2011).

The majority of the Kekaha Sugar site is unpaved and accessible to the public. A public charter school, which has a reported student enrollment of 51, is located on site within the western portion of the Main Office building. The specific number of individuals that work on site is not known; however, it is estimated that between 10 and 20 workers regularly occupy the site. There are no known residences on the site; however, the site is bordered by residential properties to the east, west, and south. In addition, several schools are located in the nearby surrounding community. Elevated concentrations of hazardous substances, specifically arsenic and mercury, have been identified on the parcel occupied by the public charter school and within 200 feet of the Main Office building, which is partially leased by the school. Approximately 2,861 individuals reside within one mile of the site. No known air quality monitoring has been conducted at the site (EPA, 2011a; Google, 2012; HDOH, 2005; HDOH, 2011).

4.0 EMERGENCY RESPONSE CONSIDERATIONS

The National Contingency Plan [40CFR 300.415 (b) (2)] authorizes the EPA to consider emergency response actions at those sites that pose an imminent threat to human health or the environment. For the following reasons, a referral to Region 9's Emergency Response Office does not appear to be necessary:

- A temporary fence has been constructed around a 3-acre portion of the site (former pesticide mixing and loading area) to restrict access to the property. A permanent fence will be installed later as part of the cleanup remedy.
- Total arsenic levels in the school picnic area and grassy area are below the HDOH EAL and comparable to background levels. One decision unit outside of the school area indicated slightly elevated levels of total arsenic and TEQ dioxin, however, the levels are below the HDOH EALs for unrestricted land use, including schools and residences. Nonetheless, the remedy for this property includes cleanup (excavation and backfill) of this area. Long-term maintenance of the cleanup remedy will be required at the property.

5.0 SUMMARY

The Kekaha Sugar Co., Ltd. (Kekaha Sugar) site is located at 8315 Kekaha Road, Kekaha, Kauai County, Hawaii. The site occupies approximately 36.8 acres and is located in a mixed agricultural, commercial, and residential area within the town of Kekaha. The site is bound to the northeast by agricultural land, and to the southeast, southwest, and northwest by primarily residential properties with some intermixed commercial areas. The Pacific Ocean is located approximately 450 feet southwest of the site.

Historic operations at the site include cane sugar processing and production activities from approximately 1898 to 1999. There are multiple potential sources of contamination associated with historic on-site operations. These sources include, but are not limited to: contaminated soils/sediments within the intermittently-flowing on-site drainage ditch, which is commonly referred to as Mill Ditch; and contaminated surficial soils within the Former Herbicide Mixing Area (FHMA), which is located at the northern portion of the site across Kekaha Road from the cane sugar mill. The herbicide mixing operations within the FHMA were reported to have been conducted from the 1800s to 1960, when the herbicide mixing operation was transferred to Waiawa Valley. The Waiawa Valley mixing area is being addressed under CERCLA as a separate site [EPA ID No.: HIN000906089 (Kekaha Sugar Co., LTD - Former Herbicide Mixing Plant/Former Wood Treatment Plant)].

Multiple investigations have been conducted at the site between approximately 2003 and 2011. These investigations have identified concentrations of hazardous substances; primarily arsenic, dioxins, and mercury; that are significantly above background levels within the surficial soils of the FHMA and sediments of Mill Ditch.

The following pertinent Hazard Ranking System factors are associated with the site:

- There are five known drinking water wells within four miles of the site, which are all located between one and four miles hydraulically upgradient from the site. These wells are part of the Kauai Department of Water's Waimea-Kekaha system, which is estimated to serve a population of approximately 5,200. The site is located within the confined portion of the basal aquifer, which is reportedly only used for agricultural/irrigation purposes.
- Surface water runoff from the site is generally directed into on-site drainage ditches or infiltrates to the ground. Surface water runoff from the southwestern portion of the site generally drains to Mill Ditch, which subsequently discharges to the Pacific Ocean approximately 450 feet southwest of the site. The mean annual precipitation in the vicinity of the site is 21.8 inches. Based upon this information, Mill Ditch is not considered to be an eligible HRS surface water body; therefore, the Pacific Ocean, which is used both for consumption fishing and recreational purposes, is the nearest surface water body to the site.

- Concentrations of hazardous substances have been identified in on-site surficial soils and sediments at concentrations greater than three times background. These substances include: arsenic, dioxins, and mercury. The elevated arsenic and mercury concentrations have been identified on the property occupied by, and within 200 feet of, a public charter school attended by 51 students. In addition, the identified arsenic concentrations exceeded the EPA Regional Screening Level for arsenic in residential soils. The majority of the site is unpaved and the site is generally accessible to the public. An estimated 10 to 20 workers regularly occupy the site and approximately 2,861 individuals reside within one mile of the site.
- No known air quality monitoring has been conducted at the site.

6.0 REFERENCE LIST

- CSAO, 2011 State of Hawaii, Charter School Administrative Office; *Kula Aupuni Niihau A Kahelelano Aloha*; <http://hcsao.org/school/kula-aupuni-niihau-kahelelani-aloha>; data extracted 09 December 2011.
- DEG, 2006 Dutch Energy Group & Western Renewable Energy; *Kekaha Bioenergy Project: Revitalizing and Re-powering of the Former Kekaha Mill Site for Kaua'i Future*; 27 January 2006.
- DLNR, 2010 Thielen, Laura H., State of Hawaii, Department of Land and Natural Resources; Letter addressed to Fenix Grange, *Subject: Right of Entry for November 29 through December 3, 2010 to State of Hawaii Department of Health...onto a State-reserved Drainage Ditch...*; 12 November 2010.
- DOW, 2001 County of Kauai, Department of Water; *Water Plan 2020*; March 2001.
- DOW, 2012 County of Kauai, Department of Water; *Water System Source, Waimea-Kekaha*; http://www.kauaiwater.org/ce_ws_waimea.asp; data extracted 19 January 2012.
- EPA, 2011a U.S. Environmental Protection Agency; GIS Report, *Kekaha Sugar Co. HID000875203*; 10 August 2011.
Note: This document is confidential and is included in the confidential information packet.
- EPA, 2011b U.S. Environmental Protection Agency; Envirofacts Warehouse, Facility Detail Report, *Kaimalu Loop, Sewage Spill*; http://iaspub.epa.gov/enviro/fii_query_dtl.disp_program_facility?p_registry_id=110001322827; data extracted 17 August 2011.
- EPA, 2011c U.S. Environmental Protection Agency; Envirofacts Warehouse, Toxic Release Inventory (TRI), *Kekaha Sugar Co. Ltd.*; http://oaspub.epa.gov/enviro/tris_control_v2.tris_print?tris_id=96752KKHSG8315K; data extracted 17 August 2011.
- EPA, 2012 U.S. Environmental Protection Agency; Envirofacts Warehouse CERCLIS query results; *Kekaha Sugar Company, LTD*; http://oaspub.epa.gov/enviro/cerclisquery.get_report?pgm_sys_id=HID000875203; data extracted 19 January 2012.
- Google, 2012 Google Earth; *21° 58' 04.21" N, 159° 42' 35.81 " W*; imagery date unknown; <http://earth.google.com>; data extracted 20 January 2012.

HDOH, 2005	State of Hawaii, Department of Health, Hazard Evaluation and Emergency Response Office; <i>Site Inspection Report, Kekaha Sugar Company, LTD</i> ; 09 August 2005.
HDOH, 2011	Brewer, Roger, State of Hawaii, Department of Health, Hazard Evaluation and Emergency Response Office; Letter addressed to Melody Calisay, Site Discovery, Assessment and Remediation Section, HEER Office, <i>Subject: Review of soil sample data results for former AMFAC Office Building in Kekaha, Kaua'i</i> ; 22 November 2011.
MWK, 2012	Midweek Kauai; <i>Taking A Chance On Kekaha Sugar Office</i> , published on 13 April 2011; data extracted 12 January 2012.
RPAD, 2012	County of Kauai, Real Property Assessment Division; Property Search query results; <i>TMK: 130090010000, 130020010000, 130010390000, 130110060000, 130071040000</i> ; http://www.kauaipropertytax.com/Search/GenericSearch.aspx?mode=PARID ; data extracted 12 January 2012.
TEC, 2010a	TEC, Inc.; <i>Draft Environmental Assessment for Diesel Generator Installation, Kekaha, Kauai, Hawaii</i> ; February 2010.
TEC, 2010b	TEC, Inc.; <i>Site Investigation Report, Phase II Environmental Site Assessment</i> ; October 2010.
WESTON, 2011	Weston Solutions, Inc.; <i>Phase I/II Investigation, Targeted Brownfield's Assessment</i> ; April 2011.
WRCC, 2011	Western Regional Climate Center; <i>Kekaha 944, Hawaii (514272), Period of Record Monthly Climate Summary</i> ; http://www.wrcc.dri.edu/cgi-bin/cliREctM.pl?hi4272 ; data extracted 25 August 2011.

APPENDIX A:

Transmittal List

TRANSMITTAL LIST

Date: September 2013
Site Name: Kekaha Sugar Co., Ltd.
EPA ID No.: HID000875203

A copy of the Site Reassessment Report for the above-referenced site should be sent to the following recipients:

Agribusiness Development Corporation
State of Hawaii
(Site Owner)
c/o Ivan Kawamoto
235 S. South Beretania St., Room 205
Honolulu, HI 96813

Kekaha MS LLC
(Site Owner)
c/o Lynn McCrory
3970 Wyllie Road
Princeville, HI 96722

Jimmy Wray
Wray Enterprises LLC
(Site Owner)
1742 Kelaukia Street
Koloa, HI 96756

Stuart and Phyllis Wellington
(Site Owner)
PO Box 628
Kapaa, HI 96746

Melody Calisay
HEER Office
State of Hawaii
Department of Health
919 Ala Moana Boulevard, Room 206
Honolulu, Hawaii 96814

U.S. Environmental Protection Agency, Superfund Records Center
c/o Eugenia Chow
USEPA - Superfund Division
75 Hawthorne Street, SFD-6-1
San Francisco, CA 94105

APPENDIX B:
Site Reconnaissance Interview and
Observation Report/Photographic
Documentation

**SITE RECONNAISSANCE INTERVIEW AND OBSERVATIONS
REPORT/PHOTOGRAPHIC DOCUMENTATION**

*(Note: No Site Reconnaissance Interview and Observations Report/Photographic
Documentation was required for the completion of this report)*

APPENDIX C:
Contact Log and Contact Reports

CONTACT LOG

SITE: Kekaha Sugar Co., Ltd.

EPA ID: HID000875203

NAME	AFFILIATION	PHONE	DATE	INFORMATION
Melody Calisay	Hawaii Department of Health, HEER	(808) 586-7577	Aug. 2011 - Jan. 2012	See Contact Report 1
Anthony Rodriguez	Weston Solutions, Inc.	(808) 275-2900	01/12/2012	See Contact Report 2

CONTACT REPORT 1

AGENCY/AFFILIATION: State of Hawaii		
DEPARTMENT: Department of Health, Hazard Evaluation and Emergency Response Office		
ADDRESS/CITY: 919 Ala Moana Boulevard, Room 206; Honolulu		
COUNTY/STATE/ZIP: Honolulu; Hawaii; 96814		
CONTACT(S)	TITLE	PHONE
Melody Calisay	Project Manager	(808) 586-7577
PERSON MAKING CONTACT: Amanda K.C. Reilly Brian P. Reilly		DATE: August 2011 - January 2012
SUBJECT: Site Status, Recent Site Conditions, and Documentation on Previous Investigations		
SITE NAME: Kekaha Sugar Co., Ltd.		EPA ID#: HID00875203

Ms. Calisay is the HDOH Project Manager for the Kekaha Sugar site. Ms. Calisay provided with several documents related to the site including, but not limited to: a Site Investigation Report for the Kekaha Diesel Generator site, a summary report of the October 2011 HDOH sampling adjacent to the Main Office Building, the site access agreement from the Department of Land and Natural Resources for sampling within Mill Ditch, and a parcel map of the site (this is presented in the report as Figure 2-3).

Ms. Calisay has also indicated that during reconnaissance of the site she has observed portions of Mill Ditch, specifically in the vicinity of MDA-07, which did not contain water at least on November 30, 2010 during the Targeted Brownfield's Assessment sampling event. In addition, Ms. Calisay indicated that she recently spoke with Landis Ignasio, Director for the Kekaha Agricultural Association that is responsible for maintaining the infrastructure in Kekaha, regarding the frequency of flow within Mill Ditch. Mr. Ignasio indicated that portions of the ditch are typically dry for some portion of the year.

CONTACT REPORT 2

AGENCY/AFFILIATION: Weston Solutions, Inc.		
DEPARTMENT: Honolulu Office		
ADDRESS/CITY: 842 Bishop Street, Suite 2301; Honolulu		
COUNTY/STATE/ZIP: Honolulu, Hawaii, 96813		
CONTACT(S)	TITLE	PHONE
Anthony Rodriguez	Field Manager	(808) 275-2900
PERSON MAKING CONTACT: Brian P. Reilly		DATE: 12 January 2012
SUBJECT: Mill Ditch Flow Information		
SITE NAME: Kekaha Sugar Co., Ltd.		EPA ID#: HID00875203

Mr. Rodriguez indicated that while doing field sampling for the Targeted Brownfield's Assessment sampling event in late November 2010, he personally observed portions of Mill Ditch that did not contain water, specifically in the vicinity of the MDA-07 Decision Unit. The dry portion extended for approximately 20 feet and was dry to bare soil (underneath any surface duff).

APPENDIX D:
Latitude and Longitude Calculations
Worksheet

Latitude and Longitude Calculation Worksheet (7.5' quads) Using an Engineer's Scale (1/50)

Site Name CERCLIS #

H	I	D	0	0	0	8	7	5	2	0	3
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AKA

Address

City State

H	I
---	---

 ZIP

Site Reference Point

USGS Quad Name Scale

Township Range Section

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 3

--	--

 3

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 3

Map Datum ☐ 1927 ☐ 1983 (Check one) Meridian

Map coordinates at southeast corner of 7.5' quadrangle (attach photocopy)

Latitude

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 "N Longitude

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 '

--	--

 "W

Map coordinates at southeast corner of 2.5' grid cell

Latitude

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 "N Longitude

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 "W

Calculations

LATITUDE(x)

A) Number of ruler graduations between 2.5' (150") grid lines

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 (a)

B) Number of ruler graduations between south grid line and the site reference point

--	--	--

 (b)

C) Therefore, $a/150 = b/x$, where **x = Latitude in decimal seconds, north of the south grid line**

Expressed as minutes and seconds (1' = 60") =

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Add to grid cell latitude =

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 "N +

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 "N

Site latitude =

--	--	--

 2 1 ° 5 8 ' 0 5 "N

LONGITUDE(y)

A) Number of ruler graduations between 2.5' (150") grid lines

--	--	--

 (a)

B) Number of ruler graduations between south grid line and the site reference point

--	--	--

 (b)

C) Therefore, $a/150 = b/x$, where **x = Longitude in decimal seconds, west of the east grid line**

Expressed as minutes and seconds (1" = 60") =

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Add to grid cell longitude =

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Site longitude =

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APPENDIX E:
EPA Quick Reference Fact Sheet



SITE ASSESSMENT:

Evaluating Risks at Superfund Sites

Office of Emergency and Remedial Response
Hazardous Site Evaluation Division 5204G

Quick Reference Fact Sheet

The Challenge of the Superfund Program

A series of headline-grabbing stories in the late 1970s, such as Love Canal, gave Americans a crash course in the perils of ignoring hazardous waste. At that time, there were no Federal regulations to protect the country against the dangers posed by hazardous substances (mainly industrial chemicals, accumulated pesticides, cleaning solvents, and other chemical products) abandoned at sites throughout the nation. And so, in 1980 Congress passed the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), commonly known as Superfund, to address these problems.

The major goal of the Superfund program is to protect human health and the environment by cleaning up areas, known as "sites," where hazardous waste contamination exists. The U.S. Environmental Protection Agency (EPA) is responsible for implementing the Superfund program.

At the time it passed the Superfund law, Congress believed that the problems associated with uncontrolled releases of hazardous waste could be



handled in five years with \$1.6 billion dollars. However, as more and more sites were identified, it became apparent that the problems were larger than anyone had originally believed. Thus, Congress passed the Superfund Amendments and Reauthorization Act (SARA) in 1986. SARA expanded and strengthened the authorities given to EPA in the original legislation and provided a budget of \$8.5 billion over five years. Superfund was extended for another three years in 1991.

What is EPA's Job at Superfund Sites?

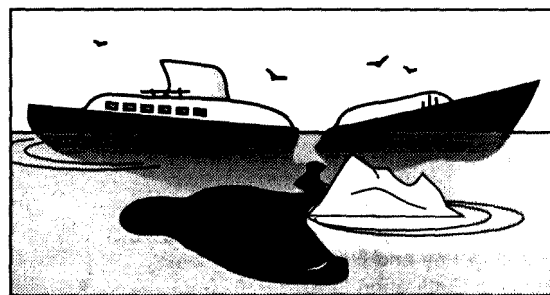
For more than 10 years, EPA has been implementing the Superfund law by:

- ☛ Evaluating potential hazardous waste sites to determine if a problem exists;
- ☛ Finding the parties who caused the hazardous waste problems and directing them to address these problems under EPA oversight or requiring them to repay EPA for addressing these problems; and
- ☛ Reducing immediate risks and tackling complex hazardous waste problems.

The Superfund site assessment process generally begins with the discovery of contamination at a site and ends with the completion of remediation (i.e., cleaning up the waste at a site) activities. This fact sheet explains the early part of the process, called the *site assessment* phase.

The National Response Center

The National Response Center (NRC), staffed by Coast Guard personnel, is the primary agency to contact for reporting all oil, chemical, and biological discharges into the environment anywhere in the U.S. and its territories. It is responsible for:



- Maintaining a telephone hotline 365 days a year, 24 hours a day;
- Providing emergency response support in specific incidents; and
- Notifying other Federal agencies of reports of pollution incidents.

To report a pollution incident, such as an oil spill, a pipeline system failure, or a transportation accident involving hazardous material, call the NRC hotline at **800-424-8802**.

1

Site Discovery

Hazardous waste sites are discovered in various ways. Sometimes concerned residents find drums filled with unknown substances surrounded by dead vegetation and call the NRC, EPA, or the State environmental agency; or an anonymous caller to the NRC or EPA reports suspicious dumping activities. Many sites come to EPA's attention through routine inspections conducted by other Federal, State, or local government officials. Other sites have resulted from a hazardous waste spill or an explosion. EPA enters these sites into a computer system that tracks any future Superfund activities.

2

Preliminary Assessment

After learning about a site, the next step in the site assessment process is to gather existing information about the site. EPA calls this the *preliminary assessment*. Anyone can request that a preliminary assessment be performed at a site by petitioning EPA, the State environmental agency, local representatives, or health officials.

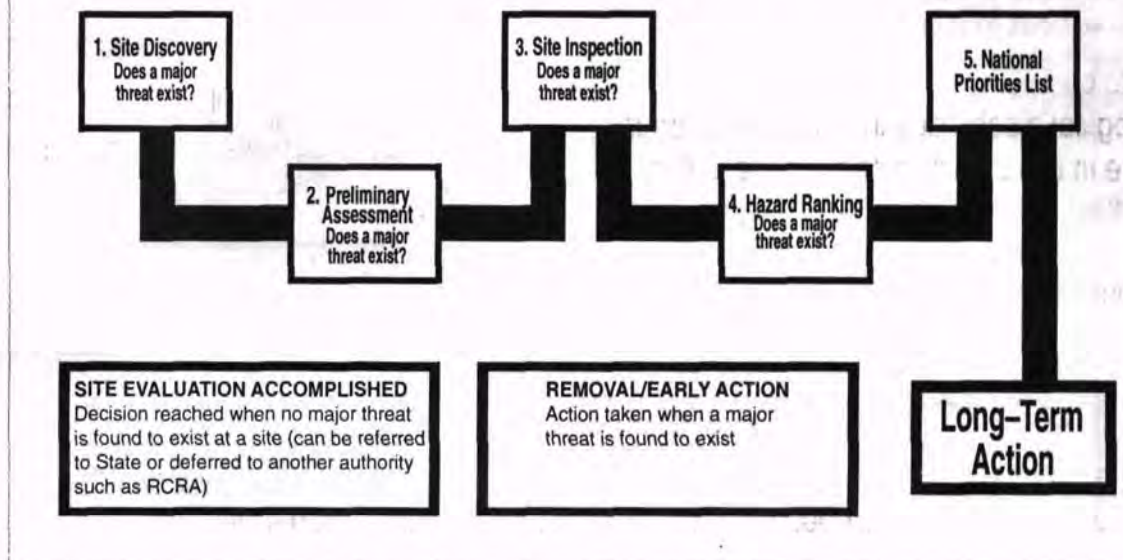
During the preliminary assessment, EPA or the State environmental agency:

- ◆ Reviews available background records;
- ◆ Determines the size of the site and the area around it;

- ◆ Tries to determine whether hazardous substances are involved;
- ◆ Identifies actual or potential pollution victims, such as the nearby population and sensitive environments;
- ◆ Makes phone calls or interviews people who may be familiar with the site; and
- ◆ Evaluates the need for early action using EPA's removal authority.

By gathering information and possibly visiting the site, EPA or the State environmental agency is able to determine if major threats exist and if cleanup is needed. Many times, the preliminary assessment indicates that no major threats exist.

The Site Assessment Process



However, if hazardous substances do pose an immediate threat, EPA quickly acts to address the threat. When a site presents an immediate danger to human health or the environment—for example, there is the potential for a fire or an explosion or the drinking water is contaminated as a result of hazardous substances leaking out of drums—EPA can move quickly to address site contamination. This action is called a *removal* or an *early action*. Additional information on early actions can be found on page 4.

EPA or the State environmental agency then decides if further Federal actions are required. Of the more than 35,000 sites discovered since 1980, only a small percentage have needed further remedial action under the Federal program.

A report is prepared at the completion of the preliminary assessment. The report includes a description of any hazardous substance release, the possible source of the release, whether the contamination could endanger people or the environment, and the pathways of the release. The information outlined in this report is formed into hypotheses that are tested if further investigation takes place. You can request a copy of this report once it becomes final—just send your name and address to your EPA regional Superfund office. See page 8 for further information on these contacts.

Sometimes it is difficult to tell if there is contamination at the site based on the initial information gathering. When this happens, EPA moves on to the next step of the site assessment, called the *site inspection*.

Making Polluters Pay

One of the major goals of the Superfund program is to have the responsible parties pay for or conduct remedial activities at hazardous waste sites. To accomplish this goal, EPA:

- ◆ Researches and determines who is responsible for contaminating the site;
- ◆ Issues an order requiring the private parties to perform cleanup actions with EPA oversight; and
- ◆ Recovers costs that EPA spends on site activities from the private parties.

Removals/Early Actions

EPA can take action quickly if hazardous substances pose an immediate threat to human health or the environment. These actions are called *removals* or *early actions* because EPA rapidly eliminates or reduces the risks at the site. EPA can take a number of actions to reduce risks, including:

- ◆ Fencing the site and posting warning signs to secure the site against trespassers;
- ◆ Removing, containing, or treating the source of the contamination;
- ◆ Providing homes and businesses with safe drinking water; and, as a last resort,
- ◆ Temporarily relocating residents away from site contamination.

"EPA can take action quickly if hazardous substances pose an immediate threat to human health or the environment."

3

Site Inspection

If the preliminary assessment shows that hazardous substances at the site may threaten residents or the environment, EPA performs a site inspection. During the site inspection, EPA or the State collects samples of the suspected hazardous substances in nearby soil and water. EPA may initiate a concurrent SI/remedial investigation at those sites that are most serious and determined early as requiring long-term action. Sometimes, wells have to be drilled to sample the ground water. Site inspectors may wear protective gear, including coveralls and respirators, to protect themselves against any hazardous substances present at the site. Samples collected during the site inspection are sent to a laboratory for analysis to help EPA answer many questions, such as:

- ◆ Are hazardous substances present at the site? If so, what are they, and approximately

how much of each substance is at the site?

- ◆ Have these hazardous substances been released into the environment? If so, when did the releases occur, and where did they originate?
- ◆ Have people been exposed to the hazardous substances? If so, how many people?
- ◆ Do these hazardous substances occur naturally in the immediate area of the site? At what concentrations?
- ◆ Have conditions at the site gotten worse since the preliminary assessment? If so, is an early action or removal needed? (See box above.)

Often, the site inspection indicates that there is no release of major contamination at the site, or that the hazardous substances are safely contained and have no possibility of being released into the environment. In these situations, EPA decides that no further Federal inspections or remedial actions are needed. This decision is referred to as *site evaluation accomplished*. (See page 5 for more details on the *site evaluation accomplished* decision.)

At the completion of the site inspection, a report is prepared. This report is available to the public—call your EPA regional Superfund office for a copy. See page 8 for the phone numbers of these offices.

"During the site inspection, EPA or the State collects samples of the suspected hazardous substances in nearby soil and water."

At sites with particularly complex conditions, EPA may need to perform a second SI to obtain legally defensible documentation of the releases.

Because EPA has limited resources, a method has been developed to rank the sites and set priorities throughout the nation. That method, known as the *Hazard Ranking System*, is the next step in the site assessment process.

4

Hazard Ranking System

EPA uses the information collected during the preliminary assessment and site inspection to evaluate the conditions at the site and determine the need for long-term remedial actions. When evaluating the seriousness of contamination at a site, EPA asks the following questions:

- ◆ Are people or sensitive environments, such as wetlands or endangered species, on or near the site?
- ◆ What is the toxic nature and volume of waste at the site?
- ◆ What is the possibility that a hazardous substance is in or will escape into ground water, surface water, air, or soil?

Based on answers to these questions, each site is given a score between zero and 100. Sites that score 28.5 or above move to the next step in the process: listing on the *National Priorities List*. Sites that score below 28.5 are referred to the State for further action.

5

National Priorities List

Sites that are listed on the *National Priorities List* present a potential threat to human health and the environment, and require further study to determine what, if any, remediation is necessary. EPA can pay for and conduct

remedial actions at NPL sites if the responsible parties are unable or unwilling to take action themselves. There are three ways a site can be listed on the National Priorities List:

- ◆ It scores 28.5 or above on the Hazard Ranking System;
- ◆ If the State where the site is located gives it top priority, the site is listed on the National Priorities List regardless of the HRS score; or
- ◆ EPA lists the site, regardless of its score, because all of the following are true about the site:
 - ▼ The Agency for Toxic Substances and Disease Registry (ATSDR), a group within the U.S. Public Health Service, issues a health advisory recommending that the local population be *dissociated* from the site (i.e., that the people be temporarily relocated or the immediate public health threat be removed);
 - ▼ EPA determines that the site poses a significant threat to human health; and
 - ▼ Conducting long-term remediation activities will be more effective than

Site Evaluation Accomplished

In many instances, site investigators find that potential sites do not warrant Federal action under the Superfund program. This conclusion can be attributed to one of two reasons:

- ◆ The contaminants present at the site do not pose a major threat to the local population or environment; or
- ◆ The site should be addressed by another Federal authority, such as EPA's Resource Conservation and Recovery Act (RCRA) hazardous waste management program.

When investigators reach this conclusion, the site evaluation is considered accomplished. A site can reach this point at several places during the site assessment process, namely at the conclusion of the preliminary assessment or the site inspection, or once the site is scored under the Hazard Ranking System.

addressing site contamination through early actions.

The list of proposed sites is published in the *Federal Register*, a publication of legal notices issued by Federal agencies. The community typically has 60 days to comment on the list. After considering all comments, EPA publishes a list of those sites that are officially on the National Priorities List. When a site is added to the National Priorities List, the site assessment is completed. Long-term actions take place during the next phase. See page 6 for more details on long-term actions.

As a Concerned Citizen, How Can I Help ?

- ☛ Read this fact sheet.
- ☛ Call EPA with any potential sites in your area.
- ☛ Provide EPA with site information.
- ☛ Comment on proposed listing of sites on the National Priorities List.
- ☛ If the site is listed on the NPL, work with your citizens' group to apply for a technical assistance grant.



Addressing Sites in the Long Term

Once a site is placed on the National Priorities List, it enters the long-term or remedial phase. The stages of this phase include:

- ✓ Investigating to fully determine the nature and extent of contamination at the site, which can include a public health assessment done by the ATSDR;
- ✓ Exploring possible technologies to address site contamination;
- ✓ Selecting the appropriate technologies—also called remedies;
- ✓ Documenting the selected remedies in a record of decision (ROD);
- ✓ Designing and constructing the technologies associated with the selected remedies;
- ✓ If necessary, operating and maintaining the technologies for several years (e.g., long-term treatment of ground water) to ensure safety levels are reached; and
- ✓ Deleting the site from the National Priorities List, completing Superfund's process and mission.



Some Commonly Asked Questions

Q: What exactly is a site?

A: EPA designates the area in which contamination exists as the "site." Samples are taken to define the area of contamination. At any time during the cleanup process the site may be expanded if contamination is discovered to have spread further.

Q: How long will it take to find out if a threat exists?

A: Within one year of discovering the site, EPA must perform a preliminary assessment. The preliminary assessment allows EPA to determine if there is an immediate danger at the site; if so, EPA takes the proper precautions. You will be notified if you are in danger. EPA may also contact you to determine what you know about the site.

Q: What is the State's role in all these investigations?

A: The State can take the lead in investigating and addressing contamination. It also provides EPA with background information on (1) immediate threats to the population or environment, and (2) any parties that might be responsible for site contamination. The State shares in the cost of any long-term actions conducted by the Superfund program, comments on the proposal of sites to the National Priorities List, and concurs on the selected remedies and final deletion of sites from the National Priorities List.

Q: Why are private contractors used to assess sites?

A: EPA has a limited workforce. By using private contractors, EPA is able to investigate more sites. Also, EPA is able to draw on the expertise of private contracting companies.

Q: Why are there so many steps in the evaluation process? Why can't you just take away all the contaminated materials right now, just to be safe?

A: When EPA assesses a site, it first determines if contamination poses any threats to the health of the local population and the integrity of the environment. Dealing with worst sites first is one of Superfund's national goals. By evaluating contamination in a phased approach, EPA can quickly identify sites that pose the greatest threats and move them through the site assessment process. Once EPA understands the conditions present at a site, it searches for the remedy that will best protect public health and the environment. Cost is only one factor in weighing equally protective remedies. Many sites do not warrant actions because no major threat exists. However, if a significant threat does exist, EPA will take action.

about Superfund Sites

Q: If a site is added to the National Priorities List, how will we know when EPA has completed the cleanup efforts?

A: EPA notifies the public and requests their comments on the actions proposed to treat site contaminants. In addition, the community is notified when a site will be deleted from the National Priorities List. The entire process can take as long as 7 years; at sites where ground water is contaminated, it can take even longer.

Q: I live next door to a site and I see EPA and contractor personnel wearing "moon suits." Am I safe?

A: EPA and contractor personnel wear protective gear because they might actually be handling hazardous materials. Also, these people are regularly exposed to contaminants at different sites and do not always know what contaminants they are handling. EPA takes steps to protect the public from coming in contact with the site contamination. If a dangerous situation arises, you will be notified immediately.

Q: If a site is added to the National Priorities List, who pays for the activities?

A: EPA issues legal orders requiring the responsible parties to conduct site cleanup activities under EPA oversight. If the parties do not cooperate, Superfund pays and files suit for reimbursement from responsible parties. The sources of this fund are taxes on the chemical and oil industries; only a small fraction of the fund is generated by income tax dollars.

Q: How can I get more information on any health-related concerns?

A: Contact your EPA regional Superfund office for more information. The ATSDR also provides information to the public on the health effects of hazardous substances. Ask your EPA regional Superfund office for the phone number of the ATSDR office in your region.

Q: How can I verify your findings? What if I disagree with your conclusions?

A: You can request copies of the results of the site assessment by writing to your EPA regional Superfund office. The public is given the opportunity to comment on the proposal of a site to the National Priorities List and the actions EPA recommends be taken at the site. If a site in your community is listed on the National Priorities List, a local community group may receive grant funds from EPA to hire a technical advisor. Call your EPA regional Superfund office (see page 8) for the location of an information repository and for information on applying for a **technical assistance grant**.

Q: How can I get further information? How can I get a list of the sites EPA has investigated?

A: Contact your EPA regional Superfund office (see page 8) for more information and a list of sites in your area.

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Important Phone Numbers

For information on the Superfund program or to report a hazardous waste emergency, call the national numbers below.

U.S. EPA Headquarters Hazardous Site Evaluation Division

- ☐ Site Assessment Branch
703-603-8860

Federal Superfund Program Information

- ☐ EPA Superfund Hotline
800-424-9346

Emergency Numbers:

Hazardous Waste Emergencies

- ☐ National Response Center
800-424-8802

ATSDR Emergency Response Assistance

- ☐ Emergency Response Line
404-639-0615

For answers to site-specific questions and information on opportunities for public involvement, contact your region's Superfund community relations office.

EPA Region 1: *Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont*

- ☐ Superfund Community Relations Section
617-565-2713

EPA Region 2: *New Jersey, New York, Puerto Rico, Virgin Islands*

- ☐ Superfund Community Relations Branch
212-264-1407

EPA Region 3: *Delaware, District of Columbia, Maryland, Pennsylvania, Virginia, West Virginia*

- ☐ Superfund Community Relations Branch
800-438-2474

EPA Region 4: *Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee*

- ☐ Superfund Site Assessment Section
404-347-5065

EPA Region 5: *Illinois, Indiana, Michigan, Minnesota, Ohio, Wisconsin*

- ☐ Office of Superfund
312-353-9773

EPA Region 6: *Arkansas, Louisiana, New Mexico, Oklahoma, Texas*

- ☐ Superfund Management Branch, Information Management Section
214-655-6718

EPA Region 7: *Iowa, Kansas, Missouri, Nebraska*

- ☐ Public Affairs Office
913-551-7003

EPA Region 8: *Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming*

- ☐ Superfund Community Involvement Branch
303-294-1124

EPA Region 9: *Arizona, California, Hawaii, Nevada, American Samoa, Guam*

- ☐ Superfund Office of Community Relations
800-231-3075

EPA Region 10: *Alaska, Idaho, Oregon, Washington*

- ☐ Superfund Community Relations
206-553-2711



September 14, 2016

By email and certified mail

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Acting Director
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Re: Complaint Under Title VI of the Civil Rights Act of 1964, 42 U.S.C. § 2000d, 40 C.F.R. Part 7, and 7 C.F.R. Part 15

Dear Acting Director Dorka, Assistant Secretary Leonard, and Deputy Chief Neal:

The Moms On a Mission Hui (The MOM Hui) and Pō'ai Wai Ola/West Kaua'i Watershed Alliance (Pō'ai Wai Ola), collectively, "community groups," by and through their counsel Earthjustice, call upon the U.S. Environmental Protection Agency (EPA) Office of Civil Rights (OCR) and the U.S. Department of Agriculture (USDA) Office of the Assistant Secretary for Civil Rights (OASCR) to investigate and ensure the policies, programs, and activities of the Hawai'i Department of Agriculture (HDOA) and the Hawai'i Agribusiness Development Corporation (ADC) comply with Title VI of the Civil Rights Act of 1964 and EPA and USDA's implementing regulations, 50 C.F.R. Part 7 and 7 C.F.R. Part 15, respectively.

HDOA and ADC are failing to comply with Title VI and implementing regulations because their actions and failures to act have an unjustified disproportionate and adverse effect on Native Hawaiians in West Kaua'i and on Moloka'i. Community groups request that OCR and OASCR promptly and thoroughly investigate the allegations set forth in this complaint and

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ATTACHMENT C

take all actions necessary to ensure that the agencies comply fully with the law and provide equal protection for the people of Hawai'i.

I. PARTIES

A. Complainants

The MOM Hui is a grassroots group of forward-thinking mothers who advocate for protecting the health, safety, and well-being of all children, present and future. The MOM Hui was created on Moloka'i and has since expanded to Kaua'i, O'ahu, and Maui. The MOM Hui's primary concerns are food and health, with a specific focus on seed production and experimentation, and the correlative increases in pesticide use. The MOM Hui's members and their children are directly affected by heavy pesticide application to seed crops on Moloka'i. The MOM Hui also engages in educational and fundraising activities to promote healthy living and bring awareness to genetically engineered seed companies' impact on communities. The MOM Hui campaigned for the passage of a moratorium on genetically engineered crop production in Maui County and Kaua'i County and is involved in a lawsuit defending the moratorium. *See* Declaration of Mercy Ritte ¶ 2-8 (attached as Ex. 1) (Ritte decl.); Declaration of Malia Chun ¶ 3-8 (attached as Ex. 2) (Chun decl.).

Pō'ai Wai Ola is a community-based organization established by Waimea watershed residents, farmers, and users, including Native Hawaiian cultural practitioners, to address water issues affecting West Kaua'i. Pō'ai Wai Ola members live, work, recreate, and practice their culture near large-scale pesticide spraying operations, and rely on, use, or seek to use the Waimea watershed and surrounding areas for a host of public trust uses including, but not limited to, fishing, agriculture, recreation, research and education, aesthetic enjoyment, spiritual practices, and the exercise of Native Hawaiian cultural rights and values. In a separate proceeding involving ADC and the Kekaha Agricultural Association's diversion of the Waimea River and its headwaters, Pō'ai Wai Ola has petitioned the Hawai'i Commission on Water Resource Management to restore these waters and cease water waste.

B. Recipients

HDOA is an agency of the State of Hawai'i charged with implementing and enforcing federal and state pesticides laws, among other responsibilities. Haw. Rev. Stat. (H.R.S.) § 26-16. HDOA's duties include licensing pesticides, *id.* pt. II, regulating pesticide use, *id.* pt. III, and investigating and resolving pesticide use complaints, Haw. Admin. R. (H.A.R.) § 4-1-37.

ADC is a state agency placed within HDOA, *id.* § 163D-3, charged with "mak[ing] optimal use of agricultural assets for the economic, environmental, and social benefit of the people of Hawaii," *id.* § 163D-1. ADC manages state agricultural lands, including approximately 12,500 acres on the Mānā Plain in West Kaua'i. *Id.* § 163D-4. ADC also operates

a 40-mile drainage ditch system that runs through these lands and populated areas before draining into the ocean.

II. JURISDICTION

Title VI of the Civil Rights Act of 1964 provides that “[n]o person in the United States shall, on the ground of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance.” 42 U.S.C. § 2000d. As explained below, both HDOA and ADC are a “program or activity” covered by Title VI and receive federal assistance from EPA and USDA. This complaint is timely and satisfies all other jurisdictional requirements.

A. HDOA and ADC are Programs or Activities Covered by Title VI.

A “program or activity” includes “all of the operations of . . . a department, agency, special purpose district, or other instrumentality of a State or of a local government . . . any part of which is extended federal financial assistance.” 42 U.S.C. § 2000d-4a. If any part of an entity receives federal funds, the whole entity is covered by Title VI. *Ass’n of Mex.-Am. Educ. v. California*, 195 F.3d 465, 474-75 (9th Cir. 1999), *rev’d in part on other grounds*, 231 F.3d 572 (9th Cir. 2000) (en banc).

HDOA is a department, agency, and instrumentality of the State of Hawai‘i, H.R.S. § 26-16, and ADC is an agency and instrumentality of the state placed within HDOA, *id.* § 163D-3. Therefore, both HDOA and ADC’s operations must comply with Title VI.

B. HDOA and ADC Receive EPA and USDA Assistance.

EPA and USDA regulations define “recipient” to include any instrumentality of a state or state agency to which “Federal financial assistance is extended, directly or through another recipient.” 40 C.F.R. § 7.25; 7 C.F.R. § 15.2. As of August 15, 2016, EPA and USDA had awarded HDOA \$783,290 in federal funds for the fiscal year 2016, and more than \$20.2 million in federal funds since 2008.¹

¹ See USASpending.gov, <https://www.usaspending.gov/transparency/Pages/RecipientProfile.aspx?DUNSNumber=809935257> (last visited Aug. 15, 2016) (showing EPA and USDA awards to HDOA (DUNS No. 809935257) for the years 2008 to the present); USASpending.gov, <https://www.usaspending.gov/transparency/Pages/RecipientProfile.aspx?DUNSNumber=809935267&FiscalYear=2009> (last visited Aug. 15, 2016) (showing USDA awards to HDOA (DUNS No. 809935267) for the year 2009).

Tbl. 1. EPA and USDA Funding to HDOA

Year	EPA Funding	USDA Funding	Combined Total
2016	\$513,450	\$269,840	\$783,290
2015	\$184,213	\$1,071,755	\$1,255,968
2014	\$375,325	\$1,851,810	\$2,227,135
2013	\$397,925	\$799,752	\$1,197,677
2012	\$258,325	\$1,132,440	\$1,390,765
2011	\$308,125	\$3,066,353	\$3,374,478
2010	\$414,125	\$3,308,664	\$3,722,789
2009	\$349,725	\$4,564,558	\$4,914,283
2008	\$308,125	\$1,108,412	\$1,416,537
Total	\$2,863,213	\$16,375,569	\$20,282,922

C. The Complaint Is Timely.

EPA and USDA regulations generally require Title VI complaints to be filed within 180 calendar days of the alleged discriminatory act, but OCR and OASCR may waive these time limits. 40 C.F.R. § 7.120(b)(2); 7 C.F.R. § 15.6. In addition, OCR and OASCR have ongoing authority to review recipients' programs and activities for Title VI compliance. 40 C.F.R. § 7.115(a); 7 C.F.R. § 15.5(a). This complaint is timely because the discriminatory acts described herein are ongoing or within OCR and OASCR's investigatory authorities.

D. The Complaint Meets Other Jurisdictional Criteria.

This complaint satisfies all other jurisdictional requirements because it is in writing, describes the alleged discriminatory acts and is filed by an authorized representative with OCR and OASCR. 40 C.F.R. § 7.120; 7 C.F.R. § 15.6.

III. FACTUAL BACKGROUND

For centuries, the Native Hawaiian food system was rooted in the ahupua'a land management system, which organized natural resource use and access around land divisions that generally followed watershed boundaries from mauka (inland) to makai (sea). This system allowed optimal use of resources and ecosystem services over short distances, and many generations to survive and thrive.

Captain Cook's arrival to Hawai'i in 1778 ushered in a new era of agriculture focused on pesticide-intensive plantation crops for export, such as sugar and pineapple. This use depleted the soil, polluted water sources, and contributed to the decline of Hawai'i's food self-sufficiency.

As the plantation era declined in Hawai'i, seed crops grown for breeding rather than food increased. In 1966, seed firms planted 5 acres of test corn on Moloka'i, and by 1969, they had expanded winter seed corn operations to about 500 acres on Moloka'i, Maui, and Kaua'i. In the 1990s, the industry transitioned to genetically engineered crops, which now comprise the vast majority of seed crops in Hawai'i. Today, there are approximately 23,728 acres of genetically engineered seed crops on the islands of Kaua'i, Moloka'i, Maui, and O'ahu.

Hawai'i's seed corn cultivation is particularly chemical-intensive because corn requires more agrochemicals than other crops, seed corn requires still more chemical treatment because it is more susceptible to environmental stress and pests, and Hawai'i soils are not well-suited for corn to begin with. Moreover, many varieties of seed corn are now being developed specifically to resist the effects of particular pesticides, which are applied to these varieties during testing and production. Thus, it is no surprise that "there are likely an average of 30 or more spray operations most days of the year on Kaua'i."²

Although chemical and pesticide use poses health risks to communities throughout Hawai'i, seed operations are particularly pesticide-intensive, and are largely concentrated in West Kaua'i and Moloka'i, which have proportionately larger Native Hawaiian populations. For example, West Side communities from Kekaha to Hanapepe have among the greatest proportions of Native Hawaiians on the island, and the lion's share of Kaua'i's seed production. Moloka'i—where 2,342 acres of seed crops grow right in the center of the island—has more than three times the statewide percentage of Native Hawaiians and more than four times the statewide percentage of pure Native Hawaiians.

Pesticide companies have thus far successfully fought a county ordinance designed to require more transparency and protective measures for pesticide use. Regardless of this ordinance, HDOA and ADC have affirmative duties to ensure their programs and activities involving pesticides do not have discriminatory effects on people of color, including Native Hawaiians. HDOA and ADC are failing to fulfill these duties.

IV. LEGAL FRAMEWORK

Title VI of the Civil Rights Act of 1964 prohibits recipients of federal funds from discriminating against individuals on the basis of race, color, or national origin. 42 U.S.C. § 2000d. Title VI directs federal agencies granting federal assistance to issue regulations to achieve the statutory objectives. *Id.* § 2000d-1.

Acceptance of EPA or USDA assistance creates an obligation to comply with the agencies' respective Title VI regulations. 40 C.F.R. § 7.80(a)(1); 7 C.F.R. § 15.4(a)(1). EPA and

² Hawai'i Center for Food Safety, Pesticides in Paradise, Hawai'i's Health & Environment at Risk (May 2015) at 30 (CFS Report).

USDA's Title VI regulations contain a general prohibition against discrimination, 40 C.F.R. § 7.30, 7 C.F.R. § 15.3(a), as well as more specific prohibitions, 40 C.F.R. § 7.35, 7 C.F.R. § 15.3(b). These regulations prohibit programs or activities that have either a discriminatory purpose or a discriminatory effect.

Under EPA regulations:

(b) A recipient shall not use criteria or methods of administering its program or activity which have the effect of subjecting individuals to discrimination because of their race, color, national origin, or sex, or have the effect of defeating or substantially impairing accomplishment of the objectives of the program or activity with respect to individuals of a particular race, color, national origin, or sex.

(c) A recipient shall not choose a site or location of a facility that has the purpose or effect of excluding individuals from, denying them the benefits of, or subjecting them to discrimination under any program or activity to which this part applies on the grounds of race, color, or national origin or sex; or with the purpose or effect of defeating or substantially impairing the accomplishment of the objectives of this subpart.

40 C.F.R. § 7.35 (emphases added).

USDA's regulations provide:

(2) A recipient, in determining the types of services, financial aid, or other benefits, or facilities which will be provided under any such program, or the class of individuals to whom, or the situations in which, such services, financial aid, other benefits, or facilities will be provided under any such program or the class of individuals to be afforded an opportunity to participate in any such program, may not, directly or through contractual or other arrangements, utilize criteria or methods of administration which have the effect of subjecting individuals to discrimination because of their race, color, or national origin, or have the effect of defeating or substantially impairing accomplishment of the objectives of the program as respects individuals of a particular race, color, or national origin.

(3) In determining the site or location of facilities, an applicant or recipient may not make selections with the purpose or effect of excluding individuals from, denying them the benefits of, or subjecting them to discrimination under any of its programs or activities to which the regulations in this part apply, on the grounds of race, color, or national origin; or with the purpose or effect of defeating or substantially impairing the accomplishment of the objectives of the Act and the regulations in this part.

7 C.F.R. § 15.3 (emphases added).

V. DISCRIMINATORY ACTS

HDOA and ADC's discriminatory actions and failures to act include both HDOA and ADC's lack of a Title VI program; HDOA's failure to limit pesticide registration; HDOA's failure to require or implement protective buffer zones between pesticide use and communities; HDOA's failure to adequately enforce federal and state pesticide laws; ADC's leasing or licensing of lands without protecting communities from pesticides; and ADC's refusal to obtain a permit under the Clean Water Act for its drainage ditch system.

A. HDOA and ADC Lack Title VI Programs.

HDOA and ADC are violating Title VI because both agencies lack a Title VI compliance program. Their acceptance of federal assistance created an obligation to implement a Title VI compliance program:

In accepting this assistance agreement, the recipient acknowledges it has an *affirmative obligation to implement effective Title VI compliance programs and ensure that its actions do not involve discriminatory treatment and do not have discriminatory effects even when facially neutral*. The recipient must be prepared to demonstrate to EPA that such compliance programs exist and are being implemented or to otherwise demonstrate how it is meeting its Title VI obligations.³

On March 23, 2016, Earthjustice submitted public records requests to HDOA and ADC seeking materials documenting any Title VI compliance program they may have.⁴ On March 30, 2016, ADC responded to the public records request as follows:

[ADC] *does not have any Title VI compliance programs*, and therefore has no document responsive to this request.⁵

³ EPA General Terms and Conditions Effective March 29, 2016, ¶ 26.c.iii (emphasis added).

⁴ Request to Access a Government Record from Paul Achitoff, Earthjustice, to State of Haw. Dep't of Agric., Mar. 23, 2016 (attached as Ex. 3); Request to Access a Government Record from Paul Achitoff, Earthjustice, to State of Haw. Agribus. Dev. Corp., Mar. 23, 2016 (attached as Ex. 4).

⁵ Letter from James Nakatani, State of Haw. Agribus. Dev. Corp. to Paul Achitoff, Earthjustice, Mar. 30, 2016 (emphasis added) (attached as Ex. 5).

On April 27, 2016, HDOA responded to the request by acknowledging it “does not have a document specifically described as HDOA Title VI program.”⁶ Instead, it provided its “Discrimination/Harassment-Free Workplace Policy”⁷ and its “Limited English Proficiency Plan,”⁸ and mentioned a “standard contract provision requiring all contractors to comply with local, State, and federal laws or with the standard grant provision similarly requiring compliance with all federal laws.”⁹ These standard documents do not establish a Title VI program.

Because HDOA and ADC lack a Title VI program to ensure that the agencies’ actions “do not involve discriminatory treatment and do not have discriminatory effects”¹⁰ on communities of color, including Native Hawaiians, the agencies are violating Title VI and the terms of the agencies’ funding.

B. HDOA Has Failed to Limit Registration of Harmful Pesticides.

HDOA is violating Title VI by failing to place protective limits on pesticide registration, and thereby discriminating against Native Hawaiians. Under the Hawai‘i Pesticides Law, H.R.S. Chapter 149A, “[a]ny pesticide which is received, used, sold, offered for sale, or distributed within this State shall be licensed by the board [of agriculture].” H.R.S. § 149A-13. HDOA may refuse to license a pesticide if the proposed use would “result in unreasonable adverse effects on the environment.” *Id.* § 149A-14(a). To protect health and the environment, HDOA may cancel a pesticide license after determining that continued use of the pesticide would “result in unreasonable adverse effects on the environment.” *Id.* § 149A-14(b). While cancellation proceedings are pending, HDOA may suspend a pesticide license “to prevent an imminent hazard.” *Id.* § 149A-14(c). Pesticide licenses are otherwise valid for three years. H.A.R. § 4-66-35(b).

HDOA has failed to place *any* limits on pesticide registration, despite discriminatory adverse effects on health and the environment. For example, on January 20, 2016, 10 fieldworkers for Syngenta Seeds, Inc. were exposed to pesticides and taken to Kaua‘i Veterans

⁶ Email from Bryan Yee, State of Haw. Dep’t of Agric, to Paul Achitoff, Earthjustice, Apr. 27, 2016 (attached as Ex. 6).

⁷ State of Haw. Dep’t of Human Res. Dev., Policies and Procedures, Discrimination/Harassment-Free Workplace Policy, Policy No. 601.001, eff. Oct. 15, 2013 (attached as Ex. 7).

⁸ State of Haw. Dep’t of Agric., Department of Agriculture Limited English Proficiency Plan, July 1, 2013 (attached as Ex. 8).

⁹ Email from Bryan Yee, State of Haw. Dep’t of Agric, to Paul Achitoff, Earthjustice, Apr. 27, 2016.

¹⁰ EPA General Terms and Conditions Effective March 29, 2016, ¶ 26.c.iii.

Memorial Hospital.¹¹ The fieldworkers walked onto a field that had been sprayed with the neurotoxic organophosphate pesticide chlorpyrifos.¹² In 2006 and 2008, children and schoolteachers of Waimea Canyon Middle School, near more of Syngenta's agricultural fields, were taken to the hospital suffering symptoms of pesticide exposure.¹³ During the 2006 incident, 60 children and at least 2 teachers experienced headache, dizziness, nausea, or vomiting.¹⁴ At least 10 children were treated at an emergency room, several were put on a nebulizer to relieve respiratory distress, and one was given an anti-vomiting medication intravenously. Air samples collected at the school—an investigation not undertaken until years after these events—revealed the presence of chlorpyrifos, metolachlor and bifenthrin.¹⁵ Despite these incidents, HDOA has not limited registration of dangerous pesticides such as chlorpyrifos in any way, and therefore is violating Title VI.

C. HDOA Has Failed to Require Protective Buffer Zones Between Pesticide Use and Communities.

HDOA is violating Title VI by failing to require, implement, and ensure protective buffer zones for pesticides to prevent discriminatory effects on Native Hawaiians. With respect to all pesticides—both general use pesticides (GUPs) and restricted use pesticides (RUPs)—H.R.S. Chapter 149A authorizes HDOA to promulgate rules “[t]o establish limitations and conditions for the application of pesticides by aircraft, power rigs, mist blowers, and other equipment,” and “[t]o establish, as necessary, specific standards and guidelines which specify those conditions which constitute unreasonable adverse effects on the environment,” among other things. H.R.S. § 149A-33.

With respect to RUPs, HDOA may promulgate rules “establish[ing] fees, procedures, conditions, and standards to certify persons for the use of restricted use pesticides under section 4 of FIFRA.” *Id.* § 149A-33. RUPs are classified as such if they are “determined to be a health hazard,” “can be reasonably anticipated to result in contamination of groundwater or significant reductions in nontarget organisms, or fatality to members of endangered species,” have certain levels of toxicity, or are categorized as RUPs under federal law. H.A.R. § 4-66-32(b).

Although pesticide applications on Kaua'i and Moloka'i occur dangerously close to schools, residential areas, and surface waters, HDOA does not require protective buffer zones in

¹¹ Pesticide Use by Large Agribusiness on Kaua'i, Findings and Recommendations of The Joint Fact Finding Study Group (May 25, 2016) at 87 (JFF Report).

¹² *Id.*

¹³ *Id.* at 80-81.

¹⁴ See Declaration of Howard Hurst ¶ 6, *Syngenta Seeds v. Cnty. of Kaua'i*, No. 1:14-cv-00014 (BMK) (D. Haw. Feb. 17, 2014) (attached as Ex. 9).

¹⁵ JFF Report at 81.

its regulation of pesticides. In fact, HDOA has actively opposed proposed state legislation to require protective buffer zones. Some pesticide users in Hawai'i claim to use buffer zones for RUPs, but these zones are voluntary, unenforceable, and in any event inadequate to protect public health and safety. For example, the voluntary "Kaua'i Good Neighbor Program" establishes a mere 100-foot buffer zone between areas treated with RUPs and schools, medical facilities, and residential properties.¹⁶ Yet, among the nation's top 25 largest agricultural production counties, buffer zones between RUP application and schools are at least 200 feet, and some are 5,280 feet (1 mile).¹⁷ Fresno County, California, requires a buffer zone of 660 (1/8 mile) for all pesticides when school is in session.¹⁸ In these counties, buffer zones for bees range from 100 feet to 4.5 miles (23,760 feet).¹⁹ By failing to require, implement, and enforce *any* buffer zones whatsoever between pesticide application and Native Hawaiian communities, HDOA is violating Title VI.

¹⁶ Kaua'i Agricultural Good Neighbor Program: Voluntary Standards and Guidelines for RUP Use Reporting and Buffer Zones (Nov. 12, 2013).

¹⁷ JFF Report at 232-34.

¹⁸ *Id.* at 232.

¹⁹ *Id.* at 232-34.

Fig. 1. Proximity of Schools to RUPs on Kaua'i (Source: CFS Report)

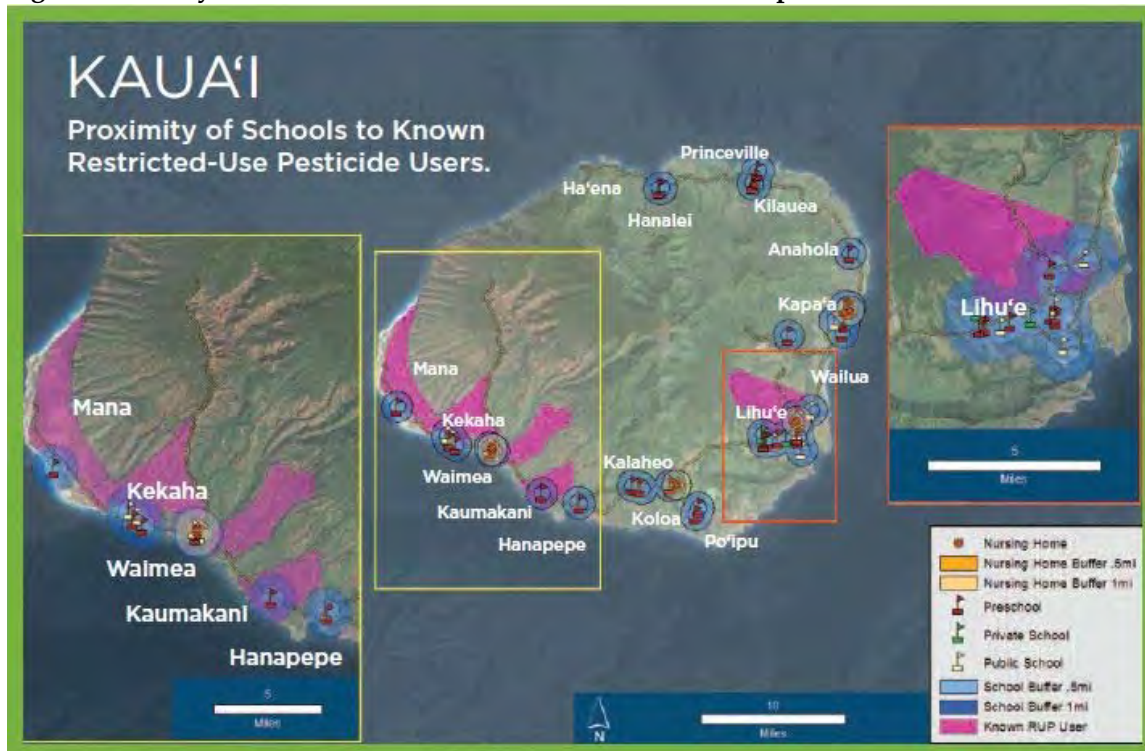
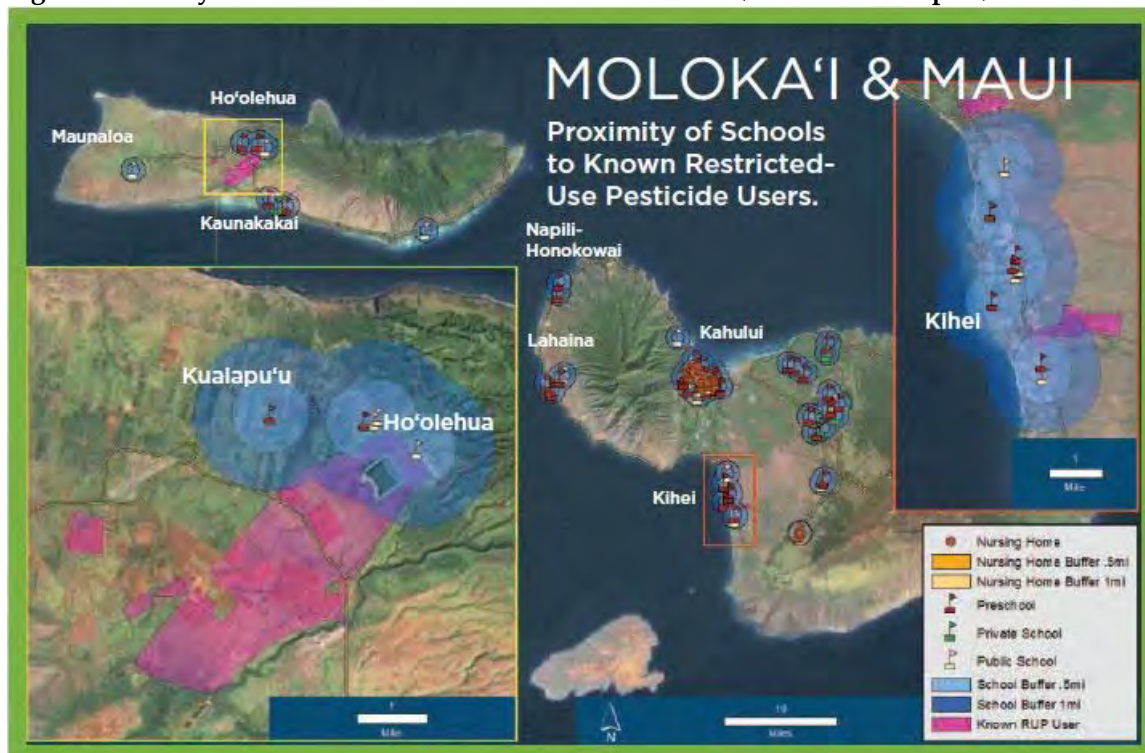


Fig. 2. Proximity of Schools to RUPs on Moloka'i and Maui (Source: CFS Report)



D. HDOA Is Failing To Enforce Federal and State Pesticides Laws.

HDOA is violating Title VI by failing to enforce the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), which disproportionately harms Native Hawaiians. FIFRA regulates pesticide distribution and use to prevent unreasonable adverse effects on the environment. 7 U.S.C. § 136a. Under 7 U.S.C. § 136w-1, the EPA Administrator may delegate primary enforcement responsibility for pesticide use violations. HDOA has primary authority to enforce FIFRA and the Hawai'i Pesticides Law, H.R.S. Chapter 149A. Accordingly, HDOA must implement adequate procedures to enforce these laws. 7 U.S.C. §§ 136w-1, -2.

HDOA is failing to enforce pesticide use violations under FIFRA and the Hawai'i Pesticides Law. HDOA has had a backlog of investigation files that has been increasing every year, with very few complaints resulting in enforcement actions, referred to the EPA, or addressed in any meaningful way.

EPA has repeatedly warned HDOA that its enforcement efforts are inadequate. EPA's 2012 performance review of HDOA recommended that HDOA hire an additional case development officer to assist with case file review.²⁰ EPA's 2013 review expressed significant concern regarding HDOA's backlog and decrease in enforcement activity, and recommended HDOA find ways to address them.²¹ EPA's 2014 review noted that HDOA "continue[d] to have significant concerns with the backlog of inspection files to be processed, and the resulting lack of enforcement actions issued, as well as the lack of inspections forwarded to EPA for review/enforcement."²² EPA's 2015 review revealed that there were approximately 700 inspection files in need of review, some dating back to 2008.²³ Some cases eventually referred to EPA that would have qualified for enforcement action were closed because the statute of limitations had expired.²⁴ EPA further noted the declining quality of the few inspections and reports HDOA had managed to produce and recommended improvement in that area, as well.²⁵ EPA also observed a significant increase in the number of pesticide-related complaints HDOA had received from individuals and groups throughout Hawai'i, focusing primarily on the

²⁰ U.S. Environmental Protection Agency, Hawaii Department of Agriculture FY2012 End-of-Year Review, Pesticide Performance Partnership Grant at 7 (attached as Ex. 10).

²¹ U.S. Environmental Protection Agency, Hawaii Department of Agriculture FY2013 Draft End-of-Year Review, Pesticide Performance Partnership Grant at 3 (attached as Ex. 11).

²² U.S. Environmental Protection Agency, Hawaii Department of Agriculture FY2014 End-of-Year Review, Pesticide Performance Partnership Grant at 9 (attached as Ex. 12).

²³ U.S. Environmental Protection Agency, Hawaii Department of Agriculture FY2015 Final End-of-Year Review, Pesticide Performance Partnership Grant at 7 (attached as Ex. 13).

²⁴ *Id.*

²⁵ *Id.* at 4.

misuse of pesticides by large agrochemical companies.²⁶ By failing to adequately enforce federal and state pesticides laws, HDOA is violating Title VI.

E. ADC Is Leasing or Licensing State Lands Without Protecting Communities From Pesticides.

ADC is violating Title VI by leasing or licensing state lands in a manner that fails to protect nearby communities, including Native Hawaiians, from heavy pesticide use. The Hawai'i legislature created ADC in 1994 in the wake of the decline of the sugar and pineapple industries, for the purpose of "creat[ing] a vehicle and process to make optimal use of agricultural assets for the economic, environmental, and social benefit of the people of Hawaii." H.R.S. § 163D-1. To further that goal, ADC has the power to "sell, assign, exchange, transfer, convey, lease, or otherwise dispose of" real property, *id.* § 163D-4(7), and adopt rules to carry out its powers and duties, *id.* § 163D-4(4).

ADC has failed to adopt or implement *any* limits on its leasing and licensing program to protect health and the environment from heavy pesticide use. Instead, ADC leases or licenses the majority (64%)²⁷ of the thousands of acres it manages in West Kaua'i to pesticide-intensive seed companies, without any meaningful restrictions. By failing to adopt or implement measures to limit leasing or licensing to pesticide-intensive operations or prevent resulting harm to nearby communities, ADC is violating Title VI.

²⁶ *Id.* at 3.

²⁷ JFF Report at 165.

Fig. 3. ADC Kekaha Map License Agreements (Source: JFF Report)

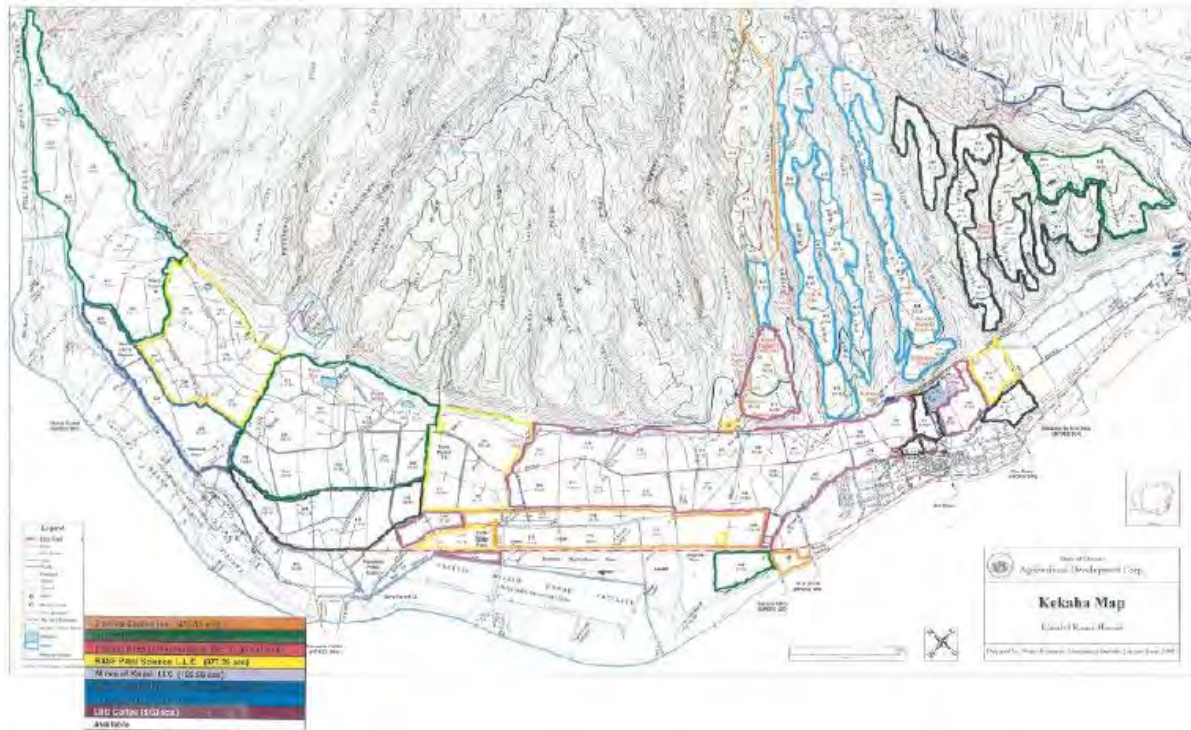
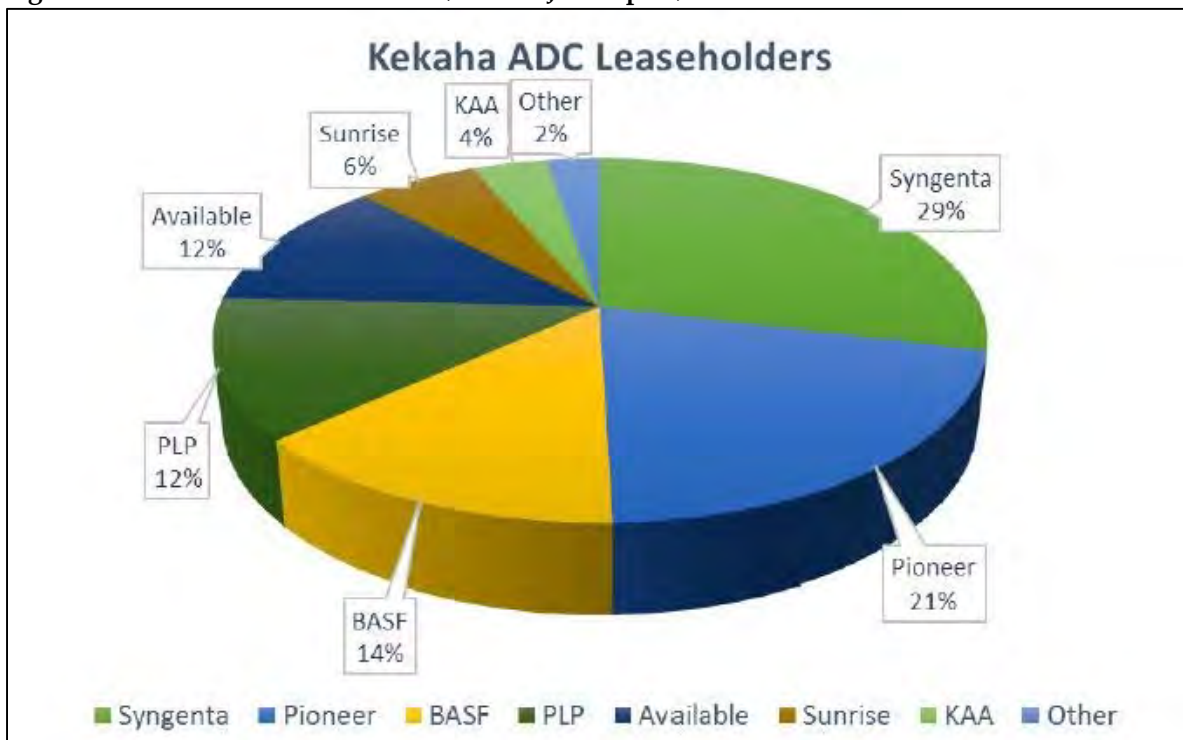


Fig. 4. Kekaha ADC Licenseholders (Source: JFF Report)



F. ADC is Refusing to Comply With the Clean Water Act.

ADC is violating Title VI by discharging pollutants without the requisite National Pollutant Discharge Elimination System (NPDES) permit, to the detriment of Native Hawaiians in West Kaua'i. The federal Clean Water Act prohibits the discharge of pollutants into jurisdictional waters in the absence of an NPDES permit. 33 U.S.C. §§ 1311(a), 1362, 1342.

ADC operates a drainage ditch system on the Mānā Plain, located on the West Side of Kaua'i. The drainage ditch system includes 40 miles of canals, 2 pumping stations, and 7 drainage ditch outfalls. In addition to genetically engineered seed crop fields, the Pacific Missile Range Facility, Sunrise Capital Shrimp Farm, Kekaha Landfill, former Kekaha Sugar Mill, Waimea Wastewater Treatment Plant, and Kaua'i Raceway Park occupy Mānā Plain lands drained by the ditch system.

For decades, that State of Hawai'i Department of Health (HDOH) regulated ADC's discharges from the drainage ditch system under an NPDES permit, until August 3, 2015, when ADC withdrew its NPDES permit renewal application.²⁸ Now, millions of gallons of drainage waters containing toxic pollutants flow through the system and populated areas, and into the nearshore ocean waters, without any regulation or monitoring. HDOH's and HDOA's testing has shown the presence of harmful pesticides including atrazine, chlorpyrifos, glyphosate, and metolachlor in the drainage ditches, in addition to many other pollutants.

These unregulated and unmonitored discharges are of particular concern since Native Hawaiians gather limu and fish in these areas. The open ditches are not fenced off or marked with warning signs to prevent children from playing in them. The outfalls funnel polluted waters into areas popular for fishing surfing, swimming, and boating. ADC's unpermitted drainage ditch system in the heart of Kekaha and the surrounding recreational areas has a discriminatory effect on Native Hawaiians and therefore violates Title VI.

²⁸ Email from James Nakatani, State of Haw. Agribus. Dev. Corp. to Alec Wong, State of Haw. Dep't of Health, Aug. 3, 2015 (attached as Ex. 14).

Fig. 5. Mānā Plain Drainage Ditch System and Pump Stations
(Source: Final Environmental Assessment Mānā Plain Wetland Restoration Project)



VI. DISCRIMINATORY ADVERSE IMPACTS

Pesticide use generally, and specifically use of RUPs, adversely affects Native Hawaiian communities on Kauaʻi and Molokaʻi.

A. Pesticide Use on Kauaʻi and Molokaʻi

Kauaʻi and Molokaʻi are subjected to heavy pesticide use. On Kauaʻi, active ingredient applications of RUPs and GUPs combined exceed 80,000 pounds annually,²⁹ and on most days, there are at least 30 pesticide spray operations.³⁰

Adverse health effects from pesticide exposure are well-documented. Proximity to agricultural fields and maternal exposure to pesticides during pregnancy have been associated with central nervous system anomalies, oral cleft, and limb defects.³¹ Pesticides have been strongly linked with asthma diagnosis in children under the age of five years of age,³² and also linked with leukemia and an increased risk of brain tumors.³³ Men exposed to pesticides from fruits and vegetables have been found to have lower sperm counts than those who consume an organic diet.³⁴ Exposure to organophosphates such as chlorpyrifos during pregnancy is associated with decreases in IQ, increases in pervasive developmental disorders, attention deficit disorders, preterm birth, decreases in birth weight, and intrauterine retardation.³⁵

On Kauaʻi and Molokaʻi, pesticide drift and windblown dust present problems for community members located near agricultural fields. A 2003 USGS survey observed that pesticides become attached to wind-blown dust.³⁶ Extremely fine dust can penetrate the lungs and cause bronchitis.³⁷ In West Kauaʻi, physicians encounter “almost daily reports of respiratory symptoms in patients that have no history of these respiratory illnesses,” nose bleeds in children, recurring dermatitis, “metallic taste” in patients’ mouths, and high levels of infertility and gout.³⁸ *See also* Chun decl. ¶ 4-5. Residents of Molokaʻi have experienced the same symptoms. *See* Ritte decl. ¶ 2-3.

²⁹ CFS Report at 32.

³⁰ *Id.* at 30.

³¹ JFF Report at 243.

³² *Id.* at 243.

³³ *Id.* at 244.

³⁴ *Id.* at 246.

³⁵ *Id.* at 242-43.

³⁶ CFS Report at 39.

³⁷ *Id.*

³⁸ *Id.*

B. RUP Use on Kaua'i and Moloka'i

Large agrochemical and other companies apply RUPs heavily on Kaua'i and Moloka'i, to the great detriment of nearby communities and their members. On Kaua'i from 2010 to 2012, RUP applications involved 22 RUPs containing 18 active ingredients and amounted to about 20,801 pounds of active ingredients annually.³⁹ The Joint Fact Finding Study Group estimated that from December 2013 to July 2015, Kaua'i's five major agricultural pesticide users—BASF Plant Science, Dow AgroScience, DuPont Pioneer, Syngenta, and Kaua'i Coffee Co., LLC⁴⁰—applied 23 RUPs containing 15,072 pounds of 15 active ingredients.⁴¹ RUP use data for these five companies is available through the "Kaua'i Agricultural Good Neighbor Program."⁴²

Moloka'i is also subjected to high pesticide use. From 2013 to 2015, Monsanto applied around 10,050 pounds of 24 RUPs containing 17 active ingredients on Moloka'i and Maui.⁴³ Although Monsanto reports only aggregate numbers for its RUP use on both islands, pesticide-intensive seed crop acreage on Moloka'i (2,342 acres) is more than triple that on Maui (754 acres), which is much larger and has a much lower proportion of Native Hawaiians.⁴⁴ Dow Chemical, the only other agrochemical company with operations on Moloka'i, does not report its pesticide use for the island.⁴⁵ Although pesticide users apply many types of RUPs on Kaua'i and Moloka'i, some of the most heavily used and toxic RUPs include chlorpyrifos, atrazine, metolachlor, bifenthrin, and paraquat dichloride, discussed below.

³⁹ *Id.* at 32.

⁴⁰ According to Kaua'i Coffee Co., LLC's voluntary reporting through the Good Neighbor Program, the only RUP the company applies is paraquat dichloride.

⁴¹ JFF Report at 23.

⁴² Kaua'i Agricultural Good Neighbor Program, Aggregate usage of Restricted Use Pesticides as reported through the Kaua'i Good Neighbor Program, <https://data.hawaii.gov/Health/Kaua-i-Agricultural-Good-Neighbor-Program-RUP-Use-/9pud-c8q5> (last visited Aug. 16, 2016) (Kaua'i GNP).

This data does not account for all RUP use or *any* GUP use on Kaua'i.

⁴³ Monsanto Hawaii, 2013 Annual Report Maui County Memorandum of Understanding at 17-18 (2013 Monsanto Report); Monsanto Hawaii, 2014 Annual Report Maui County Memorandum of Understanding at 26 (2014 Monsanto Report); Monsanto Hawaii, 2015 Annual Report Maui County Memorandum of Understanding at 25 (2015 Monsanto Report).

Monsanto's reported pesticide use was converted to pounds by multiplying the gallons used by the pounds of active ingredient per gallon, according to EPA's pesticide labels.

⁴⁴ State of Haw. Dep't of Agric., Statewide Agricultural Land Use Baseline 2015 at 47 (2015 Ag. Baseline).

⁴⁵ CFS Report at 19.

1. Chlorpyrifos

Chlorpyrifos is an organophosphate pesticide commonly used on corn fields that can over stimulate the nervous system, causing nausea, dizziness, confusion, respiratory paralysis, and death.⁴⁶ It is also a developmental neurotoxicant, exposure to which can cause structural abnormalities and persistent neurobehavioral deficits.⁴⁷ Studies have shown that juveniles are more susceptible to organophosphate toxicity than adults.⁴⁸ For children ages three to five, chlorpyrifos exposure may be associated with birth defects, autism, developmental delay, and attention deficit disorders.⁴⁹ Early life exposure to organophosphates including chlorpyrifos has been associated with higher levels of respiratory symptoms and exercise-induced coughing, consistent with possible asthma.⁵⁰ Children exposed to high levels of chlorpyrifos are more likely to suffer from attention deficit hyperactivity disorder and pervasive developmental disorder problems at three years of age.⁵¹ A California study showed a 60% increase in autism in the children of mothers who lived slightly less than one mile from areas sprayed with organophosphates and chlorpyrifos.⁵² EPA is currently considering revoking all chlorpyrifos tolerances because of its health risks.⁵³

⁴⁶ U.S. Environmental Protection Agency, Related Topics: Ingredients Used in Pesticide Products, Chlorpyrifos, <https://www.epa.gov/ingredients-used-pesticide-products/chlorpyrifos> (last visited Aug. 16, 2016).

⁴⁷ Philippe Grandjean & Philip J. Landrigan, Neurobehavioural effects of developmental toxicity, *The Lancet*, Feb. 14, 2014, <http://www.thelancet.com/journals/laneur/article/PIIS1474-4422%2813%2970278-3/fulltext> (last visited Aug. 16, 2016).

⁴⁸ Jie Zhang et al., Neonatal chlorpyrifos exposure induces loss of dopaminergic neurons in young adult rats, *Toxicology* 336, July 26, 2015, <http://www.sciencedirect.com/science/article/pii/S0300483X15300196> (last visited Aug. 16, 2016).

⁴⁹ JFF Report at 60.

⁵⁰ Rachel Raanan et al., Early-life Exposure to Organophosphate Pesticides and Pediatric Respiratory Symptoms in the CHAMACOS Cohort, *Environmental Health Perspectives* 123:2, Feb. 2015, <http://ehp.niehs.nih.gov/1408235/#tab1> (last visited Aug. 19, 2016).

⁵¹ Virginia A. Rauh et al., Impact of Prenatal Chlorpyrifos Exposure on Neurodevelopment in the First 3 Years of Life Among Inner-City Children, *Pediatrics* 118:6, Dec. 2006.

⁵² Janie F. Shelton et al., Neurodevelopmental Disorders and Prenatal Residential Proximity to Agricultural Pesticides: The CHARGE Study, *Environmental Health Perspectives* 122:10, Oct. 2014, <http://ehp.niehs.nih.gov/1307044/> (last visited Aug. 16, 2016)

⁵³ U.S. Environmental Protection Agency, Related Topics: Ingredients Used in Pesticide Products, Revised Human Health Risk Assessment on Chlorpyrifos, [https://www.epa.gov/ingredients-used-pesticide-products/revised-human-health-risk-assessment-chlorpyrifos#risk assessment](https://www.epa.gov/ingredients-used-pesticide-products/revised-human-health-risk-assessment-chlorpyrifos#risk%20assessment) (last visited Aug. 16, 2016).

From December 2013 to June 2016, agrochemical companies applied more than 3,700 pounds of chlorpyrifos on Kaua'i,⁵⁴ and from 2013 to 2015, Monsanto applied more than 1,900 pounds of the same on Moloka'i and Maui.⁵⁵ In West Kaua'i, chlorpyrifos has been detected in the air near Waimea Canyon Middle School and near Kekaha and Waimea and in drainage ditches.⁵⁶ In addition, testing studies found chlorpyrifos at 90 ng/m³ using a drift catcher 1,500 feet from the nearest agrochemical company field.⁵⁷ The Joint Fact Finding Study Group found that the rate of chlorpyrifos application on Kaua'i is 2.93 times the rate on the continental United States.⁵⁸ Reported chlorpyrifos application rates on Kaua'i are 2.5 lb. of active ingredient per acre per season for Cobalt Advanced and 3 lb. of active ingredient per acre per season for Lorsban Advanced.⁵⁹

2. Atrazine

Atrazine is a "highly potent" endocrine disruptor that is mobile and persists in the environment after its use.⁶⁰ It causes adverse reproductive effects even at concentrations as low as 0.1 ppb.⁶¹ Atrazine can cause reproductive difficulties and cardiovascular problems in humans. 40 C.F.R. Pt. 141, Subpt. O, App. A; H.A.R. § 11-20 App. A. According to the U.S. Department of Health and Human Services, Agency for Toxic Substances and Disease Registry (ATSDR), atrazine exposure in animals during pregnancy causes reduced fetus survival.⁶² Maternal exposure to surface water atrazine is associated with fetal gastroschisis.⁶³ Atrazine has been shown to decrease egg production and cause gonad abnormalities in fish.⁶⁴ ATSDR warns that "[i]n areas of high atrazine use, individuals should avoid swimming in or drinking from contaminated water sources and may desire to have personal well water tested for the presence of atrazine," and that "[c]hildren should avoid playing in soils near uncontrolled hazardous

⁵⁴ Kaua'i GNP.

⁵⁵ 2013 Monsanto Report at 17; 2014 Report at 25; 2015 Monsanto Report at 26.

⁵⁶ JFF Report at 193-94.

⁵⁷ *Id.* at 40.

⁵⁸ *Id.* at 29.

⁵⁹ *Id.* at 175, 177.

⁶⁰ *Id.* at 192.

⁶¹ *Id.*

⁶² Agency for Toxic Substances & Disease Registry, Public Health Statement for Atrazine, CAS#: 1912-24-9, Sept. 2003, *available at*, <http://www.atsdr.cdc.gov/phs/phs.asp?id=336&tid=59> (Atrazine Public Health Statement).

⁶³ Sarah A. Waller et al., Agricultural-related chemical exposures, season of conception, and risk of gastroschisis in Washington State, *American Journal of Obstetrics and Gynecology* 203:183, Aug. 2010.

⁶⁴ Donald E. Tillitt et al. Atrazine reduces reproduction in fathead minnow (*Pimephales promelas*), *Aquatic Toxicology* 99:2, Aug. 2010.

waste sites where atrazine may have been discarded.”⁶⁵ In 2004, the European Union banned products containing atrazine, concluding that the levels of atrazine would “have an unacceptable effect on groundwater.”⁶⁶

From December 2013 to June 2016, agrochemical companies applied more than 2,500 pounds of atrazine on Kaua’i,⁶⁷ and from 2013 to 2015, Monsanto applied more than 1,440 pounds of the same on Moloka’i and Maui.⁶⁸ For 2014 to 2015, 99.8% of the state’s atrazine sales occurred in Kaua’i and Maui counties.⁶⁹ In West Kaua’i, atrazine was detected in the drinking water at Waimea Canyon Middle School, and in irrigation water and surface water in amounts that exceed aquatic life benchmarks.⁷⁰ A recent EPA assessment of atrazine acknowledged that “atrazine is expected to leach to ground water and move to surface water through runoff and spray drift.”⁷¹

3. Metolachlor

Studies have associated metolachlor with reduced cell growth,⁷² and it has been classified by the EPA as a class C carcinogen.⁷³ From December 2013 to June 2016, agrochemical companies applied more than 7,400 pounds of metolachlor on Kaua’i,⁷⁴ and from 2013 to 2015, Monsanto more than 2,100 pounds of the same on Moloka’i and Maui.⁷⁵ For 2014 to 2015, 83.1%

⁶⁵ Atrazine Public Health Statement at 2.

⁶⁶ 2004/248/EC: Commission Decision of 10 March 2004 concerning the non-inclusion of atrazine in Annex I to Council Directive 91/414/EEC and the withdrawal of authorisations for plant protection products containing this active substance, *available at* <http://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX:32004D0248>.

⁶⁷ Kaua’i GNP.

⁶⁸ 2013 Monsanto Report at 17; 2014 Monsanto Report at 25; 2015 Monsanto Report at 26.

⁶⁹ State of Hawai’i Department of Agriculture, Summary of Restricted Use Pesticides Sold in 2014 (2014 RUP Sales); State of Hawai’i Department of Agriculture, Summary of Restricted Use Pesticides Sold in 2015 (2015 RUP Sales).

⁷⁰ JFF Report at 193.

⁷¹ U.S. Environmental Protection Agency, Office of Chemical Safety and Pollution Prevention, Refined Ecological Risk Assessment for Atrazine, Apr. 12, 2016.

⁷² S. Echeverrigaray et al., Isolation and characterization of Metolachlor-resistant mutants of *Saccharomyces cerevisiae*, *World Journal of Microbiology and Biotechnology* 15:6, Dec. 1999; Dana M. Lowry et al., Mechanism of metolachlor action due to alterations in cell cycle progression, *Cell Biology and Toxicology* 29:4, Aug. 2013.

⁷³ U.S. National Library of Medicine, Toxnet Toxicology Data Network, Metolachlor, <https://toxnet.nlm.nih.gov/cgi-bin/sis/search/a?dbs+hsdb:@term+@DOCNO+6706> (last visited Aug. 17, 2016).

⁷⁴ Kaua’i GNP.

⁷⁵ Monsanto 2013 Report at 17; Monsanto 2014 Report at 25; Monsanto 2015 Report at 26.

of the state's metolachlor sales occurred in Kaua'i and Maui counties.⁷⁶ In West Kaua'i, metolachlor was detected in the air near Waimea Canyon Middle School,⁷⁷ and has been found in surface water near Kikīa'ola Boat Harbor at rates that exceed EPA's aquatic life benchmarks.⁷⁸

4. Bifenthrin

EPA has classified bifenthrin as a class C carcinogen.⁷⁹ From July 2014 to March 2016, BASF Plant Science applied 0.887 pounds of bifenthrin on Kaua'i.⁸⁰ The Joint Fact Finding Study Group found that the rate per acre of bifenthrin application on Kaua'i is 5.36 times the rate in the continental United States.⁸¹ The same study found that, based on EPA analysis, bifenthrin has a high potential for volatilization (vaporization), which increases the chance of pesticide drift in the air.⁸² Bifenthrin has been detected in the air near Waimea Canyon Middle School.⁸³

5. Paraquat Dichloride

From January 2014 to June 2016, major pesticide users applied more than 2,500 pounds of paraquat dichloride on Kaua'i,⁸⁴ and from 2013 to 2015, Monsanto applied more than 310 pounds of the same on Moloka'i and Maui.⁸⁵ The European Union has banned paraquat dichloride since 2007.⁸⁶ According to EPA, paraquat dichloride is highly toxic to humans, and is

⁷⁶ 2014 RUP Sales; 2015 RUP Sales.

⁷⁷ JFF Report at 193-94.

⁷⁸ *Id.* at 194.

⁷⁹ U.S. National Library of Medicine, Toxnet Toxicology Data Network, Bifenthrin, <https://toxnet.nlm.nih.gov/cgi-bin/sis/search/a?dbs+hsdb:@term+@DOCNO+6568> (last visited Aug. 17, 2016).

⁸⁰ Kauai GNP.

⁸¹ JFF Report at 29.

⁸² *Id.* at 39.

⁸³ *Id.* at 193.

⁸⁴ Kaua'i GNP.

⁸⁵ 2014 Monsanto Report at 17; 2014 Monsanto Report at 25; 2015 Monsanto Report at 26.

⁸⁶ European Union, The Court of First Instance Annuls the Directive Authorising Paraquat as an Active Plant Protection Substance, July 11, 2007.

corrosive to the skin and eyes.⁸⁷ A 2011 National Institute of Health study demonstrated an association between paraquat dichloride use and Parkinson's disease in farm workers.⁸⁸

VII. DISPROPORTIONALITY

HDOA and ADC's discriminatory actions and inactions with respect to pesticides and the resulting adverse impacts disproportionately harm Native Hawaiians in West Kaua'i and on Moloka'i. The majority of the state's pesticide-intensive production occurs in these particular regions, which are also home to large populations of Native Hawaiians. Kaua'i bears the burden of more than half of the state's seed production (56% or 13,299 of 23,728 acres), and the great majority (78.1%) of this production is found on the West Side in the Kekaha-Waimea (5,455 acres) and Kaumakani-Hanapepe (4,932 acres) regions.⁸⁹ The Native Hawaiian populations in the Kekaha-Waimea (37.2%) and Kaumakani-Hanapepe (28.8%) regions are proportionally the second and third largest on the island and significantly exceed the island-wide (23.9%) and statewide (21.3%) percentages.⁹⁰ In the Kekaha-Waimea region, the percentage of pure Native Hawaiians (12.4%) exceeds the island-wide percentage (7.4%) and more than doubles the statewide percentage (5.9%).⁹¹ By contrast, the white alone populations in the Kaumakani-Hanapepe (14.8%) and Kekaha-Waimea (19.8%) regions are proportionally the first and third smallest on the island and are significantly less than the island-wide (33.1%) and statewide (24.7%) percentages.⁹² The seed fields in West Kaua'i surround the Hawaiian Home Lands of Kekaha and border the Hawaiian Home Lands of Hanapepe as well as the largest tract of Hawaiian Home Lands on the island, Waimea.⁹³

⁸⁷ U.S. Environmental Protection Agency, Paraquat Dichloride, <https://www.epa.gov/ingredients-used-pesticide-products/paraquat-dichloride> (last visited Aug. 16, 2016).

⁸⁸ Caroline Tanner et al., Rotenon, Paraquat, and Parkinson's Disease, *Environmental Health Perspectives* 119:6, June 2011, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3114824/> (last visited Aug. 16, 2016).

⁸⁹ 2015 Ag. Baseline at 47, 49.

⁹⁰ State of Haw. Dep't of Business, Econ. Dev. & Tourism, Native Hawaiian Population by County, Island and Census Tract in the State of Hawai'i: 2010 (Feb. 2012) at 9, 15 (2010 Native Hawaiian Census).

⁹¹ *Id.*

⁹² State of Haw. Dep't of Business, Econ. Dev. & Tourism, Population by Major Race Categories Alone or in Combination by County and Census Tract, State of Hawai'i: 2010 (2010 Hawai'i Race Census).

⁹³ 2010-2014 American Community Survey 2014, Hawaiian Home Land Areas (2014 DHHL ACS).

Seed crops occupy 2,342 acres on Molokaʻi, right in the center of the island near several populated areas, public schools, and preschools.⁹⁴ The seed fields border the island's most populated tract of Hawaiian Home Lands, Hoʻolehua-Pālāʻau (pop. 1,327), and the Hawaiian Home Lands tract Kalamaʻula.⁹⁵ The majority of Molokaʻi residents are Native Hawaiian.⁹⁶ Molokaʻi has the second highest percentage of Native Hawaiians among all of the islands in the state.⁹⁷ Molokaʻi's proportion of Native Hawaiians (61.6%) is nearly triple the statewide percentage (21.3%), and the proportion of pure Native Hawaiians (24.7%) is more than quadruple the statewide percentage (5.9%).⁹⁸ West Molokaʻi ranks fourth and East Molokaʻi ranks seventh out of all census tracts in the state for percentages of Native Hawaiians (67.8% and 58.1%), and West Molokaʻi ranks ninth for the percentage of pure Native Hawaiians (26.6%).⁹⁹ By contrast, the white alone population on Molokaʻi (16.2%) is significantly less than the statewide percentage (24.7%).¹⁰⁰

⁹⁴ 2015 Ag. Baseline at 47, 67.

⁹⁵ 2014 DHHL ACS.

⁹⁶ 2010 Native Hawaiian Census at 16.

⁹⁷ *Id.* at 6.

⁹⁸ *Id.*

⁹⁹ *Id.* at 7-8.

¹⁰⁰ 2010 Hawaiʻi Race Census.

Fig. 6. Hawaiian Populations, Hawaiian Home Lands, Seed Production, and Schools on Kaua'i

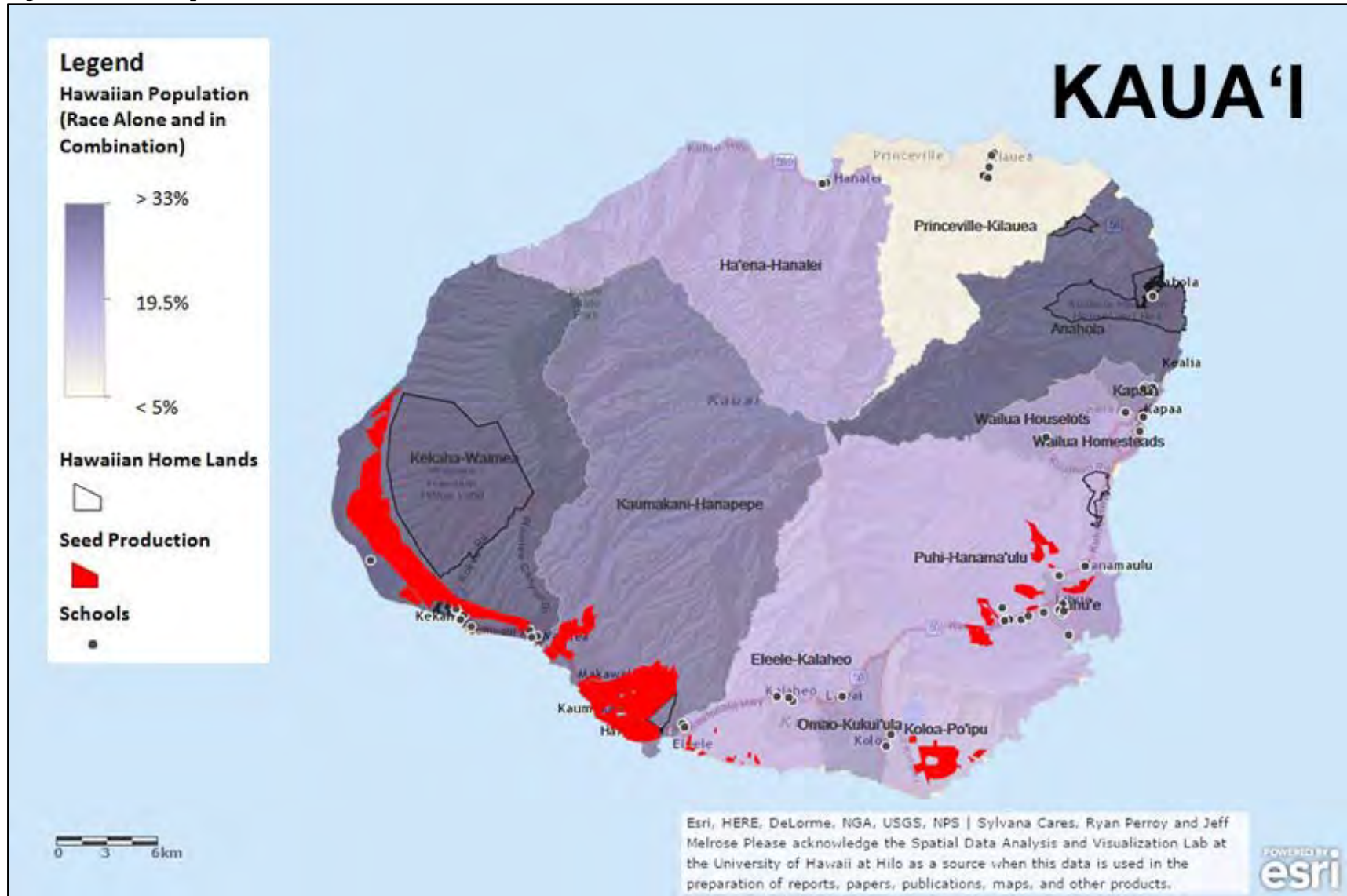
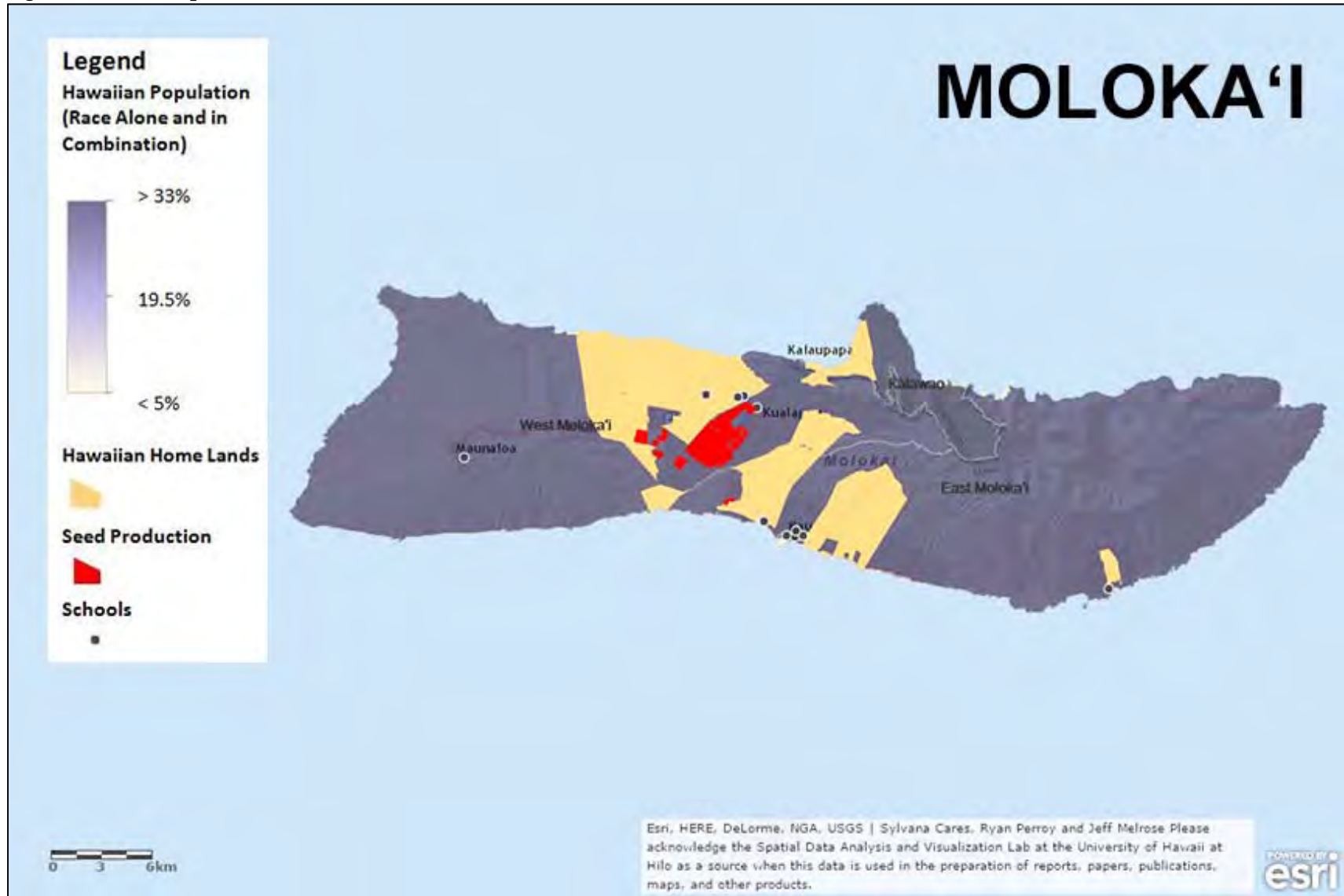


Fig. 7. Hawaiian Populations, Hawaiian Home Lands, Seed Production, and Schools on Molokaʻi



Tbl. 2. Native Hawaiian and White Populations for State, Kaua'i, and Moloka'i, Census Data 2010

State, Island, 2010 census tract	Total population	Native Hawaiian alone	Native Hawaiian alone or in combination	% of Native Hawaiian alone	% of Native Hawaiian alone or in combination	White alone	White in combination	% of White alone	% of White in combination
State	1,360,301	80,337	289,970	5.9	21.3	336,599	564,323	24.7	41.5
Kaua'i	66,921	4,951	15,978	7.4	23.9	22,155	34,152	33.1	51.03
Princeville-Kīlauea	6,484	210	629	3.2	9.7	4,366	5,063	67.3	78.1
Hā'ena-Hanalei	1,344	150	288	11.2	21.4	847	1,034	63.02	76.9
Wailua Houselots	5,047	324	1,154	6.4	22.9	2,387	3,348	47.3	66.3
Wailua Homesteads	3,845	252	816	6.6	21.2	1,496	2,220	38.9	57.7
Kapa'a	8,385	585	2,176	7.0	26.0	2,386	4,145	28.5	49.4
Puhi-Hanamā'ulu	8,740	466	1,700	5.3	19.5	1,513	2,842	17.3	32.5
Līhu'e	5,943	331	1,311	5.6	22.1	1,331	2,389	22.4	40.2
Kōloa-Po'ipū	2,544	151	466	5.9	18.3	937	1,321	36.8	51.9
'Ōma'o-Kukui'ula	3,139	205	723	6.5	23.0	1,195	1,813	38.1	57.8
'Ele'ele-Kalāheo	8,403	317	1,611	3.8	19.2	2,927	4,584	34.8	54.6
Kaumakani- Hanapēpē	3,771	357	1,085	9.5	28.8	557	1,215	14.8	32.2
Kekaha-Waimea	5,561	690	2,069	12.4	37.2	1,101	2,246	19.8	40.4
Anahola	3,715	913	1,950	24.6	52.5	1,112	1,932	29.9	52.0
Moloka'i	7,345	1,811	4,527	24.7	61.6	1,192	2,924	16.2	39.8
East Moloka'i	4,503	1,042	2,616	23.1	58.1	784	1,861	17.4	41.3
West Moloka'i	2,752	732	1,865	26.6	67.8	384	1,030	14	37.4
Kalawao	90	37	46	41.1	51.1	24	33	26.7	36.7

VIII. LESS DISCRIMINATORY ALTERNATIVES

Rather than implementing its programs and activities in a way that disproportionately adversely affects Native Hawaiians, HDOA and ADC have broad powers to instead take the following actions:

- HDOA and ADC could adopt and implement Title VI compliance programs to ensure that the agencies' policies, programs, and activities do not involve discriminatory treatment or have discriminatory effects on the basis of race, color, or national origin;
- HDOA could revoke or suspend pesticide licenses that have unreasonable adverse effects on health and the environment;
- HDOA could implement and enforce mandatory, adequately protective buffer zones between pesticide application and populated or heavily used areas like schools, medical facilities, and commercial areas;
- HDOA could adopt and implement EPA's recommendations to improve enforcement of federal and state pesticides laws;
- ADC could develop and implement criteria for evaluating applications for land licenses or leases to protect nearby communities from heavy pesticide use; and
- ADC could apply for, obtain, and comply with the terms of a valid NPDES permit.

Without implementing these measures, HDOA and ADC's activities and program will continue to disproportionately harm Native Hawaiians in West Kaua'i and on Moloka'i.

IX. RELIEF

Despite HDOA and ADC's obligations and powers under Title VI and state law, the agencies are doing remarkably little to correct this grave injustice. Accordingly, community groups request that EPA and USDA:

- Conduct a thorough Title VI compliance review of HDOA, particularly with respect to its implementation and enforcement of FIFRA and the Hawai'i Pesticides Law;
- Conduct a thorough Title VI compliance review of ADC with respect to its land management program and operation of the Mānā Plain drainage ditch system;
- Require HDOA and ADC to develop detailed inter- and intra-agency Title VI implementation plans that, at minimum, address less discriminatory alternatives and incorporate input from affected populations; and
- Oversee and ensure implementation of such plans on an annual basis.

These actions are necessary to bring HDOA and ADC into full compliance with Title VI.

We welcome the opportunity to meet with you to discuss the concerns and recommendations in this letter.

Acting Director Dorka, Assistant Secretary Leonard, and Deputy Chief Neal
September 14, 2016
Page 29

Sincerely,



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12-479 FG

August 9, 2012

THE FACTS about the disposal of contaminated soils from the EPA Cleanup Action in Kilauea at the Kekaha Landfill

Some residents of Kauai have expressed concerns about the ongoing disposal of contaminated soils at the Kekaha Landfill. This fact sheet will address some of the questions that the community has raised.

What is the clean up in Kilauea?

At the request of the Department of Health, the US Environmental Protection Agency agreed to clean up contaminated soil from an old sugar mill pesticide mixing area discovered under two homes in a residential neighborhood in Kilauea. The concentrations of arsenic and dioxin present in surface soils make the cleanup necessary to protect the affected families because long-term exposure to these soils is not safe for children and others who may come in direct contact with the contaminated soils.

Why are soils being disposed of at the Kekaha landfill?

Contaminated soils do not belong in people's yards. The Kekaha municipal landfill is designed and permitted to safely receive and store a wide variety of wastes, including contaminated soils. Currently, there is no other landfill elsewhere on the island that could safely store this soil.

Why is the soil clean up happening now?

This federal emergency action addresses a serious public safety issue affecting residents on Kauai. The action has been carefully designed to ensure that no danger exists to anyone on Kauai as a result of the excavation, transport and disposal of the pesticide-contaminated soils. The clean up meets all state, county and federal regulatory requirements and keeps everyone on the island safe. It is important to keep the project on time and on budget.

Were the rules changed to allow disposal of soil at the Kekaha landfill?

No. The terms of the Kekaha landfill permit have not changed. The landfill has been approved to take this kind of soil since the landfill was permitted in 1994.

THE FACTS about the Disposal of Pesticide-contaminated Soils from the Town of Kilauea at the Kekaha Landfill

Was EPA approval needed before the soils could be disposed of at Kekaha?

Yes. US EPA has a rule that requires that landfills be inspected and certified separately by EPA prior being used to dispose of waste from any federal emergency response actions. The purpose of this rule is to ensure that the landfill is in full compliance with its state permits. An EPA specialist inspected the facility, certified that it met all its permit conditions and approved its use.

The soil from Kilauea is considered “Special Waste.” What is “Special Waste?”

Under the DOH permit, certain kinds of waste require special handling procedures at the landfill. Special wastes include petroleum and other chemically contaminated soils, medical waste, dead animals and asbestos. Once the soils from Kilauea arrive at the landfill, they are immediately placed in a trench and covered, with a water truck standing by ready to add moisture if necessary to prevent dust generation. The landfill is held to strict requirements to ensure all wastes are managed safely to protect the community and the environment.

Will transporting these soils through our neighborhoods cause harm to our families?

No. The soils are being transported in trucks that are covered. Soils are wetted down before covering to keep dust levels down. Small amounts of dust that may be generated during excavation, transportation and disposal operations will not cause a health risk. EPA is watching for any dust emissions and will add more dust control measures if necessary.

Are there other contaminated soils that may be disposed of at the Kekaha landfill?

Yes. There are a number of sites on Kauai that have elevated levels of pesticides in the soil. In Kekaha, plans are being made to address contaminated soils discovered near a native Hawaiian charter school. One option is to dispose of these soils at the Kekaha landfill, and replace them with clean soils so that children walking to and from school won't be in contact with pesticide contaminated soils.

Why not ship all this contaminated soil off island?

Materials that can be safely disposed of in permitted landfill on island are not required to be shipped off island. Some highly contaminated materials that meet the state definition of “hazardous waste” must be shipped to special hazardous waste landfills located on the mainland. The cost for off island disposal is prohibitively high. The soils being excavated from the two residential yards in Kilauea are not hazardous waste.

Is this the first time contaminated soils and other potentially toxic materials have been placed in Kekaha landfill?

No. Disposal of contaminated materials and soils has been going on at Kekaha and other permitted municipal landfills in Hawaii for years. Common examples include contaminated soils from spills of gasoline, chemicals and pesticides, asbestos and construction debris with lead paint or canec, soils from under old home foundations that may have elevated levels of historic pesticides, and waste chemicals that are not classified as “hazardous waste”.

For more information, please contact the agency representatives listed on the next page.

THE FACTS about the Disposal of Pesticide-contaminated Soils from the Town of Kilauea at the Kekaha Landfill

US Environmental Protection Agency

Questions about the clean up action underway in Kilauea

Region 9, Emergency Response Program

Will Duncan, Federal On Scene Coordinator

415- 309-2655 field cell phone

duncan.will@epa.gov

Hawaii Department of Health

Questions about DOH's role in the Kilauea cleanup, as well as the upcoming cleanup in Kekaha

Hazard Evaluation and Emergency Response Office

Fenix Grange, Supervisor

808-586-4249

fenix.grange@doh.hawaii.gov

County of Kauai

Questions about the Kekaha Landfill operations and management

Larry Dill, County Engineer

808-241-4996

ldill@kauai.gov

JOHN WAIHEE
GOVERNOR OF HAWAII



STATE OF HAWAII
DEPARTMENT OF HEALTH

P. O. BOX 3378
HONOLULU, HAWAII 96801

May 26, 1989

FILE COPY

JOHN C. LEWIN, M.D.
DIRECTOR OF HEALTH

In reply, please refer to:
EPHSD/HEER

1989-1003

Mr. Steve Kyono
Kauai County Engineer
Department of Public Works
4444 Rice St., Rm 230
Lihue, HI 96766

Dear Mr. Kyono; *Steve*

This letter is to inform you of the Department of Health's (DOH) recommendations on the resolution of the Kekaha Landfill incident. We offer the following conclusions and recommendations:

1. Chemical analysis of the composite soil sample taken around the area of the contaminated drum did not indicate levels of unacceptable contamination.
2. Upon filling and compaction of the area excavated for removal of hazardous wastes, the area previously restricted at Kekaha landfill may be reopened for public use.
3. The drums filled with hazardous wastes should be clearly labeled as such and stored in a secure manner that will prevent any public access. A determination must be made as to whether the barrels of wastes should be transshipped as hazardous wastes based upon the analytical results of the original concentrated liquid wastes or analyzed and then evaluated as to whether it is a hazardous waste. We would be pleased to assist you in this determination.
4. Access to, and use of, the contaminated dozer should be restricted until it has been determined to be decontaminated.

ATTACHMENT E

47253

Mr. Steve Kyono

May 26, 1989

Page 2

5. Please submit a copy of the draft workplan of your hydrogeological investigation to DOH for our review. Initiating a hydrological study is appropriate due to the potential for subsurface contamination, not only from this release but others that may have occurred in the past.
6. The Department of Health is currently awaiting a report from the County of Kauai on progress to take enforcement action on the illegal disposal of hazardous substances and wastes at the landfill. We would be pleased to assist you in this effort.

This guidance is the result of compiled consultations from a number of programs and agencies including the U.S. Environmental Protection Agency Region IX, Emergency Response Section and the Department of Health's Hazardous Waste Program, Groundwater Protection Program, and Hazard Evaluation and Emergency Response (HEER) Program.

If you have any questions regarding this issue, please contact Mark Ingoglia, HEER Program Coordinator at 548-2076.

Your continuing support of this effort is important as well as appreciated.

Sincerely,



Bruce S. Anderson, Ph.D.

Deputy Director for Environmental
Health Administration

cc Arlene Kabei, HWP
Dan Chang, GWPP
Terry Brubaker, EPA

DAVID Y. IGE
GOVERNOR OF HAWAII



ELIZABETH A. CHAR, M.D.
DIRECTOR OF HEALTH

STATE OF HAWAII
DEPARTMENT OF HEALTH
P. O. BOX 3378
HONOLULU, HI 96801-3378

In reply, please refer to:
File:

October 3, 2022

S0913GH

Mr. Troy Tanigawa, Acting County Engineer
Department of Public Works
County of Kauai
4444 Rice Street, Suite 275
Lihue, Hawaii 96766

Dear Mr. Tanigawa:

SUBJECT: Kekaha Sanitary Landfill
6900-D Kaumualii Highway, Kekaha, Hawaii
TMKs: (4) 1-2-002:001 and 009

Review of:

- *Comments on Groundwater Monitoring Program*, dated August 12, 2022 by the County of Kauai, Department of Public Works, Solid Waste Management Division.
- *Summary of Background Reevaluation for Intra-Well Statistics*, dated July 21, 2022 by Geosyntec Consultants, Inc.
- *2nd Quarter 2022 Groundwater and Leachate Monitoring Report*, dated August 8, 2022 by Geosyntec Consultants, Inc.

The Department of Health (DOH), Solid and Hazardous Waste Branch, Solid Waste Section has reviewed the subject documents associated with the groundwater monitoring program at the Kekaha Landfill and provide the following background and comments.

Background

The Kekaha Landfill is comprised of Phase I, an unlined landfill which ceased accepting waste on October 8, 1993, and Phase II, a lined landfill which is currently active and accepting waste. While Phase II of the landfill is subject to groundwater requirements of section 11-58.1-16, Hawaii Administrative Rules (HAR), Phase I of the landfill ceased accepting waste prior to the applicability of these requirements. Therefore, any known or potential releases from Phase I of the landfill are regulated under chapter 128D, Hawaii Revised Statutes (HRS).

ATTACHMENT F

In 1992, groundwater samples were collected from two sets of clustered wells located just down-gradient of Phase I, as well as from one well just up-gradient of Phase I. Based on available records, these wells do not appear to have been sampled again. Between 1993 and 1995, groundwater monitoring wells MWI-1, MWI-2, and MWI-3, associated with Phase I of the landfill, and groundwater monitoring wells MWII-2, MWII-4, MWII-5, and MWII-6, associated with Phase II of the landfill, were installed. In 2008, groundwater monitoring well MWII-7 was installed along the northeast side of Phase II. In 2019, MWI-1, MWI-2, and MWI-3 were abandoned due to roots growing inside the well casings. These wells were replaced with MWI-1a (located nearby to former MWI-2), MWI-2a (located nearby to former MWI-3), and MWI-3a.

Groundwater monitoring wells MWII-4 and MWII-6 were also abandoned in 2019 to allow for landfill expansion. Following abandonment of these wells, MWI-1a, MWI-2a, and MWI-3a serve a dual purpose: as down-gradient points of compliance to monitor for a potential release from Phase II of the landfill, as well as to monitor any known or potential releases from Phase I of the landfill in accordance with HRS 128D.

Arsenic

Elevated arsenic concentrations have been detected in groundwater at the landfill beginning in 1992. In 2006, a statistically significant increase above background was verified in MWII-6. An initial alternate source demonstration (ASD) was conducted in 2007 which attributed the elevated arsenic concentrations to the presence of arsenic in the soil from historic sugar cane use. It was hypothesized that the arsenic in the soil is being mobilized into groundwater due to reducing conditions present in the area of the landfill. The DOH provided comments and requested additional information to support this hypothesis. Subsequently, in 2009 an updated ASD was conducted regarding the elevated arsenic concentrations; however, the DOH did not concur with this ASD.

Elevated concentrations of arsenic have also been detected in MWI-3, with concentrations detected above the DOH, Environmental Action Level (EAL). As MWI-3 is subject to HRS 128D in the event that a release or potential threat of a release has been identified, in 2015 the Hazard Evaluation and Emergency Response (HEER) Office sent a letter to the County of Kauai stating that further investigation into the magnitude and extent of the release needs to be conducted. In 2015, a draft statement of work that included installation of additional wells down-gradient of MWI-3 was submitted to the DOH; however, it does not appear that this work was ever conducted.

In 2017, a landfill gas extraction system was installed at the landfill in response to the Clean Air Act requirement for landfill gas collection from landfills of a specific size. An evaluation is currently on-going to determine whether the installation of the landfill gas

extraction system will have an impact on the arsenic concentrations in groundwater. Based on the data collected over the past five (5) years, there currently does not appear to be an identifiable trend so it is unknown whether this system will have any impact on arsenic concentrations in groundwater.

Comments on Groundwater Monitoring Program

1. Based on the information provided, the DOH is unable to determine whether the recent data (2019-2022) collected from MWI-1a, MWI-2a, and MWI-3a are representative of background conditions associated with the detection monitoring conducted for Phase II of the landfill. The DOH recommends that a thorough evaluation be conducted for each detection monitoring parameter that includes all historical groundwater data collected to determine the appropriate background data set, and to determine potential sources of elevated concentrations of arsenic and other detection monitoring parameters. This should include evaluating the initial concentrations of each of the detection monitoring parameters detected in groundwater before Phase II of the landfill was installed, evaluating any changes in concentrations detected over time, identifying any trends in the data, evaluating the concentrations with respect to groundwater elevation, evaluating any changes in concentrations detected with respect to activities that may have been conducted at or in the area of the landfill (e.g., installation of new piping and manholes associated with the leachate collection system, cessation of Kekaha Sugar, operation of the neighboring aquaculture activity) and comparing the concentrations detected in respect to rainfall or other climatological conditions.
2. Meanwhile, arsenic has been detected at a concentration exceeding the DOH, EAL for at least the past seven (7) sampling events in MWI-3a. In response to the detections of arsenic at concentrations above the DOH, EAL, as previously requested in the March 4, 2015 DOH-HEER Office letter, further investigation to determine the magnitude and extent of the release in accordance with HRS 128D is needed.

Summary of Background Reevaluation for Intra-Well Statistics

1. The March 2009 *Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities Unified Guidance* document states that while outliers in background data generally are not to be removed unless some basis for the likely error or discrepancy can be identified, identification and evaluation of outliers should be performed. It is unclear whether such an evaluation was performed on the proposed background datasets. If such an evaluation was performed, please

provide details regarding the evaluation and rationale for including or excluding any identified outliers. If such an evaluation was not performed, one should be conducted.

2. As stated in the section above under "*Comments on Groundwater Monitoring Program*," and based on the information provided, the DOH is unable to determine whether the recent data (2019-2022) collected from MWI-1, MWI-2a, and MWI-3a are representative of background concentrations for the purposes of determining a release from Phase II, which has been in existence since 1993.
3. While the proposed background dataset for wells MWI-1a, MWI-2a, and MWI-3a is included, the proposed control limit for each detection monitoring parameter is not included. Once a proposed background data set is developed and justified, please include a table similar to Table 2 for wells MWI-1a, MWI-2a, and MWI-3a that displays the current background limit with the proposed control limit.
4. Please provide rationale as to why the proposed background dataset period for groundwater monitoring well MWII-7 is from 2009 to the second quarter of 2015, while the proposed background dataset for groundwater monitoring wells MWII-2 and MWII-5 include data through the fourth quarter of 2021.
5. It is unclear what the column titled "Status" in Table 2 represents.

2nd Quarter 2022 Groundwater and Leachate Monitoring Report

1. It is stated within Section 1.1.2 that groundwater monitoring wells MWII-2, MWII-5, and MWII-7 now comprise the Phase II groundwater monitoring network. Following the abandonment of groundwater monitoring wells MWII-4 and MWII-6, groundwater monitoring wells MWI-1a, MWI-2a, and MWI-3a became down-gradient points of compliance for Phase II of the landfill and should also be included in the Phase II groundwater monitoring network.
2. A verified exceedance above background concentrations has been identified for ammonia as nitrogen and total organic carbon in MWI-1a and MWI-2a. While reference to previous ASDs associated with statistically significant increases above background concentrations for these parameters in other wells (e.g., MWII-6, and MWII-7) have been made, an ASD for these parameters in these wells has not been conducted. In accordance with HAR 11-58.1-16(d), either an ASD must be conducted or assessment monitoring is required.

Mr. Troy Tanigawa
October 3, 2022
Page 5

3. Total cyanide was detected in a groundwater sample collected from MWI-1a and MWII-5; however, this detection is not discussed in the findings and conclusions of the section of the document. In accordance with HAR 11-58.1-16(e), for any constituent detected in the downgradient wells as the result of the Appendix II analysis, a minimum of four independent samples from each well must be collected and analyzed to establish background for the constituent unless it can be shown that the constituent is not reasonably expected to be in or derived from the waste contained in the landfill unit.

The DOH does not believe it is appropriate to return to semi-annual groundwater monitoring at this time, as the facility is currently in assessment monitoring. The above-mentioned evaluation of current and historical data and additional investigation is necessary to better understand the subsurface conditions at the landfill and determine the appropriate path forward. Should you have any questions regarding this letter, please contact Mr. Glenn Haae of our Solid Waste Section at (808) 586-4226 or glenn.haae@doh.hawaii.gov.

Sincerely,



GLENN HAAE, P.E., ACTING CHIEF
Solid and Hazardous Waste Branch

c: Ms. Gabrielle "Fenix" Grange, DOH-HEER



2013-14 STATE WIDE PESTICIDE SAMPLING PILOT PROJECT WATER QUALITY FINDINGS

A Joint Investigation by the Hawaii State Departments of Health and Agriculture

May 2014

This project funded by:

Hawaii Department of Health Environmental Response Revolving Fund
Hawaii Department of Agriculture Pesticide Use Revolving Fund
US Geological Survey Cooperative Water Program

PREPARED BY: STATE OF HAWAII DEPARTMENT OF HEALTH HAZARD EVALUATION
AND EMERGENCY RESPONSE OFFICE

ATTACHMENT G

DRAFT

Executive Summary

Surface water samples collected from 24 sites statewide were analyzed for a total of 136 different pesticides or breakdown products. All locations had at least one pesticide detection. Only one pesticide, a historically used termiticide exceeded state and federal water regulatory limits. Five other pesticide compounds were detected at levels exceeding the most conservative EPA aquatic life benchmark. All other pesticides detected were lower than the most stringent aquatic or human health guideline value.

These findings represent a snapshot in time from a single sampling event within watersheds with multiple upstream inputs. While they provide useful information about pesticide occurrence across different land uses, they may not be representative of typical conditions or identify specific sources.

Key findings:

- Every location sampled had a trace detection of one or more pesticides; however, the majority of these represented minute concentrations that fall below state and federal benchmarks for human health and ecosystems.
- Land use significantly impacted the number and type of pesticides detected. Urban areas on Oahu showed the highest number of different pesticides.
- Oahu's urban streams had the highest number of different pesticides detected. Manoa Stream at the University of Hawaii showed 20 different pesticides and breakdown products.
- Dieldrin, a termite treatment that has been banned from sale in Hawaii since 1980, exceeded State and Federal Water Quality standards in three urban locations on Oahu.
- Fipronil detected in Manoa Stream and Waialae Iki Stream exceeded aquatic life benchmarks for freshwater invertebrates. Fipronil is an insecticide commonly used in residential settings and applied by commercial pest companies to treat soil for termites.
- Atrazine and metolachlor, two restricted use herbicides, were detected on Kauai at agricultural sites downstream of seed crop operations. One location had levels that exceed aquatic life guidelines, but remain below regulatory standards.
- The number of pesticides detected in water samples on Hawaii Island was lower than that of Kauai and Oahu.
- Atrazine, a restricted use pesticide, was the most commonly found pesticide in the study. Of the sites tested, 80 percent had atrazine detections. Only two sites, one on Kauai, and one on Maui, reflected elevated concentrations suggestive of current use of atrazine. All of the remaining detections were trace level concentrations far below state and federal benchmarks.

- The pilot study tested stream bed sediment at seven sites and found glyphosate, in all samples. Glyphosate (trade marked as Roundup) is widely used for residential, commercial, agricultural and roadside weed management.

Acknowledgments

This report was written by Fenix Grange at the Hawaii Department of Health, Hazard Evaluation and Emergency Response Office. The report would not have been possible without the extensive research and editorial assistance of Dr. Barbara Brooks and Marsha Mealey. Thanks also to HEER staff on Oahu and Hawaii who scouted sampling locations, managed the field and sample processing logistics and assisted CWB with sampling effort.

The DOH Clean Water Branch Water Monitoring Section led the field sampling effort, using their Oahu and outer island staff to collect and ship many samples in a short time frame. Their knowledge of sites and local conditions was critical to effective site selection and access.

The Department of Agriculture Pesticide Division provided key information needed for selection of analytical suites, knowledge of pesticide use patterns, as well as fate and transport and labeling issues. Special thanks to Avis Onaga, for her careful review of restricted and current use pesticide information presented in the report.

USGS provided training in field collection methods, tremendous logistical and technical support as well as invaluable guidance on data interpretation. Special thanks to Stephen Anthony and Marcael Jamison, and their peers in the three USGS laboratories who shared their expertise and provided specialized analytical services for this project.

DRAFT

Introduction

In response to growing community concerns about possible offsite impacts of currently used pesticides on local communities and ecosystems, Hawaii Department of Health (HDOH) and the Hawaii Department of Agriculture (HDOA) used agency special funds to design and implement a pilot study to sample surface waters and sediments state wide. The agencies enlisted the help of the U.S. Geological Survey (USGS) to provide state of the art analytical services and expert technical assistance. To extend the reach of the project, USGS provided additional matching funds from their Cooperative Water Program.

The short-term goal of this joint sampling effort was to gather initial data on the types and concentrations of currently used pesticides detectable in surface water and sediment associated with a variety of differing land uses. The State of Hawaii has no ongoing stream monitoring program for pesticides and consequently there is very little information available to evaluate whether current pesticide use practices are resulting in off-site movement of pesticides into state waters. The data from this pilot study will provide preliminary information on the presence or absence of pesticide residue levels in surface waters.

Previous Pesticide Studies in Hawaii

While HDOH does not routinely monitor surface waters for currently used pesticides, research conducted by USGS provides key information about pesticide incidence and movement in surface waters in Hawaii.

USGS studies on Oahu and nationwide have shown a clear pattern of detections of pesticides in surface waters associated with pesticide use in agricultural and urban settings. As part of the 1999-2001 Water Quality on the Island of Oahu study, USGS tested surface waters for 47 different pesticides in three watersheds, including Waikele, Manoa and Waihee streams to compare how different land uses affected water quality (Anthony et al., 2004)¹. Agriculture uses a combination of restricted use and general use pesticides, where urban users typically use only general use pesticides, as they do not require special licensing or expertise. These patterns can often be seen in the chemicals present in a particular stream. In addition, pesticides can behave differently in the environment because of their chemistry. Some chemicals degrade rapidly, others dissolve readily in water, infiltrating to ground water, where they may persist for decades, and still others bind tightly to soil particles and can be transported into streams by storm runoff. To better understand offsite movement of pesticides, the USGS sampling strategy compared storm water samples and samples during dry periods ("base flow" samples). Base flow to streams at or below the groundwater table is largely supplied by groundwater, though rainfall in upper parts of the basin may also provide flow.

Waikele stream was selected because it represented both urban and agricultural inputs, and the base stream flow is provided by groundwater from aquifers known to be contaminated with low levels of atrazine and bromacil from historic sugarcane and pineapple uses. In Waikele Stream, atrazine was detected at trace levels in 90% of base flow samples and 15% of storm water samples. The highest detection in these samples was 0.007 ppb, whereas the highest detection measured in groundwater in the same area was 0.112 ppb. Bromacil and diuron, herbicides frequently used in agricultural applications and detected in area groundwater, were also commonly found at trace levels in base flow samples. Three general use insecticides and two herbicides were detected more frequently and at higher concentrations in storm water, suggesting transport through surface runoff.

In Manoa stream, three general use insecticides were also frequently detected in storm water runoff at trace levels, and one general use herbicide, prometon, was frequently detected in base flow samples. A trace level of atrazine, estimated at 0.001 ppb, was found in 1 of 27 base flow samples. The patterns of detections of general use and restricted use pesticides mirror the land use patterns of the two stream systems.

Waihee Stream, located near Kahaluu, was sampled a single time in 1999 and showed no detections of any of the analytes.

In general, USGS found that agricultural herbicides were detected in base flow originating from groundwater, indicating long term residence and subsequent subsurface transport through groundwater, as compared with insecticides that were more frequently detected in storm events, indicating movement through runoff.

In 2012, the HDOH Clean Water Branch (CWB) conducted sampling at 28 stations on Kauai and 3 stations on Maui under the EPA Monitoring Initiative. These samples were analyzed for wastewater constituents, including about 10 common pesticides, and overall, showed low concentration detections of a few contaminants. This sampling found that 8 stations, including six locations in the Nawiliwili drainage on Kauai, had trace levels of atrazine ranging from 0.01 ppb to 0.04 ppb, far below EPA's proposed aquatic level of concern of 10 ppb. The other stations sampled did not show detectable levels of atrazine; however the detection limits were substantially higher (0.16 ppb).

Pesticide Analysis

The samples were tested for the full analytical suite of currently used pesticides and their breakdown products for which there are USGS methods available. These compounds include restricted and general use herbicides, insecticides and fungicides. One hundred and thirty six different pesticides were sampled in surface water and 121 in sediment. Two laboratory methods were used for the surface water analyses, *USGS National Water Quality Laboratory Schedules 2033 and 2060ⁱⁱ*. The analytical

method for sediments is from the USGS Pesticides Fate Research Group (2012)ⁱⁱⁱ. Glyphosate was measured by the USGS Kansas Water Quality Science Center using method 0-2141-09 for water samples and USGS method LCGS in sediment.^{iv}

The USGS laboratory methods used for this study measure compounds at trace levels; commonly 10 to 1,000 times lower than drinking water standards and aquatic life guidelines. Therefore, estimated concentrations are included in the results for some compounds. The methods ensure high confidence that the flagged compounds are present, but have greater uncertainty about the precise value. Using these trace values helps to better understand what compounds are entering Hawaii's waterways, and are useful to compare contaminant occurrence and distribution among land uses with differing pesticide application practices.



Figure 1 Subsampling sediment for laboratory analysis.

Sampling Design

Surface water and sediment samples were collected by HDOH personnel between December, 2013 and January, 2014 and sent to the USGS laboratories on the mainland. One liter grab samples were collected in accordance with USGS surface water sampling protocols. Sediment samples were collected following HEER guidance for multi-increment sediment sampling techniques, and handled according to USGS protocols. Quality assurance samples, including field blanks, field replicate and matrix spike samples were collected. Twenty four stream locations statewide representing four different land uses were sampled. Sediment samples were collected from seven sites to evaluate the potential for sediment to serve as a “sink” and secondary source for pesticide residues. Separate testing for the pesticide glyphosate (e.g., “Roundup”) was included in this study due to community concern about use and fate of this herbicide. Analysis for glyphosate in both water and sediment was conducted on samples at seven sites, representing different land uses associated with glyphosate applications.



Figure 2: Collecting a grab sample.

The sampling effort focused on small water bodies directly adjacent to or downstream from targeted usage activities described below.

At sites that did not have perennial streams, alternate locations representing local groundwater

conditions were selected including anchialine pools, wetlands, lagoons that have storm overflow to the ocean, and agricultural drainage systems.

Note that this surface water sampling design cannot gather data from areas that do not have perennial surface water sources adjacent to or downstream of pesticide uses. For this reason, areas such as Molokai, Kunia, Waianae, and much of Maui's agricultural areas were not included in this study. Potential pesticide impacts to shallow groundwater in these areas could be studied in the future should resources become available to assess water quality in irrigation wells.



Figure 3 Anchialine Pond Sampling location at resort on Kona Coast.

Sampling Locations Related to Land Use

Water and sediment samples were collected from locations most likely to reflect pesticide usage and impacts. As part of the sampling plan development, HDOH worked closely with Department of Agriculture, reviewed confidential restricted use pesticide sales records for 2011-13, Good Neighbor reporting from the island of Kauai, consulted with University of Hawaii, USGS, USDA and other experts and solicited input from a wide variety of stakeholders. Sites ultimately selected for sampling are located downstream of significant agricultural activities, turf uses or urban activities. Eight sites were selected on Kauai and Oahu, six sites on the Big Island, and two sites on Maui. Printable maps can be found on the HEER website^v.

The four different land use types are listed below. However, in some cases, it was not possible to isolate a single land use.

- monoculture agriculture (relatively large tracts of land with single crops, users of restricted use pesticides)
 - 6 sites with extensive monoculture crops (seed corn, sugar, macadamia or coffee). 3 of these sites had other upstream crops or land uses.
- mixed use agriculture (small farms close together growing a variety of crops)
 - 8 sites with mixed use agriculture (wide variety of crops: vegetables, papaya, banana, sweet corn, potatoes, vegetables, herbs, taro, and ornamentals). Some sites include upstream inputs from other categories.
- turf uses (golf courses and resorts that use pesticides to maintain landscaping)
 - 6 sites with golf and resort uses. 3 sites had residential, wastewater and/or historic sugar cane cultivation.
- urban areas (these include residential pesticide uses and a wide variety of urban pesticide users, often including inputs from turf and small farms)

- 4 sites that represent a mixture of residential and urban inputs. 1 of these sites, Waikele Stream on Oahu, has inputs from all categories, including small and large agriculture sites and a golf course.

Data Evaluation

The data results were compared to applicable state and federal regulatory values to evaluate whether any contaminants detected exceed levels that have been established for the protection of human health and the environment.

EPA compiles national recommended water quality criteria (AWQC)^{vi} for the protection of aquatic life and human health in surface water for approximately 150 priority pollutants. These criteria are published pursuant to Section 304(a) of the Clean Water Act (CWA) and provide guidance for states and tribes to use in adopting water quality standards. The HDOH has promulgated Hawaii State Water Quality Standards for these priority pollutants^{vii}.

While none of the surface waters sampled are used for drinking water, the results were also compared to drinking water standards, to provide some perspective with respect to human health. The federal drinking water standards, called Maximum Contaminant Level (MCL)^{viii}, are mandated by the Safe Drinking Water Act, and set by EPA's Office of Water at the "No Effect Level" with a minimum 100 fold margin of safety.

It is important to note, however, that very few drinking water or surface water standards (i.e., regulatory values) exist for currently registered pesticides; therefore, most of the values used to interpret the data results will be benchmarks and other available guidelines^{ix}.

In addition to comparing results to state and federal regulatory standards, detections were compared to the EPA Office of Pesticide Programs Human Health Benchmarks^x, Aquatic Life Benchmarks^{xi}, and to USGS Health Based Screening Levels. In general, the strictest of these guidelines were the Aquatic Life Benchmarks. Quoting from the EPA website, these values *"are estimates of the concentrations below which pesticides are not expected to harm aquatic life."* HDOH concurs with EPA's conclusion that *"comparing a measured concentration of a pesticide in water with an aquatic life benchmark can be helpful in interpreting monitoring data, and to identify and prioritize sites and pesticides that may require further investigation."*

Additional data for this report, including sampling location maps, data summaries and the raw data are posted on the Hazard Evaluation and Emergency Response (HEER) website^{xii}.

Surface Water Findings

Frequency of Pesticide Detections

Surface water samples collected from 24 sites statewide were analyzed for a total of 136 different pesticides or breakdown products. Forty two (42) pesticides or breakdown products were detected. Every location sampled had a detection of one or more pesticides. Figure 4 lists the frequency of detection of each pesticide and associated breakdown product found during sampling.

Twenty five (25) herbicides, 11 insecticides and 6 fungicides were detected in the study. Atrazine, together with its breakdown products, was the most commonly found pesticide in this study, detected in water samples at 20 of 24 locations sampled, and representing one third of all pesticide detections statewide (53 out of a total of 156 detections).

Frequency of Pesticides Detections

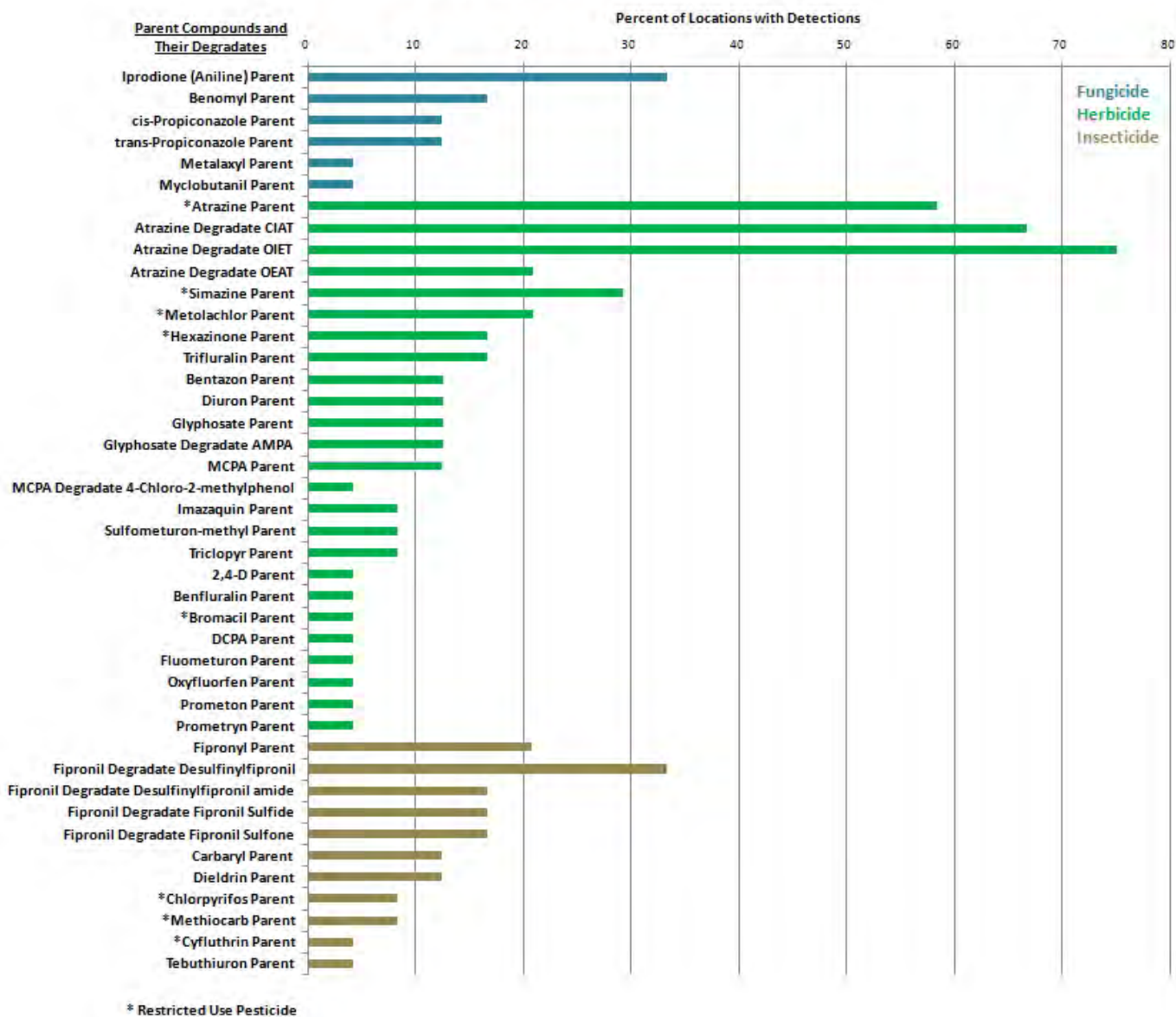


Figure 4 Percent of Locations with Detections

Pesticide Concentrations in Relation to Regulatory Limits and Benchmarks

Table 1 is a summary of the maximum concentration of each pesticide detected, the number of locations where the pesticide was detected and the number of locations where an appropriate regulatory standard or benchmark was exceeded.

Only one pesticide, a historically used termiticide exceeded state and federal water regulatory limits. Five other pesticide compounds were detected at levels exceeding the most conservative EPA aquatic life benchmark. The pesticides exceeding EPA aquatic life benchmarks include three insecticides commonly used to treat household pests like cockroaches, ants, fleas and termites and two restricted use herbicides that were detected near large monoculture agriculture operations. All other pesticides detected were lower than the most stringent aquatic or human health guideline value for the protection of human health or our ecosystem. Eighteen of those compounds were detected at concentrations more than 1,000 times lower than the most stringent aquatic or human health guideline values.

Summary of Pesticide Detections in Surface Waters
Statewide Pesticide Sampling Pilot Project
Hawaii Department of Agriculture and Hawaii Department of Health

Highest Value Above the Strictest Standard	Locations Detected	Type of pesticide	Parent or Breakdown Product	Locations Exceeding Strictest Standard	Highest Value ug/l	Strictest Standard Value ug/l	Ratio (Highest Value/Strictest Standard)	Strictest Standard Source
Dieldrin	3	Insecticide	Parent	3	0.069	0.000025	2760	Fish Consumption Hawaii WQC ¹
Highest Value Above the Strictest Benchmark	Locations Detected	Type of pesticide	Parent or Breakdown Product	Locations Exceeding Strictest Benchmark	Highest Value ug/l	Strictest Benchmark Value ug/l	Ratio (Highest Value/Strictest Benchmark)	Strictest Benchmark Source
Fipronil	5	Insecticide	Parent	3	0.026	0.011	2.364	CI OPP ²
Atrazine*	14	Herbicide	Parent	1	2.050	1	2.05	ANVP OPP ²
Cyfluthrin**	1	Insecticide	Parent	1	0.014	0.007	1.892	CI OPP ²
Fipronil Sulfone	4	Insecticide	Degradate	1	0.043	0.037	1.162	CI OPP ²
Metolachlor*	5	Herbicide	Parent	1	1.070	1	1.07	CI OPP ²
Highest Value Between 1 and 1/10 of the Strictest Benchmark	Locations Detected	Type of pesticide	Parent or Breakdown Product	Locations Exceeding Strictest Benchmark	Highest Value ug/l	Strictest Benchmark Value ug/l	Ratio (Highest Value/Strictest Benchmark)	Strictest Benchmark Source
Chlorpyrifos*	2	Insecticide	Parent	0	0.005	0.04	0.125	CI OPP ²
Highest Value Between 1/10 and 1/100 of the Strictest Benchmark	Locations Detected	Type of pesticide	Parent or Breakdown Product	Locations Exceeding Strictest Benchmark	Highest Value ug/l	Strictest Benchmark value ug/l	Ratio (Highest Value/Strictest Benchmark)	Strictest Benchmark Source
Fipronil Sulfide	4	Insecticide	Degradate	0	0.010	0.11	0.091	CI OPP ²
Sulfometuron-methyl	2	Herbicide	Parent	0	0.025	0.48	0.052	HBSL USGS App. 3 ⁵
MCPA	3	Herbicide	Parent	0	0.120	2.6	0.046	Aquatic Life Guideline CAN-Interim ¹
Hydroxyatrazine (OIET)	18	Herbicide	Degradate	0	3.150	70	0.045	HBSL USGS App. 3 ⁵
Diuron	3	Herbicide	Parent	0	0.070	2	0.035	HBSL USGS App. 3 ⁵
Carbaryl	3	Insecticide	Parent	0	0.013	0.5	0.026	CI OPP ²
Desulfinylfipronil	8	Insecticide	Degradate	0	0.009	0.59	0.015	CF OPP ²
Fluometuron	1	Herbicide	Parent	0	0.060	4	0.015	HBSL USGS App. 3 ⁵
Benomyl	4	Fungicide	Parent	0	0.035	2.8	0.013	AF ECOTOX USGS App. 3 ⁵
Bromacil*	1	Herbicide	Parent	0	0.070	6.8	0.010	ANVP OPP ²

1. CCME, Canadian Environmental Quality Guidelines, <http://st-ts.ccme.ca/>

*Hawaii Restricted Use Pesticides **Available in both Restricted Use and Non Restricted Use Formulations

2. EPA Office of Pesticide Programs Aquatic Life Benchmarks, http://www.epa.gov/oppefed1/ecorisk_ders/aquatic_life_benchmark.htm#benchmarks

3. EPA Basic Information about Regulated Drinking Water Contaminants and Indicators, <http://water.epa.gov/drink/contaminants/basicinformation/index.cfm>

4. Hawaii Water Quality Criteria, <http://gen.doh.hawaii.gov/sites/har/AdmRules/11-54.pdf>

5. USGS National Water-Quality Assessment Program, <http://pubs.usgs.gov/sir/2012/5045/pdf/sir20125045.pdf>

Summary of Pesticide Detections in Surface Waters
Statewide Pesticide Sampling Pilot Project
Hawaii Department of Agriculture and Hawaii Department of Health

Highest Value Between 1/100 and 1/1000 of the Strictest Benchmark	Locations Detected	Type of pesticide	Parent or Breakdown Produce	Locations Exceeding Strictest Benchmark	Highest Value ug/l	Strictest Benchmark Value ug/l	Ratio (Highest Value/Strictest Benchmark)	Strictest Benchmark Source
Prometryn	1	Herbicide	Parent	0	0.008	1	0.008	ANVP OPP ²
Simazine*	7	Herbicide	Parent	0	0.031	4	0.008	MCL EPA ³
2,4-D	1	Herbicide	Parent	0	0.090	13.10	0.007	ANVP OPP ²
Hexazinone*	4	Herbicide	Parent	0	0.034	7	0.005	ANVP OPP ²
Iprodione (Aniline)	8	Fungicide	Parent	0	0.004	0.80	0.005	HBSL USGS App. 3 ⁵
Oxyfluorfen	1	Herbicide	Parent	0	0.001	0.29	0.003	ANVP OPP ²
Benfluralin	1	Herbicide	Parent	0	0.002	1.9	0.0011	CF OPP ²
Highest Value Less Than 1/1000 of Strictest Benchmark	Locations Detected	Type of pesticide	Parent or Breakdown Produce	Locations Exceeding Strictest Benchmark	Highest Value ug/l	Strictest Benchmark Value ug/l	Ratio (Highest Value/Strictest Benchmark)	Strictest Benchmark Source
Trifluralin	4	Herbicide	Parent	0	0.001	1.14	0.0009	CF OPP ²
trans-Propiconazole	3	Fungicide	Parent	0	0.014	21	0.0007	ANVP OPP ²
Triclopyr	2	Herbicide	Parent	0	0.060	100	0.0006	ANVP OPP ²
Tebuthiuron	1	Herbicide	Parent	0	0.027	50	0.0005	ANVP OPP ²
cis-Propiconazole	3	Fungicide	Parent	0	0.011	21	0.0005	ANVP OPP ²
Methiocarb*	2	Insecticide	Parent	0	0.018	40	0.0005	HBSL USGS App. 3 ⁵
Glyphosate	3	Herbicide	Parent	0	0.110	700	0.000157	MCL EPA ³
Bentazon	3	Herbicide	Parent	0	0.020	200	0.0001	HBSL USGS App. 3 ⁵
Metalaxyl	1	Fungicide	Parent	0	0.007	100	0.00007	CI OPP ²
Prometon	1	Herbicide	Parent	0	0.003	98	0.000031	ANVP OPP ²
Myclobutanil	1	Fungicide	Parent	0	0.004	200	0.000020	HBSL USGS App. 3 ⁵
Imazaquin	2	Herbicide	Parent	0	0.030	2000	0.000015	HBSL USGS App. 3 ⁵
DCPA	1	Herbicide	Parent	0	0.000	70	0.000006	HBSL USGS App. 3 ⁵
4-Chloro-2-methylphenol	1	Herbicide	Degradate	0	0.006	1150	0.000005	AF ECOTOX USGS App. 3 ⁵
AMPA	3	Herbicide	Degradate	0	0.140	249500	0.0000006	AF OPP ²
Desulfinylfipronil amide	4	Insecticide	Degradate	0	0.022	Not Found		
Deethylatrazine	16	Herbicide	Degradate	0	0.104	Not Found		
OEAT	5	Herbicide	Degradate	0	0.060	Not Found		

04/30/2014 Page 2 of 2

Table 1 Pesticide Detections and Benchmarks

Dieldrin exceeds water quality standards, continues to persist from historic uses of termiticides

Dieldrin was detected at two locations in Manoa Stream and in Waikele Stream. HDOH data shows that dieldrin exceeded Hawaii state water quality standards established for fish consumption of 0.000025 micrograms per liter ($\mu\text{g/l}$) at the three locations where it was detected. Dieldrin is a breakdown product of aldrin, which was widely used historically as a termiticide in soils beneath wood structures. These data are in line with earlier data from USGS showing high levels of dieldrin in sediment in Manoa Stream and are likely due to historic application of aldrin or dieldrin as a termiticide, and subsequent erosion of impacted soils into the stream. Dieldrin was not analyzed in sediments in this study but it is likely to be present.

Two commonly used household pesticides exceeded aquatic life benchmarks in Oahu's urban streams

Fipronil is a widely available insecticide used in homes for roach and flea control. Fipronil is also applied by commercial pest companies as a treatment for termites in soils around and under home foundations. Two locations in Manoa Stream and one location in Waialae Iki Stream in Kahala exceeded EPA's aquatic life benchmark of 0.011 $\mu\text{g/l}$ for fipronil established for the protection of freshwater invertebrates. The Waialae Iki site also exceeded the EPA aquatic life benchmark of 0.037 $\mu\text{g/l}$ for one of its breakdown products, fipronil sulfone.

A trace level detection of cyfluthrin, estimated at 0.014 $\mu\text{g/l}$, exceeded the EPA aquatic life criteria of 0.007 $\mu\text{g/l}$ for the protection of freshwater invertebrates in Waikele Stream. This pyrethroid insecticide has both general and restricted use formulations, and was not detected at any other locations statewide.

Two restricted use herbicides, atrazine and metolachlor, exceeded aquatic-life benchmarks^{xiii} at monoculture crop sites

One location on west Kauai, upstream of the Kikiaola Boat Harbor, had two detections of restricted use pesticides that exceed aquatic life benchmarks, but remain below regulatory standards.

Atrazine was measured at 2.05 $\mu\text{g/l}$, below the state and federal drinking water standard of 3 $\mu\text{g/l}$, and the EPA aquatic ecosystem Level of Concern of 10 $\mu\text{g/l}$ over a 60 day period^{xiv}. This detection exceeds EPA's aquatic life benchmark of 1 $\mu\text{g/l}$ established for the protection of freshwater algae.

Metolachlor was detected in five locations on Kauai, including four sites downstream of seed crop operations. One detection of 1.07 $\mu\text{g/l}$ detected at the Kikiaola location slightly exceeded the EPA aquatic life guideline of 1.0 $\mu\text{g/l}$ for protection of freshwater invertebrates. There are

no U.S. regulatory standards for metolachlor in surface or drinking water. Other detections ranged from 0.040 µg/l down to the lowest detection of 0.006 µg/l measured in Wahiawa Stream. Metolachlor is an herbicide that is applied for pre-emergent control of grasses and broadleaf weeds on agricultural crop land, including corn, soybeans, sorghum and other crops, and on non-crop land for general weed control.

Widespread, trace level detections of atrazine

As discussed earlier, atrazine and its breakdown products, was the most frequently detected pesticide in the study. None of the samples exceeded state or federal water quality standards. One atrazine detection that appears to be associated with current use of atrazine on Kauai exceeded EPA's aquatic life benchmark of 1 µg/l, as discussed in the previous section. On Maui, the Kealia Pond National Wildlife Refuge (Kealia Pond NWR) had a detection of 0.182 µg/l atrazine, and may represent downstream impacts of current uses of atrazine in sugar cane and seed corn. The remaining 18 trace level detections occur on all islands across all land uses studied and are far below state and federal benchmarks. These low detections include at least three additional locations where atrazine is currently used, and generally align with areas with historic sugar cane and known concentrations in groundwater, though some detections were measured in areas where no earlier data exist.

As discussed in HDOH's November, 2013 Report to the Legislature on Atrazine Data Gaps^{xv}, for decades, atrazine was widely used in the sugar industry as a pre-emergent herbicide to control weeds in sugar cane fields. Drinking water monitoring statewide has shown that trace amounts of atrazine persist in groundwater in areas of historic sugar cane cultivation. Most of the locations sampled receive much of their flow from groundwater, which is likely the source for low level atrazine detections seen in this study. Atrazine is registered as a restricted use pesticide in Hawaii, so current uses cannot be ruled out at any location.

Fluometuron and benomyl, two pesticides not currently registered for use in Hawaii, detected in sampling

A confirmed detection of fluometuron, a pesticide that has never been registered for use in Hawaii, was found in Kealia Pond NWR. The source of this pesticide is unknown.

Benomyl was detected in five urban locations on Oahu, even though registration was cancelled in the early 2000's. The current detections may be a result of ongoing homeowner use of old stocks of this products, or residual concentrations in groundwater from legal uses prior to 2001.

Sediment Sampling Findings

To better understand how stream bed sediments might sequester currently used pesticides, HDOH selected 7 locations to collect stream bed sediment samples. These samples were analyzed for 121 different pesticides and breakdown products.

Glyphosate ubiquitous in stream bed sediment samples across land uses

Glyphosate, the active ingredient in Roundup, and one of its breakdown products were present at concentrations ranging from 6.8 -1,100 µg/kg (dry weight) in all seven stream bed sediment samples, and were detected in 3 of 7 paired water samples. Glyphosate is widely used across many land uses for residential, commercial, agricultural and roadside weed management. Based upon registration toxicity studies, glyphosate is labeled for weed control in aquatic environments and along banks where water contact is likely. It has a very short residence time in water and is known to bind tightly to soils and sediments.



Sediment concentrations varied between locations with detections of 1,100 µg/kg found downstream of taro fields at the Hanalei National Wildlife Refuge, and downstream of feed corn and mixed agricultural uses along Kapehu Stream on the Big Island. One site on the west side of Kauai had a detection of 800 µg/kg, down stream of seed corn crops in the agricultural drainage ditch near the Kawaiie Pump Station. Glyphosate concentrations in sediment sampled on Oahu varied between 6.8 and 9.2 µg/kg. Interestingly, the Manoa site had the highest measured concentration of glyphosate in water at 0.14 µg/l. Significant variations in hydrologic conditions between the sampling sites may account for some of the differences in concentrations of glyphosate and other pesticides detected.

Because sediment analyses for glyphosate are very new, there are no existing sediment guidelines or benchmarks. However, as a start, the glyphosate concentrations found in water samples at these same locations can be compared to US EPA's Office of Pesticides Aquatic Life benchmark of 1,800 µg/l, established for the protection of freshwater fish species. Detections in water at these three sites ranged from 0.03 -0.14 µg/l, orders of magnitude lower than the benchmark. The concentrations found in surface water were also well below the EPA's Maximum Contaminant Level (MCL) of 700 µg/l, a human health drinking water standard. As we move forward, we will be conferring closely with USGS and other glyphosate experts to develop the best available information to put the glyphosate stream bed sediment data in context.

Bed Sediment findings show few detections of other herbicides and two fungicides

Less than 5% of the 121 analytes were found in the seven sediment samples collected. Other than the glyphosate detections, there were single detections of three herbicides, two fungicides, and one historic insecticide. The other herbicides detected in sediment include atrazine, prodiamine, and oxyfluorfen. The detection of atrazine in sediments was found on the Hamakua Coast in Alia Stream, in the area overlying the aquifer that had the highest historic detections of atrazine in the state in the 1980s. The herbicide oxyfluorfen was the only pesticide detection other than glyphosate compounds at an urban location, found in Manoa Stream.

Two fungicides, azoxystrobin and propiconazole, were found in the same sample from Kapehu Stream on the Hamakua Coast of the Big Island. The paired water sample from this location also showed a trace detection of another fungicide, iprodione. DDE, a breakdown product of the historically used insecticide DDT, was detected on the west side of Kauai in the ditch by the Kawaiele Pump Station. The p'p-DDE detection of 1.1 µg/kg is below the Canadian Interim Sediment Quality Guideline of 1.42 µg/kg. Screening levels in sediment have not been established for the other detected compounds.

Discussion

Number of pesticide detections varies by land use

Urban streams on Oahu had highest number of different pesticide detections. Collectively, the four stream locations in urban Oahu had the greatest number of pesticides detected across all islands and land uses (range 11-20 detections).

Figure 5 contrasts two locations statewide that had exceedances of benchmarks, Manoa Stream at University of Hawaii on Oahu and Kikiola Ditch on Kauai's west side. The Manoa site is situated in a dense residential area, and the Kikiola site is downstream of several monoculture operations. The graph demonstrates clear differences in number, concentration and type of pesticides detected between these two different land uses.

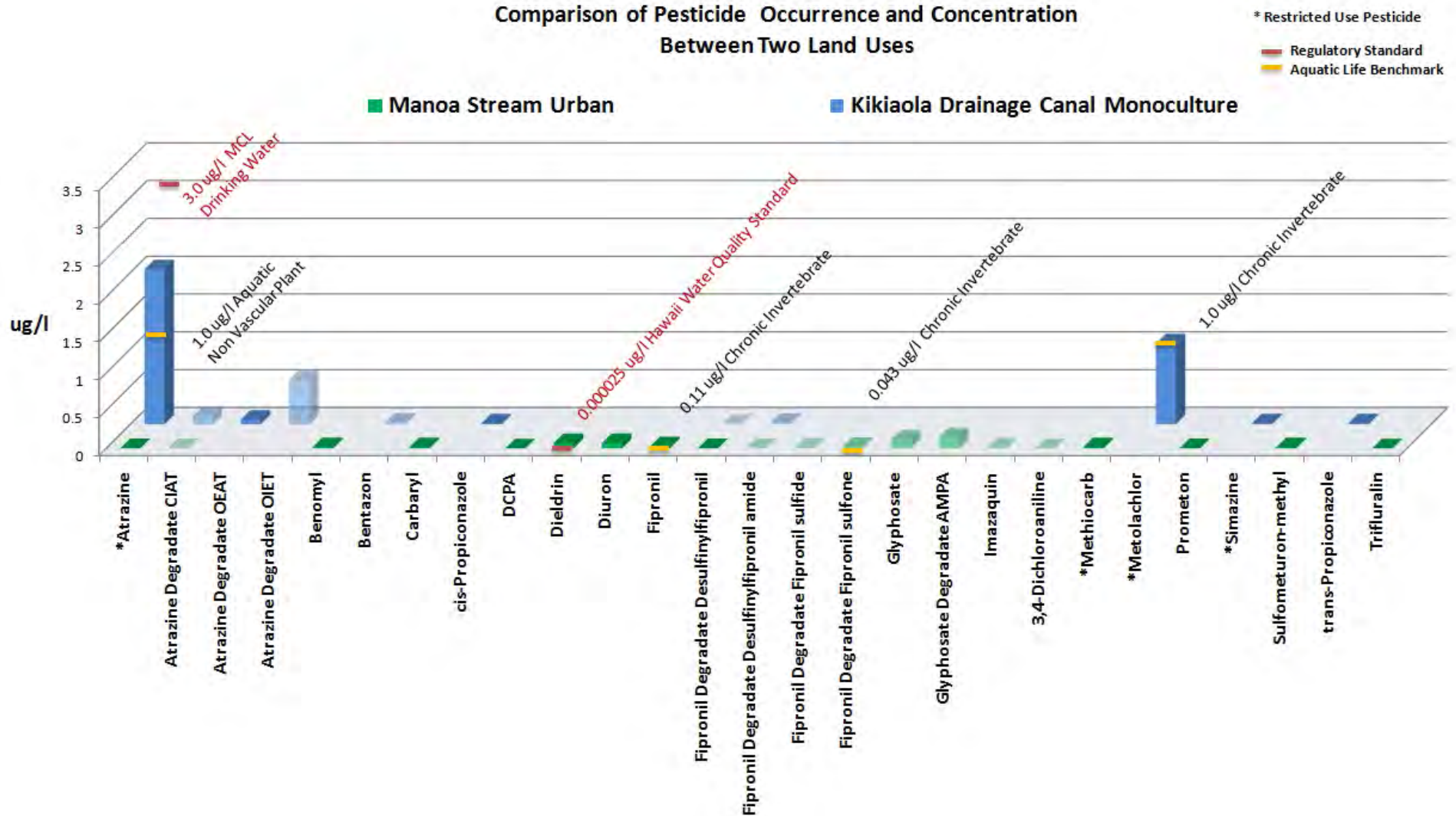


Figure 5 Comparison of Detections between Two Land Uses

Number of pesticide detections varies by island

Oahu

The Manoa Stream site at the University of Hawaii had the most individual detections in surface water state wide, with 20 different pesticides and breakdown products found in a single location. The sample from this location exceeded Hawaii's water quality standard for dieldrin (from historic use of termiticides) and EPA aquatic life benchmarks for two fipronil compounds, two insecticides commonly used in residential settings. While many of the pesticides detected are primarily for household use, traces of restricted use and an unregistered compound were found as well.

Waikole Stream showed detections of 12 different pesticides, including a broad range of restricted use herbicides and pesticides commonly used by homeowners, and historically used compounds. This location had a detection of cyfluthrin, which exceeded the EPA aquatic life benchmark.

Many of the compounds detected in Waikole and Manoa streams had been detected at the same locations by USGS in their 1999-2001 study^{xvi}, and are discussed in related report entitled, Ground-Water Quality and its Relation to Land Use on Oahu, Hawaii, 2000-01^{xvii}.

Kauai

Pesticide detections on Kauai varied widely between locations and crop types. Two sites downstream of seed corn operations on Kauai's west side each had 11 detections. One of these sites had exceedances of EPA aquatic life benchmarks for two restricted use pesticides (atrazine and metolachlor). In contrast, one location on Kauai's North Shore at Waiakalua had no detections of current pesticides, except for trace levels of atrazine and its degradates, residual evidence of former sugar cane use in that area.

Due to community concerns about pesticide usage associated with seed crops on Kauai's west side, the sampling design included three locations on drainage canals downstream of west side seed corn operations, and the Hanamaulu location that includes seed corn fields as well as a variety of mixed agricultural uses upstream. Detections at these sites were compared to reported restricted use pesticide (RUP) application under Kauai's Good Neighbor program. Five restricted use pesticides were detected at one or more of these sites, and three, atrazine, metolachlor and chlorpyrifos were reported to have been used by seed crop operators a few weeks prior to sampling. Trace concentrations of hexazinone and simazine at seed crop locations may reflect early applications or longer term residence in groundwater from earlier operations.

Chlorpyrifos, a restricted use insecticide was detected at trace levels (0.005 µg/l) at the Second Ditch location in Kekaha.

Results from Wahiawa Stream, downstream of coffee and seed crops, showed detections of atrazine, metolachlor, and two general use pesticides including iprodione, a fungicide, and the herbicide, oxyfluorfen. The coffee plantation operator reported no use of RUP pesticides during the sampling period under the Good Neighbor program. Some fields, however, are leased to seed crop operations.

Hawaii

Overall, the number of pesticides detected in water samples at the six sampling sites on the Big Island was lower than Kauai and Oahu (range 5-7 detections). All four stream locations showed levels of atrazine and its three breakdown products, consistent with historic contamination of the aquifer, but no current uses of atrazine. The three sites downstream of mixed use agriculture activities all had trace detections of simazine, a restricted use herbicide and iprodione, a fungicide.

At Honolii Stream on the Hamakua Coast of the Big Island, downstream of macadamia nut orchards, the water sample showed only one currently used pesticide in addition to trace levels of atrazine and its degradates, from former sugar cane use in that area.

Two anchialine ponds in resort areas on the Kona Coast were sampled to evaluate potential effects of pesticide use for turf management and golf courses. One location had a trace level (0.002 µg/l) detection of chlorpyrifos, an organophosphate pesticide that may be associated with insect control on the up gradient golf course.

Maui

No stream sites were sampled on Maui due to the lack of suitable perennial streams in close proximity to up gradient pesticide uses. The two surface water locations sampled are both groundwater fed, and likely receive little direct run off from upstream pesticide applications. Instead, detections at these locations may represent groundwater transport of herbicides. Atrazine and two other herbicides were detected at each site.

The Kealia Pond NWR site receives groundwater inputs from upstream sugar cane and seed corn operations. Three herbicides were detected. Atrazine and its breakdown products were detected at concentrations likely associated with current uses of atrazine. In addition, there were low level detections of two other herbicides, prometryn, and fluometuron. Prometryn is registered for general use in Hawaii. Fluometuron has not been registered for use in Hawaii.

The Kaanapali site was sampled at the mouth of a spring near Black Rock. The groundwater there has inputs from turf uses, wastewater and former sugar cane uses. Atrazine and its breakdown products were detected at low concentrations, as well as trace levels of two other herbicides, diuron and simazine.

Study Limitations

This pilot study of pesticide occurrence in surface water and sediments is limited in scope and is not adequate to describe exposure to human health and the environment. Because single grab samples were taken, data collected do not represent pesticide occurrence throughout the year, and may not capture pesticides applied outside the sampling period. Similarly, the data collected cannot be used to evaluate variability in pesticide residues found in surface water and sediments over time. Samples were not collected during high flow storm events, therefore, insecticides and other pesticides which are primarily transported to surface waters through storm runoff may not be detected. The study design did not consider pesticide application periods.

Reported concentrations of pesticides in the samples represent a snapshot in time from a small area within a watershed and may not be representative of worst-case or even typical conditions. All sites selected have multiple upstream inputs. Therefore, data collected will not conclusively identify specific source areas.

Further, water bodies and sediment conditions varied significantly between sampling sites. As an example, the photos above compare water quality conditions at the time of sampling at sites on Kauai (left) and the Big Island (right).



Next Steps

These findings and the underlying laboratory data are being made publicly available on the HDOH HEER website at <http://eha-web.doh.hawaii.gov/eha-cma/Leaders/HEER/pesticides>.

These data will be a useful first step to bring state agencies, local governments, farmers and local communities together to learn more about the occurrence and concentration of currently used pesticides in non-target environments, and how they may relate to different land use types and current pesticide practices. Over the next few months, HDOA and HDOH will continue to analyze the data, seeking to better understand how pesticide chemistries, local conditions and differing application practices may combine to result in detections in our surface waters. We intend to seek expert assistance from USGS and other scientists, and meet with a variety of stakeholders to share ideas, identify data needs, and recommend actions, where appropriate.

DRAFT

ⁱ Anthony, S.S., Hunt, C.D., Jr., Brasher, A.M.D., Miller, L.D., Tomlinson, M.S., (2004), [Water quality on the island of Oahu, Hawaii, 1999-2001](http://pubs.water.usgs.gov/cir1239): U.S. Geological Survey Circular 1239, 41 p.
<http://pubs.water.usgs.gov/cir1239>

ⁱⁱ The National Water Quality Laboratory Schedules 2033 and 2060.
<http://nwql.usgs.gov/Public/PublicQAQC/nav/S2033-PBLNK-2012.html> and
<http://wwwnwql.cr.usgs.gov/USGS/catalog/index.cfm?a=bs&sa=s&sap=2060&uid=>

ⁱⁱⁱ <http://ca.water.usgs.gov/projects/PFRG/AnalyticalMethods.html>.

^{iv} <http://ks.water.usgs.gov/lcgy>.

^v <http://eha-web.doh.hawaii.gov/eha-cma/Leaders/HEER/Statewide-Pesticide-Survey>

^{vi} EPA Water Quality Criteria <http://water.epa.gov/scitech/swguidance/standards/criteria/current/index.cfm>

^{vii} Hawaii Department of Health, Clean Water Branch, <http://health.hawaii.gov/cwb/site-map/clean-water-branch-home-page/water-quality-standards/>

^{viii} EPA Drinking Water Contaminants <http://water.epa.gov/drink/contaminants/>

^{ix} For our initial evaluation of the data, we referred to the following sources of information for information. The Appendices referred to below provide very helpful compendiums of Standards, Guidelines and Benchmarks for both Aquatic Life and Human Health. They also provide a detailed bibliography of a wide variety of state, national and international water and sediment quality guidelines. The acronyms used in our draft summary tables are referenced and well described in these Appendices.

USGS National Water-Quality Assessment Program. Prioritizing Pesticide Compounds for Analytical Methods Development, Appendix 3. Aquatic-Life and Human-Health Benchmarks Used in the Evaluation of Pesticides for Water, <http://pubs.usgs.gov/sir/2012/5045/pdf/sir20125045.pdf>

USGS National Water-Quality Assessment Program. Prioritizing Pesticide Compounds for Analytical Methods Development, Appendix 4. Aquatic-Life Benchmarks or Toxicity Values With Resulting Aquatic-Life Toxicity Bins and Available Sediment Benchmarks Used in the Evaluation of Pesticides for Sediment, <http://pubs.usgs.gov/sir/2012/5045/pdf/sir20125045.pdf>

For most current updates on individual Benchmarks, Toxicity Values and other outside reference sources, these two links are very helpful:

EPA Office of Pesticide Programs Aquatic Life Benchmarks,
http://www.epa.gov/oppefed1/ecorisk_ders/aquatic_life_benchmark.htm#benchmarks

USGS NAWQA Pesticide National Synthesis Project, Types and Sources of Water-Quality Benchmarks for Pesticides <http://water.usgs.gov/nawqa/pnsp/benchmarks/source.html#II>

^x EPA Office of Pesticide Programs Human Health Benchmarks
<http://iaspub.epa.gov/apex/pesticides/f?p=HHBP:home>

^{xi} EPA Office of Pesticide Programs Aquatic Life Benchmarks,
http://www.epa.gov/oppefed1/ecorisk_ders/aquatic_life_benchmark.htm#benchmarks

^{xii} <http://eha-web.doh.hawaii.gov/eha-cma/Leaders/HEER/Statewide-Pesticide-Survey>

^{xiv} http://www.epa.gov/oppsrrd1/reregistration/atrazine/atrazine_update.htm#ewmp The EPA is currently estimating the aquatic ecosystem level of concern as approximately 10 parts per billion (ppb) for atrazine over a 60-day period. This estimate was developed using the PATI model described in EPA's issue paper that we presented to the 2009 SAP, available at www.regulations.gov in docket number [EPA-HQ-OPP-2009-0104-0006](http://www.regulations.gov/docket/EPA-HQ-OPP-2009-0104-0006).

If a watershed shows levels of atrazine above this level of concern in any two years of monitoring, atrazine registrants must initiate watershed-based management activities in concert with state or local watershed programs to reduce atrazine exposure. These remedies will be consistent with the approaches used in the EPA Office of Water's Total Maximum Daily Load (TMDL) program but are enforceable under FIFRA through the 2003 Atrazine IRED and Memorandum of Agreement.

^{xv} HDOH Hazard Evaluation and Emergency Response Office, REPORT TO THE TWENTY-SEVENTH LEGISLATURE STATE OF HAWAII 2013 Pursuant to HCR 129, Requesting the Department of Health to Develop Partnerships to Address

the Data Gap on Air, Surface Water, and Near Shore Effects of Atrazine, November 2013
Available on line at: <http://co.doh.hawaii.gov/sites/LegRpt/2014/Reports/1/HCR%20129F.pdf>

^{xvi} Anthony, S.S., Hunt, C.D., Jr., Brasher, A.M.D., Miller, L.D., Tomlinson, M.S., (2004), [Water quality on the island of Oahu, Hawaii, 1999-2001](http://pubs.water.usgs.gov/cir1239): U.S. Geological Survey Circular 1239, 41 p.
<http://pubs.water.usgs.gov/cir1239>

^{xvii} Hunt, C.D., (2004), Ground-Water Quality and its Relation to Land Use on Oahu, Hawaii, 2000-01: U.S. Geological Survey WRI Report 03-4305, 86 p. <http://pubs.usgs.gov/wri/wri034305/>

**Summary File for Dissolved Pesticide Concentrations in Discrete Surface-Water Samples Collected on
the Islands of Kauaʻi and Oʻahu, Hawaiʻi, November 2016–April 2017**

By Adam G. Johnson and Joseph J. Kennedy

List of figures

1. Map of Kaua'i, Hawai'i showing sites where low-flow samples were collected November 2016–April 2017.
2. Map of O'ahu, Hawai'i showing sites where low-flow and high-flow samples were collected November 2016–April 2017.
3. Detection frequencies for the 19 most frequently detected pesticide compounds in all 32 water samples collected on Kaua'i and O'ahu, Hawai'i, between November 2016 and April 2017.
4. Number of pesticides detected by use group and flow condition in all 32 discrete water samples collected on Kaua'i and O'ahu, Hawai'i, between November 2016 and April 2017.
5. Detection frequencies for the 9 most frequently detected pesticide compounds in 14 high-flow samples collected on O'ahu, Hawai'i, between November 2016 and April 2017.
6. Detection frequencies for the 11 most frequently detected pesticide compounds in 18 low-flow samples collected on O'ahu, Hawai'i, between November 2016 and April 2017.
7. Detection frequencies for the 11 most frequently detected pesticide compounds in 16 water samples collected at sites classified as having agricultural land use on Kaua'i and O'ahu, Hawai'i, between November 2016 and April 2017.
8. Detection frequencies for the 9 most frequently detected pesticide compounds in 5 water samples collected at sites classified as having developed land use on O'ahu, Hawai'i, between November 2016 and April 2017.
9. Detection frequencies for the 9 most frequently detected pesticide compounds in 11 water samples collected at sites classified as having mixed land use on Kaua'i and O'ahu, Hawai'i, between November 2016 and April 2017.
10. Photograph taken January 9, 2017 at Honouliuli Stream at H-1 Freeway near Waipahu, O'ahu, Hawai'i (site 16212490). Photograph shows USGS stream-gage equipment and location of stage-level sampler used to collect the high-flow sample on February 11, 2017.
11. Graph of gage height (stream stage) measured at Honouliuli Stream at H-1 Freeway near Waipahu, O'ahu, Hawai'i (site 16212490) when high-flow samples were collected on February 6 and 11, 2017
12. Photographs showing streamflow conditions in Honouliuli Stream at H-1 Freeway near Waipahu, O'ahu, Hawai'i (site 16212490) when high-flow samples were collected on February 6, 2017 and February 11, 2017.
13. Photograph showing conditions and location of stage-level sampler at the Ditch at Waialua Beach Road, Waialua, O'ahu, Hawai'i (site 213452158074801) when a high-flow sample was retrieved on May 1, 2017.
14. Photograph showing stream conditions in Wai'alae Iki Stream at Wai'alae golf course, O'ahu, Hawai'i (site 211628157461701) when a high-flow sample was collected at this site on April 21, 2017.
15. Photograph showing conditions in Unnamed ditch 3 at Lower Saki Mana Road, Kaua'i, Hawai'i (site 20407159460401) when a low-flow sample was collected on January 30, 2017.
16. Photograph showing conditions at Mā'ili'ilili Drainage Canal, O'ahu, Hawai'i (site 212613158100101) when a high-flow sample was collected on February 6, 2017.

List of tables

1. List of 31 sites on Kaua'i and O'ahu, Hawai'i where 32 discrete water samples were collected November 2016–April 2017.
2. Water-quality standards, criteria, and benchmarks considered for comparisons with pesticide compounds detected in discrete surface-water samples collected on Kaua'i and O'ahu, Hawai'i, November 2016–April 2017.
3. Comparison of State of Hawai'i water-quality standards for acute toxicity in freshwater and U.S. Environmental Protection Agency acute freshwater aquatic-life criteria for selected pesticide compounds with the highest concentrations of these pesticide compounds in 14 discrete surface-water samples collected during high-flow conditions, after substantial rainfall, at 13 sites on O'ahu, Hawai'i, November 2016–April 2017..
4. Comparison of U.S. Environmental Protection Agency maximum contaminant levels of selected pesticides in drinking water with the highest concentrations of these pesticides in 32 discrete surface-water samples collected at 31 sites on Kaua'i and O'ahu, Hawai'i, November 2016–April 2017.
5. Summary of the highest concentrations of pesticide compounds detected in 18 discrete surface-water samples collected during dry-weather, low-flow conditions at 18 sites on Kaua'i and O'ahu, Hawai'i, November 2016–April 2017, relative to human-health benchmarks established by the U.S. Environmental Protection Agency and U.S. Geological Survey.
6. Summary of the highest concentrations of pesticide compounds detected in 18 discrete surface-water samples collected during dry-weather, low-flow conditions at 18 sites on Kaua'i and O'ahu, Hawai'i, November 2016–April 2017, relative to aquatic-life benchmarks established by the U.S. Environmental Protection Agency.
7. Summary of the highest concentrations of pesticide compounds detected in 14 discrete surface-water samples collected during high-flow conditions, after substantial rainfall, at 13 sites on O'ahu, Hawai'i, November 2016–April 2017, relative to human-health benchmarks established by the U.S. Environmental Protection Agency and U.S. Geological Survey.
8. Summary of the highest concentrations of pesticide compounds detected in 14 discrete surface-water samples collected during high-flow conditions, after substantial rainfall, at 13 sites on O'ahu, Hawai'i, November 2016–April 2017, relative to aquatic-life benchmarks established by the U.S. Environmental Protection Agency.

Table 1. List of 31 sites on Kauaʻi and Oʻahu, Hawaiʻi where 32 discrete water samples were collected November 2016–April 2017.

[Map ID, Map identification number used in figures 1 and 2 of this summary file; USGS, U.S. Geological Survey; Hwy, Highway; HI, Hawaiʻi; Str, Stream; Rd, Road; nr, near; blw, below; Dr, Drive; GC, golf course]

General area	Map ID	USGS site number	USGS site name	Land use
North Kauaʻi	1	221215159292401	Hanalei River near Kuhio Highway, Kauai, HI	Mixed
	2	221255159222401	Unnamed stream near Waiakalua, Kauai, HI	Mixed
East Kauaʻi	3	16056000	Hanamaulu Stream at Kapaia nr Lihue, Kauai, HI	Mixed
	4	16055500	Nawiliwili Str at Heleko Road at Lihue, Kauai, HI	Mixed
	5	215703159233401	Papakolea Str at Hulemalu Rd, Puhi, Kauai, HI	Mixed
West Kauaʻi	6	215835159440901	Unnamed 2nd ditch at Hwy 50, nr Kekaha, Kauai, HI	Agricultural
	7	220035159460401	Kawaiele Waterbird Sanctuary, Kauai, HI	Agricultural
	8	220056159462101	Unnamed ditch at Hwy 50, Mana Plain, Kauai, HI	Agricultural
	9	220246159461301	Unnamed ditch 1 at Lower Saki Mana Rd, Kauai, HI	Agricultural
	10	220323159454601	Unnamed ditch 4 at Lower Saki Mana Rd, Kauai, HI	Agricultural
	11	220354159455801	Unnamed ditch 2 at Lower Saki Mana Rd, Kauai, HI	Agricultural
	12	220407159460401	Unnamed ditch 3 at Lower Saki Mana Rd, Kauai, HI	Agricultural
North central Oʻahu	13	213452158074801	Ditch at Waialua Beach Rd, Waialua, Oahu, HI	Agricultural
	14	213433158071201	Kiikii Str at Waialua Beach Rd, Waialua, Oahu, HI	Mixed
	15	213447158061901	Helemano Str at Kamehameha Hwy, Haleiwa, Oahu, HI	Agricultural
	16	213449158061901	Opaeula Str at Kamehameha Hwy, Haleiwa, Oahu, HI	Agricultural
	17	213537158061201	Anahulu River at Kamehameha Hwy, Haleiwa, Oahu, HI	Agricultural
Northeast Oʻahu	18	214050157572301	Kii Str at Hwy 83, Kahuku, Oahu, HI	Agricultural
	19	214020157562801	Malaekahana Stream at Hwy 83, Laie, Oahu, HI	Mixed
	20	213806157551201	Waialele Stream at Hwy 83, Laie, Oahu, HI	Agricultural
East Oʻahu	21	16274100	Kaneohe Str blw Kamehameha Hwy, Oahu, HI	Developed
	22	16265000	Kawa Str at Kaneohe, Oahu, HI	Developed
	23	16249000	Waimanalo Str at Waimanalo, Oahu, HI	Mixed
	24	16248950	Kahawai Str at Waimanalo, Oahu, HI	Mixed
	25	211628157461701	Waialae Iki Stream at Waiʻalae GC, Oahu, HI	Developed
	26	16242500	Manoa Str at Kanewai Field, Honolulu, Oahu, HI	Developed
	27	16247100	Manoa-Palolo Drainage Canal at Moiliili, Oahu, HI	Developed
South central Oʻahu	28	16213000	Waikele Str at Waipahu, Oahu, HI	Mixed
	29	16212500	Honouliuli Str nr Waipahu, Oahu, HI	Agricultural
	30	16212490	Honouliuli Str at H-1 Freeway nr Waipahu, Oahu, HI	Agricultural
West Oʻahu	31	212613158100101	Mailiili Drainage Canal, Oahu, HI	Mixed

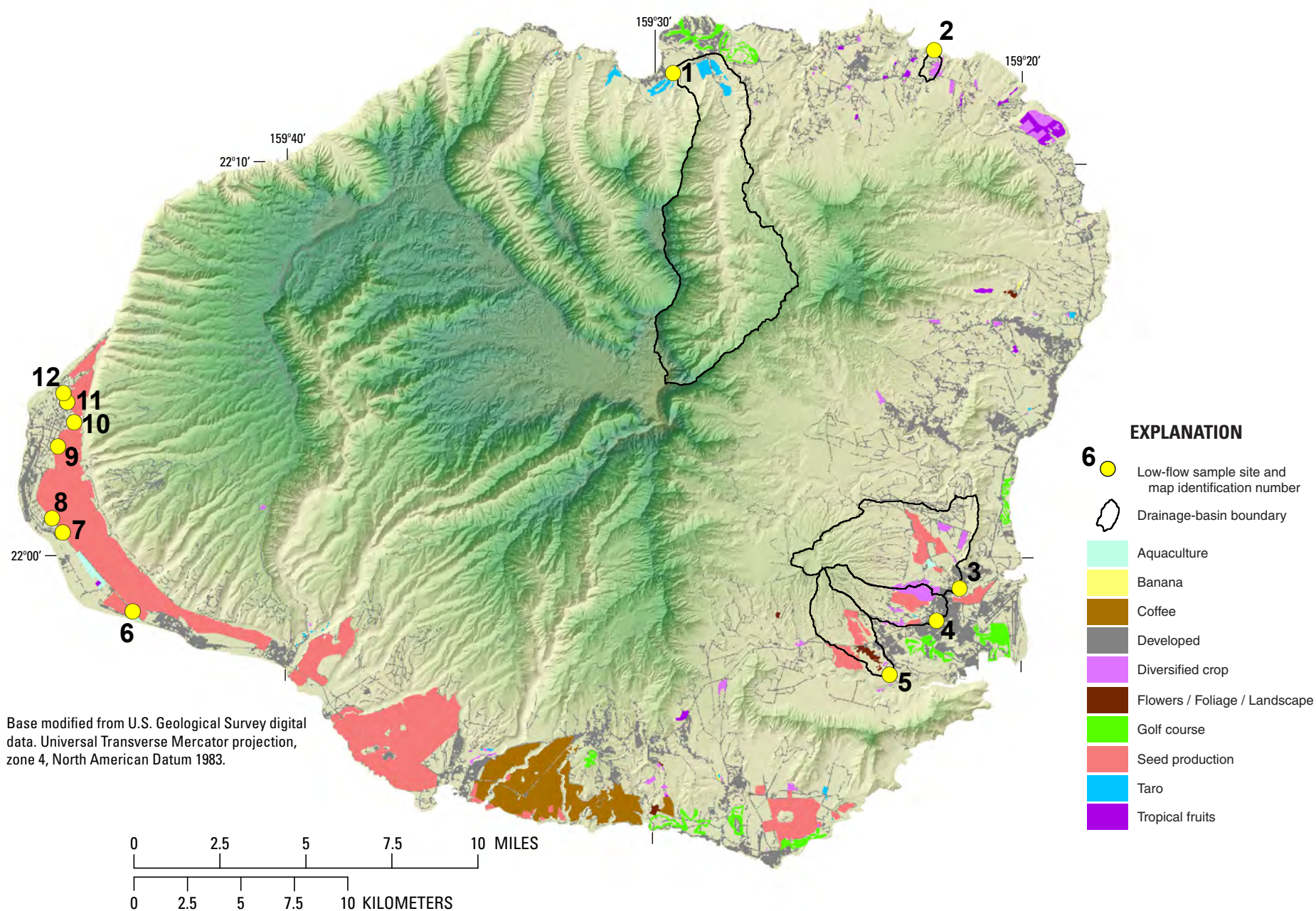


Figure 1. Map of Kaua'i, Hawai'i showing sites where low-flow samples were collected November 2016–April 2017, estimated drainage basins of select sample sites, shaded relief, and selected land uses (modified from U.S. Geological Survey, 2013; Melrose and others, 2016; Johnson and Bassiouni, 2018). No high-flow samples were collected during this period. Areas with banana land use are difficult to see at this scale.

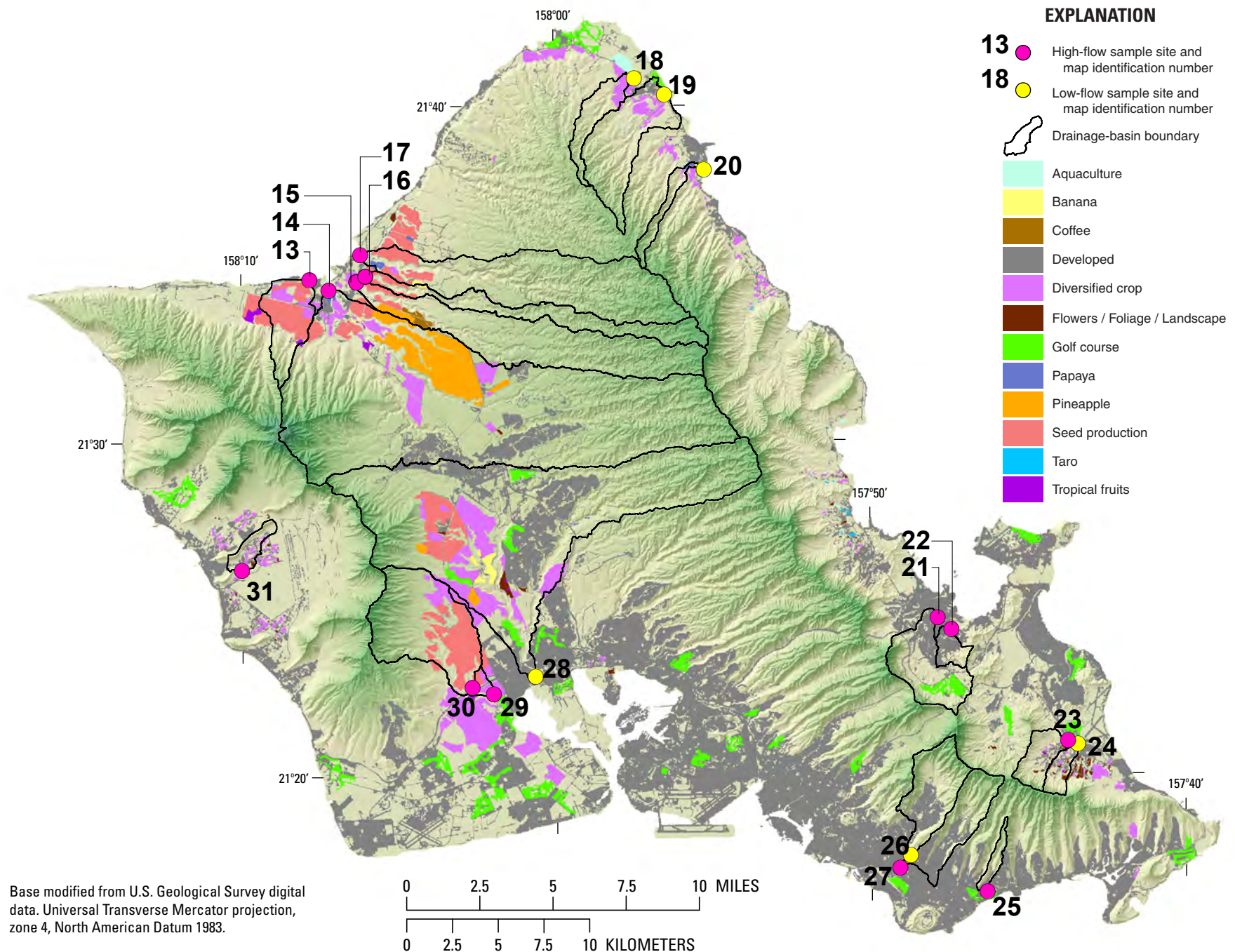


Figure 2. Map of O'ahu, Hawai'i showing sites where low-flow and high-flow samples were collected November 2016–April 2017, estimated drainage basins of sample sites, shaded relief, and selected land uses (modified from U.S. Geological Survey, 2013; Melrose and others, 2016; Engott, 2017). Areas with aquaculture, papaya, taro, and tropical fruits are difficult to see at this scale.

Most frequently detected pesticide compounds

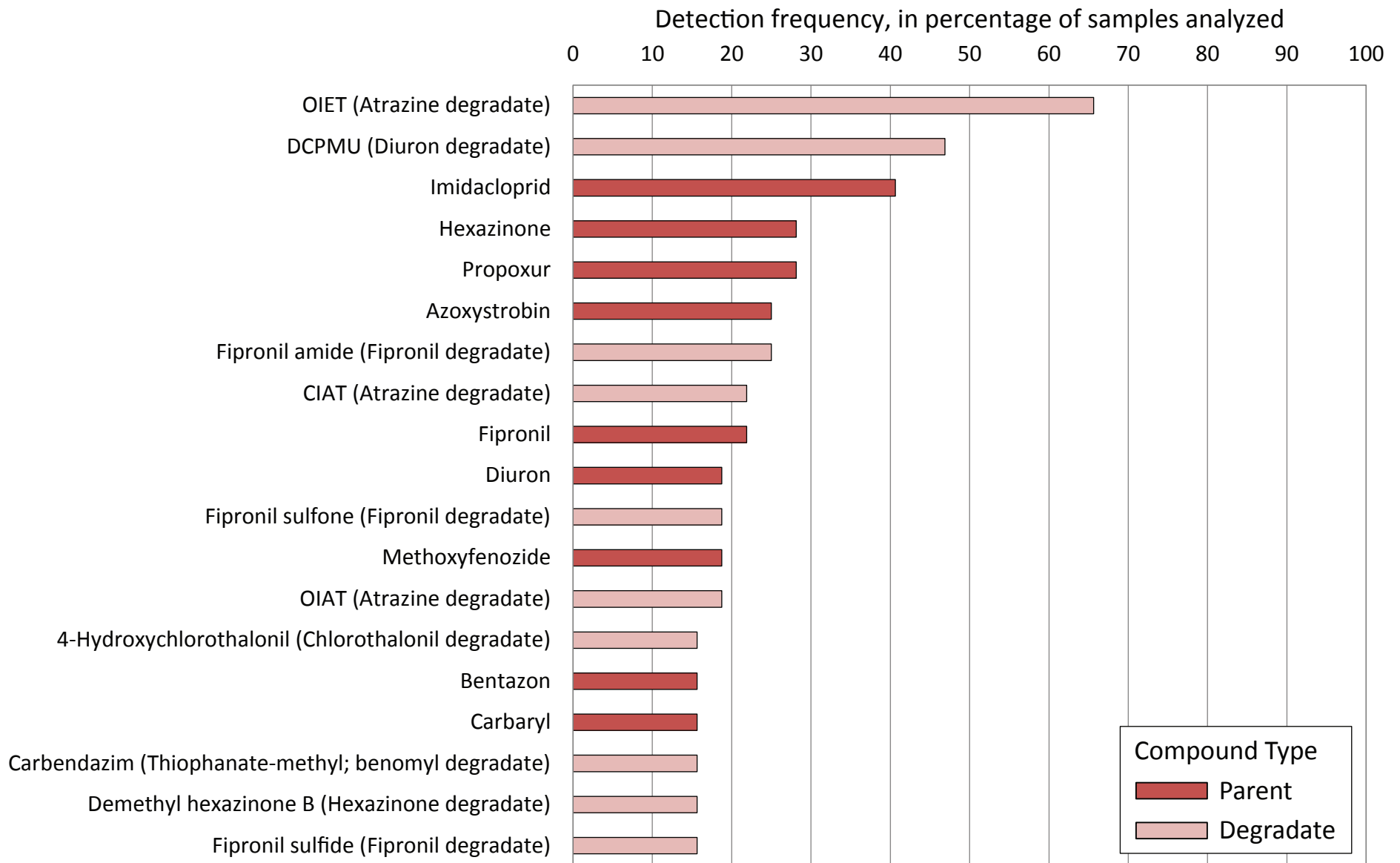


Figure 3. Detection frequencies for the 19 most frequently detected pesticide compounds in all 32 water samples collected on Kaua'i and O'ahu, Hawai'i, between November 2016 and April 2017.

Number of pesticide detections by use group and flow condition

245 detections total, out of 7,200 pesticide-compound results from laboratory

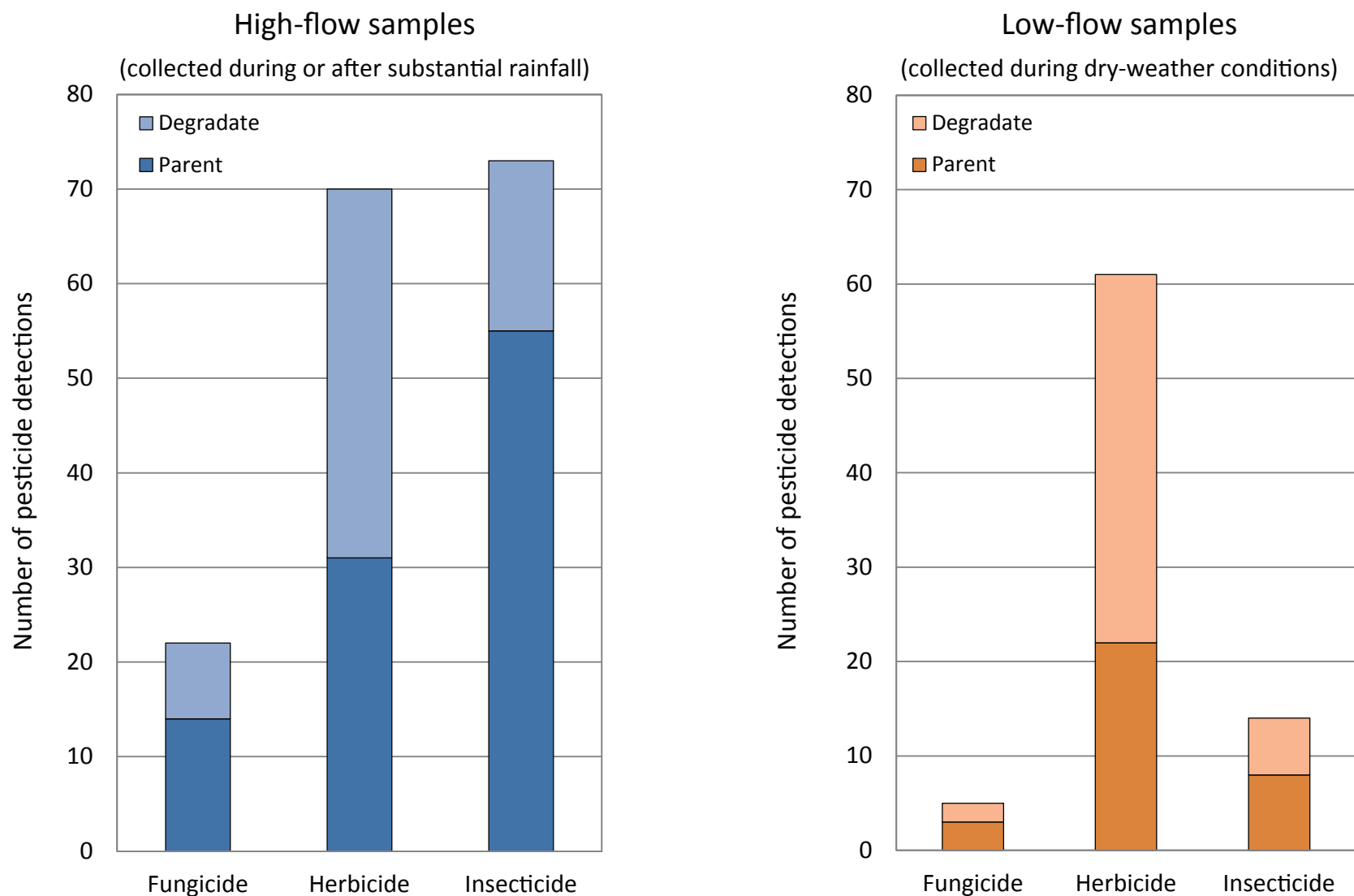


Figure 4. Number of pesticides detected by use group and flow condition in all 32 discrete water samples collected on Kaua'i and O'ahu, Hawai'i, between November 2016 and April 2017.

Most frequently detected pesticide compounds in 14 high-flow samples

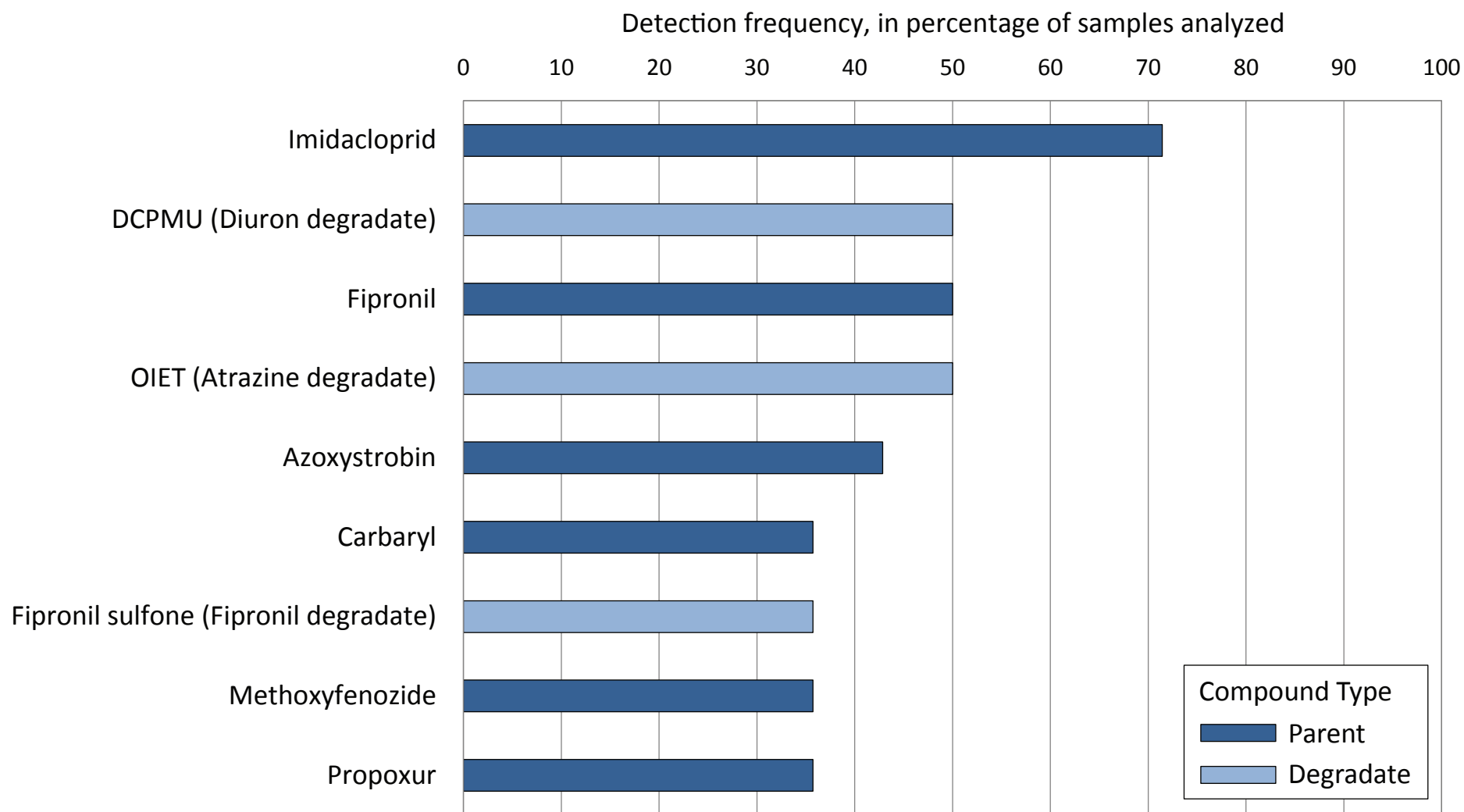


Figure 5. Detection frequencies for the 9 most frequently detected pesticide compounds in 14 high-flow samples collected on O'ahu, Hawai'i, between November 2016 and April 2017. No high-flow samples were collected on Kaua'i during this time period.

Most frequently detected pesticide compounds in 18 low-flow samples

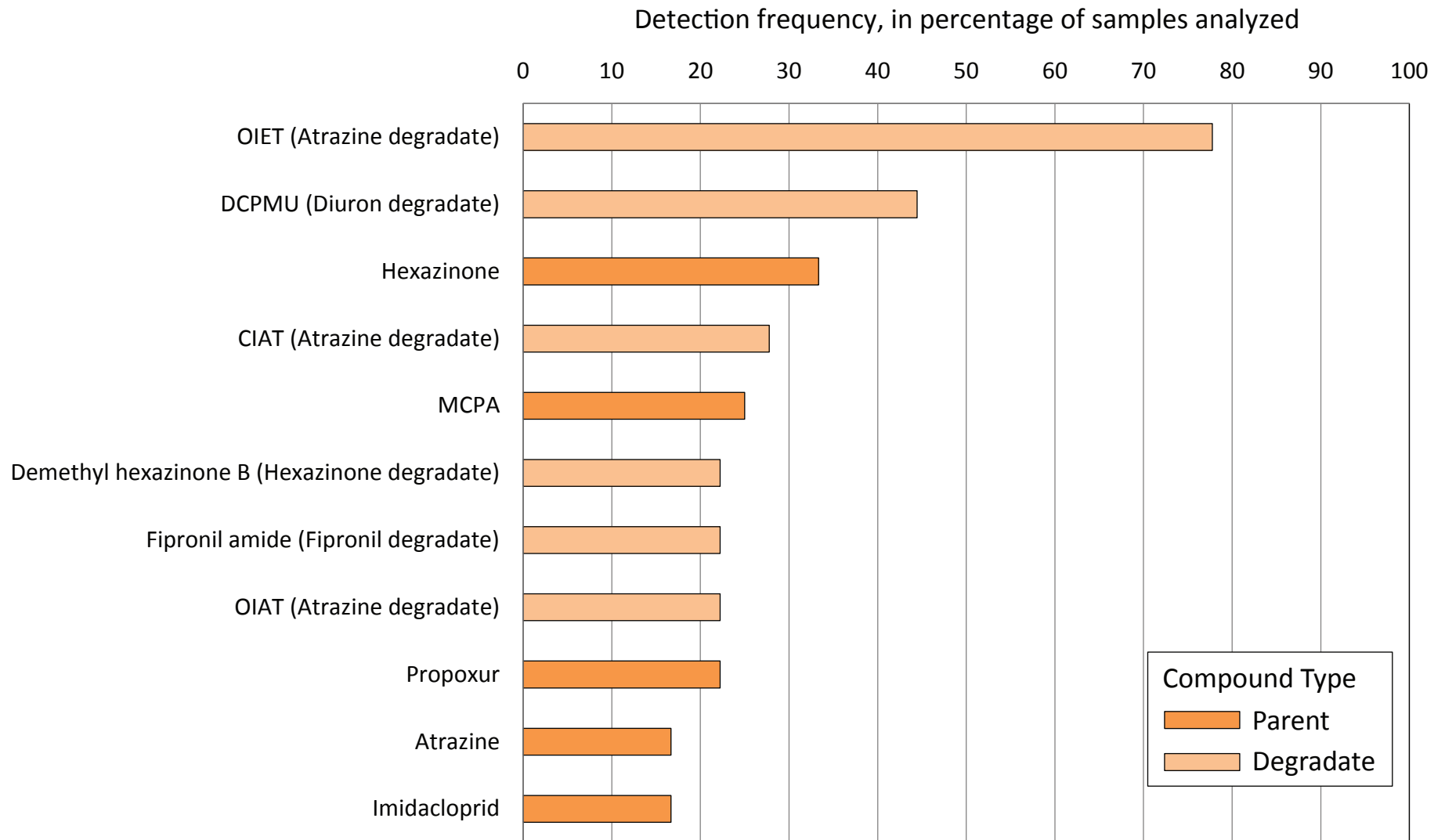


Figure 6. Detection frequencies for the 11 most frequently detected pesticide compounds in 18 low-flow samples collected on O'ahu, Hawai'i, between November 2016 and April 2017.

Most frequently detected pesticide compounds in 16 samples collected at agricultural sites

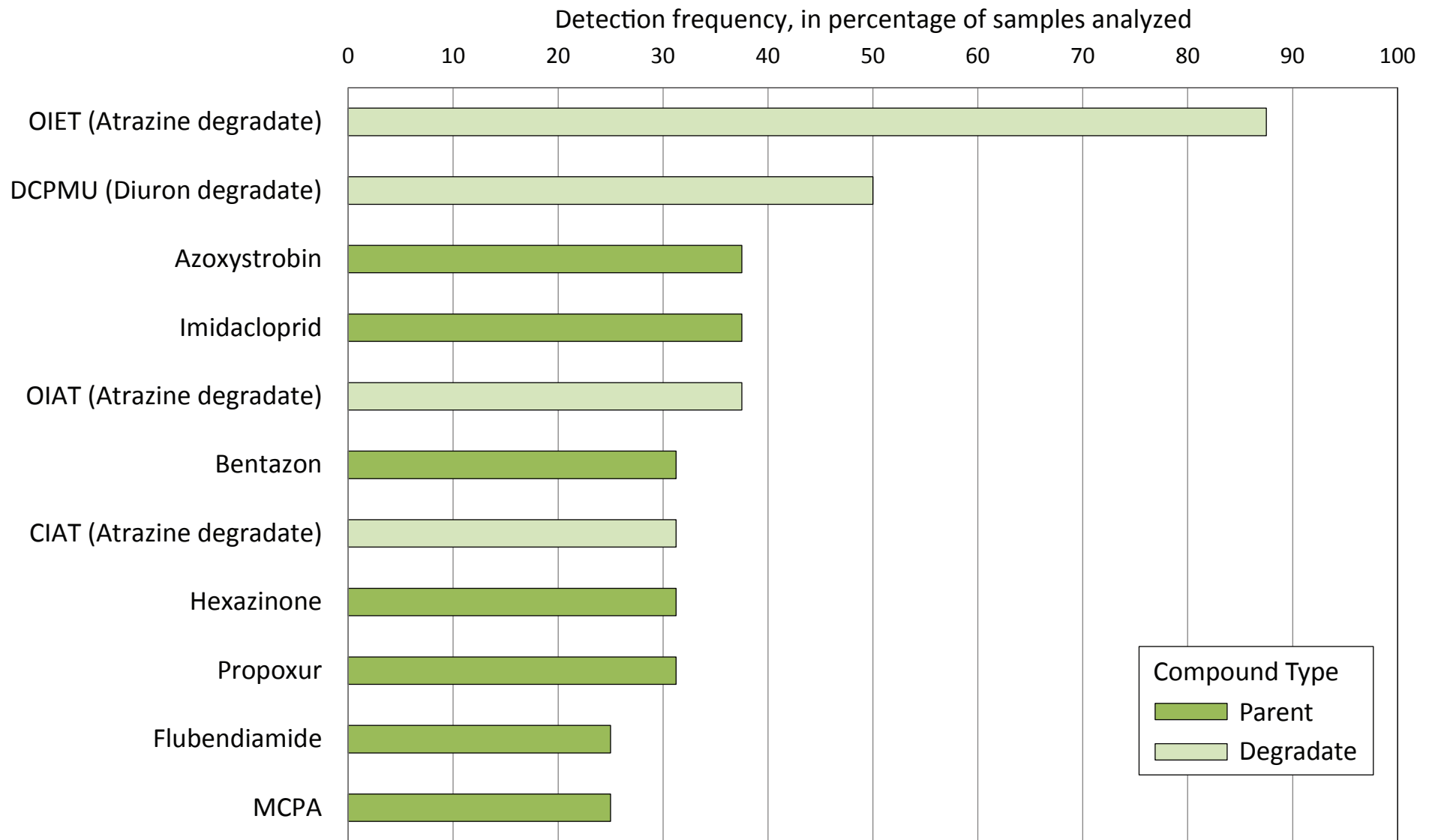


Figure 7. Detection frequencies for the 11 most frequently detected pesticide compounds in 16 water samples collected at sites classified as having agricultural land use on Kaua'i and O'ahu, Hawai'i, between November 2016 and April 2017.

Most frequently detected pesticide compounds in 5 samples collected at developed sites

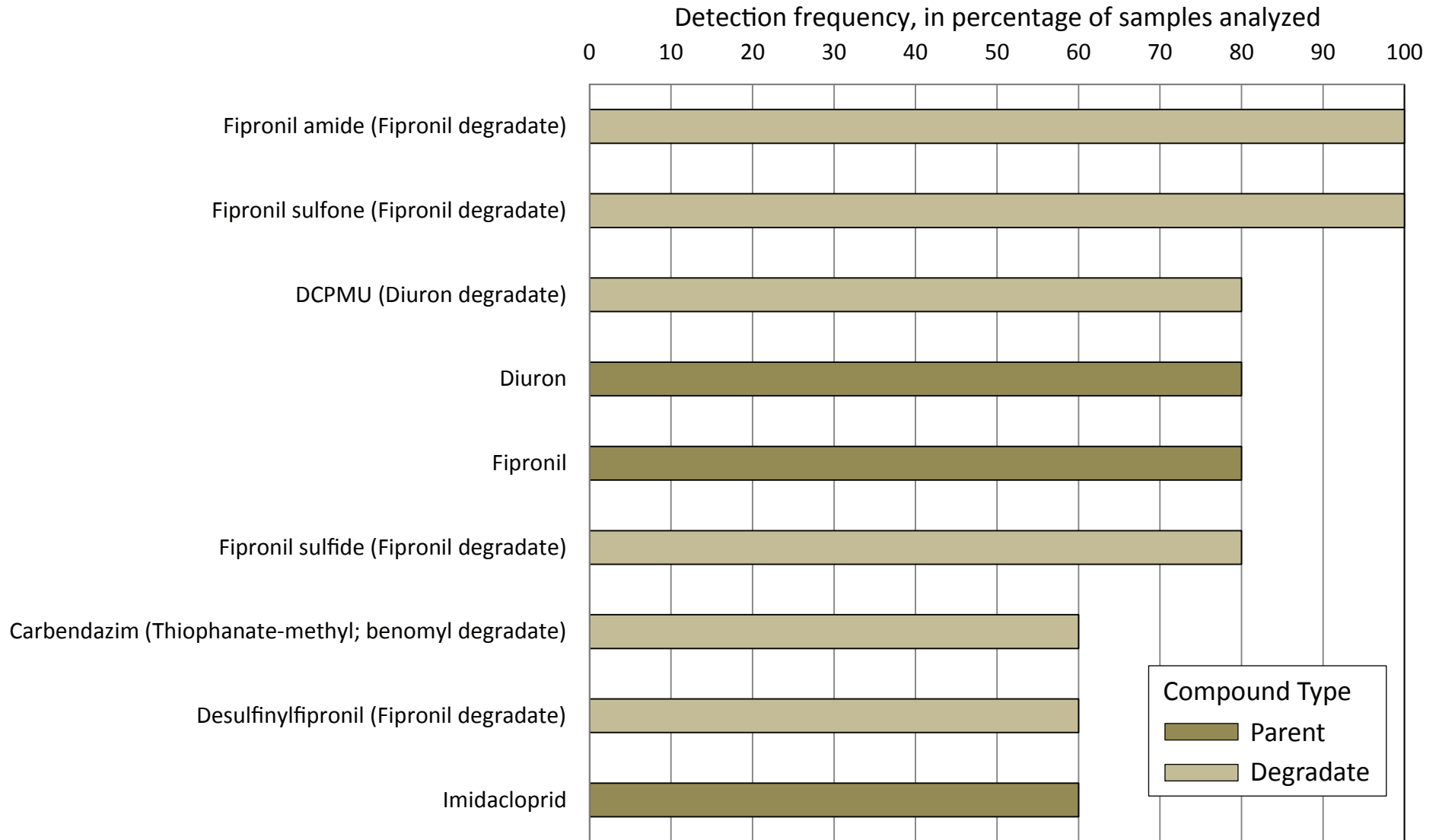


Figure 8. Detection frequencies for the 9 most frequently detected pesticide compounds in 5 water samples collected at sites classified as having developed land use on O'ahu, Hawai'i, between November 2016 and April 2017. None of the samples sites on Kaua'i were classified as having developed land use during this time period.

Most frequently detected pesticide compounds in 11 samples collected at mixed sites

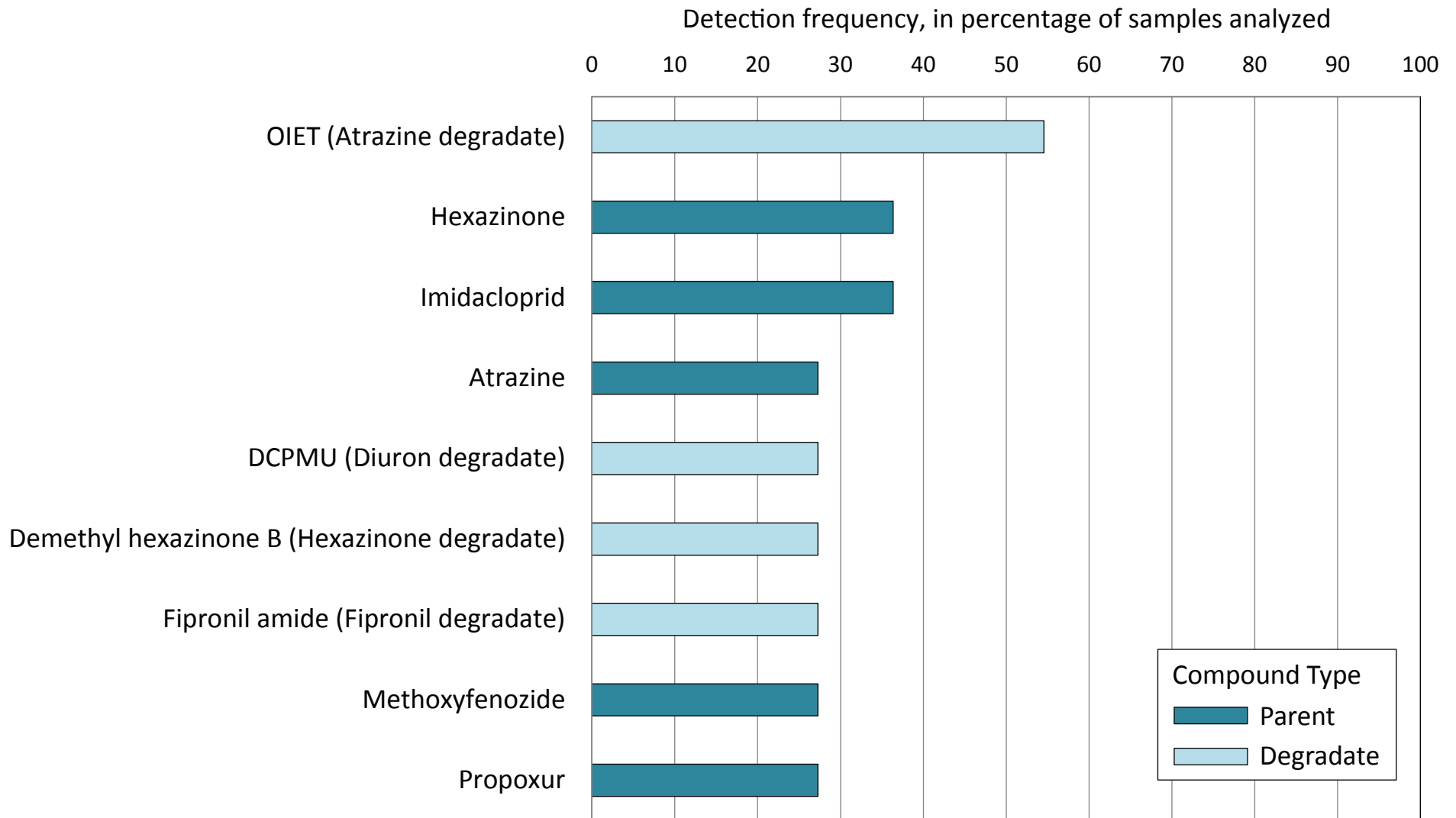


Figure 9. Detection frequencies for the 9 most frequently detected pesticide compounds in 11 water samples collected at sites classified as having mixed land use on Kaua'i and O'ahu, Hawai'i, between November 2016 and April 2017.

Table 2. Water-quality standards, criteria, and benchmarks considered for comparisons with pesticide compounds detected in discrete surface-water samples collected on Kaua'i and O'ahu, Hawai'i, November 2016–April 2017.

[Low-flow samples were collected during dry-weather conditions, whereas high-flow samples were collected during and shortly after substantial rainfall; USEPA, U.S. Environmental Protection Agency; ALC, aquatic-life criteria; MCL, maximum contaminant level; USGS, U.S. Geological Survey; HHBP, Human-Health Benchmarks for Pesticides; HBSL; Health-Based Screening Levels; ALB, aquatic-life benchmarks, which are concentrations below which pesticide compounds are not expected to harm aquatic life]

Name of standards, criteria, or benchmarks	Explanation	Considered for comparisons with results for low-flow samples?	Considered for comparisons with results for high-flow samples?
Hawai'i water-quality standards for acute toxicity in freshwater	State of Hawai'i (2014) water-quality standards for acute toxicity in freshwater. For some pesticide compounds, the Hawai'i water-quality standards for acute toxicity in freshwater are the same as USEPA acute freshwater ALC values.	Yes	Yes
Hawai'i water-quality standards for chronic toxicity in freshwater	State of Hawai'i (2014) water-quality standards for chronic toxicity in freshwater. For some pesticide compounds, the Hawai'i water-quality standards for chronic toxicity in freshwater are same as USEPA chronic freshwater ALC values.	Yes	No
USEPA acute freshwater ALC	USEPA acute aquatic-life criteria for freshwater, obtained from https://www.epa.gov/wqc/national-recommended-water-quality-criteria-aquatic-life-criteria-table .	Yes	Yes
USEPA chronic freshwater ALC	USEPA chronic aquatic-life criteria for freshwater, obtained from https://www.epa.gov/wqc/national-recommended-water-quality-criteria-aquatic-life-criteria-table .	Yes	No
USEPA MCL	Maximum contaminant levels in drinking water, obtained from USEPA (2012). Each MCL represents the highest level of a contaminant that is allowed in drinking water.	Yes	Yes
USEPA acute, noncancer HHBP	Human-health benchmarks protective of acute, noncancer effects, and obtained from USEPA (2017a).	Yes	Yes
USEPA chronic, noncancer HHBP	Human-health benchmarks protective of chronic, noncancer effects, and obtained from USEPA (2017a).	Yes	No
USEPA cancer HHBP	Human-health benchmarks protective of cancer effects, and obtained from USEPA (2017a). The HHBP of each pesticide compound was presented as range of concentrations that represents a one-in-one million to one-in-ten thousand cancer-risk range. The most conservative cancer-risk value in each range was selected for the comparisons with concentrations of pesticide compounds in water samples.	Yes	Yes
USGS cancer HBSL	Human-health benchmarks protective of cancer effects, obtained from Tocallino and others (2014). The HBSL of each pesticide compound was presented as range of concentrations that represents a one-in-one million to one-in-ten thousand cancer-risk range. The most conservative cancer-risk value in each range was selected for the comparisons with concentrations of pesticide compounds in water samples.	Yes	Yes
USGS noncancer HBSL	Human-health benchmarks protective of chronic, noncancer effects, and obtained from Tocallino and others (2014).	Yes	No
USEPA acute fish ALB	Acute aquatic-life benchmarks for fish, obtained from USEPA (2017b).	Yes	Yes
USEPA chronic fish ALB	Chronic aquatic-life benchmarks for fish, obtained from USEPA (2017b).	Yes	No
USEPA acute invertebrate ALB	Acute aquatic-life benchmarks for invertebrates, obtained from USEPA (2017b).	Yes	Yes
USEPA chronic invertebrate ALB	Chronic aquatic-life benchmarks for invertebrates, obtained from USEPA (2017b).	Yes	No
USEPA acute, nonvascular plants ALB	Acute aquatic-life benchmarks for nonvascular plants, obtained from USEPA (2017b).	Yes	Yes
USEPA acute, vascular plants ALB	Acute aquatic-life benchmarks for vascular plants, obtained from USEPA (2017b).	Yes	Yes

Table 3. Comparison of State of Hawai‘i water-quality standards for acute toxicity in freshwater and U.S. Environmental Protection Agency acute freshwater aquatic-life criteria for selected pesticide compounds with the highest concentrations of these pesticide compounds in 14 discrete surface-water samples collected during high-flow conditions, after substantial rainfall, at 13 sites on O‘ahu, Hawai‘i, November 2016–April 2017.

[As of March 2018, Hawai‘i water-quality standards for acute toxicity in freshwater were available for one of the pesticide compounds analyzed in the samples (see State of Hawai‘i, 2014), and acute freshwater aquatic-life criteria established by the U.S. Environmental Protection Agency (USEPA) were available for three of the pesticide compounds analyzed in the samples (see <https://www.epa.gov/wqc/national-recommended-water-quality-criteria-aquatic-life-criteria-table>); ng/L, nanograms per liter, approximately equivalent to parts per trillion; E, estimated]

Pesticide compound	Description	Number of sites where pesticide compound was detected in high-flow samples	Highest concentration in high-flow samples (ng/L)	Name of standard or criteria	Value of acute freshwater aquatic-life criteria (ng/L)	Number of sites where concentrations in high-flow samples exceeded standard or criteria	Ratio of highest concentration in samples to standard or criteria
Chlorpyrifos	Insecticide	2	23.3	Hawai‘i water-quality standard for acute toxicity in freshwater	83 ^a	0	0.281
Diazinon	Insecticide	3	E 3.19	USEPA acute freshwater aquatic-life criteria	170	0	0.019
Carbaryl	Insecticide	5	E 16.9	USEPA acute freshwater aquatic-life criteria	2,100	0	0.008

^a The State of Hawai‘i (2014) water-quality standard for acute toxicity of chlorpyrifos in freshwater is the same as the U.S. Environmental Protection Agency acute freshwater aquatic-life criteria for chlorpyrifos.

Table 4. Comparison of U.S. Environmental Protection Agency maximum contaminant levels of selected pesticides in drinking water with the highest concentrations of these pesticides in 32 discrete surface-water samples collected at 31 sites on Kaua'i and O'ahu, Hawai'i, November 2016–April 2017.

[Maximum contaminant level (MCL) in drinking water, established by the U.S. Environmental Protection Agency (2012), were available for six of the pesticide compounds analyzed in the samples; ng/L, nanograms per liter, approximately equivalent to parts per trillion]

Pesticide compound	Description	Number of sites where pesticide compound was detected in samples	Highest concentration in samples (ng/L)	Value of MCL (ng/L)	Number of sites where concentrations in samples exceeded MCL	Ratio of highest concentration in samples to MCL
Simazine	Herbicide	2	3,340	4,000	0	0.835
Alachlor	Herbicide	2	1,140	2,000	0	0.570
2,4-D	Herbicide	3	208	70,000	0	0.003
Atrazine	Herbicide	3	9.73	3,000	0	0.003
Carbofuran	Insecticide	0	Not detected	40,000	0	Not detected
Oxamyl	Insecticide	0	Not detected	200,000	0	Not detected

Table 5. Summary of the highest concentrations of pesticide compounds detected in 18 discrete surface-water samples collected during dry-weather, low-flow conditions at 18 sites on Kaua'i and O'ahu, Hawai'i, November 2016–April 2017, relative to human-health benchmarks established by the U.S. Environmental Protection Agency (USEPA) and U.S. Geological Survey (USGS).

[Human-health benchmarks considered for low-flow samples were three types (acute noncancer, chronic noncancer, and cancer) of Human-Health Benchmarks for Pesticides (HHBP) in drinking water established by USEPA (2017a), and two types (cancer and noncancer) USGS Health-Based Screening Levels (HBSL) established by Tocallino and others (2014); ng/L, nanograms per liter, approximately equivalent to parts per trillion; E, estimated; V, detected in field blank; <, less than]

Pesticide compound	Description	Number of sites where pesticide compound was detected in low-flow samples	Highest concentration in low-flow samples (ng/L)	Name of lowest human-health benchmark considered	Value of lowest human-health benchmark considered (ng/L)	Number of sites where concentrations in low-flow samples exceeded lowest human-health benchmark	Ratio of highest concentration in low-flow samples to lowest human-health benchmark
MCPA	Herbicide	4	E 647	USGS noncancer HBSL	30,000	0	0.022
OIET	Degradate of atrazine, a herbicide	14	E 797	USEPA chronic, noncancer HHBP	60,000	0	0.013
Diuron	Herbicide	2	11.5	USGS cancer HBSL	2,000	0	0.006
Carbendazim	Degradate of thiophanate-methyl and benomyl, two fungicides	1	E 10.4	USEPA cancer HHBP	13,400	0	< 0.001
Bentazon	Herbicide	2	61.6	USGS noncancer HBSL	200,000	0	< 0.001
Hexazinone	Herbicide	6	67.6	USGS noncancer HBSL	400,000	0	< 0.001
Bromacil	Herbicide	2	76.7	USGS noncancer HBSL	700,000	0	< 0.001
Imidacloprid	Insecticide	3	13.9	USEPA chronic, noncancer HHBP	360,000	0	< 0.001
Metalaxyl	Fungicide	1	8.59	USEPA chronic, noncancer HHBP	474,000	0	< 0.001
Ametryn	Herbicide	2	8.81	USGS noncancer HBSL	500,000	0	< 0.001
Methoxyfenozide	Insecticide	1	9.22	USEPA chronic, noncancer HHBP	600,000	0	< 0.001
Prometon	Herbicide	1	1.36	USGS noncancer HBSL	400,000	0	< 0.001
Azoxystrobin	Fungicide	2	2.00	USEPA chronic, noncancer HHBP	1,200,000	0	< 0.001
4-Hydroxychlorothalonil	Degradate of chlorothalonil, a fungicide	1	E 1,000	Not available	Not available	Cannot determine	Cannot determine
Atrazine	Herbicide	3	9.73	Not available	Not available	Cannot determine	Cannot determine
CIAT	Degradate of atrazine, a herbicide	5	E 20.5	Not available	Not available	Cannot determine	Cannot determine
DCPMU	Degradate of diuron, a herbicide	8	4.69	Not available	Not available	Cannot determine	Cannot determine
Deisopropyl prometryn	Degradate of prometryn, a herbicide	2	E 2.83	Not available	Not available	Cannot determine	Cannot determine
Demethyl hexazinone B	Degradate of hexazinone, a herbicide	4	E 25.7	Not available	Not available	Cannot determine	Cannot determine
Fipronil amide	Degradate of fipronil, an insecticide	4	32.4	Not available	Not available	Cannot determine	Cannot determine
Fipronil sulfide	Degradate of fipronil, an insecticide	1	2.43	Not available	Not available	Cannot determine	Cannot determine
Fipronil sulfone	Degradate of fipronil, an insecticide	1	3.71	Not available	Not available	Cannot determine	Cannot determine
Hydroxysimazine	Degradate of simazine, a herbicide	2	E 27.7	Not available	Not available	Cannot determine	Cannot determine
OIAT	Degradate of atrazine, a herbicide	4	9.00	Not available	Not available	Cannot determine	Cannot determine
Propoxur	Insecticide	4	V 2.58	Not available	Not available	Cannot determine	Cannot determine

Table 6. Summary of the highest concentrations of pesticide compounds detected in 18 discrete surface-water samples collected during dry-weather, low-flow conditions at 18 sites on Kaua‘i and O‘ahu, Hawai‘i, November 2016–April 2017, relative to aquatic-life benchmarks established by the U.S. Environmental Protection Agency (USEPA).

[Aquatic-life benchmarks considered for low-flow samples were six types (acute fish, chronic fish, acute invertebrate, chronic invertebrate, acute nonvascular plants, and acute vascular plants) established by the USEPA (2017b); ng/L, nanograms per liter, approximately equivalent to parts per trillion; E, estimated; V, detected in field blank; <, less than; >, greater than]

Pesticide compound	Description	Number of sites where pesticide compound was detected in low-flow samples	Highest concentration in low-flow samples (ng/L)	Name of lowest aquatic-life benchmark considered	Value of lowest aquatic-life benchmark considered (ng/L)	Number of sites where concentrations in low-flow samples exceeded lowest aquatic-life benchmark	Ratio of highest concentration in low-flow samples to lowest aquatic-life benchmark
Imidacloprid	Insecticide	3	13.9	USEPA chronic invertebrate	10	2	1.39
Fipronil sulfone	Degradate of fipronil, an insecticide	1	3.71	USEPA chronic invertebrate	37	0	0.100
Bromacil	Herbicide	2	76.7	USEPA acute nonvascular plants	6,800	0	0.011
Carbendazim	Degradate of thiophanate-methyl and benomyl, two fungicides	1	E 10.4	USEPA chronic fish	900	0	0.010
Atrazine	Herbicide	3	9.73	USEPA acute nonvascular plants	< 1,000	0	0.010
Hexazinone	Herbicide	6	67.6	USEPA acute nonvascular plants	7,000	0	0.010
Diuron	Herbicide	2	11.5	USEPA acute nonvascular plants	2,400	0	0.005
MCPA	Herbicide	4	E 647	USEPA acute vascular plants	170,000	0	0.004
Ametryn	Herbicide	2	8.81	USEPA acute nonvascular plants	3,670	0	0.002
Methoxyfenozide	Insecticide	1	9.22	USEPA chronic invertebrate	6,300	0	0.001
OIET	Degradate of atrazine, a herbicide	14	E 797	USEPA acute fish	> 1,500,000	0	< 0.001
Propoxur	Insecticide	4	V 2.58	USEPA acute invertebrate	5,500	0	< 0.001
Metalaxyl	Fungicide	1	8.59	USEPA chronic invertebrate	100,000	0	< 0.001
Azoxystrobin	Fungicide	2	2.00	USEPA chronic invertebrate	44,000	0	< 0.001
CIAT	Degradate of atrazine, a herbicide	5	E 20.5	USEPA acute nonvascular plants	1,000,000	0	< 0.001
Prometon	Herbicide	1	1.36	USEPA acute nonvascular plants	98,000	0	< 0.001
Bentazon	Herbicide	2	61.6	USEPA acute nonvascular plants	4,500,000	0	< 0.001
4-Hydroxychlorothalonil	Degradate of chlorothalonil, a fungicide	1	E 1,000	Not available	Not available	Cannot determine	Cannot determine
DCPMU	Degradate of diuron, a herbicide	8	4.69	Not available	Not available	Cannot determine	Cannot determine
Deisopropyl prometryn	Degradate of prometryn, a herbicide	2	E 2.83	Not available	Not available	Cannot determine	Cannot determine
Demethyl hexazinone B	Degradate of hexazinone, a herbicide	4	E 25.7	Not available	Not available	Cannot determine	Cannot determine
Fipronil amide	Degradate of fipronil, an insecticide	4	32.4	Not available	Not available	Cannot determine	Cannot determine
Fipronil sulfide	Degradate of fipronil, an insecticide	1	2.43	Not available	Not available	Cannot determine	Cannot determine
Hydroxysimazine	Degradate of simazine, a herbicide	2	E 27.7	Not available	Not available	Cannot determine	Cannot determine
OIAT	Degradate of atrazine, a herbicide	4	9.00	Not available	Not available	Cannot determine	Cannot determine

Table 7. Summary of the highest concentrations of pesticide compounds detected in 14 discrete surface-water samples collected during high-flow conditions, after substantial rainfall, at 13 sites on O'ahu, Hawai'i, November 2016–April 2017, relative to human-health benchmarks established by the U.S. Environmental Protection Agency (USEPA) and U.S. Geological Survey (USGS).

[Human-health benchmarks considered for high-flow samples were two types (acute noncancer and cancer) of Human-Health Benchmarks for Pesticides (HHBP) in drinking water established by USEPA (2017a) and one type (cancer) of USGS Health-Based Screening Levels (HBSL) established by Tocallino and others (2014); ng/L, nanograms per liter, approximately equivalent to parts per trillion; E, estimated; <, less than]

Pesticide compound	Description	Number of sites where pesticide compound was detected in high-flow samples	Highest concentration in high-flow samples (ng/L)	Name of lowest human-health benchmark considered	Value of lowest human-health benchmark (ng/L)	Number of sites where concentrations in high-flow samples exceeded lowest human-health benchmark	Ratio of highest concentration in high-flow samples to lowest human-health benchmark
Diuron	Herbicide	4	87.5	USGS cancer HBSL	2,000	0	0.044
Imidacloprid	Insecticide	9	4,940	USEPA acute, noncancer HHBP	930,000	0	0.005
Carbendazim	Degradate of thiophanate-methyl and benomyl, two fungicides	4	E 27.2	USEPA cancer HHBP	13,400	0	0.002
Triclopyr	Herbicide	3	1,070	USEPA acute, noncancer HHBP	1,000,000	0	0.001
Carbaryl	Insecticide	5	16.9	USGS cancer HBSL	40,000	0	< 0.001
Fipronil	Insecticide	7	55.1	USEPA acute, noncancer HHBP	170,000	0	< 0.001
Dimethoate	Insecticide	4	27.6	USEPA acute, noncancer HHBP	87,000	0	< 0.001
Propiconazole	Fungicide	3	222	USEPA acute, noncancer HHBP	2,000,000	0	< 0.001
Azoxystrobin	Fungicide	6	350	USEPA acute, noncancer HHBP	4,500,000	0	< 0.001
Flubendiamide	Insecticide	3	413	USEPA acute, noncancer HHBP	6,630,000	0	< 0.001
Acetochlor	Herbicide	2	560	USEPA acute, noncancer HHBP	10,000,000	0	< 0.001
Bifenthrin	Insecticide	1	E 1.57	USEPA acute, noncancer HHBP	70,000	0	< 0.001
Pendimethalin	Herbicide	2	34.1	USEPA acute, noncancer HHBP	7,000,000	0	< 0.001
Piperonyl butoxide	Insecticide	2	137	USEPA acute, noncancer HHBP	42,000,000	0	< 0.001
Pyraclostrobin	Fungicide	1	1.49	USEPA acute, noncancer HHBP	1,000,000	0	< 0.001
Myclobutanil	Fungicide	1	9.82	USEPA acute, noncancer HHBP	20,000,000	0	< 0.001
Dimethenamid	Herbicide	1	2.87	USEPA acute, noncancer HHBP	10,000,000	0	< 0.001
2,4-D	Herbicide	3	208	Not available	Not available	Cannot determine	Cannot determine
2-i-Pr-6-Me-4-pyrimidinol	Degradate of diazinon, an insecticide	1	6.1	Not available	Not available	Cannot determine	Cannot determine
4-Hydroxychlorothalonil	Degradate of chlorothalonil, a fungicide	4	E 2,190	Not available	Not available	Cannot determine	Cannot determine
Acetochlor 2nd amide	Degradate of acetochlor and metolachlor, two herbicides	2	14.0	Not available	Not available	Cannot determine	Cannot determine
Acetochlor OA	Degradate of acetochlor, a herbicide	2	E 237	Not available	Not available	Cannot determine	Cannot determine
Alachlor	Herbicide	2	1,140	Not available	Not available	Cannot determine	Cannot determine
Alachlor 2nd amide	Degradate of acetochlor, a herbicide	1	12.1	Not available	Not available	Cannot determine	Cannot determine
Ametryn	Herbicide	1	4.01	Not available	Not available	Cannot determine	Cannot determine
Bentazon	Herbicide	3	80.3	Not available	Not available	Cannot determine	Cannot determine
CEAT	Degradate of atrazine, a herbicide	2	62.4	Not available	Not available	Cannot determine	Cannot determine
Chlorpyrifos	Insecticide	2	23.3	Not available	Not available	Cannot determine	Cannot determine
CIAT	Degradate of atrazine, a herbicide	2	4.59	Not available	Not available	Cannot determine	Cannot determine
DCPMU	Degradate of diuron, a herbicide	6	26.3	Not available	Not available	Cannot determine	Cannot determine
Dechlorometolachlor	Degradate of metolachlor, a herbicide	2	3.64	Not available	Not available	Cannot determine	Cannot determine
Deisopropyl prometryn	Degradate of prometryn, a herbicide	1	2.86	Not available	Not available	Cannot determine	Cannot determine
Demethyl hexazinone B	Degradate of hexazinone, a herbicide	1	13.1	Not available	Not available	Cannot determine	Cannot determine

Table 7. Summary of the highest concentrations of pesticide compounds detected in 14 discrete surface-water samples collected during high-flow conditions, after substantial rainfall, at 13 sites on O‘ahu, Hawai‘i, November 2016–April 2017, relative to human-health benchmarks established by the U.S. Environmental Protection Agency (USEPA) and U.S. Geological Survey (USGS).—Continued.

[Human-health benchmarks considered for high-flow samples were two types (acute noncancer and cancer) of Human-Health Benchmarks for Pesticides (HHBP) in drinking water established by USEPA (2017a) and one type (cancer) of USGS Health-Based Screening Levels (HBSL) established by Tocallino and others (2014); ng/L, nanograms per liter, approximately equivalent to parts per trillion; E, estimated; <, less than]

Pesticide compound	Description	Number of sites where pesticide compound was detected in high-flow samples	Highest concentration in high-flow samples (ng/L)	Name of lowest human-health benchmark considered	Value of lowest human-health benchmark (ng/L)	Number of sites where concentrations in high-flow samples exceeded lowest human-health benchmark	Ratio of highest concentration in high-flow samples to lowest human-health benchmark
Desamino metribuzin	Degradate of metribuzin, a herbicide	1	E 13.2	Not available	Not available	Cannot determine	Cannot determine
Desulfinylfipronil	Degradate of fipronil, an insecticide	4	8.20	Not available	Not available	Cannot determine	Cannot determine
Diazinon	Insecticide	3	E 3.19	Not available	Not available	Cannot determine	Cannot determine
Dicamba	Herbicide	1	E 1,220	Not available	Not available	Cannot determine	Cannot determine
Ettoxazole	Insecticide	1	E 2.48	Not available	Not available	Cannot determine	Cannot determine
Fipronil amide	Degradate of fipronil, an insecticide	4	26.2	Not available	Not available	Cannot determine	Cannot determine
Fipronil sulfide	Degradate of fipronil, an insecticide	4	2.49	Not available	Not available	Cannot determine	Cannot determine
Fipronil sulfone	Degradate of fipronil, an insecticide	5	11.4	Not available	Not available	Cannot determine	Cannot determine
Hexazinone	Herbicide	3	8.31	Not available	Not available	Cannot determine	Cannot determine
Hydroxyacetochlor	Degradate of acetochlor, a herbicide	1	49.0	Not available	Not available	Cannot determine	Cannot determine
Hydroxyalachlor	Degradate ofalachlor, a herbicide	3	51.8	Not available	Not available	Cannot determine	Cannot determine
Hydroxymetolachlor	Degradate of metolachlor, a herbicide	2	16.9	Not available	Not available	Cannot determine	Cannot determine
Hydroxysimazine	Degradate of simazine, a herbicide	2	E 105	Not available	Not available	Cannot determine	Cannot determine
Imazaquin	Herbicide	1	165	Not available	Not available	Cannot determine	Cannot determine
Malathion	Insecticide	4	40.8	Not available	Not available	Cannot determine	Cannot determine
Metaxyl	Fungicide	2	E 34.4	Not available	Not available	Cannot determine	Cannot determine
Methomyl	Insecticide	2	27.5	Not available	Not available	Cannot determine	Cannot determine
Methoxyfenozide	Insecticide	4	508	Not available	Not available	Cannot determine	Cannot determine
Metolachlor	Herbicide	2	369	Not available	Not available	Cannot determine	Cannot determine
Metolachlor SA	Degradate of metolachlor, a herbicide	1	64.9	Not available	Not available	Cannot determine	Cannot determine
OIAT	Degradate of atrazine, a herbicide	2	13.6	Not available	Not available	Cannot determine	Cannot determine
OIET	Degradate of atrazine, a herbicide	6	201	Not available	Not available	Cannot determine	Cannot determine
Propoxur	Insecticide	5	3.91	Not available	Not available	Cannot determine	Cannot determine
Simazine	Herbicide	2	3,340	Not available	Not available	Cannot determine	Cannot determine

Table 8. Summary of the highest concentrations of pesticide compounds detected in 14 discrete surface-water samples collected during high-flow conditions, after substantial rainfall, at 13 sites on O‘ahu, Hawai‘i, November 2016–April 2017, relative to aquatic-life benchmarks established by the U.S. Environmental Protection Agency (USEPA).

[Aquatic-life benchmarks considered for high-flow samples were four types (acute fish, acute invertebrate, acute nonvascular plants, and acute vascular plants) established by the USEPA (2017b); ng/L, nanograms per liter, approximately equivalent to parts per trillion; E, estimated; V, detected in field blank; <, less than]

Pesticide compound	Description	Number of sites where pesticide compound was detected in high-flow samples	Highest concentration in high-flow samples (ng/L)	Name of lowest aquatic-life benchmark considered	Value of lowest aquatic-life benchmark considered (ng/L)	Number of sites where concentrations in high-flow samples exceeded lowest aquatic-life benchmark	Ratio of highest concentration in high-flow samples to lowest aquatic-life benchmark
Imidacloprid	Insecticide	9	4,940	USEPA acute invertebrate	385	1	12.8
Flubendiamide	Insecticide	3	413	USEPA acute invertebrate	140	2	2.95
Simazine	Herbicide	2	3,340	USEPA acute nonvascular plants	2,240	1	1.491
Malathion	Insecticide	4	40.8	USEPA acute invertebrate	49	0	0.833
Alachlor	Herbicide	2	1,140	USEPA acute nonvascular plants	1,640	0	0.695
Fipronil	Insecticide	7	55.1	USEPA acute invertebrate	110	0	0.501
Chlorpyrifos	Insecticide	2	23.3	USEPA acute invertebrate	50	0	0.466
Acetochlor	Herbicide	2	560	USEPA acute nonvascular plants	1,430	0	0.392
Diuron	Herbicide	4	87.5	USEPA acute nonvascular plants	2,400	0	0.036
Fipronil sulfone	Degradate of fipronil, an insecticide	5	11.4	USEPA acute invertebrate	360	0	0.032
Diazinon	Insecticide	3	E 3.19	USEPA acute invertebrate	105	0	0.030
Bifenthrin	Insecticide	1	E 1.57	USEPA acute fish	75	0	0.021
Methoxyfenozide	Insecticide	4	508	USEPA acute invertebrate	25,000	0	0.020
Dicamba	Herbicide	1	E 1,220	USEPA acute nonvascular plants	61,000	0	0.020
Carbaryl	Insecticide	5	16.9	USEPA acute invertebrate	850	0	0.020
Metolachlor	Herbicide	2	369	USEPA acute vascular plants	21,000	0	0.018
Methomyl	Insecticide	2	27.5	USEPA acute invertebrate	2,500	0	0.011
Propiconazole	Fungicide	3	222	USEPA acute nonvascular plants	21,000	0	0.011
Azoxystrobin	Fungicide	6	350	USEPA acute nonvascular plants	49,000	0	0.007
Pendimethalin	Herbicide	2	34.1	USEPA acute nonvascular plants	5,200	0	0.007
Carbendazim	Degradate of thiophanate-methyl and benomyl, two fungicides	4	E 27.2	USEPA acute fish	5,000	0	0.005
Dimethoate	Insecticide	4	27.6	USEPA acute invertebrate	21,500	0	0.001
Hexazinone	Herbicide	3	8.31	USEPA acute nonvascular plants	7,000	0	0.001
Ametryn	Herbicide	1	4.01	USEPA acute nonvascular plants	3,670	0	0.001
Pyraclostrobin	Fungicide	1	1.49	USEPA acute nonvascular plants	1,500	0	< 0.001
Desulfinylfipronil	Degradate of fipronil, an insecticide	4	8.20	USEPA acute fish	10,000	0	< 0.001
Propoxur	Insecticide	5	3.91	USEPA acute invertebrate	5,550	0	< 0.001
2,4-D	Herbicide	3	208	USEPA acute vascular plants	299,200	0	< 0.001
Etoxazole	Insecticide	1	E 2.48	USEPA acute invertebrate	3,650	0	< 0.001
Piperonyl butoxide	Insecticide	2	137	USEPA acute invertebrate	255,000	0	< 0.001
Dimethenamid	Herbicide	1	2.87	USEPA acute vascular plants	8,900	0	< 0.001
OIET	Degradate of atrazine, a herbicide	6	201	USEPA acute fish	> 1,500,000	0	< 0.001
Triclopyr	Herbicide	3	1,070	USEPA acute nonvascular plants	32,500,000	0	< 0.001

Table 8. Summary of the highest concentrations of pesticide compounds detected in 14 discrete surface-water samples collected during high-flow conditions, after substantial rainfall, at 13 sites on O‘ahu, Hawai‘i, November 2016–April 2017, relative to aquatic-life benchmarks established by the U.S. Environmental Protection Agency (USEPA).—Continued.

[Aquatic-life benchmarks considered for high-flow samples were four types (acute fish, acute invertebrate, acute nonvascular plants, and acute vascular plants) established by the USEPA (2017b); ng/L, nanograms per liter, approximately equivalent to parts per trillion; E, estimated; V, detected in field blank; <, less than]

Pesticide compound	Description	Number of sites where pesticide compound was detected in high-flow samples	Highest concentration in high-flow samples (ng/L)	Name of lowest aquatic-life benchmark considered	Value of lowest aquatic-life benchmark considered (ng/L)	Number of sites where concentrations in high-flow samples exceeded lowest aquatic-life benchmark	Ratio of highest concentration in high-flow samples to lowest aquatic-life benchmark
CEAT	Degradate of atrazine, a herbicide	2	62.4	USEPA acute nonvascular plants	2,500,000	0	< 0.001
Bentazon	Herbicide	3	80.3	USEPA acute nonvascular plants	4,500,000	0	< 0.001
Myclobutanil	Fungicide	1	9.82	USEPA acute nonvascular plants	830,000	0	< 0.001
CIAT	Degradate of atrazine, a herbicide	2	4.59	USEPA acute nonvascular plants	1,000,000	0	< 0.001
Metolachlor SA	Degradate of metolachlor, a herbicide	1	64.9	USEPA acute fish	24,000,000	0	< 0.001
Metalaxyl	Fungicide	2	E 34.4	USEPA acute invertebrate	14,000,000	0	< 0.001
Imazaquin	Herbicide	1	165	USEPA acute invertebrate	140,000,000	0	< 0.001
2-i-Pr-6-Me-4-pyrimidinol	Degradate of diazinon, an insecticide	1	6.1	Not available	Not available	Cannot determine	Cannot determine
4-Hydroxychlorothalonil	Degradate of chlorothalonil, a fungicide	4	E 2,190	Not available	Not available	Cannot determine	Cannot determine
Acetochlor 2nd amide	Degradate of acetochlor and metolachlor, two herbicides	2	14.0	Not available	Not available	Cannot determine	Cannot determine
Acetochlor OA	Degradate of acetochlor, a herbicide	2	E 237	Not available	Not available	Cannot determine	Cannot determine
Alachlor 2nd amide	Degradate of acetochlor, a herbicide	1	12.1	Not available	Not available	Cannot determine	Cannot determine
DCPMU	Degradate of diuron, a herbicide	6	26.3	Not available	Not available	Cannot determine	Cannot determine
Dechlorometolachlor	Degradate of metolachlor, a herbicide	2	3.64	Not available	Not available	Cannot determine	Cannot determine
Deisopropyl prometryn	Degradate of prometryn, a herbicide	1	2.86	Not available	Not available	Cannot determine	Cannot determine
Demethyl hexazinone B	Degradate of hexazinone, a herbicide	1	13.1	Not available	Not available	Cannot determine	Cannot determine
Desamino metribuzin	Degradate of metribuzin, a herbicide	1	E 13.2	Not available	Not available	Cannot determine	Cannot determine
Fipronil amide	Degradate of fipronil, an insecticide	4	26.2	Not available	Not available	Cannot determine	Cannot determine
Fipronil sulfide	Degradate of fipronil, an insecticide	4	2.49	Not available	Not available	Cannot determine	Cannot determine
Hydroxyacetochlor	Degradate of acetochlor, a herbicide	1	49.0	Not available	Not available	Cannot determine	Cannot determine
Hydroxyalachlor	Degradate of alachlor, a herbicide	3	51.8	Not available	Not available	Cannot determine	Cannot determine
Hydroxymetolachlor	Degradate of metolachlor, a herbicide	2	16.9	Not available	Not available	Cannot determine	Cannot determine
Hydroxysimazine	Degradate of simazine, a herbicide	2	E 105	Not available	Not available	Cannot determine	Cannot determine
OIAT	Degradate of atrazine, a herbicide	2	13.6	Not available	Not available	Cannot determine	Cannot determine

Photographs and gage-height measurements at selected sites where discrete surface-water samples were collected on the Islands of Kaua'i and O'ahu, Hawai'i, November 2016–April 2017



Figure 10. Photograph taken January 9, 2017 at Honouliuli Stream at H-1 Freeway near Waipahu, O'ahu, Hawai'i (site 16212490). Photograph shows USGS stream-gage equipment and location of stage-level sampler used to collect the high-flow sample on February 11, 2017.

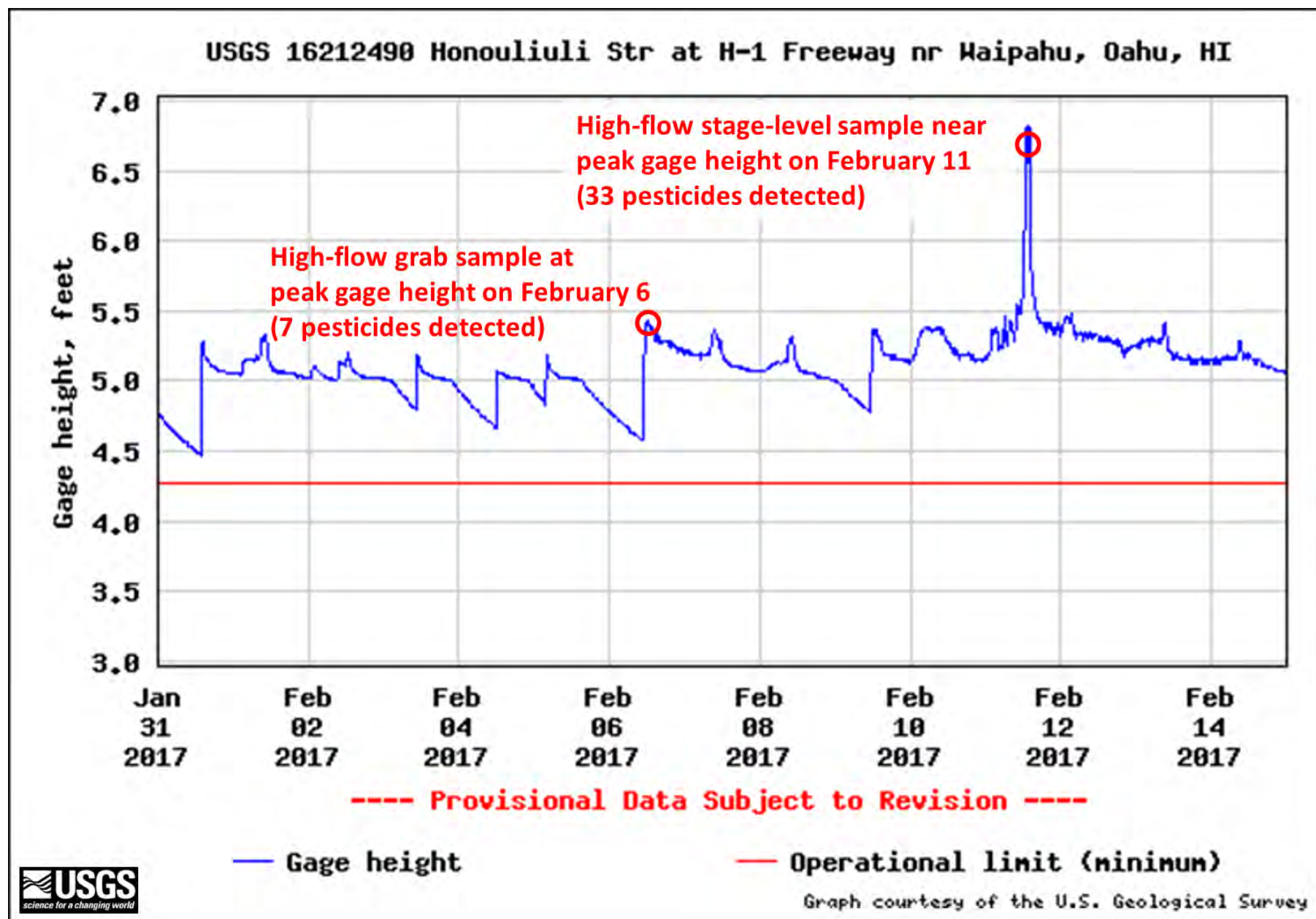


Figure 11. Graph of gage height (stream stage) measured at Honouliuli Stream at H-1 Freeway near Waipahu, O'ahu, Hawai'i (site 16212490) when high-flow samples were collected on February 6 and 11, 2017.



Figure 12. Photographs showing streamflow conditions in Honouliuli Stream at H-1 Freeway near Waipahu, O'ahu, Hawai'i (site 16212490) when high-flow samples were collected on February 6, 2017 (left) and February 11, 2017 (right).

Stage-level sampler was submerged in Ditch at Waialua Beach Road on May 1, 2017 after heavy rainfall in the area.

Outlet to ocean was blocked on January 20, 2017 when sampler was deployed and on May 1, 2017 when stage-level sampler was retrieved .

Water was stagnant at time of retrieval.

Submerged stage-level sampler

Towards ocean



Figure 13. Photograph showing conditions and location of stage-level sampler at the Ditch at Waialua Beach Road, Waialua, O'ahu, Hawai'i (site 213452158074801) when a high-flow sample was retrieved on May 1, 2017. The bottle in the sampler was assumed to have filled on April 29, 2017, based on rainfall observations in the area.



Figure 14. Photograph showing stream conditions in Wai'alae Iki Stream at Wai'alae golf course, O'ahu, Hawai'i (site 211628157461701) when a high-flow sample was collected at this site on April 21, 2017.

Sample was collected from Unnamed Ditch 3 on Jan 30, 2017 during calm, dry-weather conditions.

Water flow in the ditch appeared to be nearly zero.



Figure 15. Photograph showing conditions in Unnamed ditch 3 at Lower Saki Mana Road, Kaua'i, Hawai'i (site 20407159460401) when a low-flow sample was collected on January 30, 2017.

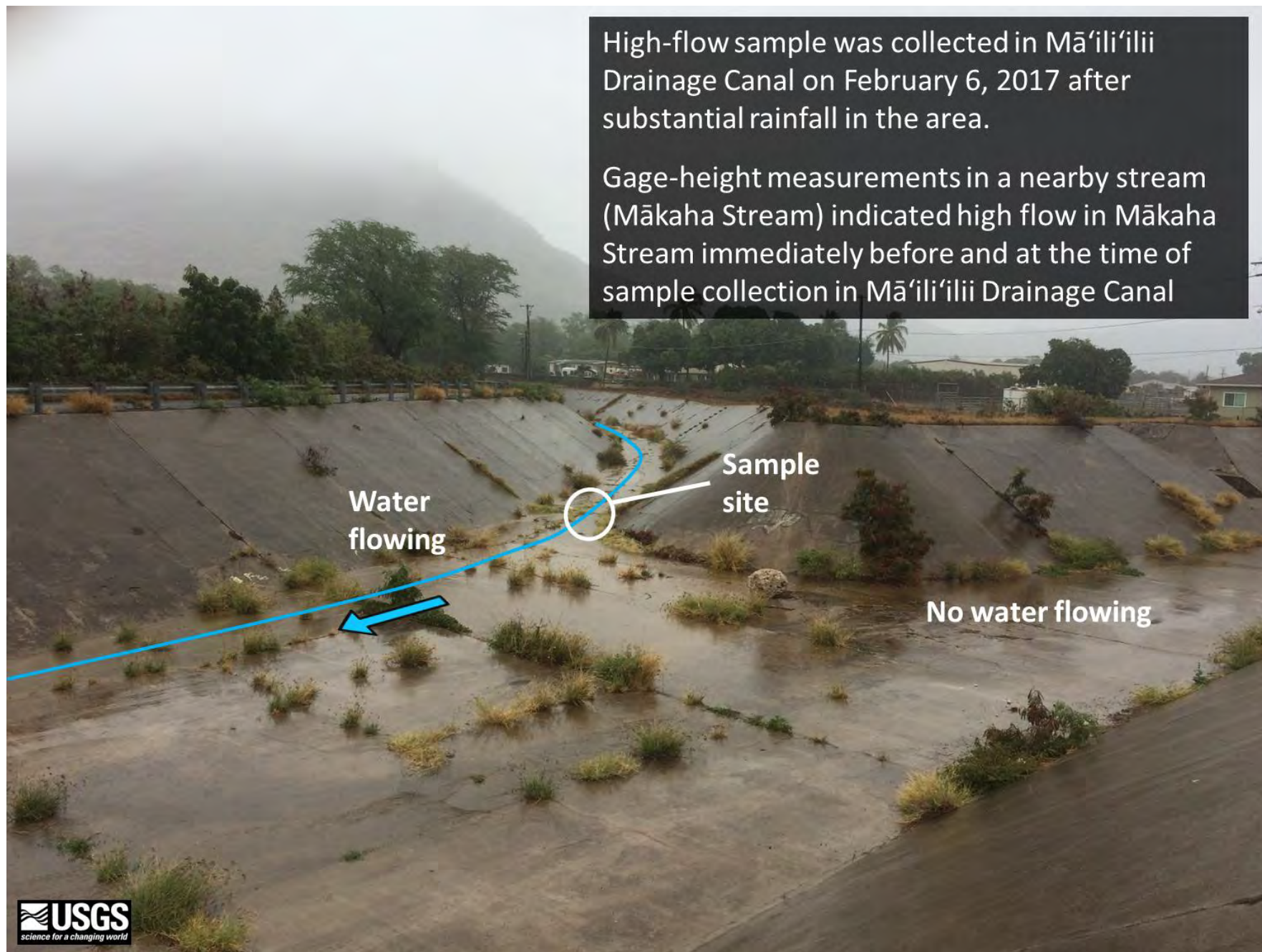


Figure 16. Photograph showing conditions at Mā'ili'ilii Drainage Canal, O'ahu, Hawai'i (site 212613158100101) when a high-flow sample was collected on February 6, 2017.

References cited

- Engott, J.A., 2017, Mean annual water-budget components for the Island of O‘ahu, Hawai‘i, for average climate conditions, 1978-2007 rainfall and 2010 land cover (version 2.0): U.S. Geological Survey data release, <https://doi.org/10.5066/F7XP72ZX>.
- Johnson, A.G., and Bassiouni, Maoya, 2018, Mean annual water-budget components for the Island of Kaua‘i, Hawai‘i, for recent conditions, 1978-2007 rainfall and 2010 land cover (version 2.0): U.S. Geological Survey data release, <https://doi.org/10.5066/F7571931>.
- Melrose, J., Perroy, R., and Cares, S., 2016, Statewide agricultural land use baseline 2015: University of Hawai‘i at Hilo, Spatial data analysis and Visualization Lab, Prepared for Hawai‘i Department of Agriculture. Report available at <http://hdoa.hawaii.gov/salub/> and digital dataset available at <http://planning.hawaii.gov/gis/download-gis-data-expanded/>.
- State of Hawai‘i, 2014, Hawai‘i administrative rules, title 11, Department of Health, chapter 54, water quality standards.
- Toccalino, P.L., Norman, J.E., and Schoephoester, K.M., 2014, Health-based screening levels for evaluating water-quality data, accessed December 2017 at <https://water.usgs.gov/nawqa/HBSL>.
- U.S. Environmental Protection Agency, 2012, 2012 Edition of the drinking water standards and health advisories, EPA 822-S-12-001, updated April 2012; accessed December 8, 2017 at <https://www.epa.gov/sites/production/files/2015-09/documents/dwstandards2012.pdf>.
- U.S. Environmental Protection Agency, 2017a, Human health benchmarks for pesticides, accessed December 8, 2017 at <https://iaspub.epa.gov/apex/pesticides/f?p=109:3:::NO:RP,4::>.
- U.S. Environmental Protection Agency, 2017b, Aquatic life benchmarks and ecological risk assessments for registered pesticides, accessed December 20–22, 2017 at <https://www.epa.gov/pesticide-science-and-assessing-pesticide-risks/aquatic-life-benchmarks-and-ecological-risk#benchmarks>.
- U.S. Geological Survey, 2013, LANDFIRE Existing Vegetation Type (LF 2012): Earth Resources Observation and Science Center, U.S. Geological Survey, accessed July 22, 2016 at https://landfire.cr.usgs.gov/version_comparison.php?mosaic=Y.

STATE OF HAWAII

DEPARTMENT OF HEALTH
NOTICE OF VIOLATION AND ORDER

TO: Maui Asphalt X-IV, LLC P.O. Box 1425 Wailuku, Hawaii 96793 Attention: Mr. Keoni Gomes Owner Respondent	NOVO No. 2021-CW-EO-26 <i>Please write this NOVO number on all correspondence</i> Re: Violation of Hawaii Water Pollution Rules and Regulations Property/Facility: TMK: (4) 1-2-006:009 Kaumualii Highway, Waimea, Hawaii 96796
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The Department of Health (**DOH**) issues this Notice of Violation and Order (**NOVO**) under Hawaii Revised Statutes (**HRS**) Chapters 91 and 342D based on self-disclosure by [you] and DOH's inspection at the Maui Asphalt X-IV facility located at TMK: (4) 1-2-006:009 (**Facility**).

Attached as exhibits are:

- Notice of Apparent Violation, Request for Information (**NAV/RFI**) dated April 22, 2021 (Exhibit A);
- Response to NAV/RFI dated September 3, 2021 (Exhibit B);
- Inspection Report No. KA0484 dated August 12, 2021 (Exhibit C); and
- National Weather Service rainfall data at Waimea Heights rain gauge (Exhibit D).

This case deals only with violations alleged below. The DOH may bring other cases for other violations. This case does not limit cases by any other public agency or private party.

Statutes/Rules

Nature of the Violation

<p>HRS §342D-9, HRS §342D-31, HRS §342D-50(a), HRS §342D-50(d), HAR §11-55-04(a), 40 CFR §122.26(b)(14)(ii)</p>	<p>Maui Asphalt X-IV, Waimea Facility</p> <p>TMK: (4) 1-2-006:009 is an approximately 417-acre parcel owned by the County of Kauai located along Kaumualii Highway in Waimea, on the western side of the Island of Kauai. Maui Asphalt X-IV (Respondent) occupies approximately 4.6 acres of the parcel. Two (2) drainage ditches border the west and east sides of the Facility. A third drainage ditch bisects the Facility. The drainage ditches are part of the Mana Plain Canal System, a Class 2 inland State water.</p> <p>The DOH-Clean Water Branch (CWB) received complaints that the Facility was discharging pollutants to State waters without a National Pollutant Discharge Elimination System (NPDES) permit. On April 22, 2021, the DOH issued a Notice of Apparent Violation/Request for Information (Exhibit A) to Respondent to determine what activities were occurring at the Facility.</p> <p>The response (Exhibit B) received by the DOH indicated that Respondent owns and operates an asphalt paving mixture and block manufacturing facility that has produced hot and cold mix asphalt concrete since June 2015, without having applied for NPDES permit coverage as required by Hawaii Administrative Rules (HAR) §11-55-04(a).</p> <p>On August 12, 2021, CWB inspected the Facility and determined that the industrial activities occurring at the Facility are consistent with Standard Industrial Classification 2951- Asphalt Paving Mixture activities, which is regulated under the NPDES program (Exhibit C). Inspection findings included that Respondent did not have an NPDES permit as required, did not implement effective pollution control practices to prevent the discharge of pollutants from the Facility to State waters, and, due to the grade of the Facility and the immediate proximity of the Facility to State waters, there's a very high potential to discharge pollutants such as aggregate and fine particles from stockpiles.</p> <p>Pollutant sources observed by the CWB inspectors during the August 12, 2021 inspection include aggregate, dirt, fuel, and oil, which are consistent with pollutant sources identified in EPA's industrial storm water fact sheet for Sector D: Asphalt Paving and Roofing Materials Manufacturers and Lubricant Manufacturers.</p> <p>During the August 12, 2021 inspection, inspectors believed that the facility was owned by Maui Kupono Builders (Exhibit C). However, the Respondent orally informed inspectors, and later confirmed in writing, that the facility belongs to Maui Asphalt X-IV, LLC owned and operated by Dyvette Fong and Keoni Gomes (Exhibit B).</p>
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	<p>Respondent was notified of the DOH's determination and instructed to obtain NPDES permit coverage for the Facility. On September 1, 2021, Respondent submitted an application to be covered under the NPDES program. Rain out days at the Facility were requested from the Respondent to determine how many days the Facility experienced rain events of magnitude to discharge significant amounts of storm water to the nearby drainage ditches. Respondent failed to provide the requested information to the DOH.</p> <p>To determine the number of days where unauthorized discharges of pollutants occurred, the DOH obtained rainfall data from the National Weather Service (NWS). Rainfall of more than one (1) inch per day is in excess of the amount needed to cause storm water to discharge from the Facility. This measure is a conservative proxy for days of discharge to State waters that immediately border the Facility. The NWS rain gauge recorded forty-three (43) occasions from September 12, 2015 to March 12, 2021 (Exhibit D) where there was rainfall greater than one (1) inch recorded at the nearby Waimea Heights rain gauge station, Station No. WHGH1, which is located 21° 57' 59" N 159° 39' 50" W.</p> <p>HRS §342D-9 authorizes the Director of Health to order measures to be taken to correct violations and impose penalties for violations of HRS Chapter 342D.</p> <p>HRS §342D-31 states that "the [D]irector is authorized to impose by order the penalties specified in [HRS §]342D-30."</p> <p>HRS §342D-30 states that violators shall be fined not more than \$25,000 per day for each separate offense and that each day of each violation constitutes a separate offense.</p> <p>HRS §342D-50(a) states that "[n]o person, including any public body, shall discharge any water pollutant into state waters, or cause or allow any water pollutant to enter state waters except in compliance with this chapter, rules adopted pursuant to this chapter, or a permit or variance issued by the [D]irector."</p> <p>HRS §342D-50(d), states that "[n]o person, including any public body, shall violate any rule adopted pursuant to this chapter or any permit or variance issued or modified pursuant to this chapter."</p> <p>40 Code of Federal Regulations §122.26(b)(14)(ii) identifies facilities classified within Standard Industrial Classification 29 as applicable to State NPDES programs for discharges of storm water associated with industrial activity.</p>
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	<p>HAR §11-55-04(a) requires a discharger to submit an application for NPDES permit, submit a notice of intent, or meet all requirements for a conditional “no exposure” exclusion before discharging any pollutant.</p> <p><u>1. Discharge of Pollutants to State waters without an NPDES Permit</u></p> <p>Respondent unlawfully discharged pollutants such as aggregate, dirt, fuel, and oils without an NPDES permit from the Facility to a Class 2 Inland State water on forty-three (43) days from September 12, 2015 to March 12, 2021. The discharge of any pollutants is required by HAR §11-55-04(a). No NPDES permit or variance authorizing the discharge of pollutants from the Facility was issued by the DOH. Respondent did not submit a notice of intent, and Respondent’s activities do not meet the requirements for a conditional “no exposure” exclusion.</p> <p>Based on the details above, the DOH finds that Respondent violated HRS §342D-50(a) on forty-three (43) counts by discharging aggregate, dirt, fuel, and oils to State waters without a permit issued by the DOH.</p>
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The facts of this case and the law justify the following order.

ORDER

Respondent is ordered to:

1. Immediately implement pollution control strategies, Best Management Practices and the requirements set forth in the Hawaii NPDES, General Permit authorizing the discharge of storm water associated with industrial facilities, HAR Chapter 11-55 at the Facility. Failure to comply with the requirements of HAR Chapter 11-55, Appendices A and B, shall constitute a violation of this Order.
2. Within 30 calendar days of service, develop and submit to the DOH a Storm Water Pollution Control Plan (SWPCP) consistent with Section 6 of HAR Chapter 11-55 Appendix B.
 - Beginning the effective date of this NOVO, collect samples for analysis from a discharge resulting from a measurable storm event. A measurable storm event means a precipitation event that results in an actual discharge and that follows the preceding storm event by at least 72 hours (3 days). The 72-hour interval does not apply if Respondent demonstrates that less than a 72-hour interval is representative for local storm events.
 - Take a minimum of one grab sample from a discharge resulting from a measurable storm event within the first 30 minutes of the associated discharge. Samples shall be collected at the location(s) where storm water

leaves the facility, and prior to entering each receiving water (east, central and west drainage ditches). Samples must be representative of discharges from the Facility and must be identified in the SWPCP. If it is not possible to collect the sample within the first 30 minutes of a measurable storm event, the sample must be collected as soon as practicable, and documentation must be kept explaining why it was not possible to take samples within the first 30 minutes.

- Samples shall be analyzed for parameters specified in Table 34.1 of HAR Chapter 11-55 Appendix B.
 - Within 30 days calendar days of sample collection, submit sample results to the DOH.
3. Upon issuance of the NPDES permit, submit a request to DOH in order to terminate monitoring requirements prescribed in Order #2 of this NOVO.
 4. Comply with all conditions of the NPDES permit upon issuance.
 5. Pay an administrative penalty of \$107,500.00 within 20 calendar days of the service of this NOVO. Send a certified check for \$107,500.00 to: Clean Water Branch, Department of Health, 2827 Waimano Home Road #225, Pearl City, Hawaii 96782. The payment should be made payable to "State of Hawaii" and include the NOVO reference number, 2021-CW-EO-26.

All submittals made pursuant to this Order shall be certified and signed by a person legally authorized to sign on behalf of Respondent. All documents submitted pursuant to this Order must include the following Certification Statement:

"I certify under penalty of law that this document and its attachments were prepared either by me personally or under my direction or supervision in a manner designed to ensure that qualified and knowledgeable personnel properly gathered and presented the information contained therein. I further certify, based on my personal knowledge or on my inquiry of those individuals immediately responsible for obtaining the information, that to the best of my knowledge and belief the information is true, accurate and complete. I am aware that there are significant penalties for submitting false information including the possibility of fines and imprisonment for knowing and willful submission of a materially false statement."

The provisions of this NOVO shall become final unless, within 20 calendar days after receipt, Respondent submits a **written** request for a hearing, along with a copy of the NOVO, without exhibit(s), to:

Hearings Officer
c/o Director of Health
1250 Punchbowl Street, Third Floor
Honolulu, Hawaii 96813

Respondent may file the hearing request in person at the Director's office listed above during regular business hours, or may mail the same to the above address within the

allotted time. **Failure to timely file the hearing request and related documents may result in a denial of the hearing request.**

The hearing will be conducted in accordance with HRS Chapter 91 and HAR Chapter 11-1. At the hearing, the parties may seek to avoid any penalty, and the DOH may seek the maximum penalty of \$25,000 per day, per violation, although the actual penalty amount may be lower, or none.

Parties may be represented by legal counsel at their own expense. An individual may appear on his/her own behalf, or a member of a partnership may represent the partnership, or an officer or authorized employee of a corporation, or trust, or association may represent the corporation, trust or association.

All inquiries regarding this matter, besides the request for hearing, shall be directed to: Mr. Matthew Kurano, Supervisor of the Enforcement Section, CWB, at (808) 586-4309.

If you have special needs due to a disability that will aid you in participating in the hearing or pre-hearing conference, please contact the Hearings Officer at (808) 586-4409 (voice) or through the Telecommunications Relay Service (711), at least 10 working days before the hearing or pre-hearing conference date.

Kathleen Ho

KATHLEEN S. HO
Deputy Director for Environmental Health

Date: Jan 28, 2022

Dale K. Sakata

Approved as To Form By:
Dale Sakata
Deputy Attorney General

**NOTICE OF PROPOSED WATER POLLUTION CONTROL PERMIT
FOR SUNRISE CAPITAL, INC.
KEKAHA, ISLAND OF KAUAI
NPDES PERMIT NO. HI 0021654**

DOCKET NO. HI 0021654

September 29, 2021

The State Department of Health (DOH) tentatively proposes to issue a National Pollutant Discharge Elimination System (NPDES) permit to discharge shrimp pond circulation wastewater and treated shrimp farm production process wastewater from its shrimp farm facility, to receiving State waters, subject to special conditions to:

SUNRISE CAPITAL, INC.

The proposed NPDES permit for the existing discharge will expire five (5) years from the date of issuance.

Sunrise Capital, Inc. owns and operates a shrimp farm located at 6526 Kaumualii Highway, Kekaha, Island of Kauai, Hawaii and produces 730,000 pounds of whiteleg shrimp (*Litopenaeus vannamei*) annually. The facility consists of 40 one-acre production ponds, 8 1/2-acre nursery ponds and 24 raceways supplied by four brackish land-based wells. Each pond at the facility is lined and includes a bottom drain system to periodically remove settled matter and a skimmer system to remove floating material. Each shrimp production pond has a volume of 1.3 million gallons, and a turnover rate of 25-40% per day, amounting to a continuous flow rate of 230 - 360 gallons per minute (gpm) per pond. When all ponds are operating, the average cumulative discharge rate from the ponds is under 20 million gallons per day (MGD), although for the past five years, the average discharge rate is under 5.0 MGD. The shrimp pond circulation water and the pond drainage system water are sent to one of two sedimentation/conveyance canals running the length of the facility prior to exiting the facility into agriculture drainage ditches (Kawaiele and Kinikini Ditches), which ultimately discharge to the Pacific Ocean at coordinates: Latitude 22°01 '01"N, Longitude 159°47'20"W.

The Pacific Ocean surrounding Kinikini Ditch, is classified by the DOH as a Class A, Wet Open Coastal Waters under HAR §11-54-6(b). It is the objective of Class A waters that their use for recreational purposes and aesthetic enjoyment be protected. Any other use shall be permitted as long as it is compatible with the protection and propagation of fish, shellfish, and wildlife, and with recreation in and on these waters.

ATTACHMENT J

Persons wishing to comment upon or object to the draft modified NPDES permit or to request a public hearing, should submit their comments or requests in writing no later than 30 calendar days after the date of this notice, either through e-mail at: cleanwaterbranch@doh.hawaii.gov or by mail at 2827 Waimano Home Road, Room 225, Pearl City, Hawaii 96782.

Copies of the draft modified permit and other information are available for public inspection, Monday through Friday (excluding holidays) from 7:45 a.m. until 4:15 p.m., at the DOH Clean Water Branch (CWB) office located at the 2827 Waimano Home Road 225, Pearl City, Hawaii 96782, or at the Kauai District Health Office located at 3040 Umi Street, Lihue, Hawaii 96766. Copies may be bought. The public notice permit and fact sheet are also available on the internet at: <https://health.hawaii.gov/cwb/clean-water-branch-home-page/public-notices-and-updates/>. For more information or if you require aid in inspecting and/or commenting on the public notice permit and related information, please contact Mr. Darryl Lum, Supervisor of the Engineering Section, CWB, at the above address or (808) 586-4309 (Voice) at least seven (7) calendar days before the comment deadline. For those who use a TTY/TDD, please call through Sprint Relay Hawaii, at 1-711 or 1-877-447-5991.

All written comments and requests received on time will be considered. If DOH determines that there is significant public interest, a public hearing may be held after at least 30 calendar days of public notice.

If DOH's position is substantially unchanged after considering all timely written comments and all oral comments at any public hearing that may be held, then the DOH will issue the NPDES permit and this action will be final.

Please notify anyone you know who would be interested in this matter.

ELIZABETH A. CHAR, M.D.
Director of Health

09014PKP.21a

**AUTHORIZATION TO DISCHARGE UNDER THE
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM**

In compliance with the provisions of the Clean Water Act, as amended, (33 U.S.C. section 1251 et seq.; the "Act"); Hawaii Revised Statutes (HRS), Chapter 342D; and Hawaii Administrative Rules (HAR), Chapters 11-54 and 11-55, Department of Health (DOH), State of Hawaii,

SUNRISE CAPITAL, INC.

(hereinafter PERMITTEE),

is authorized to discharge shrimp pond circulation wastewater and treated shrimp farm production process wastewater from its shrimp farm facility to the receiving waters named Pacific Ocean, through Outfall Serial No. 001 at Latitude 22°01'01"N and Longitude 159°47'20"W,

from the Sunrise Capital, Inc. shrimp farm located at 6526 Kaumualii Highway, Kekaha, Island of Kauai, Hawaii, (FACILITY)

in accordance with the effluent limitations, monitoring requirements and other conditions set forth herein, and in the DOH "Standard NPDES Permit Conditions," that is available on the DOH, Clean Water Branch (CWB) website at: <http://health.hawaii.gov/cwb/site-map/home/standard-npdes-permit-conditions/>.

All references to Title 40 of the Code of Federal Regulations (CFR) are to regulations that are in effect on July 1, 2020, except as otherwise specified. Unless otherwise specified herein, all terms are defined as provided in the applicable regulations in Title 40 of the CFR.

Failure to comply with any condition, requirement, and/or limitation in this permit is an enforceable violation and your NPDES permit may be terminated. Examples of enforceable violations include, but are not limited to: unauthorized discharges where a pollutant was not disclosed in the NPDES application, but was detected by monitoring only requirements in this NPDES permit or by other means determined by the DOH; failure to sample, analyze, or submit water quality results as required in this NPDES permit; and discharging pollutants in locations that were not authorized in this NPDES permit. If the Permittee violates HRS Chapter 342D, the Permittee may be subject to penalties of up to \$25,000 per violation per day and up to two years in jail. Falsification of information, including providing information in the NPDES application that does not match what is actually occurring at the facility, may result in criminal penalties for the Permittee and their authorized representative as provided in the Act, §309 and HRS §342D-35.

The administrative extension, dated March 24, 2021, is hereby terminated upon the effective date of this permit.

This permit, including the Zone of Mixing, will become effective on _____ (Effective Date).

This permit, including the Zone of Mixing, and the authorization to discharge will expire on _____. The Permittee shall submit a renewal application at least one (1) year prior to the expiration date of this permit.

Signed this ____ day of _____, 2021.

(For) Director of Health

TABLE OF CONTENTS

PART A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

PART B. WHOLE-EFFLUENT TOXICITY REQUIREMENTS

PART C. WATER QUALITY CRITERIA

PART D. ZONE OF MIXING LIMITATIONS

PART E. RECEIVING WATER MONITORING PROGRAM REQUIREMENTS

PART F. REPORTING REQUIREMENTS

PART G. SPECIAL CONDITIONS

PART H. LOCATION MAP, AND ZOM AND RECEIVING WATER LOCATION MAP

APPENDIX 1. MONITORING METHODS

ATTACHMENT: STANDARD NPDES PERMIT CONDITIONS (VERSION 15)

PART A
PERMIT NO. HI 0021654
Page 4

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

1. During the period beginning with the effective date of this permit and lasting through the expiration date of this permit, the Permittee is authorized to discharge treated effluent from the facility. The discharge shall be limited and monitored as specified below.

Effluent Characteristics	Discharge Limitations		Units	Monitoring Requirements	
	Annual Average	Daily Maximum		Measurement Frequency	Sample Type
Flow	---	20.0	MGD	Continuous	Estimate
Total Nitrogen	---	1	µg/L	1/Month	Grab
Ammonia Nitrogen	---	1	µg/L	1/Month	Grab
Total Phosphorus	---	1	µg/L	1/Month	Grab
Turbidity	---	1	NTU	1/Month	Grab
Copper, Total Recoverable	---	1	µg/L	1/Quarter	Grab
Mercury, Total Recoverable	1	1	µg/L	1/Quarter	Grab
pH	---	2	s.u.	1/Month	Grab
Whole Effluent Toxicity ³	---	Pass	Pass/Fail	1/Quarter ⁴	Grab
Appendix 1 Pollutants ⁵	---	1	µg/L	1/Year	⁶

MGD – Million Gallons per Day

¹ Monitoring and reporting required; no limitation at this time.

² Not less than 7.0 standard units not greater than 8.6 standard units.

³ Whole effluent toxicity monitoring shall be conducted in accordance with Part B.3 of this permit.

⁴ The whole effluent toxicity monitoring shall not be conducted if the facility discharges less than 96 hours during the quarterly monitoring period.

⁵ Results for copper and mercury from the analysis of Appendix 1 Pollutants may also be reported in the quarterly monitoring report for the quarter in which the analysis was performed.

⁶ As specified in Appendix 1.

2. No chemicals shall be applied to the shrimp pond circulation waters and the treated shrimp farm production process wastewater and discharged from the facility.
3. No bioactive compounds, such as pesticides, antibiotics, growth hormones, and fertilizers, nor chemical disinfectants or cleaners shall be applied to the shrimp farm operations and discharged from the facility.
4. Monitoring shall be conducted according to test procedures approved under 40 CFR Part 136 with detection limits low enough to measure the compliance with Part A of this permit. For cases where the discharge limitation is below the lowest detection limit of the appropriate test procedure, the compliance shall be based upon the lowest detection limit of the method.

PART A
PERMIT NO. HI 0021654
Page 5

5. The Permittee shall conduct the effluent sampling on the same day that the receiving water monitoring is conducted unless inclement weather or hazardous conditions exist which may endanger the lives of the Permittee's personnel.
6. Samples and measurements taken for the purposes of monitoring shall be taken after all treatment process and be representative of the volume and nature of the total discharge from the facility prior to entering the receiving water, or comingling with any other waste stream or receiving water.
7. There shall be no discharge of floating solids or visible foam.
8. There shall be no discharge of materials that will settle to form objectionable sludge or bottom deposits.
9. Within 30 calendar days after the effective date of this permit, the Permittee shall submit an updated/revised Effluent Monitoring Program to the DOH which complies with Part A of this permit. The Effluent Monitoring Program shall include at a minimum, but not be limited to the following:
 - a. Sampling location map;
 - b. Sample holding time;
 - c. Preservation techniques;
 - d. Test method and method detection level; and
 - e. Quality control measures.

The Permittee shall continue to implement the current program until the updated program is submitted to the DOH. The updated program should be implemented beginning the month it is submitted. The Permittee shall address all comments regarding the updated program to the DOH's satisfaction. The DOH reserves the right to require the Permittee to revise the approved program, as appropriate, pursuant toward compliance with the terms and conditions of this permit.

B. WHOLE-EFFLUENT TOXICITY LIMITATIONS AND MONITORING REQUIREMENTS

1. Monitoring Frequency

The Permittee shall conduct quarterly chronic toxicity tests on effluent grab samples, in accordance with the procedures outlined below. Whole-effluent toxicity monitoring is not required for the facility if discharges occur less than a total of 96-hours during the quarterly monitoring period.

If the Permittee has unacceptable control performance, the Permittee shall document its efforts, communicate all attempts to the DOH, and report all attempts on the DMR for that monitoring period.

2. Test Species and Methods

The Permittee shall conduct chronic toxicity testing on *Tripneustes gratilla* using the *Hawaiian Collector Urchin, Tripneustes gratilla (Hawa'e) Fertilization Test Method* (Adapted by Amy Wagner, EPA Region 9 Laboratory, Richmond, CA from a method developed by George Morrison, EPA, ORD Narragansett, RI and Diane Nacci, Science Applications International Corporation, ORD Narragansett, RI) (EPA/600/R-12/022) and follow quality assurance procedures as described in the test methods manual *Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to West Coast Marine and Estuarine Organisms* (EPA/600/R-95/136, 1995).

3. Chronic WET Permit Limit

In accordance with HAR, Section 11-54-4(b)(2)(B), all State waters shall be free from chronic toxicity as measured using the toxicity tests listed in HAR 11-54-10, or other methods specified by the DOH. For this discharge, the determination of "Pass" or "Fail" from a single-effluent concentration chronic toxicity test at the applicable IWC using the Test of Significant Toxicity (TST) approach described in *National Pollutant Discharge Elimination System Test of Significant Toxicity Implementation Document* (EPA 833-R-10-003, 2010). For any one chronic toxicity test, the chronic WET permit limit that must be met is rejection of the null hypothesis (H_0):

IWC (100 percent effluent) mean response $\leq 0.75 \times$ Control mean response.

For the discharge from the facility, an IWC of 10.3% shall be used. A test result that rejects this null hypothesis is reported as "Pass" on the DMR

form. A test result that does not reject this null hypothesis is reported as “Fail” on the DMR form. To calculate either “Pass” or “Fail”, the Permittee shall follow the instructions in National Pollutant Discharge Elimination System Test of Significant Toxicity Implementation Document, Appendix A. If a test result is reported as “Fail”, then the permittee shall follow Part B.6 (Accelerated Toxicity Testing and TRE/TIE Process) of this permit.

4. Quality Assurance

- a. Quality assurance measures, instructions, and other recommendations and requirements are found in the chronic test methods manual previously referenced. Additional requirements are specified below.
- b. This discharge is subject to a determination of “Pass” or “Fail” from a single-effluent concentration chronic toxicity test at the IWC (for statistical flowchart and procedures, see National Pollutant Discharge Elimination System Test of Significant Toxicity Implementation Document, Appendix A, Figure A-1). During Step 6 of Appendix A, the Permittee shall use an alpha value of 0.05 for *T. gratilla*. The chronic IWC for the discharge from the facility is 58.8 percent effluent.
- c. Effluent dilution water and control water shall be receiving water or lab water, as described in the test methods manual *Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to West Coast Marine and Estuarine Organisms* (EPA/600/R-95/136, 1995). If the dilution water is different from test organism culture water, then a second control using culture water shall also be used.
- d. If organisms are not cultured in-house, then concurrent testing with a reference toxicant shall be conducted. If organisms are cultured in-house, then monthly reference toxicant testing is sufficient. Reference toxicant tests and effluent toxicity tests shall be conducted using the same test conditions (e.g., same test duration, etc.).
- e. All multi-concentration reference toxicant test results must be reviewed and reported according to EPA guidance on the evaluation of concentration-response relationships found in *Method Guidance and Recommendations for Whole Effluent Toxicity (WET) Testing* (40 CFR Part 136) (EPA/821/B-00/004, 2000).
- f. If either the reference toxicant or effluent toxicity tests do not meet all test acceptability criteria in the test methods manual, then the Permittee shall

re-sample and re-test within 14 calendar days.

- g. If the discharged effluent is chlorinated, then chlorine shall not be removed from the effluent sample prior to toxicity testing without written approval by the DOH.

5. Initial Investigation Toxicity Reduction Evaluation (TRE) Work Plan

Within 90 calendar days of the permit effective date, the Permittee shall prepare and submit to the DOH a copy of its Initial Investigation TRE Work Plan (1-2 pages) for review. This plan shall include steps the Permittee intends to follow if toxicity is measured above the chronic WET permit limit and shall include the following, at minimum:

- a. A description of the investigation and evaluation techniques that would be used to identify potential causes and sources of toxicity, effluent variability, and treatment system efficiency.
- b. A description of methods for maximizing in-house treatment system efficiency, good housekeeping practices, and a list of all chemicals used in operations at the facility.
- c. An indication of who would conduct the TIEs if a Toxicity Identification Evaluation (TIE) is necessary (i.e., an in-house expert or outside contractor).
- d. A flow chart of the workplan steps.

6. Accelerated Toxicity Testing and TRE/TIE Process

- a. If the chronic WET permit limitation is exceeded and the source of toxicity is known (e.g., a temporary plant upset), then the Permittee shall conduct one additional toxicity test using the same species and test method. This toxicity test shall begin within 14 calendar days of receipt of a test result exceeding the chronic WET permit limit. If the additional toxicity test does not exceed the chronic WET permit limitation, then the Permittee may return to the regular testing frequency.
- b. If the chronic WET permit limit is exceeded and the source of toxicity is not known, then the Permittee shall conduct six additional toxicity tests using the same species and test method, approximately every two (2) weeks, over a 12-week period. This testing shall begin within 14 calendar days of

PART B
PERMIT NO. HI 0021654
Page 9

receipt of a test result exceeding the chronic WET permit limit. If none of the additional toxicity tests exceed the chronic WET permit limit, then the Permittee may return to the regular testing frequency.

- c. If one of the additional toxicity tests (in Parts B.6.a. or B.6.b.) exceeds the chronic WET permit limitation, then, within 14 calendar days of receipt of this test result, the Permittee shall initiate a TRE in accordance with the EPA manual *Generalized Methodology for Conducting Industrial Toxicity Reduction Evaluations* (EPA/600/2-88/070, 1989). In conjunction, the Permittee shall develop and implement a Detailed TRE Work Plan which shall include the following: further actions undertaken by the Permittee to investigate, identify, and correct the causes of toxicity; actions the Permittee will take to mitigate the effects of the discharge and prevent the recurrence of toxicity; and a schedule for these actions. The Permittee may discontinue accelerated toxicity testing upon the written approval from the DOH.
- d. The Permittee may initiate a TIE as part of a TRE to identify the causes of toxicity using the same species and test method and, as guidance, EPA manuals: *Methods for Aquatic Toxicity Identification Evaluations: Phase I Toxicity Characterization Procedures* (EPA/600/6-91/003, 1991); *Methods for Aquatic Toxicity Identification Evaluations, Phase II Toxicity Identification Procedures for Samples Exhibiting Acute and Chronic Toxicity* (EPA/600/R-92/080, 1993); *Methods for Aquatic Toxicity Identification Evaluations, Phase III Toxicity Confirmation Procedures for Samples Exhibiting Acute and Chronic Toxicity* (EPA/600/R-92/081, 1993); and *Marine Toxicity Identification Evaluation (TIE): Phase I Guidance Document* (EPA/600/R-96-054, 1996). Further, the Permittee may be required by the DOH to initiate a TIE as part of a TRE.
- e. Prior to conducting a TIE, the Permittee shall submit a TIE plan to the DOH. The TIE plan, at a minimum shall:
 - (1) Discuss previous TIE efforts and other available data useful in developing TIE procedures;
 - (2) Evaluate available operations and effluent data;
 - (3) Identify and discuss site-specific considerations for the TIE effort;
 - (4) Include a comprehensive quality control program;

- (5) Establish a monitoring program;
- (6) Identify test methods and statistical methods to be used for the TIE effort;
- (7) Identify the TIE procedures for the baseline toxicity tests and TIE manipulations;
- (8) Discuss additional potential analysis that might be helpful in evaluating the causative toxicants or appropriate treatability, such as pollutant scans for toxic effluent;
- (9) Discuss the personnel and their qualifications for the team conducting the TIE results interpretation; and,
- (10) Include follow-up procedures for use if the TIE is inconclusive.

The Permittee shall incorporate all comments received from the DOH within 14 calendar days of the TIE plan submittal. Within 14 calendar days of the TIE plan submittal, the Permittee shall commence with the TIE.

7. Reporting of Chronic Toxicity Monitoring Results

- a. The Permittee shall report on the DMR for the month in which the toxicity test was conducted: "Pass" or "Fail" (based on the Welch's t-test result), the calculated "percent mean response at IWC," where:

percent mean response at IWC = $((\text{Control mean response} - \text{IWC mean response}) \div \text{Control mean response}) \times 100$,

and to assist in evaluation of the test result, the standard deviations for the IWC mean response and the Control mean response.

- b. The Permittee shall submit a full laboratory report for all toxicity testing as an attachment to the DMR for the month in which the toxicity test was conducted. The laboratory report shall contain: the toxicity test results; the dates of sample collection and initiation of each toxicity test; all results for effluent parameters monitored concurrently with the toxicity tests; and progress reports on TRE/TIE investigations.

- c. The Permittee shall notify the DOH in writing of exceedance of the chronic WET permit limitation within five calendar days after the Permittee is made aware of the exceedance by the testing laboratory. This notification shall describe actions the Permittee has taken or will take to investigate, identify, and correct the causes of toxicity; the status of actions required by this permit; and schedule for actions not yet completed; or reasons that no action has been taken.

8. Permit Reopener for Chronic Toxicity

In accordance with 40 CFR Parts 122 and 124, this permit may be modified to include new effluent limitations or permit conditions to address chronic toxicity in the effluent or receiving waterbody, as a result of the discharge; or to implement new, revised, or newly interpreted water quality standards applicable to chronic toxicity.

C. WATER QUALITY CRITERIA

Basic Water Quality Criteria Applicable to All Waters:

1. The discharge shall comply with applicable water quality standards for receiving waters adopted by the DOH under HAR Chapter 11-54, Water Quality Standards, effective November 15, 2014.
2. The discharge shall not interfere with the attainment or maintenance of that water quality which assures protection of public water supplies and the protection and propagation of a balanced indigenous population of shellfish, fish, and wildlife and allows recreational activities in and on the water.
3. The discharge of effluent from the facility shall not cause the following basic water quality criteria applicable to all waters to be violated (HAR 11-54-4(a)):

"All waters shall be free of substances attributable to domestic, industrial, or other controllable sources of pollutants, including:

- (1) Material that will settle to form objectionable sludge or bottom deposits;
- (2) Floating debris, oil, grease, scum, or other floating materials;
- (3) Substances in amounts sufficient to produce taste in the water or detectable off-flavor in the flesh of fish, or in amounts sufficient to produce objectionable color, turbidity or other conditions in the receiving waters;
- (4) High or low temperatures; biocides; pathogenic organisms; toxic, radioactive, corrosive, or other deleterious substances at levels or in combinations sufficient to be toxic or harmful to human, animal, plant, or aquatic life, or in amounts sufficient to interfere with any beneficial use of the water;
- (5) Substances or conditions or combinations thereof in concentrations which produce undesirable aquatic life; and
- (6) Soil particles resulting from erosion on land involved in earthwork, such as the construction of public works; highways; subdivisions; recreational, commercial, or industrial developments; or the cultivation and management of agricultural lands."

D. ZONE OF MIXING LIMITATIONS AND MONITORING REQUIREMENTS

Zone of Mixing (ZOM) ZM-271

1. The ZOM shall be established for shrimp pond circulation wastewater and treated shrimp farm production process wastewater. Other chemical compounds, including, but not limited to pesticides, antibiotics, growth hormones, or fertilizers, are prohibited.
2. The discharge volume from the facility shall not exceed 20 million gallons per day.
3. The ZOM is designated as only that portion of the Pacific Ocean along the Kekaha coastline which falls within the boundaries defined by an arc of 6,000 feet radius from the point where the Outfall Serial No. 001 discharge enters the Pacific Ocean. The Outfall Serial No. 001 discharge point is located at Latitude 22°01'01"N and Longitude 159°47'20"W. The ZOM shall extend from the surface to the ocean floor.

E. RECEIVING WATER MONITORING PROGRAM REQUIREMENTS

The Permittee shall conduct receiving water monitoring at offshore stations, as described below.

1. Offshore Water Quality Monitoring

a. Monitoring Locations

A minimum of seven stations within, along and outside of the ZOM shall be monitored as noted below. The ZOM monitoring station locations (including applicable latitude and longitude) shall be specified in the Receiving Water Monitoring Program.

At a minimum, monitoring stations shall be located at:

Monitoring Location		Description
Within ZOM	ZM-1	Point of discharge
	ZM-2A	50 feet offshore and 2000 feet in southerly direction from the point of discharge
	ZM-3A	50 feet offshore and 4000 feet in southerly direction from the point of discharge
ZOM Boundary	ZM-4A	50 feet offshore and 6000 feet in southerly direction from the point of discharge and at the boundary of the ZOM
	ZM-5A	50 feet offshore and 6000 feet in northerly direction from the point of discharge and at the boundary of the ZOM
	ZM-6A	Along the edge of the ZOM
	ZM-7A	Along the edge of the ZOM
Control	C-1	Beyond the influence of the discharge and away from other pollutant sources
	C-2	Beyond the influence of the discharge and away from other pollutant sources

Surface, middle, and bottom samples of the monitoring stations water columns greater than 10 meters in depth shall be taken. At monitoring stations with water depths equal to or less than 10 meters, surface and bottom samples of the water column shall be taken. Surface samples shall be taken one meter below the ocean surface; middle samples shall be taken at mid-depth; and bottom samples shall be taken one meter above the ocean bottom. The Permittee shall provide the locations of all monitoring stations with global positioning system (GPS) coordinates.

The following water quality parameters shall be sampled:

Parameter	Units	Sample Type	Monitoring Frequency
Total Nitrogen	µg/L	Grab	1/Month ¹
Ammonia Nitrogen	µg/L	Grab	1/Month ¹
Total Phosphorus	µg/L	Grab	1/Month ¹
Turbidity	NTU	Grab	1/Month ¹
pH	s.u.	Grab	1/Month ¹
Temperature	°C	Grab	1/Month ¹
Salinity	ppt	Grab	1/Month ¹
Dissolved Oxygen	% saturation	Grab	1/Month ¹

¹ The Permittee may conduct monitoring 1/Quarter when the average monthly discharge flow for all months in a given quarter is less than 4.5 MGD.

Inability to conduct offshore monitoring due to inclement weather or hazardous conditions which may endanger the lives of the facility's personnel shall not constitute a violation of this permit.

b. Shoreline Photographs and Visual Inspection

- (1) When receiving water sampling is conducted, the Permittee shall take photographs of the ZOM at each monitoring location and record ocean bottom conditions. The photographs and descriptions of the ocean bottom conditions shall be submitted with the receiving water monitoring results.
- (2) The Permittee shall visually inspect the ZOM from the shoreline for presence of sharks. If sharks are sighted, the Permittee shall take immediate appropriate actions as established in Part G toward the protection of public health and safety.

c. Receiving Water Monitoring Program

Within 30 calendar days after the effective date of this permit, the Permittee shall submit an updated/revised Receiving Water Monitoring Program which complies with Part E of this permit to the DOH. The program shall document that analytical methods to be used are sufficiently sensitive and at a minimum, also include the following:

- (1) Sampling location map;

- (2) Sample holding times;
- (3) Preservation techniques;
- (4) Test methods and method detection levels; and
- (5) Quality control measures.

The Permittee shall continue to implement the current program until the updated program is submitted to the DOH. The updated program should be implemented beginning the month it is submitted. The Permittee shall address all comments regarding the updated program to the DOH's satisfaction. The DOH reserves the right to require the Permittee to revise the program, as appropriate, pursuant toward compliance with the terms and conditions of this permit.

2. Bottom Biological Community Monitoring

Beginning on the effective date of this permit, the receiving water bottom biological communities shall be monitored at least once during the term of the permit. The monitoring performed shall include the diversity and distribution of the bottom biological communities.

- a. The monitoring of the bottom biological communities and ocean sediments shall be conducted at the same locations or stations required under the receiving water monitoring at Part E.1.a of this permit. In addition, the Permittee shall monitor the bottom biological communities and ocean sediments at acceptable control or reference stations that are located beyond the influence of the discharge and away from any other pollutant sources. The Permittee shall provide GPS coordinates for all established monitoring stations, including any control or reference stations.
- b. The bottom biological monitoring performed shall include the diversity and distribution of the bottom biological communities. The Permittee shall measure and report the abundance, number of species, and the following biological indices for the bottom biological communities monitoring performed:
 - (1) Species Richness (Margalef's species richness (d) - measure of species number);
 - (2) Species Diversity (Shannon-Wiener diversity (H) - combined measure of species and evenness);

- (3) Species Dominance (Swartz's dominance - measure of dominance).
- c. The ocean sediments shall be monitored for total organic carbon and sediment grain size, with the objective to determine the influence of the discharge on sediment deposition and the impact to the benthic community. The bottom biological communities monitoring performed by the Permittee shall include photograph/video recording of the following ocean bottom or biological characteristic or condition:
 - (1) The sediment type and color, as well as features, noting erosional or depositional areas;
 - (2) The flora/fauna observed as their relative abundance;
 - (3) The presence of feed pellets or other debris lost as a result of the facility operation;
 - (4) The presence of *Beggiatoa* or *Capitella* type mats and their growth described as light, moderate, or heavy; and
 - (5) The presence of black or dark colored sediments, spontaneous or induced gassing, or the presence of pimpled sediments.
- d. The Permittee shall submit a receiving water bottom biological communities monitoring program detailing the requirements in accordance with Part E.2 to the DOH for approval within 90 calendar days after the effective date of this permit.

The report summarizing the findings of the bottom biological communities monitoring shall be submitted to the DOH no later than one year prior to the expiration date of this permit. A program of research to develop reasonable alternatives to the methods of treatment of control already in use at the facility may be required if deemed prudent by the DOH. This monitoring requirement may be waived upon demonstrating to the DOH, with the concurrence of the EPA that the discharge does not impact the existing bottom biological communities or no bottom biological communities exist in the receiving water.

F. BEST MANAGEMENT PRACTICES (BMPs)

1. The discharge from the facility shall meet the following requirements and/or practices in accordance with 40 CFR sections 451.11, 451.12, and 451.13.

- a. Solids Control

The Permittee must:

- (1) Employ efficient feed management and feeding strategies that limit feed input to the minimum amount reasonably necessary to achieve production goals and sustain targeted rates of aquatic animal growth in order to minimize potential discharges of uneaten feed and waste products to waters of the U.S.
- (2) In order to minimize the discharge of accumulated solids from settling ponds and basins and production systems, identify and implement procedures for routine cleaning of rearing units and off-line settling basins, and procedures to minimize any discharge of accumulated solids during the inventorying, grading and harvesting aquatic animals in the production system.
- (3) Remove and dispose of aquatic animal mortalities properly on a regular basis to prevent discharge to waters of the U.S., except in cases where the permitting authority authorizes such discharge in order to benefit the aquatic environment.

- b. Material Storage

The Permittee must:

- (1) Ensure proper storage of drugs, pesticides, and feed in a manner designed to prevent spills that may result in the discharge of drugs, pesticides or feed to waters of the U.S.
- (2) Implement procedures for properly containing, cleaning, and disposing of any spilled material.

- c. Structural Maintenance

The Permittee must:

- (1) Inspect the production system and the wastewater treatment system on a routine basis in order to identify and promptly repair any damage.

- (2) Conduct regular maintenance of the production system and the wastewater treatment system in order to ensure that they are properly functioning.

d. Recordkeeping

The Permittee must:

- (1) In order to calculate representative feed conversion ratios, maintain records for aquatic animal rearing units documenting the feed amounts and estimates of the numbers and weight of aquatic animals.
- (2) Keep records documenting the frequency of cleaning, inspections, maintenance and repairs.

e. Training

The Permittee must:

- (1) Adequately train all relevant facility personnel in spill prevention and how to respond in the event of a spill In order to ensure the proper clean-up and disposal of spilled material.
- (2) Train staff on the proper operation and cleaning of production and wastewater treatment systems including training in feeding procedures and proper use of equipment.

f. Fish Clean-Up and Notification Requirements

In the event of a fish kill, the Permittee shall take immediate action to clean up, and/or participate in the coordination of the clean-up, of the dead fish carcasses from the discharge system and affected ocean area. The clean-up and disposal of the collected fish shall be done in accordance with applicable Federal, State, and County laws, rules, and/or ordinances. The Permittee shall make notifications in accordance with Part G.4 of this permit.

2. BMPs Plan

Within 60 days from the effective date of this permit, the Permittee shall submit an updated BMPs Plan that includes BMPs required under this part as well as other site-specific BMPs that are protective of the environment.

The Permittee shall continue to implement the current plan until the updated plan is submitted to the DOH. The updated plan should be implemented beginning the month it is submitted. The Permittee shall address all comments regarding the plan to the DOH's satisfaction. The DOH reserves the right to require the Permittee to revise the plan, as appropriate, pursuant toward compliance with the terms and conditions of this permit.

G. REPORTING REQUIREMENTS

1. Transmittal and Monitoring Results Reporting Requirements

a. Certification of Transmittals

- (1) Submit all information in accordance with HAR, Section 11-55-07(b), with the following certification statement by an appropriate signatory:

“I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.”

- (2) Include **Permit No. HI 0021654** on each transmittal.

Failure to provide the assigned permit number for this facility on future correspondence or transmittals may be a basis for delay of the processing of the document(s).

b. Reporting of Discharge and Monitoring Results

- (1) The Permittee shall report effluent monitoring results required under this permit on Discharge Monitoring Report (DMR) forms submitted electronically using NetDMR, or as otherwise instructed by DOH. NetDMR is accessed from: <http://www.epa.gov/netdmr>. The DMR shall also include the following information as an attachment:

- (a) Map of sampling locations.
- (b) Estimated biomass of net pens.
- (c) Field notes, including direction of current, weather conditions, and any unusual circumstances.

- (2) The Permittee shall report ZOM monitoring results as an annual geometric mean through the CWB Compliance Submittal Form for Individual NPDES Permits and Notice of General Permit Coverages

(NGPCs) unless otherwise instructed by the DOH. This form is accessible through the Permitting Portal website at: <https://eha-cloud.doh.hawaii.gov/epermit/>.

- (3) Monitoring results shall be submitted electronically no later than the 28th day of the month following the completed reporting period.
- (4) For the purposes of reporting, the Permittee shall use the reporting threshold equivalent to the laboratory's method detection limit (MDL) and utilize a standard calibration where the lowest standard point is equal to or less than the concentration of the minimum level (ML).
 - (a) The Permittee shall report sample results and calculations at or above the laboratory's ML on DMRs as the measured concentration or calculation.
 - (b) The Permittee shall report sample results and calculations below the laboratory's MDL as NODI(B) on the DMR. NODI(B) means that the concentration of the pollutant in a sample is not detected.
 - (c) The Permittee shall report sample results and calculations between the ML and MDL as NODI(Q). NODI(Q) means that the concentration of the pollutant in a sample is detected but not quantified.
 - (d) For purposes of calculating averages, zero shall be assigned for values less than the MDL and the numeric value of the MDL shall be assigned for values between the MDL and the ML. The resulting average value must be compared to the effluent limitation or the ML, whichever is greater, in assessing compliance.
 - (e) For purposes of calculated geometric means, $0.25 \times \text{MDL}$ shall be assigned for values less than the MDL and the numeric value of the MDL shall be assigned for values between the MDL and the ML. The resulting geometric mean must be compared to the effluent limitation or the ML, whichever is greater, in assessing compliance.
 - (f) When NODI(Q) or NODI(B) is reported for a parameter, the laboratory's numeric ML and MDL for that parameter shall also be noted on the DMR or on an attachment.
- (5) All wastewater monitoring, sample preservation, and analyses shall be performed as described in the most recent edition of 40 CFR 136, unless otherwise specified in this permit. All receiving water monitoring,

sample preservation, and analyses shall be performed as specified in this permit.

- (6) In accordance with 40 CFR 122.45(c), effluent analyses for metals shall be reported as total recoverable.

c. Additional Monitoring by the Permittee

If the Permittee monitors any pollutant at locations designated herein more frequently than required by this permit, using approved analytical methods as specified in 40 CFR 136, the results of such monitoring shall be included in the calculation and reporting of the values required in the DMR form. The increased frequency shall also be indicated.

2. Reporting of Noncompliance

a. Immediate Reporting

The Permittee shall immediately report the following occurrences to the DOH, Clean Water Branch at (808) 586-4309 during regular office hours (7:45 a.m. to 4:30 p.m.) and to the State Hospital Operator at (808) 247-2191 outside of these hours. A written report shall also be provided within five days of the oral report. The written report shall contain the information required under Part F.2.c.

- (1) Any non-compliance which may endanger human health or the environment.
- (2) Any discharge not authorized by this permit.
- (3) Any change that may have any adverse effects on the receiving waters from the normal conditions for which the ZOM was granted.

b. Other Noncompliance Reporting

The Permittee shall report all other instances of noncompliance not reported under Part F.2.a at the time the next DMR is submitted as required by Part F.2 of this permit. The noncompliance reports shall contain the information requested in Part F.2.c of this permit.

c. Written Noncompliance Reports

- (1) Written noncompliance reports shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times; if the noncompliance has not been corrected,

the anticipated time it is expected to continue; public notice efforts, if any; clean-up efforts, if any; and steps taken or planned to reduce, eliminate and prevent reoccurrence of the non-compliance.

- (2) The DOH may waive the written report or the five-day deadline on a case-by-case basis.

3. Other Reporting

- a. The Permittee shall report any observation of unusual occurrences at the facility, ZOM or surrounding areas which may cause an impact to the environmental impact with the next DMR submission. "Unusual occurrences" shall include, but not be limited to, fish kills, presence of algal blooms, and damage to equipment.
- b. The Permittee shall comply with the reporting requirements of 40 CFR 122.41(l)(1) through 122.41(l)(5), and 122.41(l)(8) as incorporated by Standard NPDES Permit Conditions, Section 16. Parts F.2 and F.3 of this permit supersede the requirements of 40 CFR 122.41(l)(6) and 122.41(l)(7).
- c. Except as noted below, the Permittee must notify the DOH of the use of any investigational new animal drug (INAD) or any extra label drug use where such a use may lead to a discharge of the drug to waters of the U.S. Reporting is not required for an INAD or extra label drug use that has been previously approved by FDA for a different species or disease if the INAD or extra label use is at or below the approved dosage and involves similar conditions of use.
 - (1) The Permittee must provide a written report to the DOH or EPA Region 9 of any INAD's impending use within 7 days of agreeing or signing up to participate in an INAD study. The written report must identify the INAD to be used, method of use, the dosage, and the disease or condition the INAD is intended to treat.
 - (2) For INADs and extra label drug uses, the Permittee must provide an oral report to the DOH and EPA Region 9 as soon as possible, preferably in advance of use, but no later than seven calendar days after initiating use of that drug. The oral report must identify the drugs used, method of application, and the reason for using that drug.
 - (3) For INADs and extra label drug uses, the Permittee must provide a written report to the DOH and EPA Region 9 within 30 calendar days after initiating use of that drug. The written report must identify the

drug used and include the reason for treatment, dates, times and duration of the addition, method of application, and the amount added.

- d. The Permittee shall report the failure of, or damage to, the structure of an aquatic animal containment system resulting in an unanticipated material discharge of pollutants to the receiving waters.
 - (1) The Permittee must provide an oral report within 24 hours of discovery of any reportable failure or damage that results in a material discharge of pollutants, describing the cause of the failure or damage in the containment system and identifying materials that have been released to the environment as a result of this failure.
 - (2) The Permittee must provide a written report with seven calendar days of discovery of the failure or damage documenting the cause, the estimated time elapsed until the failure or damage was repaired, an estimate of the amount of material released as a result of the failure or damage, and steps being taken to prevent a recurrence.
- e. The Permittee must orally report any spill of drugs, pesticides or feed that results in a discharge to the receiving waters within 24 hours and a written report within seven (7) calendar days of its occurrence. The report shall include the identity and quantity of the material spilled.
- f. In the event of a fish kill, the Permittee shall perform a visual inspection of the affected ocean area and notify beach/ocean users of its occurrence and the potential presence of shark. If sharks are sighted upon visual inspection of the ocean area from the shoreline, the Permittee shall take immediate action toward the protection of public health and safety, which may include, but shall not be limited to:
 - (1) Verbal warning notification to beach/ocean recreational users of the shark sighting.
 - (2) Notifications to the following agencies:
 - (a) Clean Water Branch-Kauai Office, DOH;
 - (b) Aquatic Resources Division, Department of Land and Natural Resources (DLNR-DAR); and
 - (c) Navy Pacific Missile Range (NPMR).
 - (3) Posting of shark sighting warning signs in accordance with protocols and/or guidance provided by the DLNR-DAR and the NPMR agencies responsible representatives, as applicable.

- g. The Permittee shall notify the DOH when species in addition to shrimp (*Litopenaeus vannamei*) are cultivated at the facility.

4. Schedule of Submission

- a. The Permittee shall follow the submission schedule outlined below:

Submission Requirement	Reporting Period	Due Date
Discharge Monitoring Report	1/Month	28 th day of the month following the completed monitoring period
Planned Changes	1/Quarter ¹	28 th day of the month following the completed monitoring period
Annual Chemical Usage Summary	1/Year	January 28 th of each year
Annual Summary of Research & Development	1/Year	January 30 th of each year
Effluent Water Monitoring Program	1/Permit Term	30 days after the effective date of this permit
Receiving Water Monitoring Program	1/Permit Term	30 days after the effective date of this permit
BMPs Plan	1/Permit Term	60 days after the effective date of this permit
Initial Investigation TRE Workplan	1/Permit Term	90 days after the effective date of this permit
Bottom Biological Communities Monitoring Plan	1/Permit Term	90 days after the effective date of this permit
Bottom Biological Communities Monitoring Results	1/Permit Term	One year prior to the expiration date of this permit
Renewal Application	1/Permit Term	One year prior to the expiration date of this permit

¹As needed.

b. Submittal of Reports

All reports, notifications, and updates to information on file shall be submitted through the CWB Compliance Submittal Form for Individual NPDES Permits and Notice of General Permit Coverages (NGPCs) unless otherwise instructed by the DOH. This form is accessible through the e-Permitting Portal website at: <https://eha-cloud.doh.hawaii.gov/epermit/>.

5. Types of Sample

- a. "Grab sample" means an individual sample collected at a randomly-selected time over a period not exceeding 15 minutes.

- b. "Composite sample" means a combination of at least eight sample aliquots, collected at periodic intervals during the operating hours of the facility over a 24-hour period, unless otherwise defined. The composite must be flow proportional; either the time interval between each aliquot or the volume of each aliquot must be proportional to either the stream flow at the time of sampling or the total stream flow since the collection of the previous aliquot. Aliquots may be collected manually or automatically.

H. OTHER REQUIREMENTS

1. Special Conditions

- a. The Permittee shall allow personnel from the DOH and the EPA to inspect the work authorized by this permit during normal operation hours. At their request, the Permittee shall provide these personnel with fish from the facility to monitor compliance. The Permittee shall make operational records available to these personnel for their inspection at their request.
- b. The Permittee shall maintain records documenting the feed amounts and estimates of the numbers and weights of fish in order to calculate representative feed conversion ratios.
- c. The Permittee shall submit to the DOH by January 30th of each year, an annual summary of the research & development (R&D) activities performed with respect to bivalves, fish and/or algae aquatic species at the facility. The annual summary shall also include notifications of any R&D activities that are being planned to be conducted at the facility during the remaining calendar year. The DOH reserves the right to modify this permit pursuant to 40 CFR Part 124 if it is determined that the R&D activities or alternative aquatic species cultivation significantly alters the operations and/or discharge quality of the facility from which the issued NPDES permit is based upon.
- d. Unless otherwise specified and as applicable, from the effective date of this permit, the Permittee shall commence required monitoring in accordance with the following schedule:
 - (1) Daily – Begin sampling the next calendar day;
 - (2) Weekly and bi-weekly (once every 2 weeks) – Begin sampling the first complete calendar week;
 - (3) Monthly and bi-monthly (once every 2 months) – Begin sampling the first complete calendar month;
 - (4) Quarterly – Begin sampling the first complete calendar quarter;
 - (5) Semi-annual with permit effective date between January 1st and June 30th – Begin sampling July 1st;
 - (6) Semi-annual with permit effective date between July 1st and December 31st – Begin sampling the next calendar year;

(7) Annual with permit effective date between January 1st and September 30th – Begin sampling this calendar year; and

(8) Annual with permit effective date between October 1st and December 31st – Begin sampling the next calendar year.

2. Schedule of Maintenance

The Permittee shall provide the DOH with a schedule of maintenance at least 14 calendar days prior to any maintenance of facilities which might result in the exceedance of effluent limitations. The schedule shall contain a description of the maintenance and its purpose, the period of maintenance, including exact dates and times, and steps taken or planned to reduce, eliminate, and prevent occurrence of non-compliance.

3. Chemical Summary

The Permittee shall submit a summary of the quantities of all chemicals, listed by both chemical and trade names, which were used in the operations of the facility by January 28th of the following year.

4. Waste Load Allocation (WLA) Implementation and Monitoring Plan

The Permittee shall develop and submit a facility-specific WLA implementation and monitoring plan to the DOH within one year of notification of the EPA approval date of a Total Maximum Daily Load (TMDL), which specifies WLAs applicable to the Permittee's discharge."

5. Permit Reopener

This permit may be reopened and modified, in accordance with NPDES regulations at 40 CFR 122 and 124, as necessary, to include additional conditions or limitations based on newly available information.

09014PKP.21b

Figure I-2

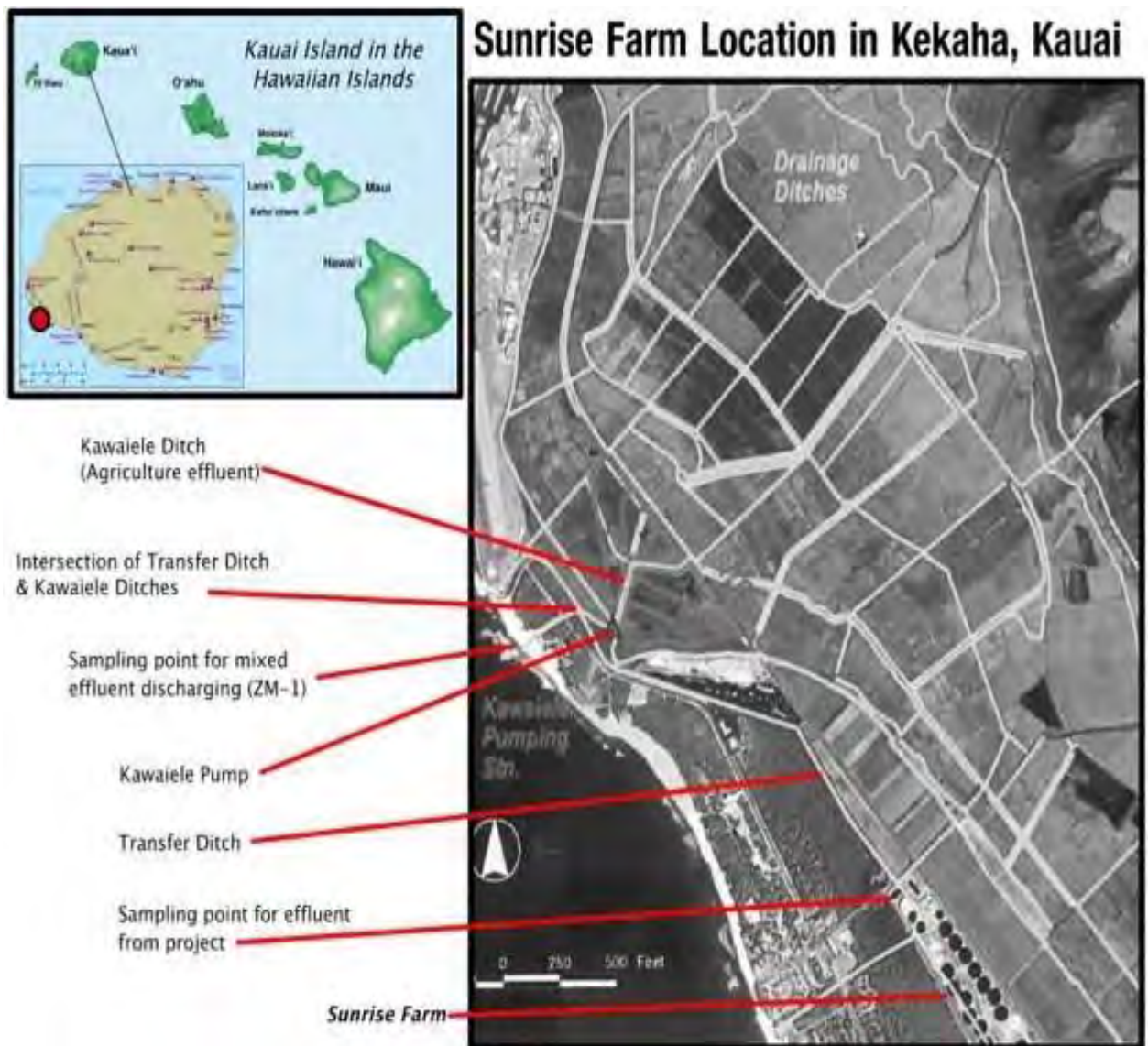
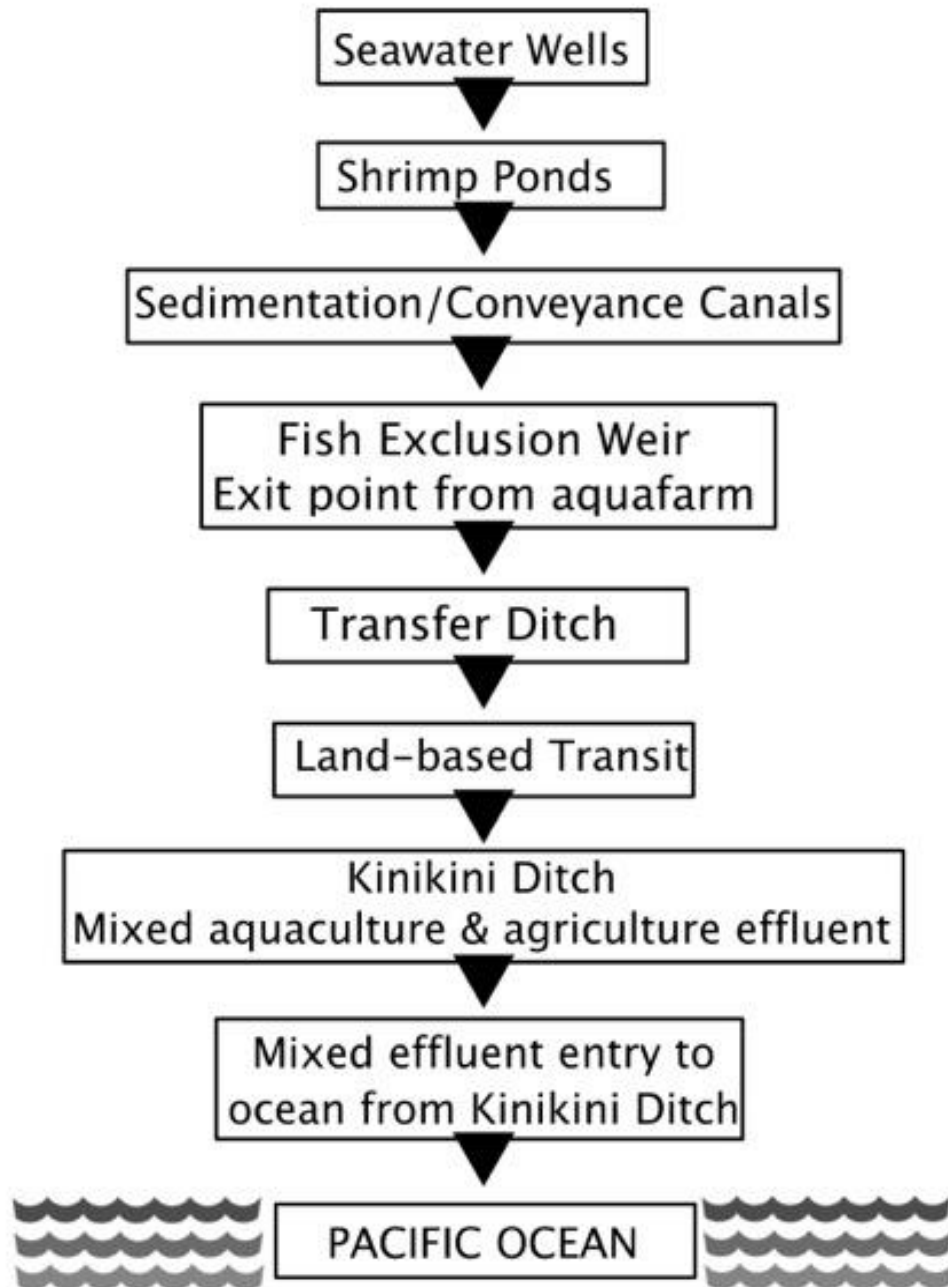


Figure I-3

Seawater Flow through Sunrise Farm to the Ocean



APPENDIX 1: MONITORING METHODS

Pollutant Name	CAS No.	ICIS Parameter Code	Sample Type
1,1,1-Trichloroethane	71-55-6	34506	Grab
1,1,2-Trichloroethane	79-00-5	34511	Grab
1,1,2,2-Tetrachloroethane	79-34-5	34516	Grab
1,2-Dichloroethane	107-06-2	81680	Grab
1,2-Diphenylhydrazine	122-66-7	34346	24-Hr Composite or Grab
1,2,4,5-Tetrachlorobenzene	95-94-3	77734	24-Hr Composite or Grab
1,3-Dichloropropene	542-75-6	77163	Grab
2-Chlorophenol	95-57-8	34586	24-Hr Composite or Grab
2-Methyl-4,6-Dinitrophenol	534-52-1	03615	24-Hr Composite or Grab
2,3,7,8-TCDD (Dioxin)	1746-01-6	34675	24-Hr Composite or Grab
2,4-Dichlorophenol	120-83-2	34601	24-Hr Composite or Grab
2,4-Dimethylphenol	105-67-9	34606	24-Hr Composite or Grab
2,4,6-Trichlorophenol	88-06-2	34621	24-Hr Composite or Grab
3,3'-Dichlorobenzidine	91-94-1	34631	24-Hr Composite or Grab
Acenaphthene	83-32-9	34205	24-Hr Composite or Grab
Acrolein	107-02-8	34210	Grab
Acrylonitrile	107-13-1	34215	Grab
Aldrin	309-00-2	39330	24-Hr Composite or Grab
alpha-Hexachlorocyclohexane (HCH)	319-84-6	39336	24-Hr Composite or Grab
Aluminum	7429-90-5	01104	24-Hr Composite or Grab
Antimony	7440-36-0	01268	24-Hr Composite or Grab
Arsenic	7440-38-2	00978	24-Hr Composite or Grab
Benzene	71-43-2	34030	Grab
Benzidine	92-87-5	39120	24-Hr Composite or Grab
Beryllium	7440-41-7	00998	24-Hr Composite or Grab
beta-Hexachlorocyclohexane (HCH)	319-85-7	39338	24-Hr Composite or Grab
Bis(2-chloro-1-Methylethyl) ether	108-60-1	34275	24-Hr Composite or Grab
Bis(2-chloroethyl) ether	111-44-4	34273	24-Hr Composite or Grab
Bis(2-ethylhexyl) phthalate	117-81-7	39100	24-Hr Composite or Grab
Cadmium	7440-43-9	01113	24-Hr Composite or Grab
Carbon tetrachloride	56-23-5	32102	Grab
Chlordane	57-74-9	39350	24-Hr Composite or Grab
Chlorine	7782-50-5	50060	Grab
Chloroform	67-66-3	32106	Grab
Chlorpyrifos	2921-88-2	38933	24-Hr Composite or Grab
Chromium (VI)	18540-29-9	01032	24-Hr Composite or Grab
Copper	7440-50-8	01119	24-Hr Composite or Grab
Cyanide	57-12-5	00720	24-Hr Composite or Grab
Demeton	8065-48-3	39560	24-Hr Composite or Grab
Di-n-butyl phthalate	84-74-2	39110	24-Hr Composite or Grab
Dieldrin	60-57-1	39380	24-Hr Composite or Grab
Diethyl phthalate	84-66-2	34336	24-Hr Composite or Grab
Dimethyl phthalate	131-11-3	34341	24-Hr Composite or Grab
Endrin	72-20-8	39390	24-Hr Composite or Grab
Ethylbenzene	100-41-4	34371	Grab
Fluoranthene	206-44-0	34376	24-Hr Composite or Grab

APPENDIX 1
PERMIT NO. HI 0021654
Page 2

gamma-Hexachlorocyclohexane (HCH) (Lindane)	58-89-9	39344	24-Hr Composite or Grab
Guthion	86-50-0	39580	24-Hr Composite or Grab
Heptachlor	76-44-8	39410	24-Hr Composite or Grab
Hexachlorobenzene	118-74-1	39700	24-Hr Composite or Grab
Hexachlorobutadiene	87-68-3	34391	24-Hr Composite or Grab
Hexachlorocyclopentadiene	77-47-4	34386	24-Hr Composite or Grab
Hexachloroethane	67-72-1	34396	24-Hr Composite or Grab
Isophorone	78-59-1	34408	24-Hr Composite or Grab
Lead	7439-92-1	01114	24-Hr Composite or Grab
Malathion	121-75-5	39530	24-Hr Composite or Grab
Mercury	7439-97-6	71901	24-Hr Composite or Grab
Methoxychlor	72-43-5	39480	24-Hr Composite or Grab
Mirex	2385-85-5	39755	24-Hr Composite or Grab
N-Nitrosodimethylamine	62-75-9	34438	24-Hr Composite or Grab
N-Nitrosodiphenylamine	86-30-6	34433	24-Hr Composite or Grab
Naphthalene	91-20-3	34696	24-Hr Composite or Grab
Nickel	7440-02-0	01074	24-Hr Composite or Grab
Nitrobenzene	98-95-3	34447	24-Hr Composite or Grab
Nitrosodibutylamine	924-16-3	78207	24-Hr Composite or Grab
Nitrosodiethylamine	55-18-5	78200	24-Hr Composite or Grab
Nitrosopyrrolidine	930-55-2	78206	24-Hr Composite or Grab
p,p'-Dichlorodiphenyldichloroethane (DDD)	72-54-8	39310	24-Hr Composite or Grab
p,p'-Dichlorodiphenyltrichloroethane (DDT)	50-29-3	39300	24-Hr Composite or Grab
Parathion	56-38-2	39540	24-Hr Composite or Grab
Pentachlorobenzene	608-93-5	77793	24-Hr Composite or Grab
Pentachloroethane	76-01-7	81501	24-Hr Composite or Grab
Pentachlorophenol	87-86-5	39032	24-Hr Composite or Grab
Phenol	108-95-2	34694	24-Hr Composite or Grab
Selenium	7782-49-2	00981	24-Hr Composite or Grab
Silver	7440-22-4	01079	24-Hr Composite or Grab
Tetrachloroethylene	127-18-4	78389	Grab
Thallium	7440-28-0	00982	24-Hr Composite or Grab
Toluene	108-88-3	34010	Grab
Toxaphene	8001-35-2	39400	24-Hr Composite or Grab
Tributyltin (TBT)**	1461-22-9	03824	24-Hr Composite or Grab
Trichloroethylene	79-01-6	39180	Grab
Vinyl chloride	75-01-4	39175	Grab
Zinc	7440-66-6	01094	24-Hr Composite or Grab

*The EPA recognizes the listed PCBs, as they are identified by the EPA Priority Pollutants List per 40 CFR 423, Appendix A, as acceptable representatives of the chemical group Polychlorinated Biphenyls.



**Per the publication EPA 822-R-03-031, certain anions of tributyltin do not contribute to toxicity. Toxicity data for tributyltin chloride were used in the derivation of aquatic life criteria.

Yost, Kayla

From: John Harder <dumpdoctor@gmail.com>
Sent: Tuesday, September 5, 2023 8:25 AM
To: Allison Fraley; Yost, Kayla
Cc: Ana Espanola; Keola Aki; Ruta Jordans; Helen Cox; Pam Burrell; Pat Gegen; Fred Styer; JoAnn Yukimura; Keone Kealoha; Gordon LaBedz; Laurel Brier; Dana Bekeart; Gary Hooser; Ichinotsubo, Lene K; Otsu, Lane M
Subject: Testimony on the Draft Environmental Assessment for the proposed Kekaha Landfill expansion
Attachments: Proclamation.jpg

Follow Up Flag: Follow up
Flag Status: Flagged

You don't often get email from dumpdoctor@gmail.com. [Learn why this is important](#)

 **CAUTION:** This email originated from an external sender. Verify the source before opening links or attachments. 

Aloha

My name is John Harder and among other positions I was Kauai County's first Solid Waste Manager. My work in that area has been recognized by the County (see the attached proclamation), the State of Hawaii, and the USEPA.

In addition to managing Solid Waste for the County of Kauai and the State of Hawaii, I also was Solid Waste Coordinator for Maui County and the Commonwealth of the Northern Mariana Islands.

While the Draft Environmental Assessment appears to adequately address the basic environmental issues involved in the proposed vertical expansion of the Kekaha Landfill (I use the term "appears" because due to its length and complexity it is almost impossible to completely digest the document even in multiple sittings) it fails to take advantage of this opportunity to include proposals for making some significant improvements in Kauai's Solid Waste System.

Even with the extensive examination of the potential environmental impacts of the proposed expansion, the Draft EA is little more than a discussion of how the proposal would fit within the existing Waste Management System, rather than taking the opportunity to look at what we could do if we were to address the environmental impacts of waste generation and disposal more aggressively.

The Draft EA is basically a document providing a minimum assessment of a proposed multi-million-dollar infrastructure project. When the County is looking at investing a significant amount of the public's money, there is a need and a responsibility to do more, to demand more. If we are ever going to be able to get off the buy-use-bury

roller coaster, now is the opportunity to include diversion options in our examination of our waste disposal infrastructure.

Solutions that could increase the life of the proposed Landfill expansion, thus increasing the value of the public's investment in the needed infrastructure, should be part of the discussion.

In addition, there is an entirely inadequate discussion of "preparing for Climate Change" looking only at how the proposed structure would hold up under the impacts of a warming climate, instead of discussing how the County's investment in a waste management infrastructure project could help address/mitigate some of the impacts of the coming changes in our climate.

There is also brief discussion of how the proposed project does not conflict with the existing State and County Environmental goals and policies, but no mention of how the investment in infrastructure could help support and advance those goals and policies, such as waste reduction and diversion.

Currently the County has made significant strides in waste disposal alternatives, with a diversion rate of over 40% through a combination of simple, publicly supported programs such as recycling and greenwaste drop sites, and commercial landfill bans and restrictions addressing materials such as greenwaste, cardboard, and scrap metal.

In the short term, even without implementing more extensive efforts such as curbside recycling or commercial foodwaste diversion we could increase the life and value of our investment in landfill infrastructure by implementing some simple policy changes.

As conserving valuable and limited landfill capacity and minimizing the potential for releases are definitely environmental concerns, these types of issues, including a commitment to expanded diversion efforts, should be part of the discussion of the environmental impacts of expanding the landfill.

One of the possible inclusions could be the commitment to the construction of a Materials Processing Facility (a MRF) in coordination with the landfill expansion.

Another simple diversion idea could be implementing a phased-in ban on certain types of Construction / Demolition debris, concurrent with support for a privately operated facility to process it.

Mahalo for the opportunity to comment on the project and your time and consideration of my input. Should you have additional questions I would be glad to respond.



Mahalo, John Harder, aka the Dumpdoctor

If you're not for ZERO Waste, how much Waste ARE you for?

Yost, Kayla

From: Allison Fraley <AFraley@kauai.gov>
Sent: Thursday, September 7, 2023 8:57 PM
To: Yost, Kayla
Cc: Keola Aki
Subject: Fwd: Response to draft EA for Kekaha landfill expansion

Follow Up Flag: Follow up
Flag Status: Flagged

 **CAUTION:** This email originated from an external sender. Verify the source before opening links or attachments. 

From: Ruta Jordans <zwknow@gmail.com>
Sent: Thursday, September 7, 2023 8:02:19 PM
To: Allison Fraley <AFraley@kauai.gov>
Cc: Alanna Le Sueur <alanna@adl-creative.com>; James Trujillo <07trujillojames18@gmail.com>; Jenn Sifuentes <jenn.sifuentes@gmail.com>; JoAnn Yukimura <jyukimura@gmail.com>; John Harder <dumpdoctor@gmail.com>; John Patt <jsclyde@aloha.net>; Nancy And Chris Romaine <nancyromaine@gmail.com>
Subject: Response to draft EA for Kekaha landfill expansion

CAUTION: This email originated from outside the County of Kauai. Do not click links or open attachments even if the sender is known to you unless it is something you were expecting.

Aloha Allison ,

Thank you for the opportunity to comment on the landfill expansion environmental assessment. As the current Kekaha Landfill has a short remaining life span and the new landfill is still in the planning stages, I believe the largest environmental issue is to divert as much as possible from the current and upcoming expanded Kekaha landfill.

With 43% diversion rate Kauai has done much diversion with little legislative help. However, in order to survive the period between when one landfill is expected to be full and the other not yet ready, we need to do as much diversion as possible starting now, thus cutting down as much as possible on trash sent to the landfill.

Looking at the 2016 landfill waste characterization study, there are many more divertable materials in the landfill. It is time for gradual bans on construction and demolition, organics and food waste and recyclables in the landfill, together with grants or other enablers to have regional composting around the island, a material recovery facility (MRF) and curbside recycling pick up (while increasing the fee for trash pickup), and an organized plan for reuse of construction and deconstruction debris.

Visitors and residents need to be made aware of our precarious position and how they can help. If we all work together

on the above suggestions we can not only make it safely through to the next landfill, but also make Kauai a more sustainable and healthy island.

Sincerely,

Ruta Jordans

Zero Waste Kauai

COMMENT SHEET

NAME: Pam Adams PHONE: 480-527-8483
AFFILIATION: Kekaha Resident EMAIL: drpamelaadams@icloud.com

PLEASE PLACE YOUR COMMENT OR QUESTION BELOW:

Wonderful starting points for "incentive" monies for the Community Benefit Program. However, to date these initiatives have been "soft." What about permanent structures to serve the community? Sidewalks, walkways, safe beach accesses?

COMMENT SHEET

NAME: Pam Adams PHONE: 480-527-8483
AFFILIATION: Kekaha Resident EMAIL: drpamelaadams@icloud.com

PLEASE PLACE YOUR COMMENT OR QUESTION BELOW:

The Community Benefit Program must begin to address infrastructure issues in Kekaha. Seniors, Kūiki, and other citizens are put in peril walking along Highway 50 in Kekaha as speeding county dump trucks speed by them. Waimea has a light and speed bump system. The citizens of Kekaha deserve similar attention to their safety.

COMMENT SHEET

NAME: Joseph Surotan PHONE: 808-652-1442

AFFILIATION: Cox County Council EMAIL: ASURO@KAAI.GOV

PLEASE PLACE YOUR COMMENT OR QUESTION BELOW:

ARE THERE ANY CONCERNS ABOUT BIRDS AND FLIGHTS
DUE TO INCREASED HEIGHT OF LANDFILL, DUE TO PROX
AIRPORT NEARBY.

COMMENT SHEET

NAME: D.J Adams PHONE: 808 859 1108

AFFILIATION: Resident EMAIL: david.adams@ahaiokai.org

PLEASE PLACE YOUR COMMENT OR QUESTION BELOW:

- (1) What are the considerations & planning for continued high volume of industrial traffic to/from the landfill? Significant safety concerns exist
- (2) When the next major hurricane arrives & destroys the current landfill, what will be the plan to restore beautiful Kekaha? Who will accept responsibility?

31 August 2023

Bonnie P Bator `Ohana (Keana`aina, Keli`ikoa, Kai`aokamalie and Kai) **PO Box 30848 – Anahola Hawai`i 96703-30848** ***** **Please, contact me when the final Environmental Assessment is published specifically by written notice by USPS (United States Postal Service), MAHALO Plenty !**

Applicant: County of Kaua`i, Department of Public Works, Solid Waste Division 4444 Rice St – 275

Līhu`e, Hawai`i 96766 **Contact:** Allison Fraley, AFraley@kauai.gov **Agent:** Tetra Tech 737 Bishop Street, Suite 2000, Honolulu, Hawai`i 96813 **Contact:** Kayla Yost, kayla.yost@tetratech.com

RE Draft Environmental Assessment (dEA) Proposed Action: TMK (4) 1-2-002:001 (portion) and :009

The proposal vertical expansion of Phase II operations at Kekaha Municipal Solid Waste Landfill (KLF)
This proposal – within the existing permitted footprint of the Phase II landfill constructed above the existing Subtitle D base liner.
To Whom it May Concern:

We appreciate the opportunity to comment on the Proposed Action to extend Phase II operations upward of the Kekaha Municipal Solid Waste Landfill (KLF) in Kekaha. Regarding the existing Subtitle D base liner – please provide the design of Subtitle D base liner – exactly how will it protect the `aina of Kekaha in the proposed increase height in the final Environmental Assessment (final EA) description of what constitutes Subtitle D ?

“ ... Under normal conditions the geomembrane is almost certainly the crucial liner component, while the mineral component guarantees failure tolerance and redundancy. An integrated research programme has suggested alternative solutions such as a geomembrane with a geosynthetic clay liner, a geomembrane with a leakage detection system and a geomembrane with a capillary barrier. However, if such systems were used, the monitoring and assessment and, possibly, repair of the liner components would represent an almost endless after-care programme. Thus the design of suitable liner materials is the need of hour as the ground water pollution is increasing day by day ... ” **A COMPREHENSIVE REVIEW ON LANDFILL LINER**

International Research Journal of Engineering and Technology (IRJET)

e-ISSN: 2395-0056 Volume: 05 Issue: 11 | Nov 2018 www.irjet.net p-ISSN: 2395-0072 – page 627

<https://www.irjet.net/archives/V5/i11/IRJET-V5I11122.pdf>

An astronomical amount of solid waste produced by enormous population growth on Kaua`i & visitor industry – We are deeply concerned as Mount Kekaha grows ever taller – the final EA must provide imminent solutions to divert the solid waste stream that is bringing Mount Kekaha to 171.5 ft above sea-level.

Accountability is severely lacking in the management of solid waste on Kaua`i. Big Box stores are a major attributing factor & must contribute to help with solid waste diversion – profits of their stockholders need to be diverted into solutions for the trashing of Kaua`i.

Poho, millions of dollars wasted during the Environmental Impact Statement (EIS) process for ill-conceived proposal Ma`alo MSWLF in August 21, 2017. According to an article published by “Honolulu Civil Beat” (<https://www.civilbeat.org/2017/08/brittany-lyte-has-kauai-finally-found-a-site-for-a-new-landfill/>) by Brittany Lyte: “ ... Has Kauai Finally Found A Site For A New Landfill?” it stated: “ ... After a decade of effort, the county has located a preferred site for a new \$65 million facility. But the plan will likely face NIMBY opposition. “ ... the bulging Kekaha landfill approaches maximum capacity, county officials are sleuthing to find the island’s 86,900 tons of annual waste a new final resting place. A replacement municipal landfill is expected to cost taxpayers \$65 million, plus another \$20 million for an access road ... ”

In 2017 dollars it’d cost \$20 million to close KLF – today’s inflation it’s double that amount – where will current County of Kauai, Department of Public Works, Solid Division top dogs be when it’s time to close KLF and deal with a looming at least \$150 million cost to construct a new Municipal Solid Waste Landfill (MSWLF) According to Mayor Kawakami, back in May 11, 2022 in “Honolulu Civil Beat” (by Brittany Lyte) “ ... The biggest bang for our buck right now that would probably make the biggest difference as far as diversion would be creating a construction and demolition reclamation center so that we’re not sending construction waste to the landfill because that takes up a lot of space and that space equates to the amount of time that the landfill has left to be operational, ... ”

(<https://www.civilbeat.org/2022/05/the-kauai-landfill-conundrum-could-quickly-become-a-public-health-hazard/>) Most resorts here on Kaua`i have accomplished multi-million dollar renovations, they contribute to the waste stream that ends up contributing to Mount Kekaha – they’re owned by multi-national consortiums – Aue –

Bonnie P Bator & `Ohana

Appendix E - Cultural Impact Assessment

**Cultural Impact Assessment for the
Kekaha Municipal Solid Waste Landfill Phase II
Vertical Expansion Project,
Waimea Ahupua‘a, Waimea District, Kaua‘i
TMKs: (4) 1-2-002:009 and 001 (por.)**

**Prepared for
Tetra Tech, Inc.
on behalf of the
County of Kaua‘i**

**Prepared by
Tehani Baculpo, B.A.,
and
Hallett H. Hammatt, Ph.D.**

**Cultural Surveys Hawai‘i, Inc.
Kailua, Hawai‘i
(Job Code: WAIMEA 49)**

July 2023

**O‘ahu Office
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Kailua, Hawai‘i 96734
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**Hawai‘i Office
399 Hualani St. #124
Hilo, Hawai‘i 96720
Ph.: (808) 965-6478
Fax: (808) 965-6582**

Management Summary

Reference	Cultural Impact Assessment for the Kekaha Municipal Solid Waste Landfill Phase II Vertical Expansion Project, Waimea Ahupua‘a, Waimea District, Kaua ‘i, TMKs: (4) 1-2-002:009 and 001 por. (Baculpo and Hammatt 2023)
Date	July 2023
Project Number(s)	Cultural Surveys Hawai‘i, Inc. (CSH) Job Code: WAIMEA 49
Agencies	County of Kaua‘i, Department of Public Works, Solid Waste Division
Land Jurisdiction	County of Kaua‘i
Project Location	The existing Kekaha Municipal Solid Waste Landfill (KLF) is located 1.3 miles northwest of the town of Kekaha on the southwest side of the Island of Kaua‘i. The KLF site encompasses approximately 98 acres of land within Tax Map Keys (TMK) 1-2-002:009 and 1-2-002:001 (por.), which are owned by the State of Hawai‘i and administered by the Department of Land and Natural Resources (DLNR). The KLF is situated adjacent to Kaumuali‘i Highway approximately 1,700 feet (ft) from the shoreline of the Pacific Ocean. The location and boundaries of the existing KLF and approximate extent of the proposed vertical expansion (proposed action) are delineated on USGS topographic maps (Figure 2 and Figure 2), tax map plat (Figure 3), and a 2021 ESRI aerial image (Figure 4).
Project Description	<p>The County of Kaua‘i, Department of Public Works, Solid Waste Division (County) is proposing a vertical expansion of Phase II of the Kekaha Municipal Solid Waste Landfill (KLF). The KLF is a municipal solid waste (MSW) landfill comprised of two distinct refuse fill areas identified as Phase I and Phase II. The proposed action would extend Phase II upward from the currently permitted maximum height of 120 ft above mean sea level (msl) to a new permitted maximum height of 171.5 ft above msl. This proposed vertical expansion would be within the existing permitted footprint of the Phase II landfill area. No native soil or new areas will be disturbed.</p> <p>The KLF is Kaua‘i Island’s only permitted MSW landfill and is predicted to reach its capacity in October 2026. However, the planning, permitting, and implementation of any potential long-term landfill capacity solution is anticipated to require more than five years (i.e., would not be available for MSW disposal until after October 2026). Therefore, there is a need to provide landfill capacity beyond October 2026 while a long-term landfill capacity solution is planned, permitted, and implemented. The purpose of the vertical expansion of the Phase II</p>

	<p>portion of the KLF is to add landfill capacity to the existing landfill while a long-term landfill capacity solution is implemented.</p> <p>The major components of the proposed action would be located entirely within TMK: (4) 1-2-002:001 (por.) and would include the following:</p> <p>Vertical Landfill Expansion: The proposed Phase II vertical expansion would extend the existing engineered waste disposal area upward to a maximum height of 171.5 ft above msl, without expanding the existing permitted footprint. The approximate extent of the proposed vertical expansion is shown in Figure 4 and Figure 5. The proposed vertical expansion would be designed for slope stability, positive drainage off the landfill surface, and to maximize disposal capacity. New access roads would be constructed to access the upper reaches of the landfill area.</p> <p>Landfill Gas (LFG) Collection and Control System (GCCS): Modern MSW facilities require GCCSs to collect and properly dispose of landfill gas. KLF's existing GCCS consists of a network of high-density polyethylene (HDPE) pipes, gas collection devices (i.e., gas wells), and an enclosed landfill gas flare designed to minimize and control emissions. The existing GCCS would be expanded to accommodate the increased height of Phase II by raising or relocating the existing GCCS infrastructure within the footprint of the vertical expansion and installing additional landfill gas extraction wells and related lateral piping in the areas of new waste.</p> <p>Stormwater Management: Current design and operation of KLF includes stormwater management that diverts stormwater away from the active refuse areas to infiltration ditches around the perimeter of the landfill and to an existing stormwater infiltration basin. Under the proposed action, existing surface water drainage features that currently divert stormwater away from the refuse areas would need to be modified slightly (i.e., extended upward) to accommodate the increase in height of the Phase II waste disposal area.</p> <p>In addition to the landfill gas GCCS and stormwater management infrastructure, KLF currently incorporates engineering and operational controls to minimize and avoid adverse impacts to the environment and public. These controls include, but are not limited to, groundwater and leachate monitoring, litter control, dust control, odor control, and vector control. KLF also implements a spill prevention, control, and countermeasures plan, emergency management procedures, and other operational plans. KLF would continue to implement its operational controls and plans under the proposed action. No substantial changes to KLF's operations are proposed. Operation of the Phase II vertical expansion would begin once all approvals are received.</p>
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Project Acreage	The Kekaha Municipal Landfill Facility encompasses approximately 98 acres (39.659 hectares). The Phase II permitted limit-of-waste footprint is approximately 44 acres. The limits of the proposed vertical expansion would be approximately 13 acres located within the Phase II permitted limit-of-waste footprint.
Document Purpose and Regulatory Context	<p>This cultural impact assessment (CIA) supports compliance for the Kekaha Municipal Solid Waste Landfill Phase II Vertical Expansion project with:</p> <ul style="list-style-type: none"> the mandate set forth by the Hawai‘i State Constitution (Articles IX and XII), courts, Hawai‘i Revised Statutes (HRS), Hawai‘i Administrative Rules (HAR), and other Hawai‘i State laws requiring government agencies to promote and preserve cultural beliefs, practices, and resources of Native Hawaiians and other ethnic groups; the State of Hawai‘i’s environmental review process under HRS §343, which requires consideration of the proposed project’s potential effects on cultural practices and cultural features in order to “promote responsible decision making” (HRS §343); and the State of Hawai‘i’s historic preservation review process under HAR §13-275-6 and §13-284-6, which requires the identification and mitigation of adverse effects proposed by a potential project in order to “promote the use and conservation of historic properties for the education of the citizens of Hawai‘i” (HAR §13-275-6). <p>This CIA contains information gathered from archival research and consultation, compiled in order to “analyze the impact of a proposed action on cultural practices and features associated with the project area” (Office of Environmental Quality Control 1997). Cultural practices and cultural features may include traditional cultural properties (TCPs), designated significant historic properties under State of Hawai‘i significance Criterion e, pursuant to HAR §13-275-6 and §13-284-6. Significance Criterion e refers to historic properties that “have an important value to the native Hawaiian people or to another ethnic group of the state due to associations with cultural practices once carried out, or still carried out, at the property or due to associations with traditional beliefs, events or oral accounts—these associations being important to the group’s history and cultural identity” (HAR §13-275-6 and §13-284-6).</p>
Results of Background Research	Background research for the proposed project yielded the following information:

	<ol style="list-style-type: none"> 1. Kekaha lies in the <i>ahupua‘a</i> (traditional land division) of Waimea on the southwest side of the island of Kaua‘i, part of the traditional Hawaiian <i>moku</i> (district) of Kona and the current district of Waimea. Waimea Ahupua‘a is by far the largest <i>ahupua‘a</i> on the island, comprising 92,646 acres and accounting for more than a quarter of the total land area of Kaua‘i (Gray 1875:146) 2. There are many legends associated with the Hawaiian gods, such as Pele and her siblings, and <i>ali‘i</i> (chiefly class), such as Ola‘a (Wichman 1998:23–24; Wichman 2001:17). 3. Hawaiian legends concerning Waimea focus on the engineering feats that made the agricultural abundance of the <i>ahupua‘a</i> possible, such as the Kīkīola Ditch, also known as the “Menehune Ditch” (Wichman 1998:9) 4. Waimea, Kaua‘i was also a site of great significance for <i>po‘e kuhikuhi pu‘uone</i> (site experts) and <i>po‘e kilo hoku holo moana</i> (navigators) of the pre-Contact time. <i>Po‘e kilo hoku</i> (astronomers) of O‘ahu and Kaua‘i, “who were very skilled in discerning the ways of the sun, the moon, and the stars, as well as knowing the configuration of the earth (<i>papa huluhonua</i>)” (Kamakau 1976:14), gathered in Waimea, Kaua‘i to make their observations. 5. While Waimea may have always been a royal center for the <i>ali‘i</i> of Kaua‘i, this position was greatly reinforced after Western Contact (Zulick et al. 2000:14). 6. Over 150 <i>kuleana</i> awards were granted in Waimea, however, only three claims were made in and nearby Kekaha (Land Commission Award [LCA] 5362, 6698, and 8841) (Papakilo Database 2022; Waihona ‘Aina 2022). 7. Knudsen assumed the lease of government land from Archibald Archer and a Mr. Gruben. The two men were involved in a failing tobacco farming enterprise. A Mr. Clifford, who made cigars, was also associated with the enterprise (Lydgate 1991:92). Eventually Knudsen controlled the entire district, excluding <i>kuleana</i> (tenant) lands, from Nu‘alolo to Waimea, including all the <i>mauka</i> (inland) area (Knudsen and Noble 1945:35). 8. Waterfowl present in the wetlands provided a food resource for the area residents. Among them the <i>kōloa</i> (Hawaiian duck) and especially the <i>‘alae</i> (Hawaiian gallinule) and <i>āe‘o</i> (<i>kukuluāe‘o</i>; Hawaiian stilts) were numerous (Von Holt 1985:78). All three
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	<p>were traditionally caught and consumed by the Hawaiians (Malo 1951:39).</p> <ol style="list-style-type: none"> 9. Rice cultivation by Chinese farmers began in Waimea Valley in the 1860s. At Waimea, as in other locales, groups of Chinese began leasing former taro lands for conversion to rice farming. By the 1930s the rice industry had ceased entirely on the islands of Hawai'i, Maui, and Moloka'i (Coulter and Chun 1937:62). 10. In 1898, the Kekaha Sugar Company was established by the consolidation of three Kaua'i sugar interests (Wilcox 1996:93). 11. Valdemar Knudsen, founder of Kekaha Sugar Company, looked to the Waimea River as a source of sugar cane irrigation—pushing forward the Kekaha Ditch project. Construction of the Kekaha Ditch started in May 1906 and was completed in September 1907 (Wilcox 1996:93). 12. Fayé founded H.P. Fayé & Company, a sugar plantation in Mānā, the westernmost town in Kaua'i. In 1906 Fayé acquired the Waimea Sugar Mill, which had been founded in 1884. In 1910 the Waimea Sugar Mill Company was bought by Hans Peter Fayé, Ltd., operator of the neighboring Kekaha Sugar Company. From 1923 to 1926 the construction of the Koke'e Ditch was undertaken by the Kekaha Sugar Company to further irrigate plantation lands (Wilcox 1996:93-97). 13. The railroad line was built by the Kekaha Sugar Company in about 1884, which used to transport sugar from its own mill to the pier at Waimea Landing. Initially the train stopped at the Waimea Sugar Mill Company to also transport their sugar to the landing (Condé and Best 1973:203). 14. In 1950, the Waimea Sugar Mill Company was reorganized into the Waimea Sugar Mill Inc., which continued to process cane, and the Kikiaola Land Company, which was created to manage the property. 15. At the time of statehood in 1959, H.P. Fayé & Company was incorporated as Kikiaola Land Company and it is still owned by about 100 of the founder's descendants. Linda Collins, a granddaughter of H.P. Fayé, is now the president of Kikiaola Land Company. 16. Kekaha Sugar Company continued to produce sugar until 17 November 2000 when the parent company, AmFac, closed the factory down due to financial hardship (Kojima 2000). 17. In September 2003, land situated in Kekaha, Kaua'i was transferred through executive order No. 4007 to the
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	<p>Agribusiness Development Corporation (ADC) for agricultural and related purposes.</p> <p>18. Seven historic properties were previously identified within the project area vicinity. Folk and Hammatt (1993) identified an abandoned irrigation canal and a low linear sand mound for irrigation control within the project area (Folk and Hammatt 1993:26, 32). These historic properties were confirmed by AECOM to no longer be present within the project area.</p> <p>19. There were three cultural studies that included the current project area. One CIA was conducted for the KLF in 2007 as part of the EA process, however, no report was produced. The EA report did state that no cultural practices were identified during consultation (Earth Tech 2007:4-3). The other two cultural studies included a portion of the current project area (Flores and Kaohi 1993;Walden and Collins 2015) and no ongoing cultural practices were identified as well.</p>
Results of Community Consultation	<p>CSH attempted to contact Hawaiian organizations, agencies, and community members as well as cultural and lineal descendants to identify individuals with cultural expertise and/or knowledge of the project area and vicinity. Community outreach letters were sent to 61 individuals or groups; 14 responded, three provided written testimony, and one of these <i>kama 'āina</i> (native-born) and/or <i>kūpuna</i> (elder/of the grandparent's generation) met with CSH for a more in-depth interview. Unfortunately, we didn't receive consent in time for one written testimony to be included. Consultation was received from:</p> <ol style="list-style-type: none"> 1. Christine "Chris" Fayé, Executive Director of Hui o Laka – Kōke'e Natural History Museum 2. Lyle Tabata, Part-owner of B&T Contractors and Kauai County Member of the Agribusiness Development Corporation (ADC) Board of Directors 3. Leanora "Lea" Dizol Kaiaokamalie, Lineal descendant and family representative for the Kilauano family
Identification of Cultural Practices	<p>Consultation identified the following cultural, historical, and natural resources where cultural practices (including traditional and customary Native Hawaiian rights) are being exercised in Waimea Ahupua'a:</p> <ol style="list-style-type: none"> 1. Freshwater resources 2. Flora and Fauna 3. Marine resources 4. <i>Iwi kūpuna</i> (ancestral remains) <p>Based on the results of community consultation and background research conducted as part of this CIA, CSH has identified the following cultural practices within Waimea Ahupua'a:</p>

	<ol style="list-style-type: none"> 1. Fishing 2. Farming (<i>kalo</i> [taro], rice, and sugarcane) 3. <i>Limu</i> (seaweed) gathering 4. Hunting 5. Salt production 6. Canoe production 7. Recreational activities 8. Weaving practices 9. Hula 10. <i>Mo'olelo</i> 11. <i>Wahi pana</i> 12. <i>Mele</i> (songs) 13. Religious activities and burial practices <p>No ongoing cultural practices were identified within the project area during background research and community consultation. However, the project area is in the general vicinity of ongoing cultural practices such as burial practices, fishing, and recreational activities.</p>
Identification of Impacts to Cultural Practices	<p>No impacts to ongoing cultural practices were identified within the project area during background research and community consultation for this CIA. Consultation identified a number of concerns related to the environment and the broader community:</p> <ol style="list-style-type: none"> 1. Ms. Fayé is concerned with the reduction of native bird habitats and food sources. Native waterfowl use reservoirs and ditches/canals as habitats and food sources, and currently they thrive in the settling pond at the landfill. 2. Ms. Fayé and Ms. Kaiaokamalie are concerned with altering the cultural landscape by creating mountains near the ocean where it was originally flat. This also impacts the visual aesthetics of the area. 3. Ms. Kaiaokamalie is also concerned with the depletion of marine resources in the area due to the strong currents and increase of predators, like hammerhead sharks, which are attracted to the smell of the trash from the landfill and the murky water.
Conclusions and Recommendations	<p>As no impacts to ongoing cultural practices were identified within the project area, no mitigation actions are necessary. There is no construction as part of the proposed action, meaning no native soil will be excavated and there will be no new disturbance. Therefore, inadvertent cultural finds are unlikely, however, CSH recommends the following in the unlikely case of inadvertent cultural finds:</p> <ol style="list-style-type: none"> 1. Landfill personnel should be informed of the possibility of inadvertent cultural finds, including human remains. In the unlikely event that any potential historic properties are identified

	<p>during landfill operations, all activities will cease and the SHPD will be notified pursuant to HAR §13-280-3. In the unlikely event that <i>iwi kūpuna</i> are identified, all earth moving activities in the area will stop, the area will be cordoned off, and the SHPD and Police Department will be notified pursuant to HAR §13-300-40. In addition, in the event of an inadvertent discovery of human remains, the completion of a burial treatment plan, in compliance with HAR §13-300 and HRS §6E-43, is recommended.</p> <p>2. In the event that <i>iwi kūpuna</i> and/or cultural finds are encountered during landfill operations, project proponents should consult with cultural and lineal descendants of the area to develop a reinterment plan and a cultural preservation plan for proper cultural protocol, curation, and long-term maintenance.</p> <p>As detailed in Section 7, community participants provided broad recommendations related to environmental stewardship and landfill management. These should be considered by the county as appropriate:</p> <ol style="list-style-type: none"> 1. In response to Ms. Fayé's concern for the reduction of native bird habitats, she recommends better management of the lands that are becoming fallow or return to wetlands for habitat purposes rather than making new wetlands out of dry land. 2. Ms. Kaiaokamalie recommends integrating previous archaeological studies conducted within the project area and including in the current CIA report how the site was studied for future reference. If another archaeological survey was to be conducted in the future, she's hoping it can be done more thoroughly. 3. Ms. Kaiaokamalie also recommends the county of Kaua'i implement more recycling and upcycling opportunities to prevent overfill at the landfill. 4. Ms. Kaiaokamalie suggests the county develop mitigation efforts toward removing the vertical expansion once a long-term solution for the landfill is established. It needs to be removed or flattened to recover the cultural landscape. 5. Ms. Kaiaokamalie also suggests to include possible impacts, solutions, and outcomes from projects around the world with similar solid waste management issues. This will create a trail that allows people in the future to further develop a solution. She also recommends the county have a working group or
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	policy where they must revisit the issue and discuss how to implement ongoing solid waste management technologies.
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Table of Contents

Management Summary	i
Section 1 Introduction	1
1.1 Project Description	1
1.1.1 History of KLF	1
1.1.2 Purpose and Need	4
1.1.3 Proposed Action.....	4
1.2 Regulatory Context.....	6
1.3 Document Purpose.....	6
1.4 Scope of Work	6
1.5 Natural Environment	7
1.5.1 <i>Ka Lepo</i> (Soils).....	7
1.5.2 <i>Nā Makani</i> (Winds)	8
1.5.3 <i>Nā Ua</i> (Rains).....	11
1.5.4 <i>Nā Kahawai</i> (Streams and Freshwater)	15
1.5.5 <i>Ka Likikikai a me Ka Moana</i> (the Coast and Ocean).....	16
1.6 Built Environment	17
Section 2 Methods	18
2.1 Archival Research.....	18
2.2 Community Consultation.....	18
2.2.1 Sampling and Recruitment.....	18
2.2.2 Informed Consent Protocol.....	19
2.2.3 Interview Techniques.....	20
2.2.4 Protection of Sensitive Information.....	20
2.3 Compensation and Contributions to Community	20
Section 3 Traditional Background.....	22
3.1 Traditional Land Settlement Patterns	22
3.2 <i>Nā ka‘ao a me nā Mo‘olelo</i> (Legends and Stories)	22
3.2.1 Pele	23
3.2.2 Kanaka-Nunui-Moe	25
3.2.3 The Girl and the <i>Mo‘o</i>	26
3.2.4 The Rainbow Princess	26
3.2.5 The Story of Ola	27
3.3 <i>Nā Wahi Pana</i> (Storied Places)	28
3.3.1 <i>Nā Inoa ‘Āina</i> (Place Names)	29
3.4 <i>Oli</i> (Chants)	36
3.4.1 <i>Ho‘ao</i> (Marriage) <i>oli</i>	36
3.4.2 Pele and Oli of Waimea	37
3.5 <i>Nā Mele</i> (Songs)	38
3.5.1 <i>Kaua‘i Mele</i>	38
3.5.2 <i>Kōke‘e</i>	39
3.5.3 <i>Maika‘i Kaua‘i</i>	40
3.5.4 <i>Hele On To Kaua‘i</i>	40
3.6 <i>Nā ‘Ōlelo No‘eau</i> (Proverbs).....	41
3.6.1 <i>‘Ōlelo No‘eau #686</i>	41

3.6.2 'Ōlelo No 'eau #1028	42
3.6.3 'Ōlelo No 'eau #1104	42
3.6.4 'Ōlelo No 'eau #1662	42
3.6.5 'Ōlelo No 'eau #1339	42
3.6.6 'Ōlelo No 'eau #1775	42
3.6.7 'Ōlelo No 'eau #2910	42
3.6.8 'Ōlelo No 'eau #2920	43
Section 4 Historical Background	44
4.1 Pre-Contact to Early Post-Contact Period	44
4.2 Early Historic Period	45
4.2.1 Observations of Early Explorers and Visitors	45
4.2.2 Missionary Accounts	49
4.2.3 Population Decline.....	51
4.3 The Māhele and the Kuleana Act	51
4.4 Mid- to Late 1800s.....	55
4.4.1 Kekaha	55
4.4.2 Rice and Sugar Cultivation	58
4.5 1900s.....	60
4.6 Contemporary Land Use.....	63
Section 5 Previous Archaeological Research	70
5.1 Overview.....	70
5.2 Previous Archaeological Research in the KLF (Ching 1982; Folk and Hammatt 1993).....	75
5.3 Discussion and Overview of Archaeological Historic Properties in the Project Area Vicinity...	76
Section 6 Previous Cultural Research	77
6.1 Overview.....	77
6.2 Hawaiian Cultural and Historical Survey of Nohili, Mānā (Flores and Kaohi 1993).....	79
6.2.1 Agriculture.....	79
6.2.2 Gathering Practices and Resources	79
6.2.3 Fishing Practices and Resources	79
6.2.4 Hula.....	80
6.2.5 Weaving.....	80
6.2.6 Burials.....	80
6.3 Kekaha Cable Landing Project (Chiogioji et al. 2003).....	80
6.3.1 Habitation	81
6.3.2 Trails.....	81
6.3.3 Agriculture.....	81
6.3.4 Fishing	81
6.3.5 Burials.....	83
6.3.6 <i>Mele</i>	83
6.4 Proposed Rock Crushing Establishment Project (Fernandes-Farias et al. 2010).....	83
6.4.1 Habitation	83
6.4.2 Trails.....	83
6.4.3 Freshwater Resources	84
6.4.4 Agriculture.....	85
6.4.5 Fishing	86
6.4.6 Hunting	86

6.4.7 Historical and Cultural Properties.....	87
6.4.8 Burials.....	89
6.5 Lighting and Electrical Improvements at the Mānā Drag Racing Strip in Kekaha (Walden and Collins 2015).....	89
Section 7 Community Consultation.....	90
7.1 Overview.....	90
7.2 Acknowledgements.....	90
7.3 Community Consultation Table.....	90
7.4 Written Responses	95
7.4.1 Ms. Christine “Chris” Fayé.....	95
7.4.2 Mr. Lyle Tabata	102
7.5 Summaries of Community Interviews	104
7.5.1 Ms. Leanora “Lea” Dizol Kaiaokamalie.....	104
Section 8 Traditional Cultural Practices and Resources.....	108
8.1 Overview.....	108
8.2 Habitation and Freshwater Resources.....	108
8.3 Trails	110
8.4 Flora and Fauna	111
8.5 Agriculture.....	111
8.6 Fishing and Marine Resources.....	113
8.7 Hunting	114
8.8 Gathering Practices and Resources.....	114
8.9 Hula	116
8.10 Historical and Cultural Properties.....	116
8.11 Burials.....	118
8.12 Wahi Pana, Mo‘olelo, and Mele	118
Section 9 Summary and Recommendations	120
9.1 Results of Background Research	120
9.2 Results of Community Consultation.....	121
9.3 Identification of Cultural Practices	122
9.4 Identification of Impacts to Cultural Practices	122
9.5 Conclusions and Recommendations	123
Section 10 References Cited	125
Appendix A Community Outreach Letter	136
Appendix B Permissions/Release Forms	141
Appendix C Interview Questionnaires	144
Chris Fayé.....	144
Lyle Tabata	152

List of Figures

Figure 1. Portion of the 1991 Kekaha USGS 7.5-minute topographic map quadrangle with the boundary of the existing Kekaha Municipal Landfill delineated (USGS 1991).....	1
Figure 2. TMK: (4) 1-2-002 showing portions of the project area within portion of parcels 009 and 001 (Hawai‘i TMK Service 2014)	2
Figure 3. 2021 ESRI aerial image superimposed with the boundaries of Phase I and Phase II of the existing Kekaha Municipal Landfill and approximate extent of the proposed vertical expansion (ESRI 2021)	3
Figure 4. Profile drawing showing the proposed vertical expansion (courtesy of client)	5
Figure 5. Overlay of <i>Soil Survey of the Islands of Kauai, Oahu, Maui, Molokai, and Lanai, State of Hawaii</i> (Foote et al. 1972), indicating soil types within and surrounding the project area (USDA SSURGO 2001)	9
Figure 6. Portion of 1991 Kekaha USGS 7.5-minute topographic quadrangle depicting LCA 8841.....	54
Figure 7. 1907 Helibron map of Mānā lots in Waimea and swamplands	57
Figure 8. 1906 Donn map of Kaua‘i Island with land use (RM 2375) showing the current project area	59
Figure 9. Historic photo of the upper reaches of the Kekaha Ditch showing the general nature of the ditch (Wilcox 1996:94).....	61
Figure 10. Kekaha irrigation ditch photo, n.d. (University of Chicago).....	62
Figure 11. Kekaha Sugar Mill (CSH 2010)	64
Figure 12. 1910 Mana USGS topographic quadrangle showing railroad route and no urban development within and around the project area	65
Figure 13. 1952 Awana map of Waimea government lands showing development within and around the project area	66
Figure 14. 1963 Kekaha USGS topographic quadrangle showing project area	67
Figure 15. 1977 USGS Orthophotoquad aerial photograph of Kekaha quadrangle, showing development within and around the project area	68
Figure 16. Portion of the 1991 Kekaha USGS 7.5-minute topographic quadrangle showing previous archaeological studies in the vicinity of the project area	73
Figure 17. A portion of the 1991 Kekaha USGS 7.5-minute topographic quadrangle with overlay of historic properties in the vicinity of the project area	74
Figure 18. Portion of the 1991 Kekaha USGS 7.5-minute topographic quadrangle showing previous cultural studies in the vicinity of the project area	78

List of Tables

Table 1. Place names within Waimea Ahupua‘a and project area vicinity	29
Table 2. LCAs awarded in the vicinity of Kekaha.....	53
Table 3. Waimea Port exports between 1850 and 1851.....	55
Table 4. Previous archaeological studies in the vicinity of the project area.....	70
Table 5. Archaeological historic properties in the project area vicinity	75
Table 6. Previous cultural studies within the vicinity of the project area.....	77
Table 7. Summary of community consultation efforts	90

Section 1 Introduction

1.1 Project Description

Cultural Surveys Hawai'i (CSH) has prepared this cultural impact assessment (CIA) for the Kekaha Municipal Solid Waste Landfill Phase II Vertical Expansion Project, Waimea Ahupua'a, Waimea District, Kaua'i, TMKs: (4) 1-2-002:009 and 001 por. for Tetra Tech on behalf of the County of Kaua'i. The County of Kaua'i, Department of Public Works, Solid Waste Division is proposing a vertical expansion of Phase II the Kekaha Municipal Solid Waste Landfill (KLF) (proposed action). The KLF is a municipal solid waste (MSW) landfill comprised of two distinct refuse fill areas identified as Phase I and Phase II. The proposed action would extend Phase II upward from the currently permitted maximum height of 120 feet (ft) above mean sea level (msl) to a new permitted maximum height of 171.5 ft above msl. This proposed vertical expansion would be within the existing permitted footprint of the Phase II landfill area. No native soils or new areas will be disturbed. The location and boundaries of the existing KLF and approximate extent of the proposed vertical expansion are delineated on USGS topographic maps (Figure 1 and Figure 2), a tax map plat (Figure 3), and aerial photo (Figure 4).

The county is preparing an Environmental Assessment (EA) under Hawai'i Revised Statutes (HRS) §343 for the proposed action. As part of the EA process, the County of Kaua'i has requested that CSH conduct a CIA for the proposed action located in Waimea Ahupua'a, Waimea District, Kaua'i Island. Under Act 50, the Hawai'i State Department of Health *Guidelines for Cultural Impact Assessments* mandate that the subject property be studied as well as surrounding areas where construction or development have impact potential. These guidelines also recommend personal interviews with traditional cultural practitioners and knowledgeable informants on cultural practices.

The existing KLF is located 1.3 miles northwest of the town of Kekaha on the southwest side of the island of Kaua'i. The KLF site encompasses approximately 98 acres of land within Tax Map Keys (TMK) 1-2-002:009 and 1-2-002:001 (por.), which are owned by the State of Hawai'i and administered by the Department of Land and Natural Resources (DLNR). Executive Order 1558 (signed 27 April 1953), Executive Order 2872 (signed 6 October 1977), and Executive Order 3695 (signed 02 December 1996), place the control and management of the lands underlying the KLF to the County of Kaua'i. The KLF is situated adjacent to Kaumuali'i Highway approximately 1,700 ft from the shoreline of the Pacific Ocean.

1.1.1 History of KLF

As discussed above, the KLF is comprised of two distinct refuse fill areas: Phase I and Phase II. The KLF Phase I is an inactive, unlined landfill that began accepting solid waste in 1953 and ceased operations 8 October 1993. The KLF Phase II is an active, lined landfill that began accepting solid waste on 9 October 1993 and is predicted to reach its capacity in October 2026.

KLF Phase II has undergone three vertical expansions and two lateral expansion since the initial permitting of the refuse area. Phase II was originally permitted to reach a height of 37 ft above msl, but was permitted for vertical expansion in 1998, 2004, and 2013; the current maximum permitted landfill height of Phase II is 120 ft above msl. Phase II was also expanded

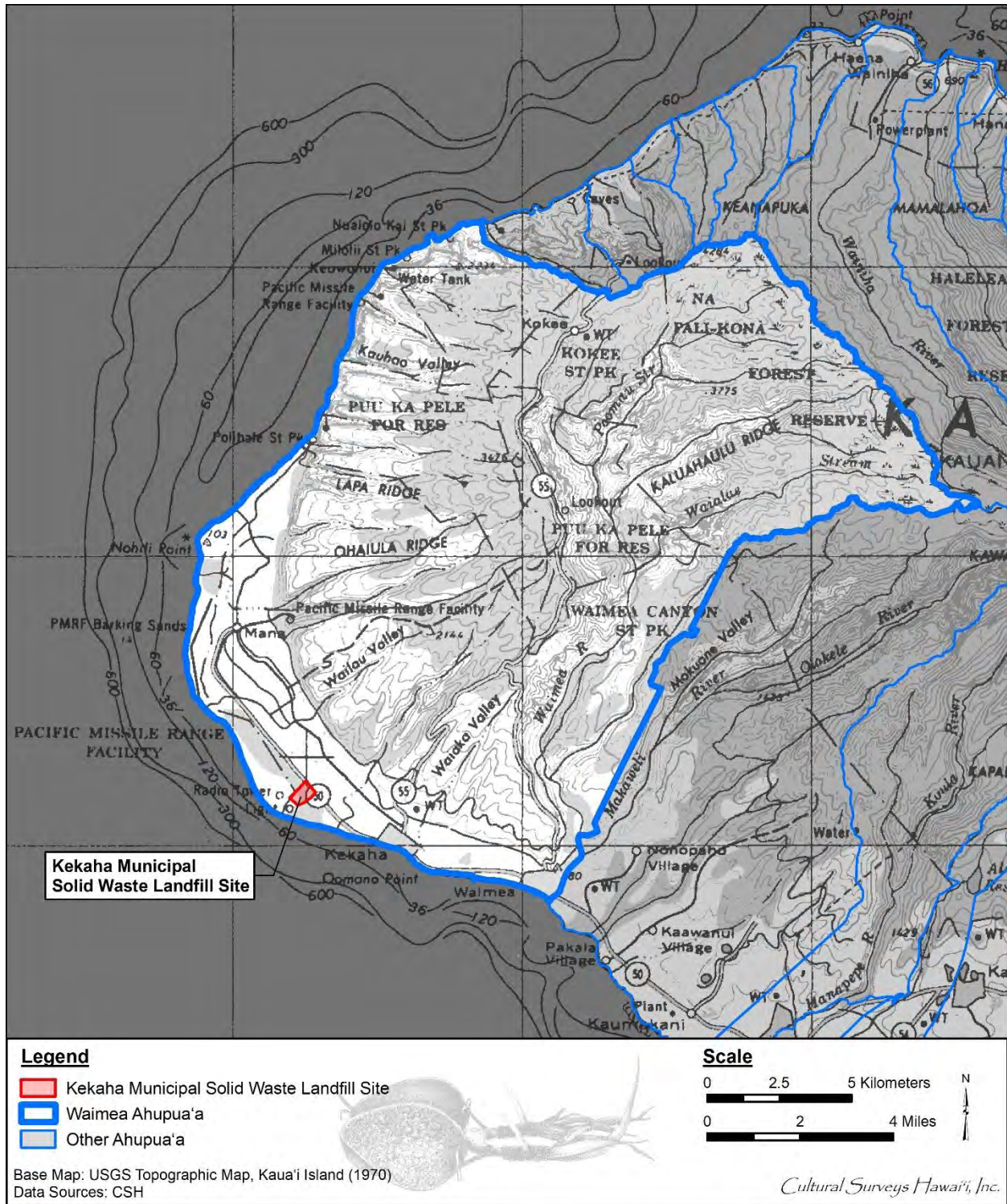


Figure 1. 1970 Kaua'i Island USGS topographic map showing the location of the existing Kekaha Municipal Landfill within Waimea ahupua'a (USGS 1970)

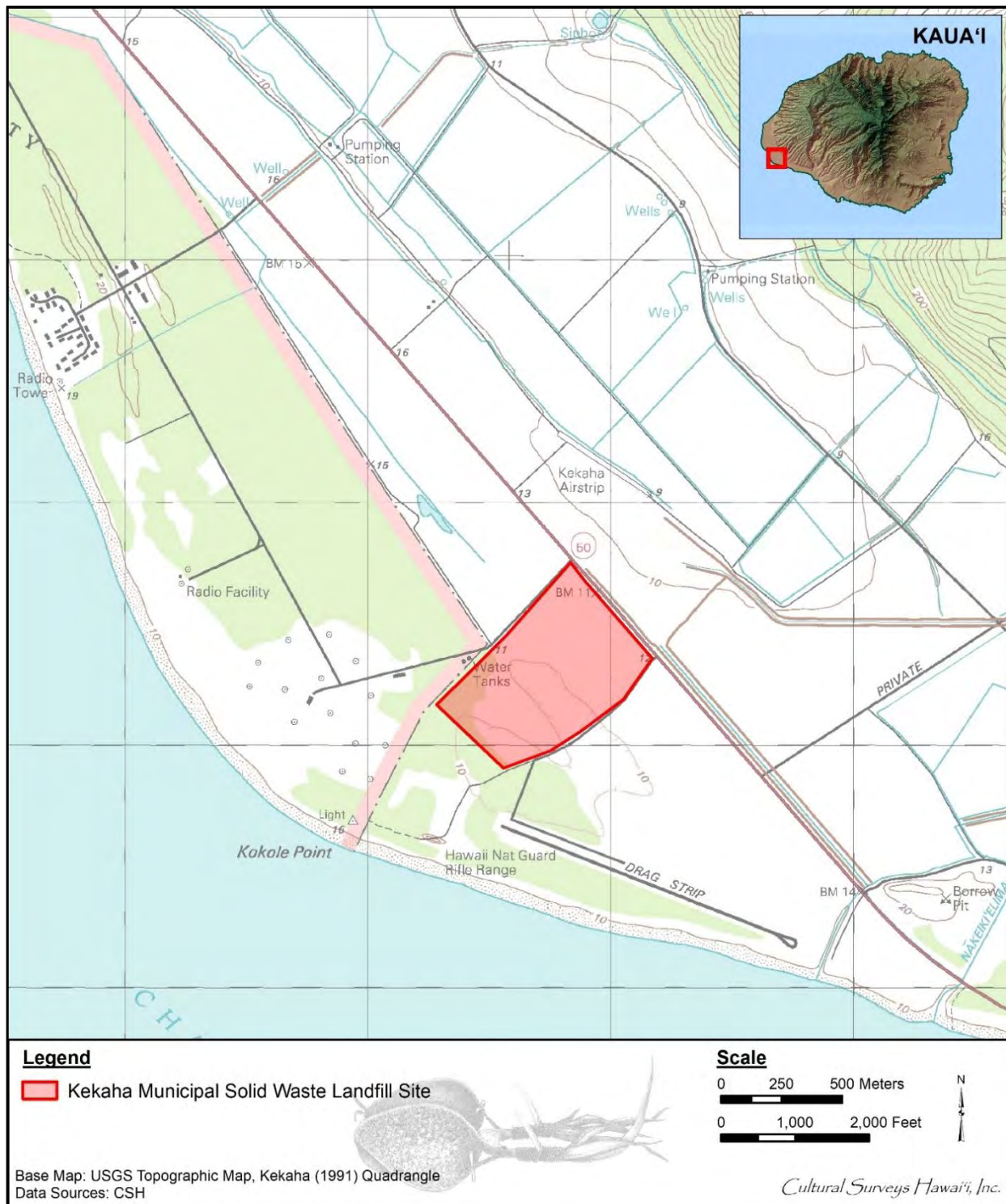


Figure 2. Portion of the 1991 Kekaha USGS 7.5-minute topographic map quadrangle with the boundary of the existing Kekaha Municipal Landfill delineated (USGS 1991)

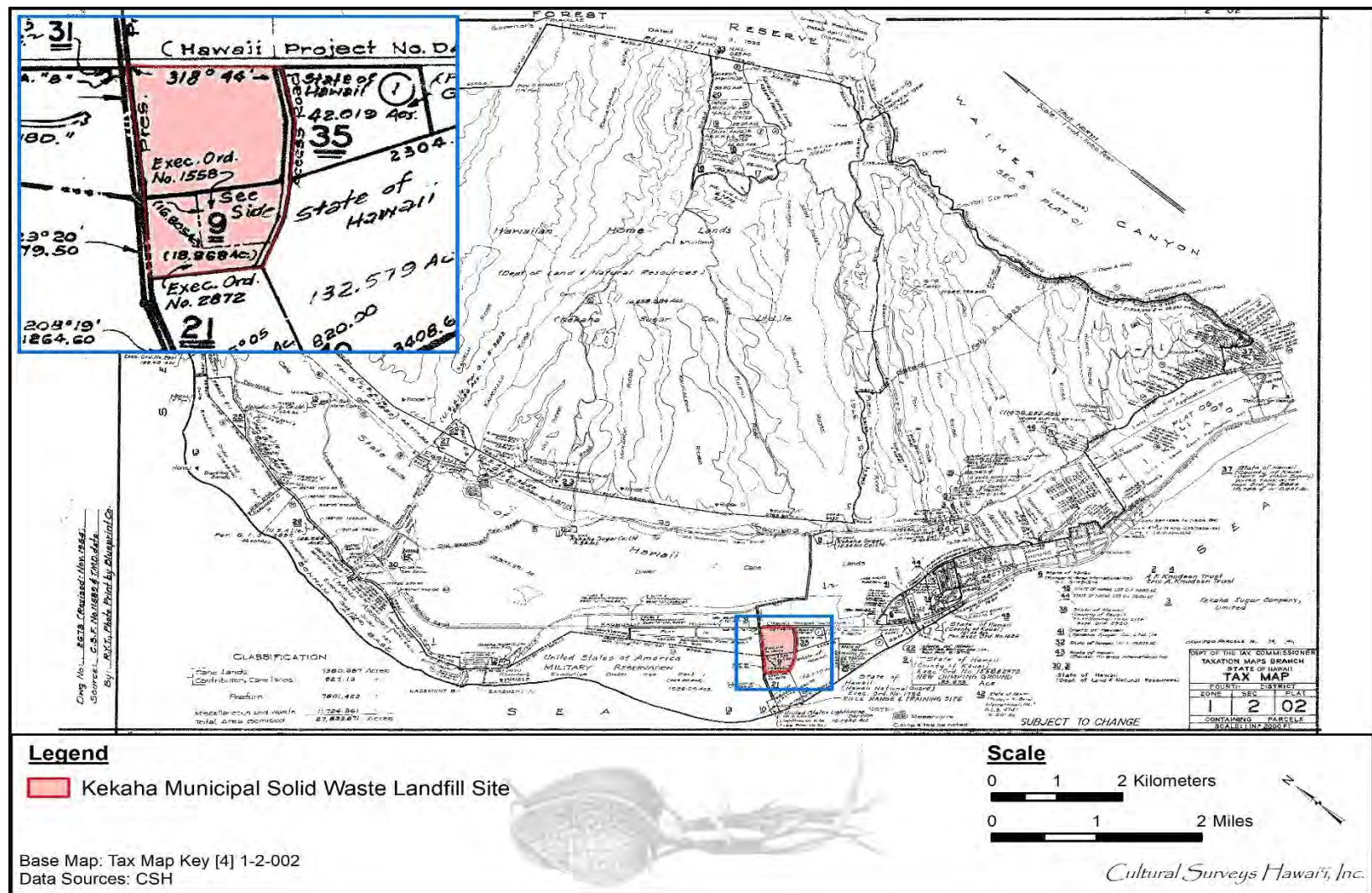


Figure 3. TMK: (4) 1-2-002 showing portions of the project area within portion of parcels 009 and 001 (Hawai'i TMK Service 2014)

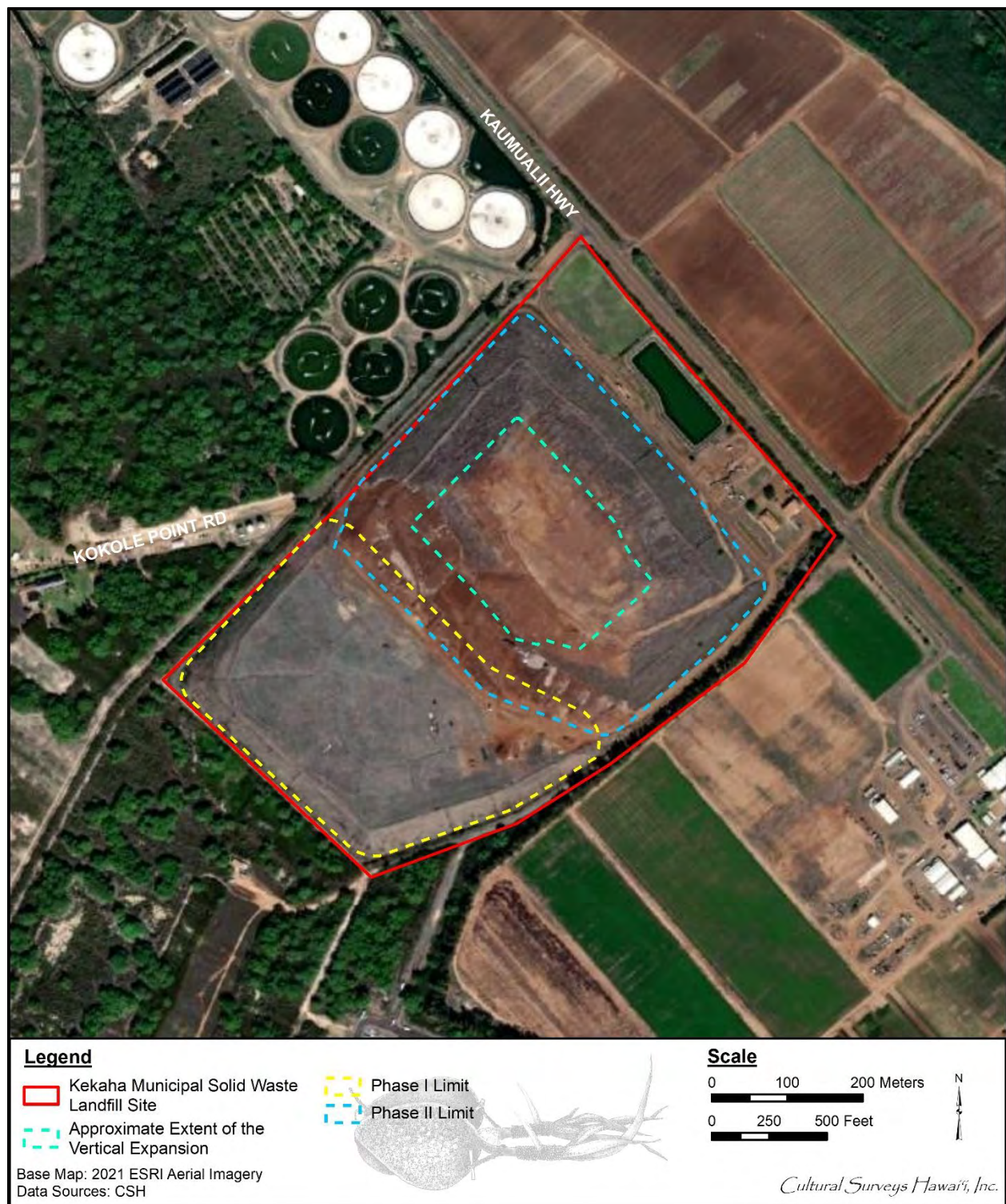


Figure 4. 2021 ESRI aerial image superimposed with the boundaries of Phase I and Phase II of the existing Kekaha Municipal Landfill and approximate extent of the proposed vertical expansion (ESRI 2021)

laterally to include Cell 1 and Cell 2 in 2009 and 2019, respectively, reaching the currently permitted landfill area of 44 acres.

The purpose of the previous vertical and lateral expansions was to provide additional air space volume for placement of refuse while the siting, designing, and construction phases for a new landfill facility or other long-term landfill capacity solutions was completed. The county has previously attempted to site a new MSW landfill at another location on the island and continues to investigate alternative landfill sites. The county completed landfill siting studies in 2001/2002, 2007, and 2012. In 2018, the county completed an engineering design and Environmental Impact Statement (EIS) for a new MSW landfill and resource recovery park at Ma'alo. However, during the permitting process, the county had to abandon its plans to develop a new MSW landfill facility at Ma'alo due to the potential for the landfill to increase bird strikes at Līhu'e Airport. The county understands there is a critical need to identify a long-term MSW capacity solution for the island of Kaua'i and continues to evaluate alternative landfill sites and other long-term options for increasing the landfill capacity on Kaua'i.

1.1.2 Purpose and Need

KLF is Kaua'i Island's only permitted MSW landfill and is predicted to reach its capacity in October 2026. However, the planning, permitting, and implementation of any potential long-term landfill capacity solution is anticipated to require more than five years (i.e., would not be available for MSW disposal until after October 2026). Therefore, there is a need to provide landfill capacity beyond October 2026 while a long-term landfill capacity solution is planned, permitted, and implemented. The purpose of the vertical expansion of the Phase II portion of the KLF is to add landfill capacity to the existing landfill while a long-term landfill capacity solution is implemented.

1.1.3 Proposed Action

The major components of the Proposed Action would be located entirely within the Phase II area, TMK: (4) 1-2-002:001 (por.), and include the following:

- **Vertical Landfill Expansion:** The proposed Phase II vertical expansion would extend the existing waste disposal area upwards to a maximum height of 171.5 ft above msl, without expanding the existing permitted footprint. The approximate extent of the proposed vertical expansion is shown in Figure 4 and Figure 5. The proposed vertical expansion would be designed for slope stability, positive drainage off the landfill surface, and to maximize disposal capacity. New, access roads would be constructed to access the upper reaches of the landfill area.
- **Landfill Gas Collection and Control System (GCCS):** Modern MSW facilities require GCCSs to collect and properly dispose of landfill gas. KLF's existing GCCS consists of a network of high-density polyethylene (HDPE) pipes, gas collection devices (i.e., gas wells), and an enclosed landfill gas flare designed to minimize and control emissions. The existing GCCS would be expanded to accommodate the increased height of Phase II by raising or relocating the existing GCCS infrastructure within the footprint of the vertical expansion and installing additional landfill gas extraction wells and related lateral piping in the areas of new waste.

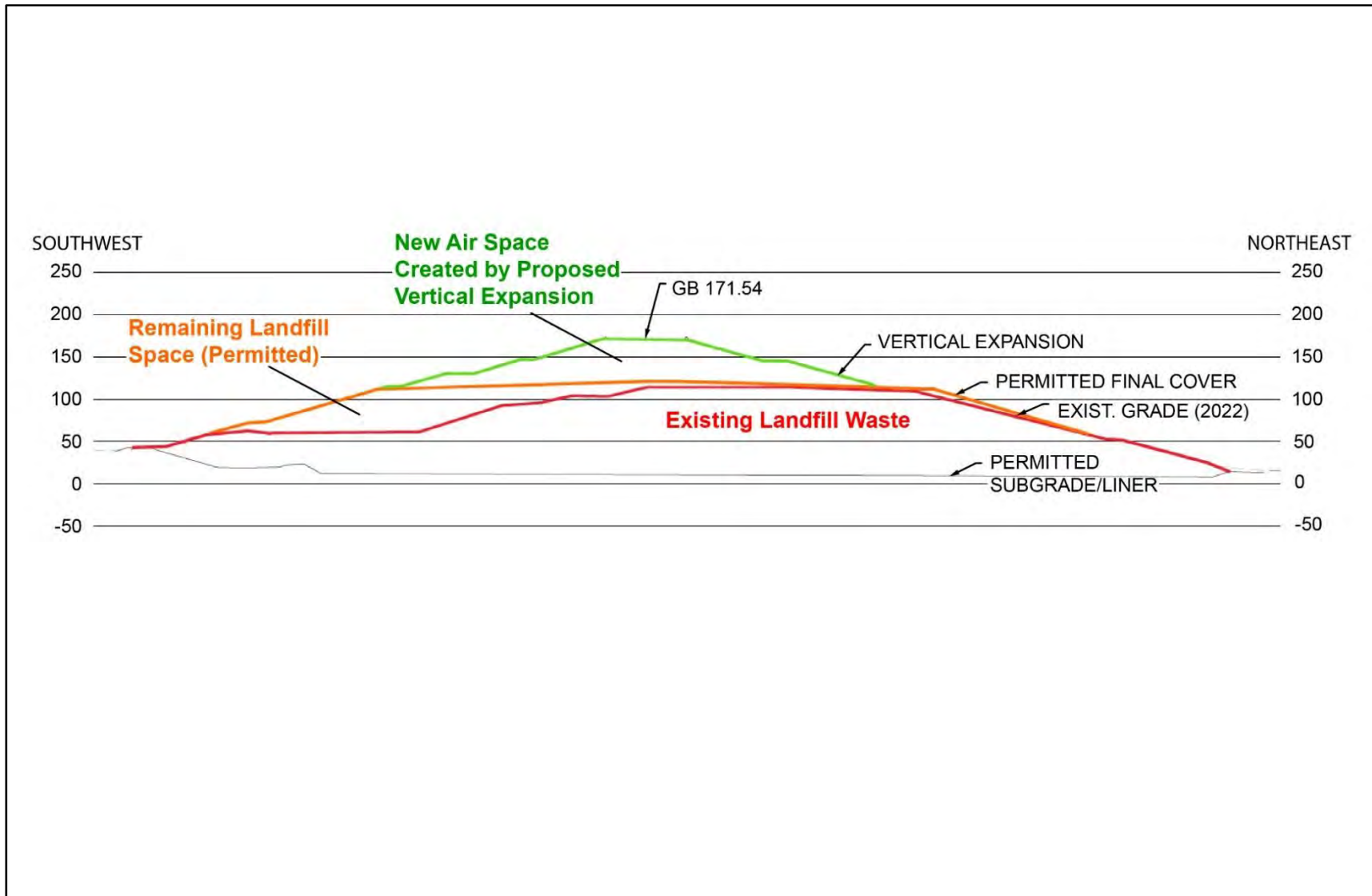


Figure 5. Profile drawing showing the proposed vertical expansion (courtesy of client)

- **Stormwater Management:** Current design and operation of KLF includes stormwater management that diverts stormwater away from the active refuse areas to infiltration ditches around the perimeter of the landfill and to an existing stormwater infiltration basin. Under the proposed action, existing surface water drainage features that currently divert stormwater away from the refuse areas would need to be modified slightly (i.e., extended upwards) to accommodate the increase in height of the Phase II waste disposal area.

In addition to the landfill gas GCCS and stormwater management infrastructure, KLF currently incorporates engineering and operational controls to minimize and avoid adverse impacts to the environment and public. These controls include, but are not limited to, groundwater and leachate monitoring, litter control, dust control, odor control, and vector control. KLF also implements a spill prevention, control, and countermeasures plan, emergency management procedures, and other operational plans. KLF would continue to implement its operational controls and plans under the proposed action. No substantial changes to KLF’s operations are proposed. Operation of the Phase II vertical expansion would begin once all approvals are received.

1.2 Regulatory Context

This CIA supports compliance for the KLF Phase II Vertical Expansion project with:

- the mandate set forth by the Hawai‘i State Constitution (Articles IX and XII), courts, Hawai‘i Revised Statutes (HRS), Hawai‘i Administrative Rules (HAR), and other Hawai‘i State laws requiring government agencies promote and preserve cultural beliefs, practices, and resources of Native Hawaiians and other ethnic groups;
- the State of Hawai‘i’s environmental review process under HRS §343, which requires consideration of the proposed project’s potential effects on cultural practices and cultural features in order to “promote responsible decision making” (HRS §343);
- and the State of Hawai‘i’s historic preservation review process under HAR §13-275-6 and §13-284-6, which requires the identification and mitigation of adverse effects proposed by a potential project in order to “promote the use and conservation of historic properties for the education of the citizens of Hawai‘i” (HAR §13-275-6).

1.3 Document Purpose

This CIA contains information gathered from archival research and consultation, compiled to “analyze the impact of a proposed action on cultural practices and features associated with the project area” (Office of Environmental Quality Control 1997). Cultural practices and cultural features may include traditional cultural properties (TCPs), designated significant historic properties under State of Hawai‘i significance Criterion e, pursuant to HAR §13-275-6 and §13-284-6. Significance Criterion e refers to historic properties that “have an important value to the native Hawaiian people or to another ethnic group of the state due to associations with cultural practices once carried out, or still carried out, at the property or due to associations with traditional beliefs, events or oral accounts—these associations being important to the group’s history and cultural identity” (HAR §13-275-6 and §13-284-6).

1.4 Scope of Work

The scope of work for this cultural assessment includes the following:

1. Examination of cultural and historical resources, including Land Commission documents, historic maps, and previous research reports, with the specific purpose of identifying traditional Hawaiian activities including gathering of plant, animal, and other resources or agricultural pursuits as may be indicated in the historic record.
2. Review of previous archaeological work at and near the subject parcel that may be relevant to reconstructions of traditional land use activities; and to the identification and description of cultural resources, practices, and beliefs associated with the parcel.
3. Consultation and interviews with knowledgeable parties regarding cultural and natural resources and practices at or near the parcel; present and past uses of the parcel; and/or other practices, uses, or traditions associated with the parcel and environs.
4. Preparation of a report that summarizes the results of these research activities and provides recommendations based on findings.

1.5 Natural Environment

Kekaha lies in the *ahupua'a* (traditional land division) of Waimea on the southwest side of the island of Kaua'i, part of the traditional Hawaiian *moku* (district) of Kona and the current district of Waimea. Waimea Ahupua'a is by far the largest *ahupua'a* on the island, comprising 92,646 acres and accounting for more than a quarter of the total land area of Kaua'i. The *ahupua'a* encompasses all of the Waimea River Canyon area, the uplands of Kōke'e, the high swampy plateau of Alaka'i, and the northwestern coastal valleys of Nu'alolo and Miloli'i (Gray 1875:140–146).

The project area is located at the south end of the Mānā plain. The Mānā Plain is situated at the base of ancient sea cliffs at the extreme western end of Kaua'i Island. This plain is constructional in character with calcareous sands dominating the seaward margin, and terrigenous alluvium from the valleys of the western slopes of the island dominating the landward margin. The seaward margin of the plain is a beach ridge built upon a submerged wave-cut terrace (Macdonald and Abbott 1974:395). The beach ridge forms a barrier against the sea which created a shallow lagoon environment inland. The lagoon was filled during the mid-nineteenth century to create Mānā Plain as it appears today. Part of the seaward barrier of the plain consists of a formation of "Moderately to well cemented calcareous sand dunes [...] [that] appear to have formed during the Waipio stand of the sea" (Macdonald and Abbott 1974:395). Annual rainfall in the project area is less than 20 inches, occurring primarily in the fall and winter months (September to March) (Giambelluca et al. 1986). Maximum and minimum average temperatures throughout the year vary little from other coastal areas around Kaua'i, but it feels considerably hotter due in part to more variable and lighter winds on this leeward side of the island.

1.5.1 Ka Lepo (Soils)

According to the U.S. Department of Agriculture (USDA) Soil Survey Geographic (SSURGO) database (2001) and soil survey gathered by Foote et al. (1972), the project area consists of Jaucas loamy fine sand, 0 to 8% slopes (JfB) (Figure 6). The Jaucas series is described by Foote et al. (1972) in the following excerpt:

This series consists of excessively drained, calcerous soils that occur as narrow strips on coastal places, adjacent to the ocean[...] They developed in wind- and

water-deposited sand from coral and seashells[...] Elevations range from sea level to 100 feet[...] The annual rainfall amount to 10 to 40 inches. [Foote et al. 1972:48]

1.5.2 *Nā Makani* (Winds)

For Native Hawaiians, *makani* (wind) were named for various reasons. Names of winds were assigned based on but not limited to their direction, strength, and geographic location. David Malo, a Native Hawaiian historian, explains some general terms related to wind:

[...] There was the *kona*, a wind from the south, of great violence and of wide extent. It affected all sides of an island, east, west, north, and south, and continued for many days [...] The *kona* wind often brings rain, though sometimes it is rainless. [...] The *hoolua*, a wind that blows from the north, sometimes brings rain and sometimes is rainless [...] The *hau* is a wind from the mountains, and they are thought to be the cause of it, because this wind invariably blows from the mountains outwards towards the circumference of the island. [Malo 1951:14]

Malo has supplied a foundation of names for winds, however, there is an abundance of names in various stories and chants. In the traditional story *The Wind Gourd of La‘amaomao*, Pāka‘a and his son Kūapāka‘a are descendants of the wind goddess La‘amaomao whose traditional home was in a gourd that contained all of the winds of Hawai‘i. They are able to control the winds of Hawai‘i contained in the gourd by chanting their names. Kūapāka‘a’s chant traces the winds of Kaua‘i Island.

The following excerpt mentions the winds of Waimea ahupua‘a, Kaua‘i Island:

There they are, the winds of Kaua‘i [...]
 ‘Aiko‘o is of Nu‘alolo,
 Kuehu-kai is the wind of Miloli‘i,
 Pu‘ukapele is of Mānā,
 Moeahua is of Kekaha,
 Waipao is of Waimea [...]
 [Nakuina 1992:53]

According to Nakuina (1992:138), ‘Aiko‘o means “canoe-eating” and is associated with Nu‘alolo, located on the northwestern portion of Waimea Ahupua‘a. The Kuehukai wind of Miloli‘i is translated to mean, “stirring up the sea” by Nakuina (1992:139). Pukui and Elbert (1986:359) say Pu‘ukapele wind is the “[s]ame as Pu‘u-pele, the name of a wind at Mānā, Kaua‘i, and of a place on Kaua‘i.” The wind of Waimea was Waipao, which means “wind-scooped” according to Kent (1986:443) or “the cool breeze” according to Nakuina (1992:140). A storm in the northeast portion of Waimea was called ‘E‘elekoa, meaning “stormy” (Pukui and Elbert 1986:37). Moeahua is the wind name of Kekaha, where the project area is located.

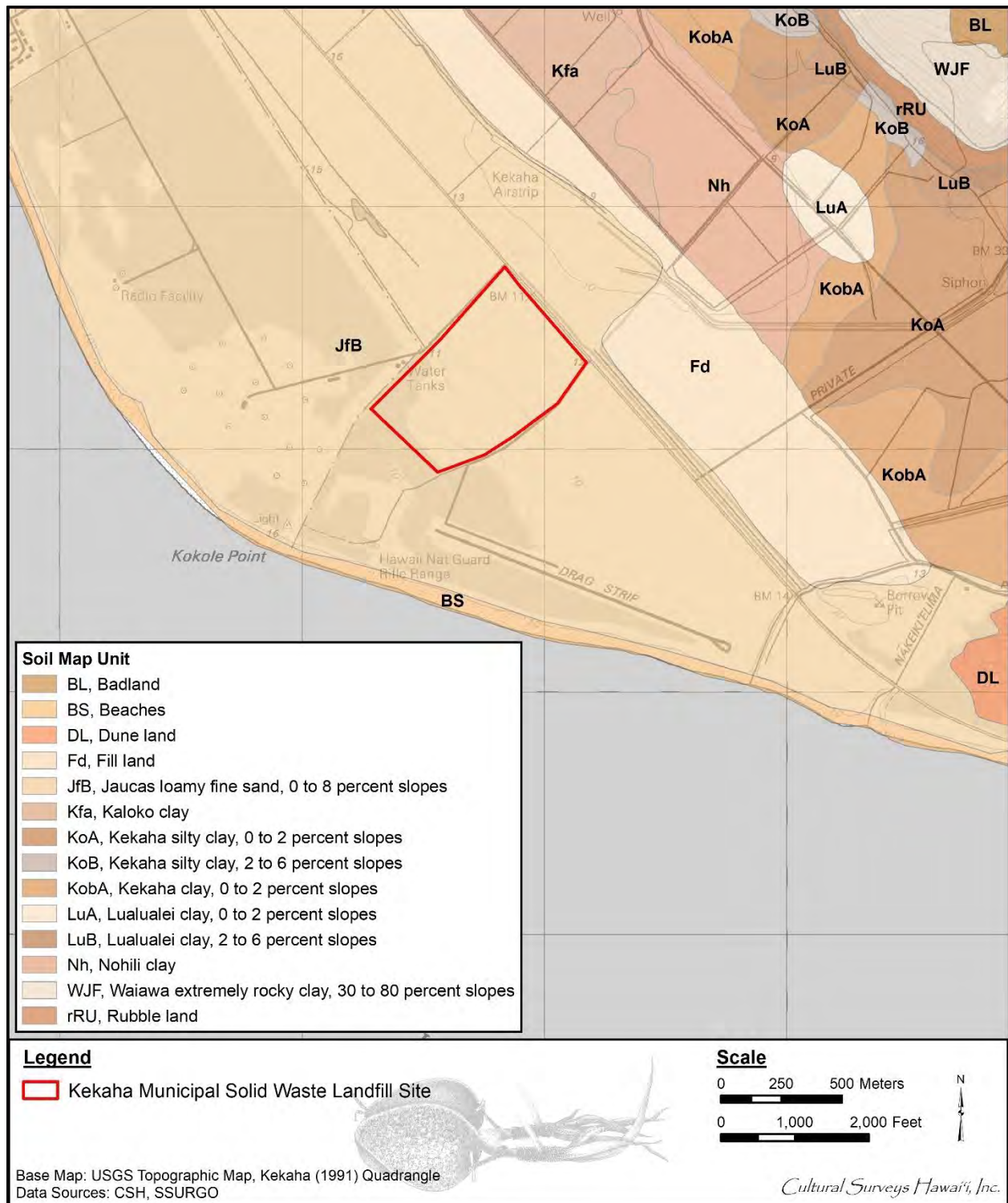


Figure 6. Overlay of *Soil Survey of the Islands of Kauai, Oahu, Maui, Molokai, and Lanai, State of Hawaii* (Foote et al. 1972), indicating soil types within and surrounding the project area (USDA SSURGO 2001)

Another wind of Waimea is the Naulu. The Naulu wind was identified within a *mele* (song) describing the wedding night of Wanahili, a princess of Puna (Hawai'i Island) and Manu'a, a king of Hilo and son of Kanehili (Emerson 1965:100). In the fourteenth stanza, the Naulu Wind of Waimea is identified:

<i>O Wanahili ka po loa ia Manu'a,</i>	Wanahili hides the whole night with Manu'a,
<i>O ka pu kau kama i Hawaii akea;</i>	By trumpet hailed through broad Hawaii,
<i>O ka pu leina kea a Kiha-</i>	By the white vaulting conch of Kiha-
<i>O kiha nui a Pii-lani-</i>	Great Kiha, offspring of Pii-lani,
<i>O Kauhi kalana-honu'-a-Kama;</i>	Father of eight-branched Kama-lala-walu.
<i>O ka maka iolena ke hoohaulani i-ō!</i>	The far-roaming eye now sparkles with joy,
<i>O kela kanaka hoali mauna,</i>	Whose energy erstwhile shook mountains,
<i>O Ka Lani ku'i hono i ka moku.</i>	The king who firm-bound the isles in one state,
<i>I waihona kapuahi kanaka ehā,</i>	His glory, symbolized by four human altars,
<i>Ai i Kauai, i Oahu, i Maui,</i>	Reaches Kauai, Oahu, Maui,
<i>I Hawaii kahiko o Keawe enaena,</i>	Hawaii the eld of Keawe,
<i>Ke a-a mai la me ko o-koko,</i>	Whose tabu, burning with blood-red blaze.
<i>Ke lapa-lapa la i ka makani,</i>	Shoots flame-tongues that leap with the wind,
<i>Makani kua, he Naulu.</i>	The breeze from the mountain, the Naulu.
<i>Kua ka Waihoa i ka Mikioi.</i>	Waihoa humps its back, while cold Mikioi
<i>Pu-ā ia lalo o Hala-li'i,</i>	Blows fierce and swift across Hala-li'i.
<i>Me he alii, alii, la no ka hele i Kekaha,</i>	It vaunts like a King at Kekaha,
<i>Ka hookiekie i ka li'u-la,</i>	Flaunting itself in the sun's heat,
<i>Ka hele i ke alia-lia la, alia!</i>	And lifts itself up in mirage,

<i>Alia-lia la 'a-laau Kekaha.</i>	Ghost-forms of Woods and trees in Kekaha-
<i>Ke kaha o Kala-ihi, Wai-o-lono.</i>	Sweeping o'er waste Kala-ihi, Water of Lono;
<i>Ke olo la ke pihe a ka La, e!</i>	While the sun shoots forth its fierce rays-

[Emerson 1965:100–101]

1.5.3 *Nā Ua* (Rains)

Precipitation is a major component of the water cycle, responsible for depositing *wai* (fresh water) on local flora. Pre-Contact *kānaka* (Native Hawaiians) recognized two distinct annual seasons. The first, known as *kau* (period of time, especially summer) lasts typically from May to October and is a season marked by a high-sun period corresponding to warmer temperatures and steady trade winds. The second season, *ho'oilō* (winter, rainy season) continues through the end of the year from November to April and is a much cooler period when trade winds are less frequent, and widespread storms and rainfall become more common (Giambelluca et al. 1986:17). Each small geographic area on Kaua'i had a Hawaiian name for its own rains. According to Akana and Gonzalez (2015):

Rain names are a precious legacy from our kūpuna [elders] who were keen observers of the world around them and who had a nuanced understanding of the forces of nature. They knew that one place could have several types of rain, each distinct from the other. They knew when a particular rain would fall, its color, its duration, its intensity, its path, its sound, its scent, and its effect on the land and their lives [...] Rain names are a treasure of cultural, historical, and environmental information. [Akana and Gonzalez 2015:n.p.]

Rain in the Waimea Ahupua'a varies greatly depending on location. The Alakai Swamp and upper Kōke'e areas receive large amounts of rainfall; fresh water is especially plentiful in this locality. The coastal ridges and plains of the Kekaha-Mānā area receive some of the lowest rainfall on the island. On the drier leeward coast of Kaua'i, annual rainfall averages less than 500 mm (20 inches) and occurs primarily in the fall and winter months (September to March) (Giambelluca et al. 1986:86–98). The types of rain that are common where the project area is located, the Kekaha-Mānā area, consists of Nāulu, Kiu, and Ko'apuai'a. These rains along with other types of rain found within Waimea ahupua'a are discussed below.

1.5.3.1 Waimea

In the *ahupua'a* of Waimea many rain names are associated with areas near or within the project area. Kapa'ahoa rain is known to be associated with Waimea according to Akana and Gonzalez (2015). The Kapa'ahoa rain of Waimea is mentioned in the following excerpts:

5. 'O Lu'anū'u a Laka, 'o Lu'anū'u ke keiki a Laka, 'o Hīkāwaelena ka makuahine, he ali'i wahine 'o ia no ka ua Kapa'ahoa no Waimea i Kaua'i.

Lu'anū'u of Laka, Lu'anū'u is the son of Laka; Hīkāwaelena is his mother; she is a chiefess of the Kapa'ahoa rain of Waimea in Kaua'i.

From the legend of Lu‘anu‘u. Hawaiian source: Kamakau, ‘Ka moolelo Hawaii’ 10/28/1869. English trans. by author. Additional source: Kamakau, Tales 147.

6. *Ku‘u kāne, e ku‘u kāne ho‘i* My beloved husband, oh, my dear husband indeed

Ku‘u kāne mai ka wai ‘ula ‘iliahi My dear husband of the red sandalwood
o Waimea waters of Waimea

Wai nono ‘ula aka ua Kapa‘ahoa Red-glowing water of the Kapa‘ahoa rain

From a kanikau, or lament, for Kamehameha IV by his wife, ‘Emalani Kaleleonālani. Source: Nogelmeier 339. Note: Pukui, ‘Ōlelo 179, says that ‘ka wai ‘ula ‘iliahi o Waimea’ refers to Waimea Stream, which runs red following a storm ‘where it meets Makaweli Stream to form Waimea River, the water is sometimes red on one side and clear on the other. The red side is called ‘wai ‘ula ‘iliahi.’

7. *Kau ke Kiuwai‘ahulu o Waimea* The Kiuwai‘ahulu wind of Waimea settles

Wai nono ‘ula aka ua Kapa‘ahoa Blushing water of the Kapa‘ahoa rain

I ho‘olu‘u a kohu i ka pili Dyed and stained by the closeness

A ‘ula mai he‘a ka uka o Kahana Becoming red, stained red are the uplands of Kahana

From a chant originally composed for Lunailo and inherited by Kalakaua. This portion of the mele was composed by Ka‘ahumanu. Hawaiian source: Na Mele Aimoku 147–48. English trans. by author. [Akana and Gonzalez 2015:66–67]

Furthermore, Nounou‘ili meaning “to pelt the skin,” is also a rain associated with Waimea. “*Ka ua Nounou‘ili o Waimea*. The skin-pelting [Nounou‘ili] rain of Waimea. A traditional saying. Source: Pukui, ‘Ōlelo 172” (Akana and Gonzalez 2015:212).

1.5.3.1.1 Mānā

The project area is located within the Mānā Plains. Three rains are associated with Mānā: Nāulu, Kiu, and Ko‘apuai‘a. According to Akana and Gonzalez (2015), Nāulu is a sudden shower as well as the name of a shower cloud and wind; Kiu and Ko‘apuai‘a are rains associated with Kaua‘i. The following excerpts mention these rains of Mānā:

Nāulu:

A ua wai Nāulu ka uka o Mānā The waters of the sudden Nāula showers cover Mānā

Ke hahai lā i ka li‘ulā o Kaunalewa Following the mirage of Kaunalewa

From a mele māka‘ika‘i, or travel chant, for ‘Emalani Kaleleonālani and her travels on Kaua‘i. Hawaiian source: Nogelmeier 72. English trans. by author.

[Akana and Gonzalez 2015:187]

Kiu:

<i>E Kū, e Lono, e Kāne, Kanaloa</i>	Kū, Lono, Kāne, Kanaloa
<i>‘Akahi ‘oe a ‘ike i ka mole wai</i>	You are just now seeing the source of water
<i>I nā mole wai pūhae a ka makani</i>	The water sources torn by wind
<i>I nā lile wai ‘one kau i ka pali</i>	The sparkling, delicious water placed on the cliffs
<i>I nā muliwai loloa a ka ua Kiu</i>	The long streams created by the Kiu rain
<i>‘Ololī ka wai ‘oloke ‘a i Mānā</i>	Narrow are the waters crisscrossing at Mānā
<i>Uhala ‘ole ke kaha ‘ōkolo i ka helu</i>	Innumerable are the places across which they crawl

From a mele for Haili, the daughter of Kaumuali‘i. Hawaiian source: Pukui, *Nā Mele Welo* 38. English trans. by author. [Akana and Gonzalez 2015:106]

Ko‘apuai‘a:

<i>Makemake au i ke inu wai o lalo</i>	I wish to sip of the waters below
<i>I ka ho‘onani mai a ke Ko‘apuai‘a</i>	Enhanced by the Ko‘apuai‘a showers
<i>Pāpa‘anā kō‘ele‘ele Mānā</i>	Mānā shudders and clamors in haste
<i>‘Eleu nō i ke kaha o Nohomalu ē, i laila</i>	Rushing to the sheltered strands of Nohomalu, yes, there

From a mele recalled by Ho‘oulumāhiechie as he described the fine physiques of Hi‘iakaikapoliopole and her companions. Hawaiian source: Ho‘oulumāhiechie, *Ka Mo‘olelo* 73. English trans.: Ho‘oulumāhiechie, *Epic* 70. Additional source: *Na Mele Aimoku* 169. [Akana and Gonzalez 2015:106]

1.5.3.1.2 Nu‘alolo

Nu‘alolo is located in the most northwestern portion of Waimea Ahupua‘a. Two rains are associated with Nu‘alolo: Hōli‘o and Kēhaupua. According to Akana and Gonzalez (2015), Hōli‘o is a rain associated with Hawai‘i, O‘ahu, and Kaua‘i and Kēhaupua is a misty rain. The following excerpts mention *Hōli‘o* and *Kēhaupua*:

Hōli‘o:

<i>Nū ka leo o ke kai i ka haka lewa o Nu‘alolo</i>	The voice of the sea roars upon the floating platform of Nu‘alolo
<i>Kū ka ‘ehu o ka huna o ke kai i nā pali</i>	The mist of the sea ascends the cliffs
<i>Hū ka ‘ōmaka wai a ka ua i ka makani</i>	The source of the rain gushes in the wind

Makani halihali i ka ua Hōli‘o Wind that carries the Hōli‘o rain

From a mele māka‘ika‘i, or travel chant, for ‘Emalani Kaleleonālani and her travels on Kaua‘i. Hawaiian source: Nogelmeier 72. English trans. by author. [Akana and Gonzalez 2015:39—40]

Kēhaupua:

He ipu wai ‘ala, wai aloha A fragrant water bowl, the essence of
affection

Na ke Kēhaupua By the Kēhaupua misty rain

‘O ke Kino ia o ka Ha ‘ikō makani It is the embodiment of the Ha‘ikō wind

Hali ‘ala o Nu‘alolo That carried the perfume to Nu‘alolo

From a makena, or lament, for ‘Emalani Kaleleonālani. Source: Nogelmeier 348. [Akana and Gonzalez 2015:77]

1.5.3.1.3 Alaka‘i Valley

The Alaka‘i Valley is located in the northeastern corner of the *ahupua‘a* of Waimea. There are five rains associated with Alaka‘i: Ki‘owao, Nahae, Puananaiea, and ‘Ulalena. The following excerpt mentions these rains of Alaka‘i Valley:

Ki‘owao:

“Ki‘o wai” means “upland root” (Akane and Gonzalez 2015:85) and is a “cool mountain rain accompanied by wind and fog, sometimes associated with Alaka‘i Swamp on Mt. Wai‘ale‘ale, Kaua‘i, as well as Nu‘uanu Valley, O‘ahu” (Akana and Gonzalez 2015:89).

Nahae:

“Nahae” means “to shred” (Akana and Gonzalez 2015:180)

‘Oiai ‘o ka nanā ‘o Kauaikananā While the surly one is Kauaikananā

‘O ka mana o ka ua Nahae i The power is in the shredding [Nahae] rain
Alaka‘i at Alaka‘i

From a mele māka‘ika‘i, or travel chant, for Emalani Kaleleonālani by Kapapa. Source: Nogelmeier 132. Note: Kuapuu, ‘He wahi moolelo’ 4/10/1861, says that ‘Kauaikananā’ is the name of a walley in Waimea, Kaua‘i. It is also the name of a stream there. [Akana and Gonzalez 2015:180]

Puananaiea:

‘O ‘oe kā ia, e nā lehua i Alaka‘i It is you, O lehua at Alaka‘i

Ke pūhene ‘ia maila e ka manu Teased by the birds

He nui ho‘i na ka ua Puananaiea A darling of the Puananaiea rain

He punahele na ka Lawelawemālie A favorite of the Lawelawemālie wind

I lāhui nō i ka uka o Kawaineki Gathered together in the upland of
Kawaineki

From a mele inoa, or name chant, by Keauka praising the child Kahelekūlani in the legend of Kamaakamahi‘ai. Hawaiian source: Kauaililinoe, ‘Ka moolelo’ 10/1/1870. English trans. by author. Additional source: Kauaililinoe, ‘Legend’ 60-61. [Akana and Gonzalez 2015:246]

‘Ulalena:

“Ua lena” means “yellowish-red” and is found on Maui, Kaho‘olawe, O‘ahu, and Kaua‘i (Akana and Gonzalez 2015:262).

Ku‘u hoa o ka ua ‘Ulalena My beloved companion of the ‘Ulalena rain
O ka ua loku mai i ka nahele Of the rain that pours down upon the forest
Hāli‘i maila i ke pili Spreading over the pili grass
Pulu pē i ka Noe o Alaka‘i Soaked with the Noe of Alaka‘i

From the song ‘Pua kooolau lei o Kaiulani’ by Kapoli. Hawaiian source: Holstein 58. English trans. by author. [Akana and Gonzalez 2015:269]

1.5.4 *Nā Kahawai* (Streams and Freshwater)

There exist numerous streams and waterways in Waimea Ahupua‘a, however, there are no naturally occurring streams or surface waters located within the KLF site. Kauaikinanā Stream, translated to mean “the rain defied,” rises at approximately 3,830 ft and meets Kawikio Stream at 2,565 ft to form Po‘omau Stream. Po‘omau Stream, translated as “constant source” or “constant head,” is a major tributary to the Waimea River. Kawaikōi Stream rises to 4,160 ft at Alakai Swamp, drops down into Po‘omau canyon and ends at Moeloa waterfall, meaning “long sleep.” The name Kawaikōi is translated to mean “the flowing water” (Ulukau 2014) or “rushing stream” (Gay 1873:22). The Waiahulu stream begins at an elevation of 1,620 ft at the meeting of Halemanu and Kōke‘e streams. Waiahulu joins the Po‘omau Stream at 965 ft to produce the Waimea River. The Waimea River, which begins at an elevation of approximately 965 ft at the joining of Waiahulu and Po‘omau streams, is translated to mean “reddish water”(Ulukau 2014). Wichman (2003) describes Waimea Stream at the time of early voyages to Kaua‘i:

The river itself was generous in its gift of ‘o‘opu (goby). Once a year the spawn of the ‘o‘opu (*hinana*) swam down the rivers to the sea in such numbers that they touched the skin of anyone entering the water. *Hinana* were only one or two inches in length and were easily netted. They quickly became a favorite food. Better yet, after a season in the ocean the *hinana* returned as adult ‘o‘opu to their spawning grounds, and their life cycle began again. [Wichman 2003:6]

The spirited act of *hinana* harvesting is described in Margaret Titcomb’s (1972) *Native Use of Fish in Hawaii*.

Hinana (spawn) were especially popular as dainty food.

By the mouth of the river of Waimea, Kauai, was a multitude of men and women along the banks, for those were good days in which to catch *hinana* in nets. The

fish were as plentiful as rubbish in that land when the *hinana* season came. The natives there call it '*ke i'a ili kanaka o Waimea*' (the fish of Waimea that touches the skin of man) (75.51).

The *hinana* was a fish of which the natives of Waimea and thereabouts were so fond that they hardly shared with others [...] *Hinana* was *i'a pi ia* (fish stingily regarded). There were people so lucky in fishing that they were said to have skins like Ku'ula ('ili Ku'ula). If there were such persons in a locality only they were allowed to dive into the water with *hinana* nets. No others went into the water at that time, for that would counteract the influence or *mana* of the diver. If there were only one such person she had to go alone. Strangely, all the '*ili Ku'ula* people I knew were women.

[...] The spawn, *hinana*, a very popular food, were gathered in vast quantities in certain areas. Even today the coming of this fish is worth talking about. (1940) An informant from Waimea, Kauai, says that the well-known fish of the land has appeared (May). This fish was well liked from the time of our ancestors. '*Ai wale i ka hinana, ka i'a kaulana o ka 'aina.*' (Eat freely of the *hinana*, the well-known fish of the land.) [Titcomb 1972:122–123]

Kekaha, an '*ili* (land section, next in importance to *ahupua'a* and usually a subdivision of an *ahupua'a*) within the *ahupua'a* of Waimea, and other settlements on the Mānā plain suffered from a definite lack of fresh surface water and variable rainfall. *Mauka* (toward the mountain) gulches had only intermittent stream flows, and water sources were primarily springs along the base of the cliffs (Handy and Handy 1972:268–270).

1.5.5 *Ka Likikikai a me Ka Moana* (the Coast and Ocean)

Mary Kawena Pukui of the Bishop Museum made a list of surfing spots mentioned in Hawaiian oral traditions. For Waimea, she recorded the names of Kaua (meaning “war”), Kualua (“twice”), and Po'o (“head”) (Finney and Houston 1996:31). John Papa 'Ī'ī, the early Hawaiian historian, had a similar list of Kaua'i surfing spots:

The surf of Kamakaiwa is in Kapaa, Kauai, and so is the surf of Kaohala and one that runs to the sand of Wailua. Others are the surfs of Poo, Koalua, and the one that runs to the mouth of the sand-bottomed stream of Waimea, and the surf of Manalau is in Waioli. ['Ī'ī 1959:135]

Clark (2002) adds that Waimea River mouth, located off the mouth of Waimea River, GI's, off Waimea State Recreation Pier, and Wright Beach Park, on the west bank of the Waimea River, are also popular surf sites in Waimea, Kaua'i. Clark also sites Waimea as a “Former interisland steamer landing at the end of Moana Road” and as “a fishing site used by the residents of West Kaua'i” (Clark 2002:381).

The Kaulakahi channel that runs between Waimea and Ni'ihau was said to be plentiful in marine resources supplying “such fishes as the *ulua* (jackfish), *mahimahi* (dolphin), *ono* (mackerel), and *a'u* (marlin), all large enough to feed many people” (Wichman 2003:6). Furthermore, Wichman states people in Waimea benefited from the “reef fish, sea urchins, squid, and seaweeds” (Wichman 2003:6) of the shallow water.

1.6 Built Environment

The project area is located 1.3 miles northwest of the town of Kekaha on the southwest side of the island of Kaua'i. It is adjacent to Kaumuali'i Highway and is approximately 1,700 ft from the shoreline of the Pacific Ocean. Southeast of the project area is the Mānā Drag Strip, owned by the State of Hawai'i, DLNR and leased to the Garden Isle Racing association. The Drag Strip began construction in 1969 and was completed in 1971. The Kauai Raceway Park was then established at the Drag Strip where drag racing events continue to occur. To the east of the project area is Hartung Brothers, Inc., a family owned and operated agribusiness. To the west is the Pacific Missile Range Facility (PMRF).

Section 2 Methods

2.1 Archival Research

Historical documents, maps, and existing archaeological information pertaining to Waimea Ahupua‘a, Waimea Moku and the project area vicinity were researched at the CSH library and other archives including the University of Hawai‘i at Mānoa’s Hamilton Library, the State Historic Preservation Division (SHPD) library, the Hawai‘i State Archives, the State Land Survey Division, and the archives of the Bishop Museum. Previous archaeological reports for the area were reviewed, as were historic maps and photographs and primary and secondary historical sources. Information on Land Commission Awards (LCAs) was accessed through Waihona ‘Aina Corporation’s Māhele Data Base (Waihona ‘Aina 2022) as well as a selection of CSH library references.

The definitive source for Hawaiian place names is Pukui et al.’s (1974) *Place Names of Hawai‘i*, but additional place name translations and interpretations were also gleaned from Soehren’s “Hawaiian Place Names” database on the internet (Soehren 2014), historical maps, Land Commission documents available at the Hawai‘i State Archives or on the internet at Waihona ‘Aina (2014), and from other place name texts such as Clark (1977) and Thrum (1922).

For cultural studies, research for the Traditional Background section centered on Hawaiian activities including religious and ceremonial knowledge and practices; traditional subsistence land use and settlement patterns; gathering practices and agricultural pursuits; as well as Hawaiian place names and *mo‘olelo*, *mele* (songs), *oli* (chants), *‘ōlelo no‘eau* (proverbs), and more. For the Historic Background section research focused on land transformation, development, and population changes beginning in the early post–European Contact era to the present day (see Scope of Work above).

2.2 Community Consultation

2.2.1 Sampling and Recruitment

A combination of qualitative methods, including purposive, snowball, and expert (or judgment) sampling, were used to identify and invite potential participants to the study. These methods are used for intensive case studies, such as CIAs, to recruit people that are hard to identify, or are members of elite groups (Bernard 2006:190). Our purpose is not to establish a representative or random sample. It is to “identify specific groups of people who either possess characteristics or live in circumstances relevant to the social phenomenon being studied [...] This approach to sampling allows the researcher deliberately to include a wide range of types of informants and also to select key informants with access to important sources of knowledge” (Mays and Pope 1995:110).

We then begin with purposive sampling informed by referrals from known specialists and relevant agencies. For example, we contacted the SHPD, Office of Hawaiian Affairs, Kaua‘i/Ni‘ihau Island Burial Council (KNIBC), and community and cultural organizations in Kekaha and Waimea for their brief response/review of the project and to identify potentially knowledgeable individuals with cultural expertise and/or knowledge of the project area and vicinity, cultural and lineal descendants, and other appropriate community representatives and

members. Based on their in-depth knowledge and experiences, these key respondents then referred CSH to additional potential participants who were added to the pool of invited participants. This is snowball sampling, a chain referral method that entails asking a few key individuals (including agency and organization representatives) to provide their comments and referrals to other locally recognized experts or stakeholders who would be likely candidates for the study (Bernard 2006:192).

CSH also employs expert or judgment sampling which involves assembling a group of people with recognized experience and expertise in a specific area (Bernard 2006:189–191). We utilized our previous contact list from previous CIA projects within the project area vicinity. CSH maintains a database that draws on over two decades of established relationships with community consultants: cultural practitioners and specialists, community representatives, and cultural and lineal descendants. We review this in-house database and compile a list of consultants to contact within the project area vicinity. The names of new potential contacts were also provided by colleagues at CSH and from the researchers' familiarity with people who live in or around the study area. Researchers often attend public forums (e.g., Neighborhood Board, Burial Council and Civic Club meetings) in (or near) the study area to scope for participants. Please refer to Table 7, Section 7 for a list of individuals and organizations who were contacted and responded for this CIA. Outreach was attempted to 61 parties.

CSH focuses on obtaining in-depth information with a high level of validity from a targeted group of relevant stakeholders and local experts. Our qualitative methods do not aim to survey an entire population or subgroup. A depth of understanding about complex issues cannot be gained through comprehensive surveying. Our qualitative methodologies do not include quantitative (statistical) analyses, yet they are recognized as rigorous and thorough. Bernard (2006:25) describes the qualitative methods as "a kind of measurement, an integral part of the complex whole that comprises scientific research." Depending on the size and complexity of the project, CSH reports include in-depth contributions from about one-third of all participating respondents; typically this means three to 12 interviews. For the current project, we were able to conduct one in-depth interview remotely via MS Teams and received two written testimonies from consultants.

2.2.2 Informed Consent Protocol

An informed consent process was conducted as follows: 1) before beginning the interview, the CSH researcher explained to the participant how the consent process works, the project purpose, the intent of the study and how his/her information will be used; 2) the researcher gave him/her a copy of the Authorization and Release Form to read and sign (Appendix B); 3) if the person agreed to participate by way of signing the consent form *or* by providing oral consent, the researcher started the interview; 4) the interviewee received a copy of the Authorization and Release Form for his/her records, while the original is stored at CSH; 5) after the interview was summarized at CSH (and possibly transcribed in full), the study participant was afforded an opportunity to review the interview notes (or transcription) and summary and to make any corrections, deletions or additions to the substance of their testimony/oral history interview; this was accomplished primarily via phone, post or email follow-up and secondarily by in-person visits; 6) participants received the final approved interview, photographs, and the audio-recording and/or transcripts of their interview if it was recorded. They were also given information on how

to view the draft report on the Environmental Review Program (ERP) website and offered a hard copy of the report once the report is a public document.

If an interviewee agreed to participate on the condition that his/her name be withheld, procedures were taken to protect his/her confidentiality (see Protection of Sensitive Information below).

2.2.3 Interview Techniques

To assist in discussion of natural and cultural resources and cultural practices specific to the study area, CSH initiated semi-structured interviews (as described by Bernard 2006) asking questions from the following broad categories: gathering practices and *mauka* and *makai* (lowland, ocean) resources, burials, trails, historic properties and *wahi pana* (storied place/s). The interview protocol is tailored to the specific natural and cultural features of the landscape in the study area identified through archival research and community consultation. These interviews and oral histories supplement and provide depth to consultations from government agencies and community organizations that may provide brief responses, reviews and/or referrals gathered via phone, email, and occasionally face-to-face commentary.

2.2.3.1 In-depth Interview and Oral Histories

Interviews were conducted initially at a place of the study participant's choosing (usually at the participant's home or at a public meeting place) and/or—whenever feasible—during site visits to the project area. Generally, CSH's preference is to interview a participant individually or in small groups (two–four); occasionally participants are interviewed in focus groups (six–eight). Following the consent protocol outlined above, interviews may be recorded on tape or a digital audio device and in handwritten notes, and the participant photographed. The interview typically lasts one to four hours, and records the “who, what, when and where” of the interview. In addition to questions outlined above, the interviewee is asked to provide biographical information (e.g., connection to the study area, genealogy, professional and volunteer affiliations, etc.). Of those who responded to our request for consultation, only one in-depth interview was conducted remotely via MS Teams. Two consultants responded via an interview questionnaire that was initially sent along with our request for consultation letter.

2.2.4 Protection of Sensitive Information

It is sometimes the case that participants in cultural studies agree to contribute their comments or be interviewed for a study on the condition that their names are withheld from the report. Their reasons for doing so vary from concern about protecting the identity of resource collectors and/or revealing the precise location of certain natural and cultural resources to opposition to the proposed project. For the interviewee who agrees to participate on the condition that his/her name is withheld from public disclosure, CSH takes all precautions to make sure his/her contribution remains confidential. The confidentiality of subjects is maintained via protected files. For this reason, CIA reports sometime include a subsection of summaries of *kama 'āina* “talk-story” interviews entitled Additional Statements.

2.3 Compensation and Contributions to Community

Many individuals and communities have generously worked with CSH over the years to identify and document the rich natural and cultural resources of these islands for cultural impact,

ethno-historical and, more recently, TCP studies. CSH makes every effort to provide some form of compensation to individuals and communities who contribute to cultural studies. This is done in a variety of ways: individual interview participants are compensated for their time in the form of a small honorarium and/or other *makana* (gift); community organization representatives (who may not be allowed to receive a gift) are asked if they would like a donation to a Hawaiian charter school or nonprofit of their choice to be made anonymously or in the name of the individual or organization participating in the study; contributors are provided their transcripts, interview summaries, photographs and—when possible—a copy of the CIA report; CSH is working to identify a public repository for all cultural studies that will allow easy access to current and past reports; CSH staff do volunteer work for community initiatives that serve to preserve and protect historic and cultural resources (for example in Lānaʻi and Kahoʻolawe). Generally our goal is to provide educational opportunities to students through internships, share our knowledge of historic preservation and cultural resources and the state and federal laws that guide the historic preservation process, and through involvement in an ongoing working group of public and private stakeholders collaborating to improve and strengthen the §343 environmental review process.

Section 3 Traditional Background

3.1 Traditional Land Settlement Patterns

Kekaha, Pōki'i, Wai'awa, and Mānā are *ahupua'a* located in the ancient district of Kona, Waimea District, on the southwest side of the island of Kaua'i. All of these *ahupua'a* are now *'ili 'āina* (land section) of the *ahupua'a* of Waimea. Waimea Ahupua'a is composed of several regions which are very different in climate and terrain. These differences essentially dictated the kinds of resources that were available, and hence had much to do with the way the *ahupua'a* was settled by pre-Contact Hawaiians. The well-watered valley and delta of the Waimea River were ingeniously developed and engineered for wetland agriculture and represent the epitome of the typical Hawaiian and Kaua'i-type valley settlement (Handy and Handy 1972:393–397).

On the southwestern leeward coast, about 3 miles from Waimea Bay, a broad, flat plain stretches between the Waimea River delta and Polihale to the west (Handy and Handy 1972:394). It is here that Kekaha, Pōki'i, Wai'awa, and Mānā are located, backed on the *mauka* side by steep low cliffs and a series of small valleys and gulches.

Just below, *makai* of the ridges and valleys, lies the Kekaha Ditch, which winds its way down from the Waimea River in the mountains. From the edge of Kekaha Ditch to the ocean lie the former swamp lands of the Kekaha-Mānā plains, now planted in corn and truck produce, and previously in sugarcane. Between these former swamp lands and Kekaha Ditch is a strip of land that once housed many people in the villages of Pōki'i, Wai'awa, Kaunalewa, Mānā, and others. Between the villages were intermittent homes, with the Old and New Government roads to Mānā (also called the Mānā Road) linking each community between Mānā and Kekaha.

Kelly (1971:2) describes Kekaha on the island of Hawai'i as *'āina malo 'o* or “dry land,” and indeed the same could be said of Kekaha, Kaua'i, if one considers the area's low annual rainfall and lack of permanent streams. Kekaha, however, was neither void of water nor a prehistoric population that made use of the local resources.

3.2 *Nā ka'ao a me nā Mo'olelo* (Legends and Stories)

Hawaiian storytellers of old were greatly honored; they were a major source of entertainment and their stories contained teachings while interweaving elements of Hawaiian lifestyles, genealogy, history, relationships, arts, and the natural environment (Pukui and Green 1995:IX). According to Pukui and Green (1995), storytelling is better heard than read for much becomes lost in the transfer from the spoken to the written word and *ka'ao* (legends) are often full of *kaona* or double meanings.

Ka'ao are defined by Pukui and Elbert as a “legend, tale [...], romance, [and/or], fiction” (Pukui and Elbert 1986:108). *Ka'ao* may be thought of as oral literature or legends, often fictional or mythic in origin, and have been “consciously composed to tickle the fancy rather than to inform the mind as to supposed events” (Beckwith 1970:1). Conversely, Pukui and Elbert define *mo'olelo* as a “story, tale, myth, history, [and/or] tradition” (Pukui and Elbert 1986:254). The *mo'olelo* are generally traditional stories about the gods, historic figures or stories that cover historic events and locate the events with known places. *Mo'olelo* are often intimately connected to a tangible place or space.

In differentiating *ka'ao* and *mo'olelo* it may be useful to think of *ka'ao* as expressly delving into the *wao akua* (realm of the gods), discussing the exploits of *akua* in a primordial time. However, it is also necessary to note there are exceptions, and not all *ka'ao* discuss gods of an ancient past. *Mo'olelo* on the other hand, reference a host of characters from *ali'i* (chief), to *akua* and *kupua* (supernatural beings), to finally *maka'āinana* (commoners), and discuss their varied and complex interactions within the *wao kānaka* (realm of man). Beckwith elaborates, "In reality, the distinction between *ka'ao* as fiction and *mo'olelo* as fact cannot be pressed too closely. It is rather in the intention than in the fact" (Beckwith 1970:1). Thus, a so-called *mo'olelo*, which may be enlivened by fantastic adventures of *kupua*, "nevertheless corresponds with the Hawaiian view of the relation between nature and man" (Beckwith 1970:1).

Both *ka'ao* and *mo'olelo* provide important insight into a specific geographical area, adding to a rich fabric of traditional knowledge. The preservation and passing on of these stories through oration remains a highly valued tradition. Additionally, oral traditions associated with the study area communicate the intrinsic value and meaning of a place, specifically its meaning to both *kama'āina* as well as others who also value that place.

The following section presents traditional accounts of ancient Hawaiians living in the vicinity of the project area. Many relate an age of mythical characters whose epic adventures inadvertently lead to the Hawaiian race of *ali'i* (chiefly class) and *maka'āinana* (commoners). The *ka'ao* in and around the project area shared below are some of the oldest Hawaiian stories that have survived; they still speak to the characteristics and environment of the area and its people.

3.2.1 Pele

There are many stories of Pele and her siblings on the island of Kaua'i. There are two stories that Wichman mentions of Pele and her siblings arriving on the shores of Mānā, the southwestern portion of Waimea Ahupua'a. The first story, "Pele in Waimea," discusses the naming origin of Pa'u o Hi'iaka. The second story, "Pele and Her Sisters: The Winds and Waters," discusses place names within the *ahupua'a* of Waimea.

3.2.1.1 Pele in Waimea

Before Pele found her home in Mauna Loa volcano, she journeyed around Kaua'i searching for a place to live. Pele first landed in Mānā along with her baby sister Hi'iaka-i-ka-poli-o-Pele ("Hi'iaka carried in the bosom of Pele"). Two plants, '*Ohai* (*Sesbania tomentosa*)—a shrub and *Inoa*—a vine, shaded the infant Hi'iaka upon her arrival to the shores of Mānā. Pele felt so much gratitude toward the plants that she offered them a favor:

'What can I do to thank you?' Pele asked.

'Nothing for me,' '*Ohai* said. 'But you could help my friend.'

'How?' asked Pele.

'She has no name,' '*Ohai* said. 'Can you give her one?'

'That is all you ask?' Pele said in surprise.

She reached to pick up Hi'iaka from her sandy and leafy bed. Inoa cast loose her newly grown tendrils, which draped themselves around Hi'iaka's waist like a skirt of the finest tapa made of small rounded leaves and wide-petaled blue flowers.

‘Your name shall be Pa‘u-o-Hi‘iaka, skirt of Hi‘iaka, the beloved of Pele’s heart.’

Thus it was that the little vine earned a name for herself. Ever after, when ‘Ohai spoke to her old friend, she was always careful to call her by name, Pa‘u-o-Hi‘iaka, for had they not been the first to help Pele find a home in a new land? [Wichman 2001:17]

Pa‘u o Hi‘iaka (*Jaquemontia ovalifolia*) also known as “The Skirt of Hi‘iaka” is an endemic subspecies found throughout the Hawaiian Islands at coastal sites and is traditionally used for medicine and landscaping (Hawaiian Native Plant Propagation Database 2001).

3.2.1.2 Pele and Her Sisters: The Winds and Waters

There are many legends of the Hawaiian volcano goddess Pele on the island of Hawai‘i. Pele and her sisters left their ancestral home of Hawaiiki (the Marquesan Islands) and journeyed to Hawai‘i. On Kaua‘i, Pele’s siblings, her sisters Kapo‘ulakina‘u (Kapo), a brother Kahuilaokalani (Kahuila), and the youngest sister, Kapokūlanimoeha‘unaiki (Moeha‘una) landed on the shores of Mānā, an ‘ili of the western section of Waimea. A handsome chief, Limaloa, with a feather cape greeted the travelers. Limaloa fell in love with Moeha‘una and begged her to stay with him in Mānā as the other siblings traveled onward east toward Waimea village. The group stopped on a ridge, missing their sister, and looked back toward Mānā. To commemorate the spot, Kahuila suggested they name the ridge Pōki‘ikauna, meaning “the yearning for the little sister.” This may be a reference to the ridge near the project area called Pōki‘i (Wichman 1991:32–38).

When the Hawaiian goddess Pele traveled to Kaua‘i, she recited the winds of Kaua‘i to her lover Lohi‘au and his people. Several place names, generally names of ‘ili and other place names within the *ahupua‘a* of Waimea and Makaweli are found.

The winds of Kaua‘i blow, urged on...	<i>A pa a noua ka makani o Kaua‘i...</i>
Kaua‘i is what I see and know	<i>‘O Kaua‘i ka ‘u i ‘ike</i>
A land where the winds assemble...	<i>He ‘āina na ka makani i ho‘ohulu ai...</i>
Pōki‘i has a Lamalamapū‘ilikai wind...	<i>He Lamalamapū‘ilikai ko Pōki‘i...</i>
‘Āina‘ike has a Mau‘umae wind...	<i>He Mau‘umae ko ‘Āina‘ike...</i>
Kapa‘eli has a Holonaku wind	<i>He Holonaku ko Kapa‘eli</i>
Kekaha has a Moeahua wind	<i>He Moeahua ko Kekaha</i>
Pu‘upu‘upa‘akai has a Moehau wind	<i>He Moehau ko Pu‘upu‘upa‘akai</i>
Pāwehe has an Ulumano wind	<i>He Ulumano ko Pāwehe</i>
Pa‘ena‘ena has a Lapawai wind	<i>He Lapawai ko Pa‘ena‘ena</i>
Waimea has a Ho‘okomowaipao wind	<i>He Ho‘okomowaipao ko Waimea</i>
Kīkīlaola has a Kiuwai‘ula wind	<i>He Kiuwai‘ula ko Kīkīlaola</i>
Koai‘e has a Wai‘alae wind	<i>He Wai‘alae ko Koai‘e</i>

Mokihana has a Kumulipoho‘ouluali‘i *He Kumulipoho ‘ouluali ‘i ko Mokihana...*
wind

Waiahulu has a Waikea wind [...] *He Waikea ko Waiahulu [...]*

[Ho‘oulumāhie 2008a:16–17; Ho‘oulumāhie 2008b:16–17]

This chant also refers to Waimea and the land of “two beloved waters.” An *‘ōlelo no ‘eau*, a Hawaiian proverb, explains this reference.

Ka wai ‘ula ‘ilahi of Waimea The red sandalwood water of Waimea.

This expression is sometimes used in old chants of Waimea, Kaua‘i. After a storm Waimea Stream is said to run red. Where it meets Makaweli Stream to form Waimea River, the water is sometimes red on one side and clear on the other. The red side is called *wai ‘ula ‘ilahi*. [Pukui 1983:179, No. 1662]

3.2.2 Kanaka-Nunui-Moe

The story *Kanaka-nunui-moe*, or “the sleeping giant,” mentions Kōke‘e, Waimea Canyon, and Mānā, all locations within Waimea Ahupua‘a. A long time ago a giant named Nunui, who only slept once every one hundred years, lived in the Kawaihau hills behind the town of Kapa‘a.

One time, while Nunui was still awake, the high chief of Kawaihau wanted to build a large heiau to honor one of his gods. This was to be no ordinary temple. The chief wanted water-polished rocks for the walls and hard koa wood from Koke‘e for the framework of the god’s house. So the chief told the Kawaihau people what he wanted them to do. They must gather rocks from the golden brown waters of the Koke‘e streams and cut koa trees on the edges of Waimea canyon, and gather pili grass that grew at Mana. ‘All this must be done in the turn of one moon,’ he ordered. [Wichman 1985:14]

The people knew the task the chief ordered was impossible to complete in one night. Noticing the villagers’ long faces, Nunui asked the village people what was wrong, they explained the chief’s lofty desire.

Nunui smiled gently. ‘Tend to your fields,’ he said. ‘This work is nothing for me, and I’ll gladly help you. Besides, it will give me something to do.’

The giant went to Koke‘e and scooped up smooth, round boulders from the golden brown waters and brought them to Kapa‘a. ‘Chief,’ he called to the astonished ruler, ‘show me where you wish to build this heiau.’

The amazed chief pointed out the place set aside for the temple. Nunui placed the rocks to form a wall, fitting them so closely together that not even a mouse could squeeze between the cracks. Within a week, he had built a strong, thick, handsome wall around the sacred place.

Nunui returned to the edge of Waimea canyon and cut down koa trees and trimmed them into the shapes he needed. He carried these back and made the framework of the house. He gathered pili grass from Mana and wrapped the stems into bundles,

tied these bundles to the framework, and within half the time the chief had set, the heiau was finished. [Wichman 1985:15]

3.2.3 The Girl and the *Mo'o*

Willian Hyde Rice (1977) retells the story “The Girl and the Mo-o” also obtained from Mr. Francis Gay. In this retelling a young girl living in the mountains above Makaweli caused her parents so many troubles that they sent her to live with a lizard or crocodile *mo'o* (reptile; water spirit). The *mo'o* raised the young girl until one day her parents longed to recover their child. Trapping the girl with a net she cried out to her parents:

‘In my youth you drove me from you. The mo-o cared for me. Now, why do you want me again?’

She was like a wild animal, struggling to be free. Not daring to keep her so near the cave the parents moved to Waimea, where gradually they tamed the girl, until she grew accustomed to her old life. She had become very beautiful and later she was married to the prince of Waimea. [Rice 1977:91]

A place called Wai-ka-mo'o, translated to mean the “Water-of-the-Lizard,” is a valley—said to have had pools and a small stream before the marshes of Mānā were drained—which opens to a plain opposite of Mānā ridge (Handy and Handy 1972). Whether the Wai-ka-mo'o valley is the location where the “Girl and the Mo'o” takes place is unknown, it can be speculated that this well-watered area was important to locals in the vicinity and could have been the *wahi pana* mentioned in the above *mo'olelo*.

3.2.4 The Rainbow Princess

In his collection of Hawaiian legends, Willian Hyde Rice (1977) of Kaua'i, retells the story “The Rainbow Princess” obtained by the Hawaiian language scholar Mr. Francis Gay. In this story, a family traveling to the valley of Nu'alolo on the Nāpali coast dropped their baby girl into the depths of Waimea valley. At that point:

The parents, in agony, watched their baby falling, but were overjoyed to see the *akua* of the rainbow catch her up before she struck the water and carry her on the rainbow over the mountains down to Waimea valley. In this valley, they placed her in a small cave beneath a waterfall. There she lived, watched over by the *akua*, who always sent the rainbow to care for her. There she grew, at length, into beautiful womanhood, and every day she sat in the sunshine on the rocks above the cave with a rainbow above her head.

Then it happened that a prince from Waimea fell deeply in love with the beautiful Rainbow Princess, as she was called. [Rice 1977:16]

The prince of Waimea tried to woo the Rainbow Princess but to no avail. The Princess insisted that “When you can call me by name, I will come to you” (Rice 1977:16). The Prince of Waimea set off on a journey to seek the counsel of the *kāhuna* (priests; expert) of Maui and Hawai'i regarding the girl's name. The *kāhuna* offered him no help on the matter so he returned to Waimea calling upon his grandmother for help. “I could have told you her name,” his grandmother exclaimed.

‘Go to the waterfall. When the princess laughs at you, call her *Ua*, which means rain.’ The prince hastened to the waterfall and when he called ‘*Ua*’ the beautiful maiden went to him. They were married and lived together many happy years. [Rice 1977:16]

3.2.5 The Story of Ola

In another tale, Rice’s (1977) “The Story of Ola” tells of the king of the Ke-na-mu on Kauai-o-mano-ka-lani-po; he was Kualu-nui-pauku-moku-moku, Big-Kualu-of-the-Broken-Rope. While living in Waimea, he falls in love with a princess by the name of Kuhapuola from Waimea. After having spent many happy days with her, the king returns to his duties at Kekaha. He calls Kuhapuola to his side giving to her his personal items such as his *malo* (loincloth), and *lei nihopalaoa*, a necklace made of many braided strands of human hair, fastened by a hooked ivory ornament. His instruction with these items that could be worn only by high chiefs, was that if a boy were born to her, she should name him after the king’s family, but if a girl were born, she might select the name herself. Here Rice relates how a princess saves her son from disaster:

After a time the princess gave birth to a boy, whom she called Kualu-nui, as she had been told. As the child grew older he became very mischievous and headstrong. He refused to regard the *kapu* [taboo, prohibition] of the *kahunas* [priests] and was always in trouble.

At one time the people had gathered to make a *kahe* or fishtrap in the Makaweli River to catch the fish which the freshet would carry down. An order was issued that no one was to touch the *kahe* until the *kahuna* had removed the *kapu*. But the boy disregarded this order and ate of the fish that had been caught. In great anger the *kahuna* caught him and took him to Kekaha where he was tried the following day before the king.

Hearing that her son was in trouble, the princess hurried to her *kahuna*, asking what she should do to save her boy. The *kahuna* answered, ‘Take the *malo* and the *lei palaoa* of the king and six *kukui* nuts. You must walk to Kekaha, and as you go you must be ever tossing the six nuts into the air and catching them. If you drop one, your child will die. If you catch all, his life will be spared.’ The princess at once set out for Kekaha. Her journey was successful, for not once did she let fall a nut.

When she came into the presence of the king, who was sitting in the *heiau* of Hauola, she saw her son bound, ready to be offered as a sacrifice for his crime of breaking the sacred *kapu*. Going before the king, she showed him his *malo* and *lei palaoa*. He at once recognized the princess and spared the life of his son, whom he called Ola, or Life, and named him as his successor. [Rice 1977:54–56]

Similar to Rice’s (1977) version, Wichman (1998) recounts the same *mo’olelo*. About a quarter of the way up the valley is an area called Wai’awa’awa, “bitter water,” where the spring Kukui-‘ula, “red candlenut tree,” gives fresh water. A red *kukui* tree was planted here by Kahapula, the mother of Ola, after she was banished to Mokuone by her husband, Kū’alunui-paukū-mokumoku. When they parted, he gave her a loincloth, a feather cape, a helmet, and a spear as gifts for their unborn son and a *kukui* nut she was told to plant as soon as she arrived.

Many years later, Ola was captured by the evil high priest and condemned to death. Kahapula prayed and was told to pick two kukui nuts from the tree she had planted. Then she was to juggle them in the air as she walked from Mokuone to Waiawa, a distance of at least fifteen miles. If she arrived without dropping either nut, Ola would be saved. Going slowly and carefully, with her friends and retainers clearing the path ahead of her, Kahapula succeeded.

Ola is still remembered for having ordered the building of the Menehune Ditch in Waimea. In order to pay for Kīkīaola, the Waimea irrigation ditch, Ola promised the Menehune one shrimp each as payment for their work. Ola ordered his chief officer, Pi'i, to make sure there were enough shrimp. Naturally, Pi'i ordered every 'opae (shrimp) that could be found in the streams of the canyon complex to be gathered. He went himself to make sure, and in so doing, he left his name in several places.

One such place was 'Opae-pi'i, 'climbing shrimp' or 'Pi'i's shrimp,' for certainly he would have placed a taboo on all shrimp so that no one would eat them. A path in upper Mokuone is called Ala-pi'i, 'upward path' or 'Pi'i's path.' Near the end of the canyon is Hali'opae, 'fetched shrimp.' So it seems that the inhabitants of Mokuone where Ola had grown up provided all the shrimp they had. In the end, every Menehune did have one shrimp apiece. [Wichman 1998:23–24]

3.3 *Nā Wahi Pana* (Storied Places)

Wahi pana are legendary or storied places of an area. These legendary or storied places may include a variety of natural or human-made structures. Oftentimes dating to the pre-Contact period, most *wahi pana* are in some way connected to a particular *mo'olelo*, however, a *wahi pana* may exist without a connection to any particular story. Davianna McGregor outlines the types of natural and human-made structures that may constitute *wahi pana*:

Natural places have mana, and are sacred because of the presence of the gods, the akua, and the ancestral guardian spirits, the 'aumakua. Human-made structures for the Hawaiian religion and family religious practices are also sacred. These structures and places include temples, and shrines, or heiau, for war, peace, agriculture, fishing, healing, and the like; pu'uhonua, places of refuge and sanctuaries for healing and rebirth; agricultural sites and sites of food production such as the lo'i pond fields and terraces slopes, 'auwai irrigation ditches, and the fishponds; and special function sites such as trails, salt pans, holua slides, quarries, petroglyphs, gaming sites, and canoe landings [McGregor 1996:22].

As McGregor makes clear, *wahi pana* can refer to natural geographic locations such as streams, peaks, rock formations, ridges, offshore islands and reefs, or they can refer to Hawaiian land divisions such as *ahupua'a* or *'ili*, and man-made structures such as fishponds. In this way, the *wahi pana* of Waimea tangibly link the *kama 'āina* of Waimea to their past. It is common for places and landscape features to have multiple names, some of which may only be known to certain 'ohana (family) or even certain individuals within an 'ohana, and many have been lost, forgotten or kept secret through time. Place names also convey *kaona* (hidden meanings) and *huna* (secret) information that may even have political or subversive undertones. Before the introduction of

writing to the Hawaiian Islands, cultural information was exclusively preserved and perpetuated orally. Hawaiians gave names to literally everything in their environment, including individual garden plots and *'auwai*, house sites, intangible phenomena such as meteorological and atmospheric effects, *pōhaku* (rock, stone), *pūnāwai* (freshwater springs), and many others. According to Landgraf (1994), Hawaiian *wahi pana* “physically and poetically describes an area while revealing its historical or legendary significance” (Landgraf 1994:v).

3.3.1 *Nā Inoa 'Āina* (Place Names)

In the preface of *Place Names of Hawaii* (Pukui et al. 1974:x), Samuel Elbert states that

Hawaiians named taro patches, rocks and trees that represented deities and ancestors, sites of houses and heiau, canoe landings, fishing stations in the sea, resting places in the forests, and the tiniest spots where miraculous or interesting events are believed to have taken place.

Place names are far from static [...] names are constantly being given to new houses and buildings, land holdings, airstrips, streets, and towns and old names are replaced by new ones [...] it is all the more essential, then to record the names and the lore associated with them [the ancient names] now. [Pukui et al. 1974:x]

Inherent in the statements of Elbert is the knowledge that the oldest place names held meaning and told the story of an area prior to European Contact. Literal translations of place names for land areas and divisions near the project corridor are listed in Table 1 below and may provide some insight into what this area was like prior to Western Contact. Unless otherwise noted, translations are by Pukui et al. (1974) and the Ulukau electronic library (Ulukau 2014), Hawaiian place name database, Soehren (2014), with references cited in text.

Pukui et al. (1974:106) give the literal translation of Kekaha as “the place.” However, Handy and Handy’s (1972) definition offers more insight into the place name: “Kaha was a special term applied to areas facing the shore but not favorable for planting. Kekaha in Kona, Hawaii, was one so named, and Kekaha on Kauai another” (Handy and Handy 1972:54).

Table 1. Place names within Waimea Ahupua‘a and project area vicinity

Name	Feature	Translation
Alaka‘i	Swamp and valley	Swamp and trail <i>Lit.</i> , to lead
Hau‘ola	Ridge	<i>Lit.</i> , dew [of] life
Hikimoe	Ridge and valley	<i>Lit.</i> , resting place
Hō‘ea	Valley	<i>Lit.</i> , to arrive
Ho‘one‘enu‘u	<i>Heiau</i>	Bennett’s Site 12. “...along the ditch line inland from the government road near the center of Kaunalewa ridge...Thrum...mentions that it was a heiau for circumcision.” Source: Bennett 1993:102. Quadrangle: 30-05.
Huluhulunui	Ridge	<i>Lit.</i> , many rootlets

Name	Feature	Translation
Kā'ana	Land section	Elev. 3440+ ft on west rim of Waimea Canyon. Source: USGS 1965. Quadrangle: 30-01. North: 98,000. East: 439,200. <i>Lit.</i> , division
Kahelu	Ridge and <i>heiau</i>	Bennett's Site 10. "Kahelu heiau, at Kahelu near Mana and described by Thrum as 'A heiau of platform character at the base of the hill, about 6 feet high in front, not of large size.'" Source: Bennett 1931:102. Quadrangle: 30-05. <i>Lit.</i> , the number or the scratch
Kahoana	Valley	<i>Lit.</i> , the whetstone
Kaua	Ancient surfing area	<i>Lit.</i> , war
Kauaikananā	Stream and valley	<i>Lit.</i> , the rain defied During a storm, a man found shelter in a small cave; his companion stood under a tree and shouted: <i>Ua 'oe ē ka ua, ka ua o ka nanā keia</i> , rain on, O rain, a rain defied is this. The man in the cave thought his companion had better shelter and ran out to see. The man under the tree then went into the cave.
Kaulakahi	Channel	Channel between Kaua'i and Ni'ihau <i>Lit.</i> , the single flame (streak of color)
Kaunalewa	Land section and ridge	A famous coconut grove was here. <i>Lit.</i> , swaying place (perhaps referring to coconuts)
Kawai'ele	<i>Loko</i> (pond)	One of three large ponds drained and filled for sugar plantation. Also written "Kawaieli" or "Waieli." Source: RM 1395; TM 1000; USGS 1963. Quadrangle: 30-05. North: 67,000. East: 406,000.
Kawaikōi	Stream	Stream inland of Waimea Canyon, northwest Kaua'i <i>Lit.</i> , the flowing water
Kekaha	<i>'Ili 'āina</i>	Land section, elementary school, town ditch, and plantation <i>Lit.</i> , the place
Kīkī-a-Ola	<i>'Ili kū</i>	Land division, small boat harbor, stream, and watercourse, now called Menehune Ditch. <i>Lit.</i> , container [acquired] by Old Chief Ola ordered the Menehune to build a watercourse here; each brought a stone, and the ditch was finished in a single night; HM 328-329.

Name	Feature	Translation
Kōke'e		State park, natural history museum, land division, and stream. <i>Lit.</i> , to bend <i>or</i> to wind
Kokole	Point	<i>Lit.</i> , raw
Kona	Ancient district	Leeward districts on Hawai'i, Kaua'i, Moloka'i, Ni'ihu, and O'ahu <i>Lit.</i> , leeward
Kualua	Ancient surfing area	<i>Lit.</i> , twice
Kuapa'a	Valley	Between Kaunalewa Ridge and Pulehu Ridge. Source: USGS 1963. Quadrangle: 30-05. North: 65,000. East: 421,000.
Makahoa	Ridge and <i>heiau</i>	Ridge and heiau near Kaunalewa, Kaua'i <i>Lit.</i> , friendly point
Mānā	<i>Ili 'āina</i>	Dry western end of Kaua'i, where an older sister of Pele, Nā-maka-o-Kaha'i (the eyes of Kaha'i), introduced the <i>kauna'oa</i> dodder. <i>Lit.</i> , arid
Miloli'i	Valley	Land sections, ridge, and valley, Nāpali coast, Kaua'i. <i>Lit.</i> , fine twist (as sennit cord) An alternate interpretation is "small swirling," as a current.
Nākeiki'elima	Area	<i>Lit.</i> , the five children
Niu	Ridge and valley	<i>Lit.</i> , coconut
Nohili	Area and point	Small area and point in Barking Sands Beach
Nu'alolo	Valley	Valley, stream, land section, and trail, Nāpali coast, northwest Kaua'i, proposed as a State reserve area. The <i>iliau</i> , a relative of the silversword, grows here. Also called Nu'ulolo, Nu'ololo
'Ō'ōmanō	Point	<i>Lit.</i> , shark spear
Paliuli	<i>Ili 'āina</i>	<i>Lit.</i> , green cliff. Source: PEM
Papa'ena'ena	<i>Mo'o</i>	Place name of the Waimea shore near the old wharf <i>Lit.</i> , red, hot, lowland (Gray 1873)
Paua	Valley	Between Pokii Ridge and Paua Ridge. Source: USGS 1963. Quadrangle: 30-05. North: 56,000. East: 428,000.

Name	Feature	Translation
Pe'ekaua'i	<i>'Auwai and 'ili 'āina</i>	A large ili with over 50 kuleana awarded, many supplied by the Peekauai Ditch. Source: IN 529; AB 9:448; NR 5:386. Quadrangle: 30-09. North: 49,400. East: 446,100.
Pōki'i	Ridge	The old name was Pōki'ikauna (chanting youngest brother or sister) Kapo, Pele's sister, left her younger female relative, Moehauna (lie struck), here and she chanted a farewell. <i>Lit.</i> , youngest brother or sister
Polihale		State park, beach, ridge, heiau, and land division, Waimea district, Kaua'i, famous for its seaweed (<i>pahapaha</i>) used in leis, a practice said to have been introduced by Pele's older sister, Nā-maka-o-Kaha'i. <i>Lit.</i> , house bosom
Po'o	Ancient surfing area	<i>Lit.</i> , head
Po'omau	Canyon and stream	<i>Lit.</i> , constant source or constant head
Pūlehu	Ridge	<i>Lit.</i> , broiled
Pu'ukapele	Peak	Peak (3,657 ft high), Waimea Canyon, Kaua'i. Voices of Menehune here were believed audible on O'ahu: <i>Wawā ka Menehune I Pu'u-ka-Pele ma Kaua'i, pū'oho ka manu o ka lolo o Ka-wai-nui ma Ko'olau-loa, O'ahu</i> , Menehune speak at Pu'u-ka-Pele, birds at Ka-wai Nui pond at Ko'olau Loa, O'ahu, are startled. <i>Lit.</i> , the volcano hill.
Waiahulu	Stream and <i>'ili 'āina</i>	LCAw 11299 to Kukanolu. "Aina kalo a me pahale ma ka ili o Waiahulu, ma Waimea..." TMK 1401. "This land is in the ili of Kukui" according to FT 13:234. Source: IN 532; AB 9:430. Quadrangle: 30-06.
Wai'aka	Valley and ridge	<i>Lit.</i> , laughing water
Waiakoali	Stream	Rises at 3920 ft in Alakai Swamp, enters Kawaikoi Stream at 3140 ft. elev. Source: USGS 1965. Qudrangle: 30-02. North: 108,800. East: 461,000.
Wai'awa	Reservoir	<i>Lit.</i> , milkfish water
Wailau		State park, land division, river, falls, valley, town, and golf course, Līhu'e qd., Kaua'i.

Name	Feature	Translation
		Heiau, a place of refuge, and birth stones here are said to be in excellent condition. <i>Lit.</i> , two waters
Waimea	<i>Ahupua‘a</i> and <i>moku</i>	Town, bay, canyon, district, school, ditch, plantation, landing, river, road, and land division, southwest Kaua‘i, where Captain Cook first landed (1778) <i>Lit.</i> , reddish waters (as from erosion of red soil)
Waineki	Swamp	Swampy mountains above Waimea town, Kaua‘i, home of the Menehune (Jarrett 29); also spelled Waineke <i>Lit.</i> , bulrush water
Waipao	Gulch	<i>Lit.</i> , scooped water

3.3.1.1 The Menehune and the Kīkīaola Ditch

Hawaiian legends concerning Waimea focus on the engineering feats that made the agricultural abundance of the *ahupua‘a* possible. Especially noteworthy are the legends narrating the origins of the cut stone-lined *‘auwai* (irrigation ditch) called Kīkīaola, popularly known as the “Menehune Ditch.” Wichman (1998:9) says the original settlers named the farmland in this area Pe‘e Kaua‘i, meaning “hidden Kauai,” after the name of their ancient homeland. In the Māhele land records, Pe‘ekaua‘i is listed as the name of an *‘ili* near the Waimea coast and along the west bank of the Waimea River. The Pe‘ekaua‘i *‘auwai* watered the plain west of the Waimea River, and its most notable section—the water along the face of a cliff some 20 ft above the river—by means of an aqueduct constructed of intricately fitted, cut, and dressed stones (Bennett 1931:23, 105–107).

Martha Beckwith (1970:329–330) associates the name Kīkīaola (meaning, “container acquired by ‘Ola”; Pukui et al. 1974:110) with three versions of the legend of Ola, an *ali‘i* of Waimea. In one version (Rice 1923:45), Ola, “desiring to bring water to the taro patches of the Waimea flats [...] summon[s] the Menehune people [who] each bring a stone and the watercourse (Kiki-a-Ola) is laid in a single night.” In another version (Thrum 1908:110–111), Kīkīaola is not the name of the watercourse itself: “Pi is the chief of Waimea who gets the Menehune to construct for him a dam across the Waimea river and a watercourse leading from it to a place above Kiki-a-ola.”

Thrum (1923) says of the *menehune*,

Their dwelling place was in the mountains, above Waimea, near, perhaps, to a place known as Waineki. [...] The watercourse of Kikīaola, above the Waimea river, was built by this race of Menehunes [...] The chief that encouraged this race of Menehunes to the task rejoiced greatly at hearing of and seeing the completion of the watercourse of Kikīaola, to benefit the laboring people residing at *Paliuli*, and the water flowing down its course to enable the taro to grow thriftily for their sustenance. [Thrum 1923:214, 216]

Thus, Thrum identifies the land east and adjacent to the Kīkīaola Ditch as the land (*'ili*) of Pali'uli, a Hawaiian word for “green cliff.” In the third version (Luomala 1951:23), “Kiki-a-ola is the chief of Waimea” who “seems to be the sacrifice to be offered” at the completion of the dam and watercourse of Waimea by the *menehune*.

Menehune, a Tahitian term meaning “commoner,” came to refer to a mythical race of small industrious people who were alleged to have built many of the fishponds, irrigation systems, and *heiau* (pre-Christian place of worship) on Kaua'i (Mills 1996:63). The *menehune* overseer of the Pe'ekaua'i *'auwai* project was named Papa'ena'ena, which is the place name of the Waimea shore near the old wharf. Papa'ena'ena means “red, hot, lowland,” according to information on place names collected by Francis Gay in 1873 (Gay 1873:33). In Rice's version, Papa'ena'ena is the name of a stone on the Waimea shore. “At one time the Menehune hollowed out a huge stone, and carried it to Waimea, where the head Menehune fisherman used it as a house. It was called Papa'ena'ena, from his name. He sat in this house, and watched his men fish” (Rice 1923:36).

Wichman (1998:8) also states this is the stone Papa'ena'ena sat on to direct his *menehune* workers when they built the irrigation ditch, Kīkīaola, which means “container acquired by Ola.”

The chief Ola is also associated with several other sites in Waimea Ahupua'a, including Hau'ola Heiau (built by his father near Kekaha), Ahululu Heiau at the foot of Pu'ukapele Crater, and Kīpapa-a-Ola, a trail paved with sticks that crossed the Alaka'i Swamp and connected Kōke'e with Wainiha Valley on the island's north shore (Beckwith 1970:328–229). Any attempt to roughly date these sites or the Menehune Ditch through genealogical means would probably be fruitless. Although Ola is a very popular *ali'i* in legends, his name cannot be found in any surviving Kaua'i genealogy (Luomala 1955:132).

3.3.1.2 Hau'ola Heiau

Hau'ola Heiau is located at Waiawa, Kaua'i and named after a famous King of Kaua'i, Ola. The “Story of King Ola” by A.F. Knudsen (Thrum 1923) discusses how Ola succeeds his father and becomes the King of Kaua'i. Ola's father and the priesthood were in constant conflict with one another:

The father of King Ola lived a harassed life. The priesthood was degraded, the high priest a keen, intellectual, power-loving man, of no spiritual insight, and the king felt that the tabu was in danger. But in the second generation were growing up a number of splendid young men [...] [Thrum 1923:94]

The King was in search of a successor; however, the priestly party would continuously interfere and the chosen successor would die. During this time, Ola's mother was the wife of the King, a princess of high rank, however, she was thrown out and restricted to the confines of Koula valley. The following excerpt describes how Ola reunited with his father and became the King of Kaua'i:

[...] And then when the bright *ohia*'s blossoms came out and reddened the forest in the deep, dark valleys, with a promise of their rich red apples in the fall, the banished princess opened a wooden calabash that had been mysteriously left with her the day of her banishment, and therein she found the cloak, the apron, the helmet, the dagger and the sacred breast ornament of a prince of the blood, and this she hung upon her son's neck, calling him *Ola* (life), and telling him to present himself at the door of the inner temple, where that day all the young warriors were

to present themselves for initiation, to take the vow of preserving the tabu with their life's blood. The old king stood in the East, barely suppressing his emotion and expectation. His old arch enemy, gray-haired but erect, stood in the West, and in marched Ola with his regalia. He wore the sacred emblems, but the instant the high priest saw him he knew that his game was at an end. He did not recognize the youth, but of course he recognized the regalia, and divined the trick of the king. Forgetting himself, he hurled a javelin of office, the sacred spear, emblem of the creative power, at the youth, but Ola, trained as a warrior, struck it aside with his mace, and took his position [...] The king arose in his seat. He said the tabu had been broken. Life had been stricken with the emblem of creation. The only salvation was that one died in defense of the tabu [...] and the old priest saw that whether there was truth in their belief or not, there was nothing left for him to do but to die in the defense of the tabu. And he walked to the altar and leaned back across the great flat stone [...] and he plunged his own dagger into his own breast [...] Ola was initiated [...] elected heir apparent to the king [...] Soon after that the old king died in peace, and King Ola began at twenty-four years of age to reign for fifty-six years, a reign that has gone down in Hawaiian history as the reign of peace, of fine arts, and of great public works, for the benefit of the masses.

The last work of the old king, his father, was to enlarge and improve the temple, and make the hill above it a fortress, and consecrate the whole with a new name '*Hauola*'—'The stricken ola.' [Thrum 1923:95-97]

3.3.1.3 Keonekanionohili (Nohili)

Keonekanionohili, also known as "barking sands of Nohili," was named after Nohili, a fisherman, and his dogs. Unlike most Native Hawaiians who only raised dogs as livestock or for sacrificial purposes, Nohili kept his dogs like pets and would not eat or kill his dogs (Wichman 1991:24).

[...] Nohili had collected the nine colors of native dogs. The largest of these was an '*īlio mo'ō*, a dog brindled like a lizard's skin. There was an '*īlio apowai*, a gray-brown dog whose eyes and nose were the same color. The '*īlio pe'elua* was striped like a caterpillar and the '*īlio makue* was a solid brown. There was an '*īlio 'ōlohe*, a hairless dog noted for its fierceness and cunning. The four small dogs were the '*īlio i'i 'ā'ula*, reddish brown like the seaweed; the '*īlio i'i ke'oke'ō* that was like the whiteness of breaking waves; the '*īlio i'i hinahina*, the dog that was the gray of the low spreading beach plant; and the '*īlio i'i 'ea 'ula*, the dog colored like a turtle shell. [Wichman 1991:24]

Nohili would tie up his nine dogs to three different pegs (three dogs per peg) as he went fishing. On one of his fishing trips, he was caught in a storm that pushed him out to the island of Nihoa. Nohili's dogs would run around, bark, and dig into the sand to help guide Nohili home. When Nohili finally made it ashore to Kaua'i, his dogs were gone. The only trace of them were the circles and markings they have left running around and barking. As he continued on his way, he could hear his dogs barking as if it was coming from below. It is believed that in the dogs' attempt to guide Nohili back home, they buried themselves in the sand (Wichman 1998:160–161).

3.3.1.4 Polihale Heiau

Deemed one of the oldest and most sacred *heiau* on Kaua‘i, Polihale (House Blossom) Heiau is dedicated to Kāne and Kanaloa as this was their first home in Hawai‘i. According to Wichman:

Chief Polihale had a daughter, Nā-pihe-nui, who attracted the attention of Kū, the first of the four great Polynesian gods to come to Kaua‘i. In the form of a white dog, he [Kū] would play with her [Nā-pihe-nui] and her maidens as they swam and bathed in the nearby pond. He asked Polihale for his daughter, but he was refused. Kū said he would kill all the inhabitants one by one until Polihale would agree to the marriage. Kū did so in his form as a large black dog. Polihale prayed to Kāne and Kanaloa, two more of the great gods, to help him in this uneven battle. The gods came in their seagoing bird forms and defeated Kū. In thanks, Polihale built this *heiau* that bears his name as the first home in Hawai‘i of Kāne and Kanaloa. [Wichman 1998:162]

It is also believed that the spirits of the dead would gather at Polihale, by Kā‘ana (divide). Here the spirits would follow Hikimoe (to arrive prostrated) Stream to Polihale Heiau. The spirits would rest here before continuing their journey up the cliff and leaping into the ocean into Pō (Wichman 1998:162).

3.4 Oli (Chants)

Oli, according to Mary Kawena Pukui (Pukui 1995:xvi–xvii) are often grouped according to content. Chants often were imbued with *mana* (spiritual power); such *mana* was made manifest through themes and *kaona* (hidden meanings). According to Pukui, chants for the gods (prayers) came first, and chants for the *ali‘i*, “the descendants of the gods,” came second in significance. Chants “concerning the activities of the earth peopled by common humans,” were last in this hierarchy (Pukui 1995:xvi–xvii). Emerson conversely states,

In its most familiar form the Hawaiians—many of whom [were lyrical masters]—used the *oli* not only for the songful expression of joy and affection, but as the vehicle of humorous or sarcastic narrative in the entertainment of their comrades. The dividing line, then, between the *oli* and those other weightier forms of the *mele*, the *ino*, the *kanikau* (threnody), the *pule*, and that unnamed variety of *mele* in which the poet dealt with historic or mythologic subjects, is to be found almost wholly in the mood of the singer. [Emerson 1965:254]

While *oli* may vary thematically, subject to the perspective of the *ho‘opa‘a* (chanter), it was undoubtedly a valued art form used to preserve oral histories, genealogies, and traditions, to recall special places and events, and to offer prayers to *akua* (gods) and *‘aumākua* (family gods) alike. Perhaps most importantly, as Alameida (1993:26) writes, “chants [...] created a mystic beauty [...] confirming the special feeling for the environment among Hawaiians: their *one hānau* (birthplace), their *kula iwi* (land of their ancestors).”

3.4.1 Ho‘ao (Marriage) oli

In an *oli* that would be chanted during a woman’s pregnancy, in hopes of producing desired qualities for the offspring, Kekaha of Waimea Ahupua‘a is mentioned (Gutmanis 1983). Today, this *oli* may be used as a marriage prayer according to Gutmanis (1983).

[...] *Me he alii, alii, la no ka hele i Kekaha,
Ka hookiekie i ka li‘u-la,
Ka hele i ke alia-lia la, alia!
Alia-lia la ‘a-laau Kekaha.
Ke kaha o Kaia-ihi, Wai-o-Lono.*

[...] It vaunts like a king at Kekaha,
Flaunting itself in the sun’s heat,
And lifts itself up in mirage,
Ghost-forms of woods and trees in Kekaha
Sweeping o’er waste Kala-ihi, Water-of-Lono.
[Gutmanis 1983:46]

3.4.2 Pele and Oli of Waimea

Many *oli* that mention places of Waimea are related to Pele, her family, friends, and her journeys. Places within Waimea are mentioned in an *oli* transcribed in the *The Epic Tale of Hi‘iakaikapoliopole* (Ho‘oulumāhiehie 2008). Several place names, generally names of ‘*ili* within the *ahupua‘a* of Waimea, are found in a chant by the volcano goddess Pele, as she called out the names of the winds of the island of Kaua‘i.

<i>A pā a noua ka makani o Kaua‘i</i>	[...]The winds of Kaua‘i blow, urged on [...]
<i>He Lamalamapū‘ilikai ko Pōki‘i</i>	Pōki‘i has a Lamalamapū‘ilikai wind
<i>Aloha wale o ‘u pōki‘i</i>	Beloved indeed are my pōki‘i, my younger siblings
<i>He Mau‘umae ko ‘Āina‘ike</i>	‘Āina‘ike has a Mau‘umae wind
<i>A ‘ike mai nō ‘oe ia ‘u, e ke aloha</i>	As you ‘ike, see and know me, my love
<i>Mai ho‘ohewahewa mai ‘oe</i>	Be not mistaken
<i>He Holonaku ko Kapā‘eli</i>	Kapā‘eli has a Holonaku wind
<i>He Moeāhua ko Kekaha</i>	Kekaha has a Moeāhua wind
<i>He Moehau ko Pu‘upu‘upa‘akai</i>	Pu‘upu‘upa‘akai has a Moehau wind
<i>He Ulumano ko Pāwehe</i>	Pāwehe has an Ulumano wind
<i>He Lapawai ko Pā‘ena‘ena</i>	Pā‘ena‘ena has a Lapawai wind
<i>He Ho‘okomowaipao ko Waimea</i>	Waimea has a Ho‘okomowaipao wind
<i>He Kiuwai‘ula ko Kīkīaola</i>	Kīkīaola has a Kiuwai‘ula wind

[Ho‘oulumāhiehie 2008a:16; 2008b:15–16]

When Pele’s beloved sister, Hi‘iaka, and her companions were sailing in a canoe past the shore of Waimea, she called the following chant:

<i>‘O a ‘u mau wai aloha ‘elua lā</i>	My two beloved waters
<i>‘O ka wai ‘ula lā a me ka wai kea</i>	Water running red and water running white

<i>Ke wilia maila e ka makani</i>	Swirled together by the wind
<i>‘O a‘u mau makani aloha i ka pali o Kīkīaola</i>	My beloved winds on the cliffs of Kīkīaola
<i>‘O Kaho‘okomowaipao me Kiuwai‘ula</i>	The Kaho‘okomowaipao and the Kiuwai‘ula
<i>E keuhu nei i ke one kahakai lā</i>	Stirring up the sand there at the shore
<i>Aloha wale Papa‘ena‘ena lā</i>	Beloved indeed in Papa‘ena‘ena
<i>I ka mālīe a‘e ho‘i ē.</i>	There beyond, in the calm.

[Ho‘oulumāhiehie 2008a:252, 2008b:236]

While in Hā‘ena, Kaua‘i, Pele was intent on winning over Lohi‘au as her lover and bringing him back to Hale-ma‘uma‘u with her. In this moment Pele offered the following chant to Lohi‘au which mentions the Alaka‘i swamp of Waimea:

Hanalei is beaten down by the heavy rains
Falling from the clouds over Alaka‘i swamp.
The rain reaches Manu‘a-kepa
Where the traveler falls on slippery moss.
Where is one to lead the newcomer safely?
I search for one to give me life
To bring life to me here! [Wichman 2001:79]

3.5 *Nā Mele* (Songs)

The following section draws from the Hawaiian art of *mele*, poetic song intended to create two styles of meaning.

Words and word combinations were studied to see whether they were auspicious or not. There were always two things to consider the literal meaning and the *kaona*, or ‘inner meaning.’ The inner meaning was sometimes so veiled that only the people to whom the chant belonged understood it, and sometimes so obvious that anyone who knew the figurative speech of old Hawai‘i could see it very plainly. There are but two meanings: the literal and the *kaona*, or inner meaning. The literal is like the body and the inner meaning is like the spirit of the poem. [Pukui 1949:247]

The Hawaiians were lovers of poetry and keen observers of nature. Every phase of nature was noted and expressions of this love and observation woven into poems of praise, of satire, of resentment, of love and of celebration for any occasion that might arise. The ancient poets carefully selected men worthy of carrying on their art. These young men were taught the old *meles* and the technique of fashioning new ones. [Pukui 1949:247]

3.5.1 Kaua‘i Mele

This *mele* from Kaua‘i highlights the complexities of local color and topography with mention of the Waimea area.

Pale I

*Auheā wale oe, e ka Makani Inu-wai?
 Pa kolonahe i ka ili-kai,
 Hoohui me ka Naulu,
 Na ulu hau i ka hapapa.
 Anō au ike i ke ko Hala-li'i,
 I keia wa nana ia Lehua.*

Pale II

*Aia i Waimea ku'u haku-lei;
 Hui pu me ka wai ula ili-ahi,
 Mohala ka pua i ke one o Pawehe;
 Ka lawe a ke Koolau*

*Noho pu me ka ua punonohu ula i ka nahele,
 Ike i ka wai kea o Makaweli;*

Ua noho pu i ka nahele

*Me ka lei hinahina o Maka-li'i.
 Liilii ka uka o Koae'a;
 Nana i ka ua lani-pili,
 Ka o-ō, manu le'a o ka nahele.
 I Pa-ie-ie au, noho pu me ke anu.
 E ha'i a'e oe I ka puana:
 Ke kahuna kalai-hoe o Puu-ka-Pele.
 [Emerson 1965:110–111]*

Canto I

Whence art thou, thirsty wind,
 That gently kissest the sea,
 Then, wed to the ocean breeze,
 Playest fan with the bread-fruit tree?
 Here sprawl Hala-ili's canes,
 There stands bird-haunted Lehua.

Canto II

My wreath-maker dwells at Waimea.
 Partnered is she to the swirling river;
 They plant with flowers the sandy lea,
 While the bearded surf tossed by the breeze,

Vaunts on the hills as the sun-bow,
 Looks on the crystal stream
 Makaweli,

And in the wildwood makes her
 abode.

With Hinahina of silvern wreaths.
 Koae'a's a speck to the eye,
 Under the low-hanging rain-cloud,
 Woodland home of the plaintive o-ō.
 From frost-bitten Pa-ie-ie
 I bid you, guess me the fable:
 Paddle-maker of Pele's mount.

The author mentions the *Naulu* sea-breeze of Waimea; *Lehua*—a bird-island visible from Waimea; *Puu-ka-Pele*—a volcanic hill near Waimea; and the wreath-maker—*haku-lei*, who dwells at Waimea, which is thought to be ocean-vapor (Emerson 1965:111).

3.5.2 Kōke'e

Written for the forests above Waimea, *Kōke'e*, composed by Dennis Kamakahi in 1983, describes the beauty and landscape of the *Kōke'e* mountains of Waimea.

*'Upu a'e, he mana'o
 I ka wēkiu o Kōke'e
 I ka nani, o ka 'āina
 O ka noe pō'ai'ai*

~hui

*'O Kalalau he 'āina la'a
 I ka ua li'ili'i
 'O Waimea ku'u lei aloha
 Never more to say goodbye*

Thoughts well up in me
 Of the highlands of Kōke'e
 Of the beauty of the land
 And the swirling mists

chorus:

Kalalau, a sacred land
 In the fine, passing rains
 Waimea is my lei of love
 Never more to say goodbye

*E ho‘i mai ana i ka hikina
I ka lā welawela
I ke kai hāwanawana
I Po‘ipū ma Kōloa*

Returning to the east
In the sun, clear and hot
To the whispering seas
At Po‘ipū and Kōloa

*Mele au no ka beauty
I ka uka ‘iū‘iū
I Kōke‘e ua ‘ike au
I ka noe pō‘ai‘ai
[Wilcox 2003:130]*

I sing of the beauty
In the far highlands
At Kōke‘e I have seen
The mists that swirl about

3.5.3 Maika‘i Kaua‘i

Composed by Henry Waiua, the choir director of Lihu‘e Hawaiian Congregational Church, this *mele* is said to be based on a chant composed for Kaumuali‘i, the Kaua‘i chief.

*Maika‘i nō Kaua‘i
Hemolele i ka mālie
Kuahiwi Wai‘ale‘ale
Lei ana i ka mokihana*

Fine indeed is Kaua‘i
So perfect in the calm
Beautiful mountain, Wai‘ale‘ale
Wears the mokihana lei

*Hanohano wale ‘o Hanalei
I ka ua nui hō‘eha ‘ili
I ka wai o ‘u‘inakolo
I ka poli o Nāmolo kama*

So glorious is Hanalei
With pounding rain that stings the skin
And the rustling water
In the heart of Nāmolo kama

*Ua nani wale ‘o Līhu‘e
I ka ua pa‘u pili hale
I ka wai hu‘ihu‘i anu
Kahi wai a ‘o Kēmamo*

So very beautiful is Līhu‘e
In the drenching rain that clings to the house
With the cold refreshing waters
From the springs of Kēmamo

*Kaulana wale ‘o Waimea
I ke one kani o Nohili
I ka wai ‘ula ‘iliahi
A he wai na ka malihini*

So renowned is Waimea
With the roaring sands of Nohili
Amidst the red tinged waters
Water that visitors enjoy

*Maika‘i wale nō Kaua‘i
Hemolele wale i ka mālie
Kuahiwi nani Wai‘ale‘ale
Lei ana i ka mokihana
[Wilcox 2003:160]*

So very fine is Kaua‘i
So perfect in the calm
Beautiful mountain, Wai‘ale‘ale
Wears the mokihana lei

3.5.4 Hele On To Kaua‘i

This *mele* by Israel Kamakawiwo‘ole, recorded and released in 1995, represents a more contemporary ode to Kaua‘i and the canyons of Waimea—which have long captivated the attention of visitors and residents alike.

There’s a place I recall
Not too big, in fact its kinda small
The people there know they got it all

The simple life for me

Hele on to Kauai

Hanalei by the bay

Wailua river valley is where I used to play

The canyons of Waimea standing all aglow

The magic of the garden isle is calling me back home

When I was young, not too smart

I left my home, looking for a brand new start

To find a place that's better still

now I know, I know I never will

[Huapala n.d.]

3.6 *Nā 'Ōlelo No'eau* (Proverbs)

Hawaiian knowledge was shared by way of oral histories. Indeed, one's *leo* (voice) is oftentimes presented as *ho'okupu* ("tribute," a gift given to convey appreciation, to strengthen bonds); the high valuation of the spoken word underscores the importance of the oral tradition (in this case, Hawaiian sayings or expressions), and its ability to impart traditional Hawaiian "aesthetic, historic, and educational values" (Pukui 1983:vii). Thus, in many ways these expressions may be understood as inspiring growth within the reader or between speaker and listener:

They reveal with each new reading ever deeper layers of meaning, giving understanding not only of Hawai'i and its people but of all humanity. Since the sayings carry the immediacy of the spoken word, considered to be the highest form of cultural expression in old Hawai'i, they bring us closer to the everyday thoughts and lives of the Hawaiians who created them. Taken together, the sayings offer a basis for an understanding of the essence and origins of traditional Hawaiian values. The sayings may be categorized, in Western terms, as proverbs, aphorisms, didactic adages, jokes, riddles, epithets, lines from chants, etc., and they present a variety of literary techniques such as metaphor, analogy, allegory, personification, irony, pun, and repetition. It is worth noting, however, that the sayings were spoken, and that their meanings and purposes should not be assessed by the Western concepts of literary types and techniques. [Pukui 1983:vii]

Simply, *'ōlelo no'eau* may be understood as proverbs. The Webster dictionary notes it as "a phrase which is often repeated; especially, a sentence which briefly and forcibly expresses some practical truth, or the result of experience and observation." It is a pithy or short form of folk wisdom. Pukui equates proverbs as a treasury of Hawaiian expressions (Pukui 1995:xii). Oftentimes within these Hawaiian expressions or proverbs are references to places. This section draws from the collection of author and historian Mary Kawena Pukui and her knowledge of Hawaiian proverbs describing *'āina* (land), chiefs, plants, and places.

3.6.1 *'Ōlelo No'eau* #686

He keiki kālai hoe na ka uka o Pu'ukapele.

A paddle-making youth of Pu'ukapele.

A complimentary expression. He who lives in the uplands, where good trees grow, can make good paddles. Pu'ukapele is a place above Waimea Canyon on Kaua'i. [Pukui 1983:76]

3.6.2 'Ōlelo No'eau #1028

Ho 'i hou ka pa 'akai i Waimea.

The salt has gone back to Waimea.

Said when someone starts out on a journey and then comes back again. The salt of Waimea, Kaua'i, is known for its reddish brown color. [Pukui 1983:110]

3.6.3 'Ōlelo No'eau #1104

Ho 'onohonoho i Waineki kauhale o Limaloa.

Set in order at Waineki are the houses of Limaloa.

Limaloa, the god of mirages, made houses appear and disappear on the plains of Mana. This saying applies to the development of ideas, the setting of plans, or the arranging of things in order. [Pukui 1983:118]

3.6.4 'Ōlelo No'eau #1662

Ka wai 'ula 'iliahi of Waimea

The red sandalwood water of Waimea.

This expression is sometimes used in old chants of Waimea, Kaua'i. After a storm Waimea Stream is said to run red. Where it meets Makaweli Stream to form Waimea River, the water is sometimes red on one side and clear on the other. The red side is called *wai 'ula 'iliahi*. [Pukui 1983:179]

3.6.5 'Ōlelo No'eau #1339

Ka i 'a ho 'pā 'ili kanaka o Waimea.

The fish of Waimea that touch the skins of people.

When it was the season for *hinana*, the spawn of 'o 'opu, at Waimea, Kaua'i, they were so numerous that one couldn't go into the water without rubbing against them. [Pukui 1983:146]

3.6.6 'Ōlelo No'eau #1775

Ke one kapu o Kahamalu 'ihi.

The sacred sand of Kahamalu 'ihi.

A city of refuge for those of Waimea, Mana, and the Kona side of Kaua'i. [Pukui 1983:190]

3.6.7 'Ōlelo No'eau #2910

Waikāhi o Mānā.

The single water of Mānā.

When schools of *ōpelu* and *kawakawa* appeared at Mana, Kaua'i, news soon reached other places like Makaweli, Waimea, Kekaha, and Poki'i. The uplanders hurried to the canoe landing at Keanapuka with loads of *poi* and other upland products to exchange for fish. After the trading was finished, the fishermen placed their unmixed *poi* in a large container and poured in enough water to mix a whole batch at once. It didn't matter if the mass was somewhat lumpy, for the delicious taste of fresh fish and the hunger of the men made the *poi* vanish. This single pouring of water for the mixing of *poi* led to the expression, '*Waikāhi o Mana.*' [Pukui 1983:318–319]

3.6.8 *‘Ōlelo No‘eau* #2920

Wawā ka menehune i Pu‘ukapele ma Kaua‘i, puoho ka manu o ka loko o Kawainui ma O‘ahu.

The shouts of the menehune on Pu‘ukapele on Kaua‘i startled the birds of Kawainui Pond on O‘ahu.

The menehune were once so numerous on Kaua‘i that their shouting could be heard on O‘ahu. Said of too much boisterous talking. [Pukui 1983:320]

Section 4 Historical Background

4.1 Pre-Contact to Early Post-Contact Period

The large size of Waimea Ahupua'a is admittedly unusual as single *ahupua'a* do not typically occupy such a large percentage of the land area of a major Hawaiian island. It could be argued that the comparatively low agricultural productivity of the Mānā plain, where the project area is located, due to the scarcity of water, is the basis for its inclusion in Waimea. However, the same cannot be said for the well-watered valleys of Nu'alolo and Miloli'i, both of which could easily support typical and self-contained valley settlements of perhaps small but stable populations.

One could also speculate that Waimea, being one of the two areas of the island that traditionally served as the domain of the high chiefs (the other being Wailua), commanded the resources of the large upland region of Kōke'e and Alaka'i, among them the large *koa* trees out of which the hulls of canoes were hewn, and forest birds that supplied the feathers for cloaks, capes, and other items associated with the *ali'i*. It is quite possible that at one time, Waimea was divided into several smaller *ahupua'a*, perhaps before the Māhele, or even in pre-Contact times.

Waimea is thought to have first been settled by voyagers from Tahiti, led by Kūalu-nui-kini-akua. The first settlers of Waimea utilized a native tree they named *waimea* (also known as *māmaki*. *Waimea pipturus* or *Pipturus albidus*) to make *kapa* (cloth) until the *wauke* trees they had brought with them were mature enough to be used (Wichman 2003:6). The *kapa* made from the *waimea* or *māmaki* tree was not as soft as that made from *wauke* and was thus only utilized for *kapa* production when *wauke* was unavailable. The fruit of the *māmaki* tree was also used by early Hawaiians as a laxative while the leaves, today as well as in past, are used to brew a tea that is drunk to reduce blood pressure and high cholesterol (Hawaiian Electric Company and Partners 2002).

The Pi'i-ali'i (*Colocasia esculenta*) variety of taro, brought to Kaua'i by its namesake Pi'i-ali'i, Ku'alu-nui-kini-akua's *kalaimoku* (chief counselor), was used as an offering to the gods and kept for use only by *ali'i*. Pi'i-ali'i makes a red-colored *poi* (the Hawaiian staff of life, made from cooked taro corms) held in high regard for its flavor and quality. This variety of taro is one of the oldest taro varieties grown in the Hawaiian Islands and is still grown in Kaua'i today (Wichman 2003:7; Whitney et al. 1939:41).

Under the leadership of Ola, Kūalu-nui-kini-akua's grandson, the island was further explored and many of Kaua'i's current place names were established.

Waimea, Kaua'i was also a site of great significance for *po'e kuhikuhi pu'uone* (site experts) and *po'e kilo hoku holo moana* (navigators) of the pre-Contact time. *Po'e kilo hoku* (astronomers) of O'ahu and Kaua'i, "who were very skilled in discerning the ways of the sun, the moon, and the stars, as well as knowing the configuration of the earth (*papa huluhonua*)" (Kamakau 1976:14), gathered in Waimea, Kaua'i to make their observations.

In Fredrick B. Wichman's work in *Nā Pua Ali'i o Kaua'i (Ruling Chiefs of Kaua'i)* (2003), he gives a rich description of the Waimea area in pre-Contact times. Wichman describes the land ashore of the Waimea River upon the arrival of voyager Ku'alu-nui-kiniakua saying,

There was abundant water from the swift rivers and streams that flowed within a protected canyon complex. The climate was warm and dry, useful for people who wore clothes of beaten bark. The area was cooled by Wai-paoa ('Scooped Water'), a daytime breeze from the sea, and Wai-pa'u ('Water Drenched') from the mountains at night. There was good soil within the canyon valleys behind the cliff that blocked easy access into the interior [...] Taro could easily be grown in fields that took water from the river upstream, fed by ditches to each connected lo'i (taro patch) before returning the water to the river. Sweet potatoes and yams grew well [...] [Wichman 2003:5–6]

Speaking more broadly of the early people of Kaua'i, Wichman (2003) describes unique cultural developments on the island:

From the beginning the Kaua'i people developed unique tools never seen on other islands. These included *pohaku ku'i poi* (ring and stirrup pounders), double-grooved stone club heads, and a broad anvil for beating kapa. They learned how to weave intricately designed mats of *makaloa* (sedge) so soft it could be used for clothing. They discovered a method for decorating their *ipu* (bottle gourds), which they used as containers for food and water. They strung the tiny seashells found on the beaches into necklaces. Brightly feathered birds abounded from seashore to mountaintop, and their feathers were collected and woven into wreaths, capes, and helmets. Throughout their entire history, the people of Kaua'i created things of beauty from even the most ordinary objects. [Wichman 2003:6–7]

4.2 Early Historic Period

4.2.1 Observations of Early Explorers and Visitors

4.2.1.1 Captain Cook in Waimea (1778)

By the time the British vessels *Discovery* and *Resolution*, under the command of Captain James Cook, anchored at Waimea Bay on 20 January 1778, the *ahupua'a* of Waimea had long been a focus of settlement, agriculture, and *ali'i* residence on Kaua'i. The well-watered valley and delta of the Waimea River were ingeniously developed and engineered for wetland agriculture, and represent the epitome of the typical Hawaiian and Kaua'i-type valley settlement (Handy and Handy 1972:393–397). Cook, anchored off Waimea, observed the following:

The road, or anchoring place, which we occupied, is on the south-west side of the island, about six miles from the west end, before a village which has the name of Wymoa [Waimea]. As far as we sounded, we found the bank has a fine grey sand at the bottom, and is free from rocks; except a little to the eastward of the village, where there spits out a shoal, on which are some rocks and breakers; but they are not far from the shore. [Cook 1821:206]

According to Hawaiian tradition, Cook's landing site was seaward of the native village on a beach of fine black sand called Luhi or Keoneluhi (Joerger and Streck 1979:8). *Luhi* means "tedious or tired," as in the saying, *Ho 'i i ke one o Luhi* ("Go back to Tired Beach"). This saying refers to one returning to an unpleasant task (Pukui et al. 1974:135). Aletha Kaohi, quoting her father William Kapahukaniolono Goodwin of Waimea, relates that the beach was named this

because warriors used the area for training, running on the sand to strengthen their legs, which made them very tired and weary (Joerger and Streck 1979:8). Kaohi reported the ancient landing site of Waimea was midway between the river mouth and the pier; this may also have been the landing area for Cook's men.

Cook's observations during an excursion on shore in 1778 reveal the profusion of population, agriculture, and cultural/religious expression that had evolved at Waimea by the latter eighteenth century:

Our road [...] lay through the plantations. The greatest part of the ground was quite flat, with ditches full of water intersecting different parts, and roads that seemed artificially raised to some height. The interspaces were, in general, planted with *taro*, which grows here with great strength, as the fields are sunk below the common level, so as to contain the water necessary to nourish the roots. This water probably comes from the same source, which supplies the large pool from which we filled our casks. On the drier spaces were several spots where the cloth-mulberry was planted in regular rows; also growing vigorously, and kept very clean. The cocoa-trees were not in so thriving a state, and were all low; but the plantain-trees made a better appearance, though they were not large. In general the trees round this village, and which were seen at many of those which we passed before we anchored are the *cordia sebestina* [kou; *Cordia subcordata*]; but of a more diminutive size than the product of the southern isles. The greatest part of the village stands near the beach, and consists of above sixty houses there; but, perhaps, about forty more stand scattered about, farther up the country, toward the burying-place [*heiau*]. [...]

I found a great crowd assembled at the beach, and a brisk trade for pigs, fowls, and roots going on there, with the greatest good order, though I did not observe any particular person who took the lead amongst the rest of his countrymen. [Cook 1821:189]

While provisioning on this particular excursion, Cook's party acquired nine tons of water, 60 to 80 pigs, some fowl, potatoes, a small quantity of plantains and taro—all this in exchange for nails and iron pieces. Captain Cook's first visit to Waimea was brief, but it left a major impact on the small village. Cook's own lieutenants (Portlock, Dixon, Vancouver) returned to Waimea repeatedly and established it as a major port and entry point. While Waimea may have always been a royal center for the *ali'i* of Kaua'i, this position was greatly reinforced after Western Contact (Zulick et al. 2000:14).

4.2.1.2 William Broughton (1787)

In 1786 and 1787, two fur-trading ships, the *King George* and the *Queen Charlotte*, visited Waimea for revictualing and refurbishing. The ships were under the command of Captains Nathaniel Portlock and George Dixon. William Broughton, who served under Dixon, described Waimea in February 1787:

There are a number of houses scattered here and there all the way from this village to the beach; and as we walked leisurely along, the inhabitants were continually pressing us to stop a while, and repose ourselves under the trees, which generally grow about their habitations. [...]

The valley all the way we walked along to the beach, is entirely planted with taro; and these plantations are laid out with a great deal of judgment.

The ground is very low, and taro grounds are entirely covered with water, and surrounded with trenches, so that they can either be drained, or fresh watered, from the river at pleasure. They are laid out in a variety of forms, according to the fancy of the different owners, whose various shares are marked with the most scrupulous exactness: these are intersected at convenient distances by raised foot-paths, about two feet wide. I should observe that these plantations range entirely along the river-side, and the houses I have been speaking of are situated to the westward of the extreme path. The trees, which are pretty numerous about the houses, are generally the cloth mulberry. [Dixon 1789:130–131]

4.2.1.3 Captain George Vancouver and Menzies (1792)

In March 1792, Captain George Vancouver walked through the same area, but traveled deep enough into the valley to give the first western account of the Menehune Ditch. Vancouver writes the following:

I proceeded along the river-side, and found the low country which stretches from the foot of the mountains toward the sea, occupied principally with the taro plant, cultivated much in the same manner as at Woahoo; interspersed with a few sugar canes of luxuriant growth, and some sweet potatoes. The latter are planted on dry ground, the former on the borders and partitions of the taro ground, which here, as well as at Woahoo, would be infinitely more commodious were they a little broader, being at present scarcely of sufficient width to walk upon. This inconvenience may possibly arise from the principle of economy, and the scarcity of naturally good land. The sides of the hills extending from these plantations to the commencement of the forest, a space comprehending at least one half of the island, appeared to produce nothing but a coarse spiry grass from an argillaceous soil, which had the appearance of having undergone the action of fire. [...] Most of the cultivated lands being considerably above the level of the river, made it very difficult to account for their being so uniformly well watered. As we proceeded, our attention was arrested by an object that greatly excited our admiration, and at once put an end to all conjecture on the means to which natives resorted for the watering of their plantations. A lofty perpendicular cliff now presented itself, which, by rising immediately from the river, would have effectually stopped our further progress in to the country, had it not been for an exceedingly well constructed wall of stones and clay about twenty-four feet high, raised from the bottom by the side of the cliff, which not only served as a pass into the country, but also as an aqueduct, to convey water brought thither by great labour from a considerable distance; the place where the river descends from the mountains affording the planters an abundant stream, for the purpose to which it is so advantageously applied. This wall, which did no less credit to the mind of the projector than to the skill of the builder, terminated the extent of our walk; from which we returned through the plantations, whose highly improved state impressed us with a very favorable opinion of the industry and ingenuity of the inhabitants. [Vancouver 1798:170–171]

Archibald Menzies, a surgeon and naturalist aboard the *Discovery*, accompanied Vancouver on the inland expedition and left his own account. Menzies writes the following:

We landed on a sandy beach near the mouth of the river where we were received by the natives with great order and regularity [...]

I walked with Captain Vancouver into the plantation and passed over a place where a number of houses had recently burnt down. This I knew to be formerly the site of Ka'eo's residence, for whom these houses had been particularly tabooed, and as, according to the custom of the country, no one could inhabit them after him, it is probable that they were thus destroyed when he departed on his present warlike expedition.

Through this plantation, which is tolerably level, the village of Waimea is irregularly scattered over the bottom of a valley facing the bay by a fine sandy beach, where it is about half a mile wide and gets gradually narrower as it recedes back from the shore. It is sheltered on both sides by steep, rocky banks, in the caverns of which the natives in many places form habitations. The river which here glides on so smoothly as to form a pleasing sheet of water, takes the direction of the eastern side of the valley for nearly two miles back, where it divides into two branches which fall from the mountains by separate valleys formed by steep, rocky precipices that give them a wild and romantic appearance. [Menzies 1920:27–28]

Ka'eo, whose residence Menzies mentions, was the king of Kaua'i. Since the high chiefs of the island made their principal residences in Wailua on east Kaua'i, it is noteworthy that Ka'eo had a residence at Waimea on the east side of the river, perhaps an indication of the area's prestige and importance at the end of the eighteenth century. Menzies reported several hundred orange plants were brought by Vancouver's ships to be distributed among the Hawaiian Islands (Menzies 1920:12). Apparently, some of these plants never left Waimea and during following decades oranges would be among the goods traded to whaling ships stopping there.

4.2.1.4 William Beresford (1798)

A thorough search of major Hawaiian myths and legends found no mention of Kekaha, but the first western description of the place comes only nine years into the post-Contact era. William Beresford was the supercargo on board the British ship *Queen Charlotte* under Captain George Dixon, which along with the *King George*, captained by Nathaniel Portlock, sailed on an exploratory voyage to the northwest coast of America. In 1798, both ships wintered in Hawai'i, spending much time off Waimea, Kaua'i. On one of the several shore outings, Beresford visited nearby Kekaha, which he called "A Tappa."

Having frequently heard our people who had been on shore speak of a village, called by the natives A Tappa, where a great number of people were commonly employed in manufacturing cloth, curiosity prompted me to walk to that place first, as I found it was not more than three miles distant, so that I could easily get back by Tyheira's dinner time.

The country, from the place where we landed to A Tappa is tolerably level, and for the space of two miles, very dry. The soil here is a light red earth, and with proper cultivation, would produce excellent potatoes, or anything that suits a dry soil; but

at present, it is entirely covered with long coarse grass: the inhabitants, I suppose, finding plenty of ground near their habitations, more conveniently situated for their various purposes. So far, the space from the beach to the foot of the mountains is about two miles in breadth; but from hence to A Tappa, it grows gradually narrower, till it terminates in a long sandy point, which I have already observed, is the West extreme of Wymea Bay.

A Tappa is a pretty large village, situated behind a long row of coconut trees, which afford the inhabitants a most excellent shelter from the scorching heat of the noonday sun. Amongst these cocoa-trees is a good deal of wet swampy ground, which is well laid out in plantations of taro and sugar cane.

I had laid my account in seeing their method of manufacturing cloth; but here I was mistaken. A number of our people, prompted by the same curiosity as myself, were got to A Tappa before, where 'Labour stood suspended as we passed.' The people flocked eagerly about us; some asking us to repose ourselves under the shady branches of trees planted about their doors; other running to the trees for cocoanuts and presenting them to us with every mark of kindness and good nature; in short, every inhabitant of the village was fully employed, either in relieving our wants, or gratifying their curiosity in looking at us.

The day being very sultry, we walked leisurely back, and I returned by a different path from that I had taken, in going to A Tappa. On examining the grass, which in most places is higher than the knee, I found it not altogether of a rough coarse sort, but intermixed with various sorts of flowers, together with different grasses, of the meadow kind; so that I have no doubt, with proper management, it would make excellent hay. [Dixon 1968:124–126]

Beresford's remark that the dry soil conditions in the area would be most suitable for potatoes is in line with Handy and Handy's (1972:410) assertion that the sweet potato was probably the prime staple of the village, rather than taro, because of the limited water resources.

While Beresford described taro, sugarcane, and coconut being cultivated in Kekaha, no mention is made of *wauke* (the inner bark of the mulberry tree) used as the raw material for making *kapa*. This seems curious in light of his statement that cloth making was a major activity of the village and the main purpose of his trek there was to observe this process.

Due to climatic conditions, the Mānā plain was probably not a prime *wauke* growing area (Handy and Handy 1972:209). However, Beresford did note on a later excursion through the lower Waimea Valley that "cloth mulberry" trees were numerous around the house sites there (Dixon 1968:131). It is possible there was some sort of trade going on between the residents of Waimea and Kekaha, for raw material and the labor that turned it into cloth.

4.2.2 Missionary Accounts

The American Board of Commissioners for Foreign Missions (ABCFM), headquartered in Boston, sent its first company of missionaries to the Hawaiian Islands in 1819, leaving Boston on 23 October aboard the brig *Thaddeus*. The vessel came in sight of Mauna Kea on 30 March 1820 and anchored at Kawaihae Bay a couple of days later. There they learned of Kamehameha's death in May 1819 and of the recent overturning of the *kapu* (taboo) system. In May 1820, two American

Protestant missionary couples landed at Waimea, Kaua'i with the intention of establishing a station there. Their party consisted of Samuel and Mercy Whitney and Samuel and Nancy Ruggles (Damon 1931:284).

Kaumuali'i's son, Prince George, who had been sent away to school in New England, accompanied the missionaries. Kaumuali'i granted Waimea Ahupua'a to George, along with the fort and houses. In July 1820, the two missionary couples were established in a house *makai* of the fort. The house's *lānai* (porch) served as the schoolroom and meetinghouse.

By the mid-1820s, the Ruggles had left Kaua'i and the Whitneys had moved to a new house at Māha'iha'i on the east side of the Waimea River. The Whitneys were visited in 1824 by another missionary, Hiram Bingham, who described the idyllic Waimea landscape he encountered:

The valley contains about four hundred habitations, including those on the sea-shore. The numerous patches of the nutritious arum, and the huts or cottages of the people, were beautifully interspersed with the bread-fruit, the cocoanut, and the furniture kou, the medicinal Palma Christi, and oleaginous candlenut, the luscious banana, and sugar-cane [...]

To a spectator from the missionary's door, or from the fort, or either precipice, is presented a good specimen of Sandwich Islands scenery. On a calm and bright summer's day, the wide ocean and foaming surf, the peaceful river, with verdant banks, the bold cliff, and forest covered mountains, the level and fertile vale, the pleasant shade-trees, the green tufts of elegant fronds on the tall cocoanut trunks, nodding and waving, like graceful plumes, in the refreshing breeze; birds flitting, chirping, and singing among them, goats grazing and bleating, and their kids frisking on the rocky cliff, the natives at their work, carrying burdens, or sailing up and down the river, or along the sea-shore, in their canoes, propelled by their polished paddles that glitter in the sun-beam, or by a small sail well trimmed, or riding more rapidly and proudly on their surf-boards, on the front of foaming surges, as they hasten to the sandy shore, all give life and interest to the scenery. [Bingham 1847:217–218]

Bingham's account suggests life in Waimea retained much of its pre-Contact character well into the nineteenth century. However, in August 1824 peace in Waimea was shattered during a rebellion of Kaua'i chiefs led by Prince George. Kaumuali'i, George's father and the last king of Kaua'i, had died in Honolulu on 26 May 1824. On 8 August, George and a band of rebellious Kaua'i chiefs and their followers attacked the garrison at the Waimea fort, outpost of the Hawaiian Kingdom ruled by Liholiho. Ten rebels and six defenders were killed. The attack failed and George and his men retreated southeast to Hanapēpē Valley (Joesting 1984:106). The rebellion was crushed, George was taken captive and sent to Honolulu, and, according to the pioneering nineteenth century historian Samuel Kamakau,

Ka-lani-moku [prime minister of the Hawaiian kingdom] redistributed the lands of Kauai [...] The last will of Ka-umu-ali'i, who had the real title to the lands, was not respected [...] The lands were again divided. Soldiers who had been given lands but had returned to Oahu had their lands taken away, chiefs who had large lands

were deprived of them, and the loafers and hangers-on (*palaualelo*) of Oahu and Maui obtained the rich lands of Kauai. [Kamakau 1992:268–269]

Missionary journals and documents recount the events shaping Waimea from the 1820s onwards. The people of the *ahupua'a* were struck in May 1826 by an influenza epidemic and a great flood that wreaked havoc upon taro *lo'i* and damaged structures built by the missionaries. In 1828, a new stone house for the Whitney family was built on the western side of the river, and in 1848, the new missionary George Rowell built his own house. The original mission church was built west of the project area in 1834 of stones and mud. Rowell began construction of a new church on the same site built of sandstone blocks taken from a quarry in Waimea. Construction of the exterior was completed by 1854. This church was called the Waimea Foreign Church; in 1996, the church was renamed the Waimea United Church of Christ. The church has an associated cemetery. In 1874, Rowell left the Hawaii Board of Missions and started an independent church called the Waimea Hawaiian Church. This structure was *makai* of Kaumuali'i Highway near the *makai* end of Menehune Road.

At the end of Ola Road, the Hawaiian governor of Kaua'i, Kaikioewa, built a house in 1926 on the bluff overlooking Waimea. The cellar was used for the burial of several high *ali'i*. Aubrey Robinson purchased the lot in 1935 and constructed a large house. The lot was later bequeathed to the Waimea Foreign Church, which used the buildings for their parsonage.

4.2.3 Population Decline

Beginning in 1831, censuses taken by Protestant missionaries throughout the Hawaiian Islands provide the earliest documentation of the size of the native population after the first decades of Western Contact. In 1833, Rev. Samuel Whitney estimated a population of 3,883 persons within 6 miles of the Waimea station. More ominously, he also estimated ten deaths were occurring for every birth (Kauai Bicentennial Committee 1977: n.p). Subsequent missionary station reports from Waimea recorded the continuing diminishment of the district's population. In 1838 the total population was 3,272; in 1840 it was 2,819; and, in 1841 it was 2,779 (Schmitt 1973:14). Whitney himself died in 1845 and was replaced by Rev. George Rowell who moved to Waimea from Wai'oli with his family in 1846.

4.3 The Māhele and the Kuleana Act

The Organic Acts of 1845 and 1846 initiated the process of the Māhele—the division of Hawaiian lands—that introduced private property into Hawaiian society. On 27 January 1848, the Crown and the *ali'i* began to receive their land titles as Konohiki (land manager) awards. The *ahupua'a* of Waimea was retained by the monarch, Kamehameha III, as crown land.

For *konohiki* lands, a claim first had to be approved by the Land Commissioners. Upon confirmation of the claim, a certificate was awarded to the claimant. This certificate was called a Land Commission Award (LCA), which confirmed the claim of an individual for a parcel. The awardee could then obtain from the Minister of the Interior a Royal Patent (RP), which indicated the government's interest in the land had been settled by the payment of a commutation fee. Commutation means “an exchange, or replacement.” The commutation fee was usually set at a maximum of one-third of the value of the unimproved land. The fee could be settled by the exchange of cash but was usually settled by the return of one-third of the lands (or cumulative value of the lands) originally awarded to the claimant (Chinen 1958:13).

On 19 October 1849, the Hawaiian Privy Council adopted resolutions to protect the rights of native tenants, the *maka'āinana*, or the “common” people. The Kuleana Act of 1850 confirmed these rights. Under this act, the claimant was required to produce two witnesses who knew the claimant and the boundaries of the land, knew the claimant had lived on the land for a minimum of two years, and knew no one had challenged the claim. The land also had to be surveyed. Native tenants or naturalized foreigners who could prove occupancy on the parcels before 1845 could be awarded lands they occupied or that they cultivated as *kuleana* (land holding of a tenant or *hoa'āina* residing in the *ahupua'a*) awards. No commutation fee was necessary to apply for a Royal Patent for a *kuleana* award, as the commutation fee had presumably already been paid by the *ali'i / konohiki* who had been awarded the entire *ahupua'a*, or *'ili* in which the native tenant claimed his own small parcels (Chinen 1958:29–30).

Over 150 *kuleana* awards were granted in Waimea. It is through records for Land Commission Awards generated during the Māhele that the first specific documentation of life in Hawai'i as it had evolved up to the mid-nineteenth century comes to light. Although many Hawaiians did not submit or follow through on claims, or simply were not granted the claims for their lands, the distribution of LCAs can provide insight into patterns of residence and agriculture; many of these patterns probably had existed for centuries past. The *kuleana* awardees in the *ahupua'a* do not reflect the total population of Waimea. As Russell Apple notes,

They probably represent the local elite, those who could afford the survey and commutation [that were part of the award procedure], had proper authority for permanent occupancy, had reputable witnesses to sustain both the authority [to occupy] and continuous use [of the parcel], and who chose to apply. [Apple 1978:62]

However, the records associated with these awards illuminate the character of the Hawaiian settlement and livelihood within Waimea by 1850. The upper and lower valley were extensively cultivated. The Pe'ekaua'i Ditch, along with a system of lateral *'auwai*, watered *lo'i kalo* on the western flats of the river all the way to the shore. Interspersed among the *lo'i* were house sites, small plots of *kula* on which were cultivated traditional native dry land crops as well as introduced ones, and also pasture land. In the upper canyon past the Makaweli fork, the degree of settlement thinned out greatly with *lo'i* and house sites dispersed along the banks of the Waimea River. The furthest *mauka* extent of settlement was Kalakahi's LCA 11286 which was approximately 2,000 ft into Koai'e Valley.

There were 38 *'ili 'āina* in mid-nineteenth century land documents: 'Eleao (aphid), Hakila, Halepua, Hope'ō (wasp, yellow jacket), Kahuamoa (chicken egg), Kekauakaloha, Kalooloa, Kamuliwai (the river mouth, estuary), Kana'ana (Canaan), Kapalawai (the bottom lands), Kapele, Kaulu (ledge, grove) or Ka'ulu (breadfruit), Kekaha (the place), Koai'e (acacia koaia tree), Koaiki, Koolaiki, Koolanui, Kukui (candlenut lamp, light of any kind), Laumahi, Miloli'i (find twist as sennit cord), Mokihana (*Pelea anisata*), Nāmāhana (the twins), Nania, Nu'alolo, 'Ōpelu (variety of taro), Paliuli (green cliff), Pauwa, Peekauai, Pepekanaka, Pōki'i (youngest brother or sister), Puehulunui (big feathers on the back of a bird), Waiahulu, Wai'alae (mudhen water), Waiawa (milkfish water), Wai'awa'awa (bitter water), Waikolu (three waters), Waimea (reddish water, as from erosion of red soil), and Waiōhole (mature *āhole* [*Kuhlia sandvicensis*] water).

Only three claims were made in and nearby Kekaha. All land information was found on the Waihona ‘Aina database (Waihona ‘Aina 2022). Additional LCA information can be found in Table 2.

Keaona (No. 8841) claimed a house lot, six *lo‘i* (irrigated plots) and some *kula* (land used for dryland agriculture or pasture) near the base of the *pali* (cliff) at Pōki‘i, about a mile north of Kekaha (Board of Commissioners 1929: Native Register 1848 Vol. 9:397) (Figure 7). Elia Lihau (No. 6698) claimed all the land of Wai‘awa (just west of Pōki‘i), most of which was unused *kula*, but included a restricted fishery. This claim was never awarded (Board of Commissioners 1929: Native Testimony, Vol 11:155).

The only one to claim land in Kekaha was B. Naumu (No. 5386). Mentioned in this claim are *lo‘i*, a house lot, a salt bed (*aliapa‘akai*) and a *muliwai* (a pool near the mouth of a stream or an estuary) called Kapenu. Naumu developed the *lo‘i* in 1844, stating that it was previously overgrown land (Board of Commissioners 1929: Native Testimony, Vol 11:146). Naumu was also awarded a parcel in Kekaha at the base of the *makai*-facing *pali* of Hululunui Ridge.

Table 2. LCAs awarded in the vicinity of Kekaha

LCA	Claimant	Ahupua‘a	‘Ili	Notes
5362	B. Naumu	Waimea	Pe‘ekaua‘i, Kekaha	‘Āpana (lot) 1: House lot, fishpond, <i>kula</i> ‘āina (plain) ‘Āpana 2: House lot ‘Āpana 3: Coconut grove ‘Āpana 4: <i>Loko pa‘akai</i> (salt bed)
6698	Lihau, Elia	Waimea	Waiawa	All the land in the sub <i>ahupua‘a</i> /‘ <i>ili</i> of Waiawa located in Waimea; land was a gift from Kaikio‘ewa, governor of Kaua‘i; land was not awarded to claimant
8841	Keaona	Waimea	Poki‘i, Paka	‘Āpana 1: <i>Ahupua‘a</i> and ‘ <i>ili</i> of Poki‘i, Kalana of Kona, Kaua‘i; claimant held land from his ancestors to the present time ‘Āpana 2: Four taro patches in the <i>ahupua‘a</i> and ‘ <i>ili</i> of Paka, Kalana of Kaua‘i

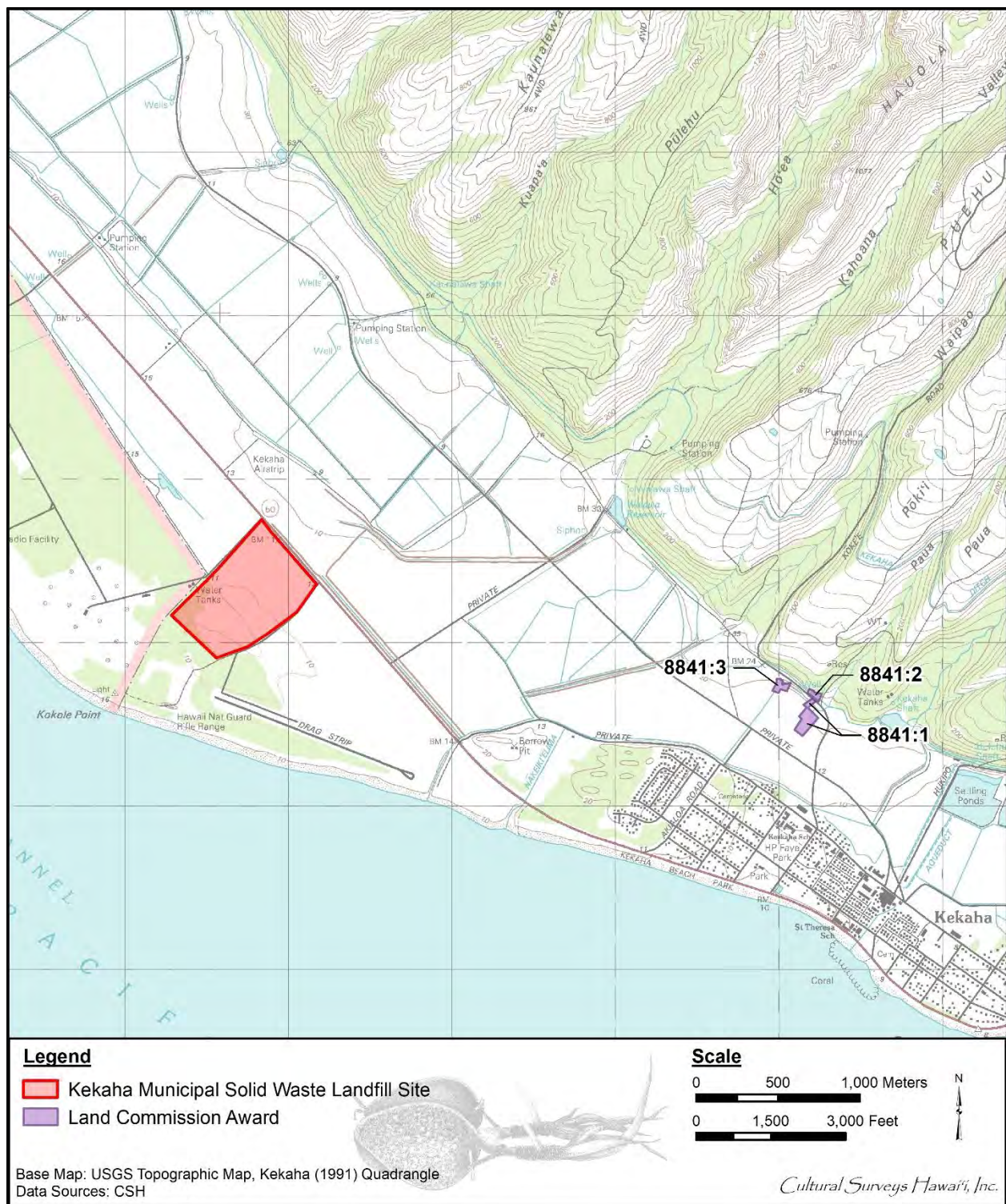


Figure 7. Portion of 1991 Kekaha USGS 7.5-minute topographic quadrangle depicting LCA 8841

4.4 Mid- to Late 1800s

In 1850, Waimea was designated a government port, opening it to foreign commerce. At the time, Waimea was exporting a respectable variety of agricultural goods and livestock. A report of the Royal Hawaiian Agricultural Society noted the listed exports from the port of Waimea between 1 July 1850 and 30 June 1851 (Table 3; Damon 1931:291). Most of these goods were brought to the port of Waimea for shipment off the island; they were not necessarily products of the *ahupua'a* itself. Within a few years, the government port facility was moved to Kōloa, and Waimea declined in importance as a shipping destination.

Table 3. Waimea Port exports between 1850 and 1851

Item	Quantity	Item	Number
Sweet potatoes	3,009 bbls	Oranges	4,000
Yams	9 bbls	Squashes	100
Onions	568½ bbls	Cattle	4
Sugar	5,000 lbs	Sheep	108
Salt	50 lbs	Swine	110
Pineapples	2,000	Turkeys	110
Cocoanuts	1,400	Fowls	1,202
Bananas	20 bunches	Ducks	12
Dried pork	1,200 lbs	Total Value	\$9,030.62

4.4.1 Kekaha

Most of the historical accounts of Kekaha during this period are found in the letters, papers, and books authored by Valdemar Knudsen and his immediate offspring, Eric A. Knudsen and Ida Elizabeth Knudsen Von Holt. Knudsen came to Hawai'i from Norway via the continental United States where he had business dealings. He settled at Waiawa in 1856 as a rancher, agriculturalist and eventually sugar planter (Veech 1979:6–8).

Knudsen assumed the lease of government land from Archibald Archer and a Mr. Gruben. The two men were involved in a failing tobacco farming enterprise. A Mr. Clifford, who made cigars, was also associated with the enterprise (Lydgate 1991:92).

Eventually Knudsen controlled the entire district, excluding *kuleana* (tenant) lands, from Nu'alolo to Waimea, including all the *mauka* area (Knudsen and Noble 1945:35). In this post-Māhele era, he held the title of *konohiki* (overseer), and Hawaiians with no *kuleana* of their own who lived in the district, reportedly numbering three to four hundred people, worked for Knudsen three days out of the month as “rental” payment (Von Holt 1985:61).

Knudsen described Kekaha as “a low marsh land, full of fish ponds and coconut-trees, but the ponds are overgrown with bullrushes and would cost more than they are worth to bring in order. I tried once and it cost me circa \$200.00. There is not much grazing lands belonging to Ketaha and it is chiefly pili grass” (Knudsen 1866:304).

Valdemar's son Eric later made this observation. Evidently the area had changed little since Beresford's visit in 1787:

From Waimea towards Mana there were no trees, no fences, no cane, all was open country; along the taro patches of Kekaha and Pokii grew quite a number of cocoanuts. The mango trees were planted by my father. Numbers of Hawaiians lived about Kekaha and Pokii, where there were springs and taro land. Then the land was bare again until you reached Waiawa. Above the road in Pokii, where the cane loaders now stand, was a row of thatched houses and the natives planted a lot of tobacco. [Knudsen 1991:98]

The perpetual swamplands of the plain apparently were greatly enlarged during periods of heavy winter rains. It was possible on these occasions to paddle a canoe from Mānā to Waimea on this inland waterway (Figure 8; Knudsen 1991:99; Von Holt 1985:77–78). Waterfowl present in the wetlands provided a food resource for the area residents. Among them the *kōloa* (Hawaiian duck) and especially the *'alae* (Hawaiian gallinule) and *āe'o* (*kukuluāe'o*; Hawaiian stilts) were numerous (Von Holt 1985:78). All three were traditionally caught and consumed by the Hawaiians (Malo 1951:39).

Kekaha was watered by a spring called Kauhika located at the base of the *pali*. The spring had a fishpond, then taro *lo'i* and rice fields before flowing into the swamp (Knudsen and Noble 1945:62).

Most of the residents also lived in this area, near the water source and cultivatable lands. Eric Knudsen provides an anecdotal description:

A row of grass houses extended all the way along the foothills from Waimea to Mana. Every house site had a name. To find a man you had to find his house name. The natives seemed to know every name and would keep sending you along until you finally came to the spot you were looking for.

At certain hours all the women sat in their houses and beat tapa cloth and as they beat they talked to one another in a tapa beater's code. They could send a message with great speed from Waimea to Mana. When the men returned from the mountains with fire wood or canoes, the woman that saw them at once tapped out the news and it flew from house to house with the result that every man, when he came home, found his house in order and no surprised visitors hanging around. The men tried to learn this secret code but never did, though an old man at Mana told my father that the men had tried for years to learn the secrets of the tapa code but were never able to do so.

The grass houses were all built in one general design—one big living room and two doors—one on each side and opposite to one another. One day my father noticed that all were built with their gable-ends east and west and the doors facing the ocean and the hills. He asked one of the men why that was so and he replied, 'Why, you know that Po, the abode of the dead, lies under the ocean just outside Polihale, where the cliffs and the ocean meet, and the spirits of the dead must go there. As the spirits wander along their way to Po, they will go around the gable-

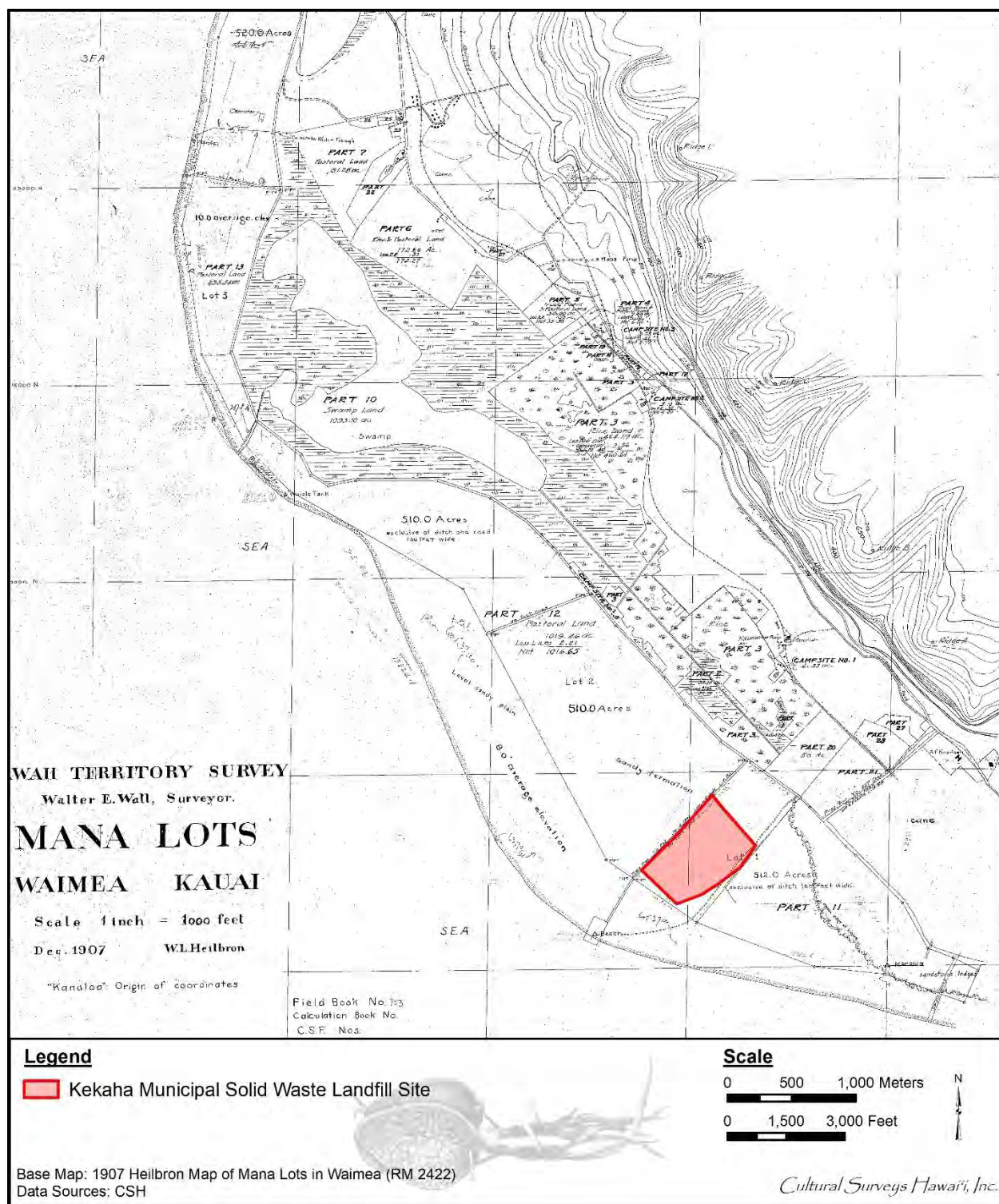


Figure 8. 1907 Heilbron map of Mānā lots in Waimea and swamplands

end of a house but if the house stood facing the other way, the spirits would walk straight through and it would be very disagreeable to have a spirit walk past you as you were eating your meal' 'In fact,' he continued, 'we can always tell when a battle has been fought by the number of spirits passing at the same time.' [Knudsen 1991:101, 102]

4.4.2 Rice and Sugar Cultivation

Rice cultivation by Chinese farmers began in Waimea Valley in the 1860s. The Chinese originally came to the Islands to work on the sugar plantations. As the commercial sugar industry expanded throughout the Hawaiian Kingdom, the need for increased numbers of field laborers prompted passage of contract labor laws. In 1852, the first Chinese contract laborers arrived in the Islands. Contracts were for five years and pay was \$3 a month plus room and board. Upon completion of their contracts, a number of the immigrants remained in the Hawaiian kingdom, many becoming merchants or rice farmers. The Hawaiian Islands were well positioned for rice cultivation. A market for rice in California had developed as increasing numbers of Chinese laborers immigrated there since the mid-nineteenth century. Similarly, as Chinese immigration to the Islands also accelerated, a domestic market opened (Coulter and Chun 1937:8–9).

At Waimea, as in other locales, groups of Chinese began leasing former taro lands for conversion to rice farming. Overall, by 1892, 2,055 acres of Kaua'i lands were planted in rice (Coulter and Chun 1937:20). Sadly, the taro lands' availability throughout the Islands in the later 1800s reflected the declining demand for taro, as the Native Hawaiian population diminished. Censuses taken during the second half of the nineteenth century record the dwindling population of the Waimea District. In 1838 there were 3,272 persons living in the district; by 1853 a total of 2,872 persons were recorded in Waimea. Twenty-five years later, in 1878, the total population had diminished further to 1,374 (Schmitt 1977:12–13).

Rice farming declined sharply throughout the Hawaiian Islands after the first decade of the twentieth century. Total acreage dropped from a high of 9,425 acres in 1909 to 1,130 acres in 1935. By the 1930s the rice industry had ceased entirely on the islands of Hawai'i, Maui, and Moloka'i (Coulter and Chun 1937:62). Though rice continued to be grown at Waimea and Makaweli into the 1930s, many of the rice fields were being reclaimed for sugar planting.

During the last decade of the nineteenth century, the population of Waimea rebounded, growing from a total of 2,739 in 1890 to 4,595 in 1896, and 5,886 in 1900 (Schmitt 1977:13). That growth was spurred by the establishment of commercial sugarcane planting at Waimea. Population figures up to World War II reflect the continued growth of the Waimea District as the sugar industry prospered; in 1910 the population total was 8,195 and by 1940 it had grown to 10,852 (Schmitt 1977:13–14).

In the 1880s, two planters named Conrad and Borchgrevink attempted to grow cane at Waimea. They had little success, but in 1884 H. Schmidt organized the mill enterprise and other entrepreneurs on O'ahu were organizing the Waimea Sugar Mill Company to begin operations on land leased from the Rowell family. Soon, a ditch was constructed to bring Waimea River water to the fields, which covered about 200 acres (Condé and Best 1973:203). The extent of Waimea Plantation in 1906 is shown in Figure 9. This map of Kaua'i also shows the location of the wetlands, at first used for rice and then taro, and the location of pastureland.

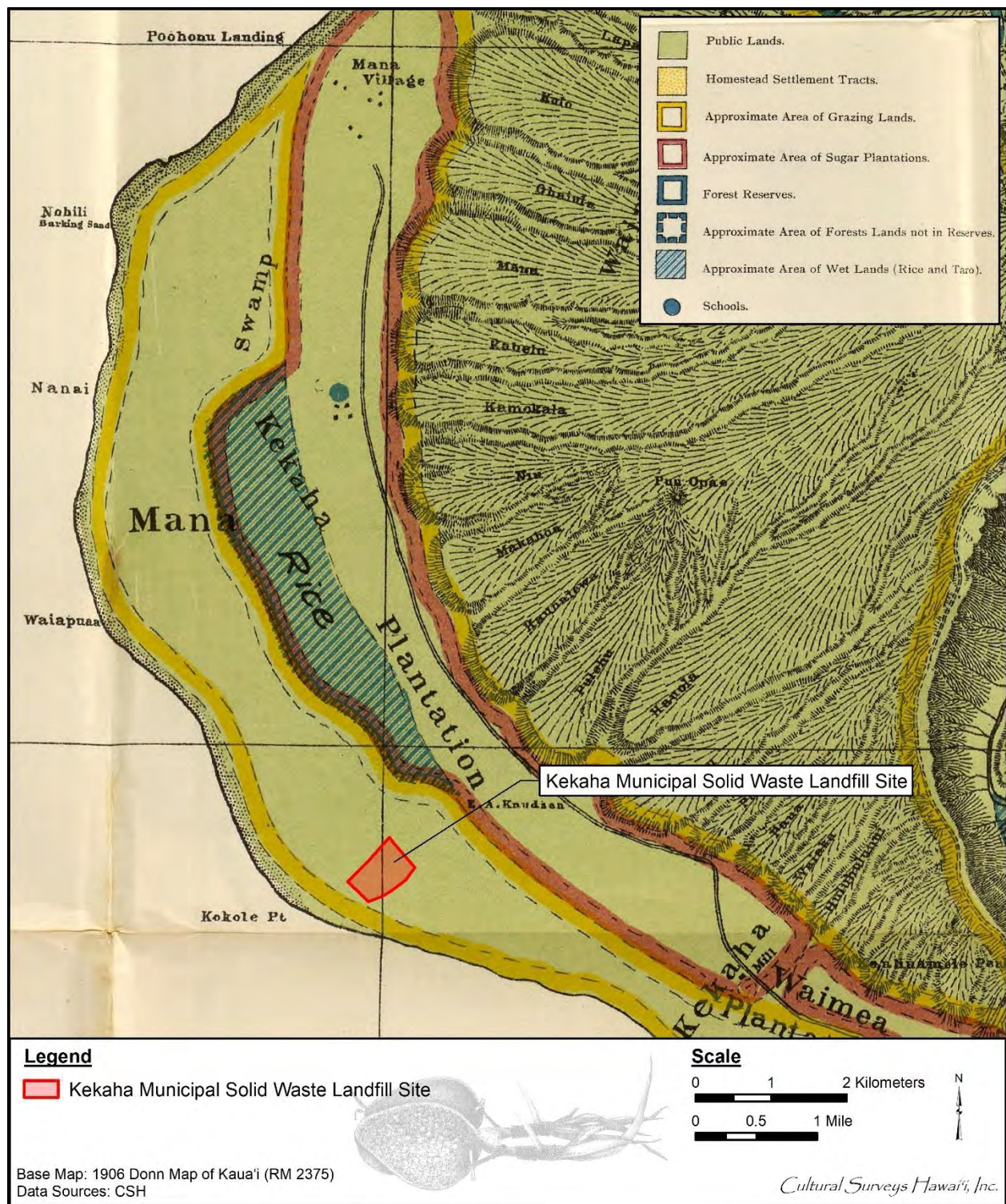


Figure 9. 1906 Donn map of Kaua‘i Island with land use (RM 2375) showing the current project area

4.5 1900s

In 1898 Kekaha Sugar Company was established through consolidation of three Kaua'i sugar interests. The fate of plantation agriculture in the arid zones of Waimea Ahupua'a hinged on water supply development in the twentieth century. Following a series of droughts and water overuse in the late nineteenth century, groundwater was increasing in salt content and well water levels decreased. Valdemar Knudsen, founder of Kekaha Sugar Company, looked to the Waimea River as a source of sugarcane irrigation—pushing forward the Kekaha Ditch project. Construction of the Kekaha Ditch started in May 1906 and was completed in September 1907 (Wilcox 1996:93) (Figure 10 and Figure 11). The Kekaha Ditch has also been known as the Waimea Ditch and as the Waimea-Kekaha Ditch. The ditch diverges water from the Waiahulu stream, Koaia stream, and Waimea River and originally extended through 16 miles of *mauka* lands and 4 miles through the lowlands (Wilcox 1996:93). This water was used to irrigate plantation lands of the Kekaha-Mānā Plain.

Hans Peter Fayé came to Kaua'i from Norway in 1880 at the age of 21. Four years later, with a loan from Isenberg and a lease from his uncle, sugar pioneer Valdemar Knudsen, Fayé founded H.P. Fayé & Company, a sugar plantation in Mānā, the westernmost town in Kaua'i. In 1906 Fayé acquired the Waimea Sugar Mill, which had been founded in 1884. In 1910 the Waimea Sugar Mill Company was bought by Hans Peter Fayé, Ltd., operator of the neighboring Kekaha Sugar Company.

A 1910 newspaper article in the *San Francisco Chronicle* describes the sugar lands and the railroad line built to haul the cane to the mill:

Waimea has a bit of flat land hemmed in by two neighbors, Kekaha and Hawaiian Sugar Company, just over a half mile long and a little wider. It lies only a few feet above sea level. Cane is transported from the fields over a railway system which consists of two miles of permanent track and one mile of portable track, thirty eight cars and a locomotive. [Condé and Best 1973:203]

The railroad line described above was built by the Kekaha Sugar Company in about 1884, and used to transport sugar from its own mill to the pier at Waimea Landing. Initially the train also stopped at the Waimea Sugar Mill Company to transport their sugar to the landing. By 1910, the railroad system was laid from Kekaha sugar mill to Polihale for transporting sugarcane, labor, and freight. The steam locomotives acquired for this purpose were named "Poli Hale," "Mana," "Kolo," "Nohili," and "Pokii" after places of the area. They were eventually replaced with diesel locomotives in 1928. By the early 1930s, about 670 acres of land were cultivated by the Waimea Sugar Mill Company. Most of Waimea Town's commercial buildings were constructed during this period of the sugar industry's growth. The railroad system was eliminated in 1947 when trucks were utilized for hauling sugarcane to the mill (Condé and Best 1973:141–146).

From 1923 to 1926 the construction of the Koke'e Ditch was undertaken by the Kekaha Sugar Company to further irrigate planation lands (Wilcox 1996:93–97). This system is comprised of 21 miles of channels which divert water from the Kauaikinana, Kawaikoi, Waiakoali, and Kōke'e streams.



Figure 10. Historic photo of the upper reaches of the Kekaha Ditch showing the general nature of the ditch (Wilcox 1996:94)



Figure 11. Kekaha irrigation ditch photo, n.d. (University of Chicago)

At the time of statehood in 1959, H.P. Fayé & Company was incorporated as Kikiaola Land Company and is still owned by about 100 of the founder's descendants. Linda Collins, a granddaughter of H.P. Fayé is now the president of Kikiaola Land Company.

During World War II the U.S. Army Corps of Engineers used the plantation shop yard as their headquarters; the sugarcane from the fields was taken to Kekaha Sugar Mill to be processed (Figure 12). Following World War II, the fortunes of the Waimea Sugar Mill Company changed. The Waimea mill stopped operating in 1945, though the Waimea Sugar Company continued to cultivate cane on its lands until 1969. The milling equipment was sold, and the mill building was used for grain storage (Fayé 1997:26). After the company closed, its fields were leased to the Kekaha Sugar Company. Kekaha Sugar Company was the first in the Territory to switch to diesel power. In June 1928, the first diesel locomotive in the Islands was placed in service at Kekaha (Condé and Best 1973:145). Diesel was found to be more cost effective than steam and persisted as the primary means of transporting sugarcane until the 1940s when transportation by truck proved more efficient. In 1947, the railroad system was eliminated, completing the full conversion to truck transport (Condé and Best 1973:146).

In 1950, the Waimea Sugar Mill Company was reorganized into the Waimea Sugar Mill Inc., which continued to process cane, and the Kikiaola Land Company, which was created to manage the property. In 1982, one of the former plantation cottages opened as a vacation rental and was so successful that the Fayés decided to construct a plantation-type resort. The renovated plantation houses, built between 1900 and 1920, became part of the Waimea Plantation Cottages (Chang 1988:49–52), with 48 rental units and a conference center.

In the *mauka* portion of Waimea Ahupua'a land was divided and preserved by the creation of state parks such as Kōke'e State Park and Waimea Canyon State Park. The twentieth century history of Kōke'e State Park and Waimea Canyon State Park include the following chronology of activities: the presence of cattle during the first decades of the century, the opening of leased cabin sites at Kōke'e beginning in 1919, the planting of tree stands and construction of new trails by the Civilian Conservation Corps during the 1930s and '40s, the construction of military and communications facilities beginning in the 1960s, and the development of the parks themselves, beginning in the late 1940s at the instigation of Joseph M. Souza, Jr.

A 1910 USGS map (Figure 13) of Kaua'i shows no urban development within and around the project area in the early twentieth century. However, a 1952 Awana map (Figure 14) does show the location of the Kekaha Landfill Phase I within the project area as well as the adjacent Kaumuali'i Highway. A mid-1960s USGS map (Figure 15) and a 1977 aerial photograph (Figure 16) show the continued lack of urban development within and around the current project area.

4.6 Contemporary Land Use

Kekaha Sugar Company continued to produce sugar until 17 November 2000 when the parent company, AmFac, closed the factory down due to financial hardship (Kojima 2000). During recent decades, growth in Waimea has focused on development of the former sugar plantation lands and structures into tourist-oriented facilities and diverse agricultural development. After sugar operations ceased, lands previously under contract to Kekaha Sugar Company reverted



Figure 12. Kekaha Sugar Mill (CSH 2010)

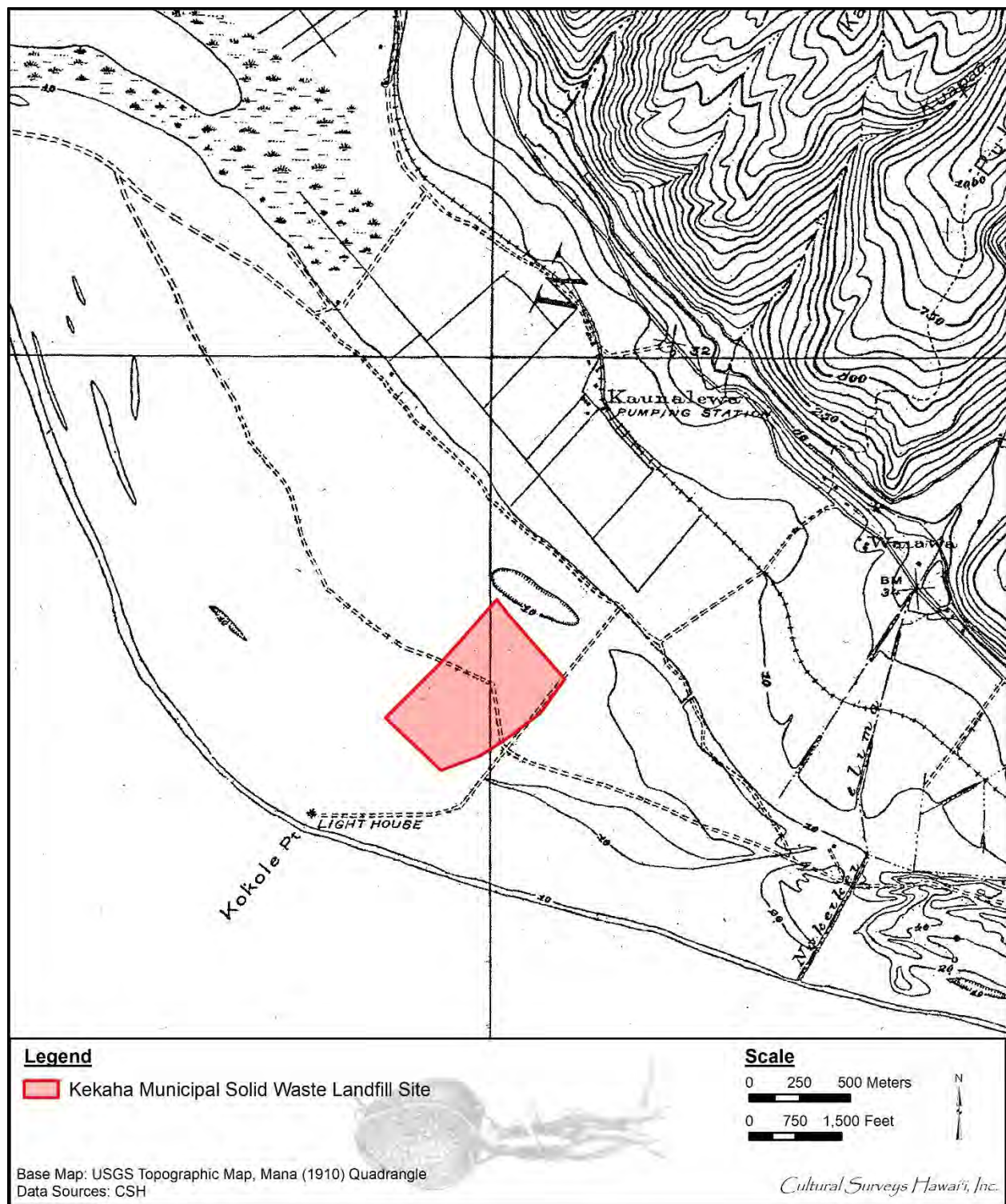


Figure 13. 1910 Mana USGS topographic quadrangle showing railroad route and no urban development within and around the project area

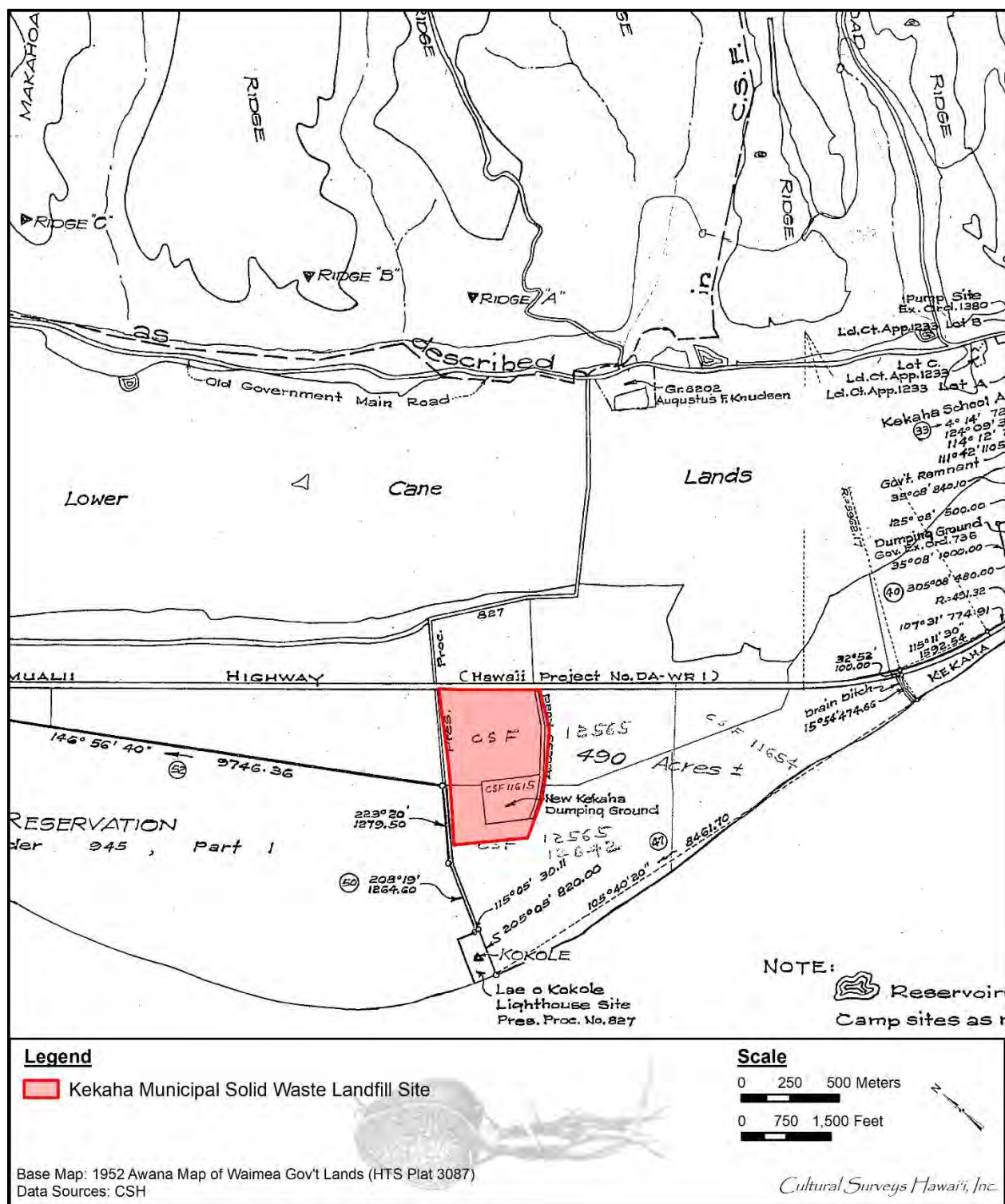


Figure 14. 1952 Awana map of Waimea government lands showing development within and around the project area



Figure 15. 1963 Kekaha USGS topographic quadrangle showing project area



Figure 16. 1977 USGS Orthophotoquad aerial photograph of Kekaha quadrangle, showing development within and around the project area

back to the State of Hawai‘i. These lands were subsequently divided among multiple state agencies based on use and management strategies.

As noted above, during the second half of the nineteenth century, two newly arrived settlers on Kaua‘i—Archibald Archer and Valdemar Knudsen—built cabins in upland Waimea, in what would become the Kōke‘e State Park. These early initiatives set the stage for developments throughout the twentieth century focused on creation of the present state parks. Koke‘e State Park and Waimea Canyon State Park draw many visitors and local residents to Waimea Ahupua‘a today. Additional cabins have been added in the Koke‘e State Park and many local families use the cabins for vacation get-aways. Campgrounds are also located in Koke‘e State Park near the Waiakoali, Kawaikōi, and Kauaikinā Stream diversions.

Hunting and fishing are both popular activities in Koke‘e and Waimea Canyon State Parks. Puu Lua Reservoir trout fishing is a well-known and very popular activity among Kaua‘i residents, and many people frequent the Pu‘u Lua and Koke‘e areas during the season to collect plums.

In September 2003, land situated in Kekaha, Kaua‘i was transferred through Executive Order No. 4007 to the Agribusiness Development Corporation (ADC) for agricultural and related purposes. The lands were identified as “Portion of the Government (Crown) Land of Waimea,” containing a gross area of 12,860.642 acres and a net area of 12,592.133 acres, a portion of which has been under active agricultural use for the last several years under the management of the Kekaha Agricultural Association (Aiona 2003). The Pacific Missile Range Facility, Barking Sands (PMRF) is also located on the Mānā Plains on the shoreline between Kekaha and Pōlihale with additional facilities just north of the Mana Reservoir.

Section 5 Previous Archaeological Research

5.1 Overview

A discussion of previously identified archaeological resources in the project area vicinity is included in this CIA to inform understandings of land and local communities from the initial Hawaiian discovery and settlement of the islands through the historic era, and to provide additional context for the historic documentation, traditional cultural practices, and oral histories associated with the project area and vicinity. Table 4 presents a list of previous archaeological studies; these are shown in Figure 17. Table 5 lists the historic properties documented in the vicinity of the project area and presented in Figure 18. A brief description of archaeological studies in the area of the proposed action follows.

Table 4. Previous archaeological studies in the vicinity of the project area

Reference	Type of Study	Location	Results (SIHP # 50-30-05****)
Bordner 1977	Reconnaissance survey	Kekaha Beach Park	No significant findings
Ching 1982	Reconnaissance survey	Proposed landfill near Barking Sands	No significant findings
McMahon 1988	Field inspection	Mānā near land fill; TMK: (4) 1-2-002:040	No significant findings
Gonzalez et al. 1990	Archaeological inventory survey with subsurface testing	Kauai Test Facility (KTF) at PMRF	Recent trash scatter, bone fragments of unknown species, porcelain fragments, and one <i>cypraea</i> sp. discovered
Walker and Rosendahl 1990	Archaeological inventory survey	Three areas at PMRF and four areas in Kōke'e Park Geophysical Observatory	No significant findings
Kennedy 1991a	Archaeological subsurface testing	Family housing area at PMRF	No significant findings
Kennedy 1991b	Supplemental to archaeological subsurface testing	Family housing area at PMRF	Further discussion of historic ditch (SIHP # -00754) and testing of low sand mounds discussed in Kennedy 1991a
Spear 1992	Archaeological monitoring	West of Kekaha Town	No significant findings

Reference	Type of Study	Location	Results (SIHP # 50-30-05****)
Folk and Hammatt 1993	Inventory survey with subsurface testing	Proposed landfill expansion near Barking Sands; TMK: (4) 1-2-002:009	No significant findings
Hammatt and Ida 1993	Archaeological assessment	Two separate parcels; <i>makai</i> of Kaumuali'i Hwy and <i>mauka</i> parcel located on Kaleinamanu Ridge in Kekaha	No significant findings
Folk and Hammatt 1994	Archaeological inventory survey with subsurface testing	National Guard Rifle Range, Barking Sands	No significant findings
Masterson, Hammatt, Folk, and Ida 1994	Inventory survey with subsurface testing	Proposed agricultural park near Barking Sands	SIHP # 03650, two human burials identified
Drolet et al. 1999	Archaeological monitoring	Site of Project H-134 in PMRF	No significant findings
Dye and Dye 2008	Archaeological monitoring	PMRF <i>makai</i> of Kekaha Landfill	No significant findings
engineering-environmental Management 2009	Survey and evaluation of historic buildings	Hanapēpē Armory and adjacent to SE boundary of PMRF	TS Kekaha WETS at PMRF, a single building (Building 00001) documented; Hanapēpē Armory is modern with exception of one building: flammable material storage building (Building 29) built in 1963
Altzer and Hammatt 2010	Archaeological inventory survey	Access roads from Mānā Rd NE through agricultural fields, encompasses portions of New and Old Government roads	Eight historic properties identified: SHIP #s 02107, portions of New and Old Government Rd and associated structural remnants; -02108 and -02112, habitation terraces; -02109, wall remnant; -02110 and -02111, mounds; -02113, historic house site; and -02114, <i>heiau</i>

Reference	Type of Study	Location	Results (SIHP # 50-30-05****)
Coward and Hammatt 2011	Archaeological literature review and field inspection	10-acre Agricultural Field Office, TMK: (4) 1-2-002:001	No significant findings
Hammatt and Shideler 2011	Literature review	Eight possible locations for Kaua'i Municipal Solid Waste Landfill: Kekaha-Mauka, TMK: (4) 1-2-002	Discusses history of area, previous archaeological studies, and historic properties identified during previous studies
Fong 2012	Archaeological monitoring	Central and southern segments of PMRF	No significant findings
Hammatt and Shideler 2013	Archaeological monitoring	Kaumuali'i Hwy, vicinity of Kekaha, MP 27	No significant findings
Blackwell and Barnes 2014	Historic building survey and evaluation	Eight locations: focus on Kekaha Weekend Training Site (WETS)	KD Range #0: Constructed in 1961 as 300-yard known-distance rifle range that provided firearms training for Guardsmen on Kaua'i
Watanabe et al. 2014	Archaeological monitoring	Mānā Drag Racing Strip, TMKs: (4) 1-2-002:001, 009, 035, 036, 040	No significant findings
Clark et al. 2015	Archaeological inventory survey with subsurface testing	Mānā Drag Racing Strip, TMKs: (4) 1-2-002:009, 036, and 040	No significant findings

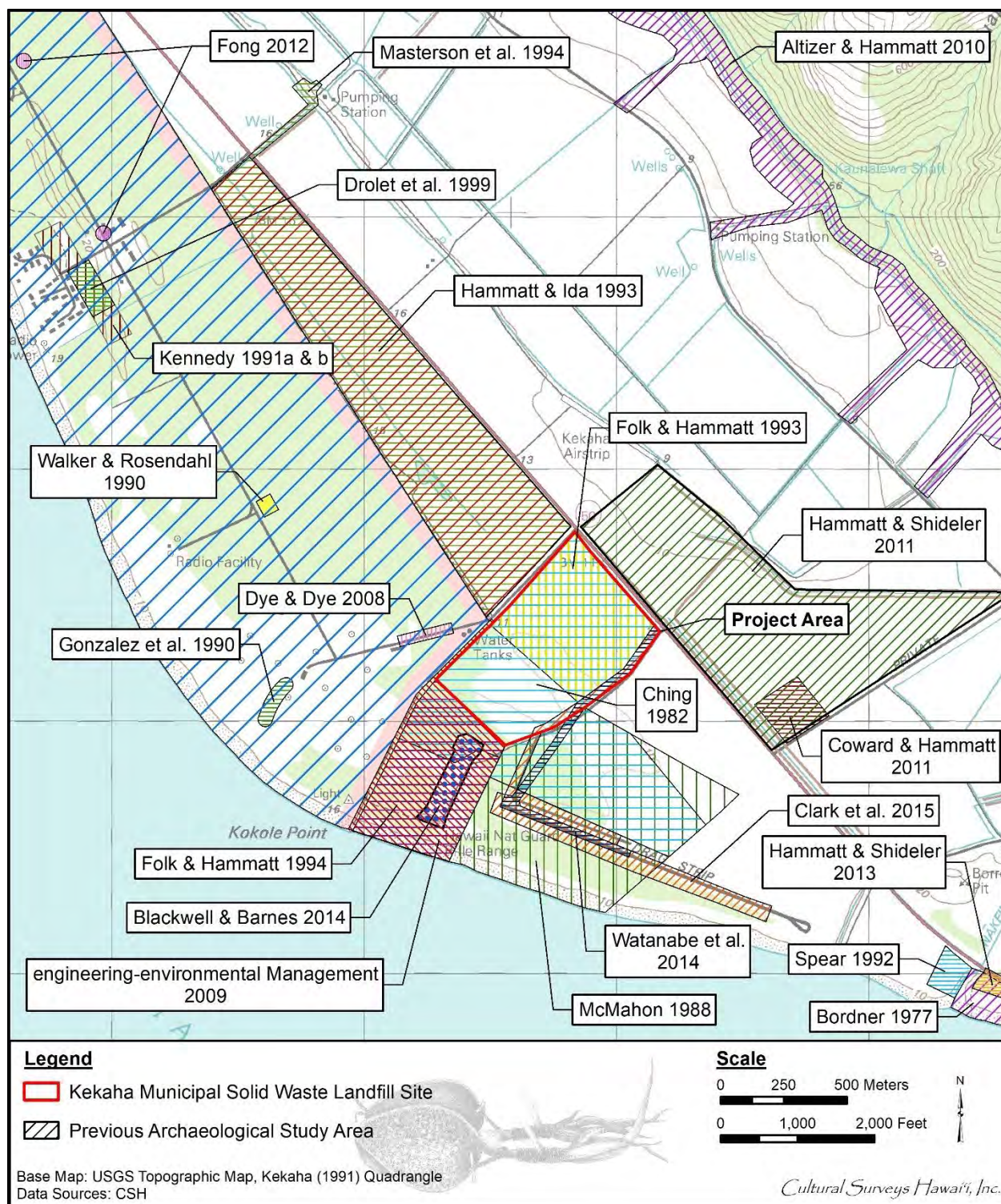


Figure 17. Portion of the 1991 Kekaha USGS 7.5-minute topographic quadrangle showing previous archaeological studies in the vicinity of the project area

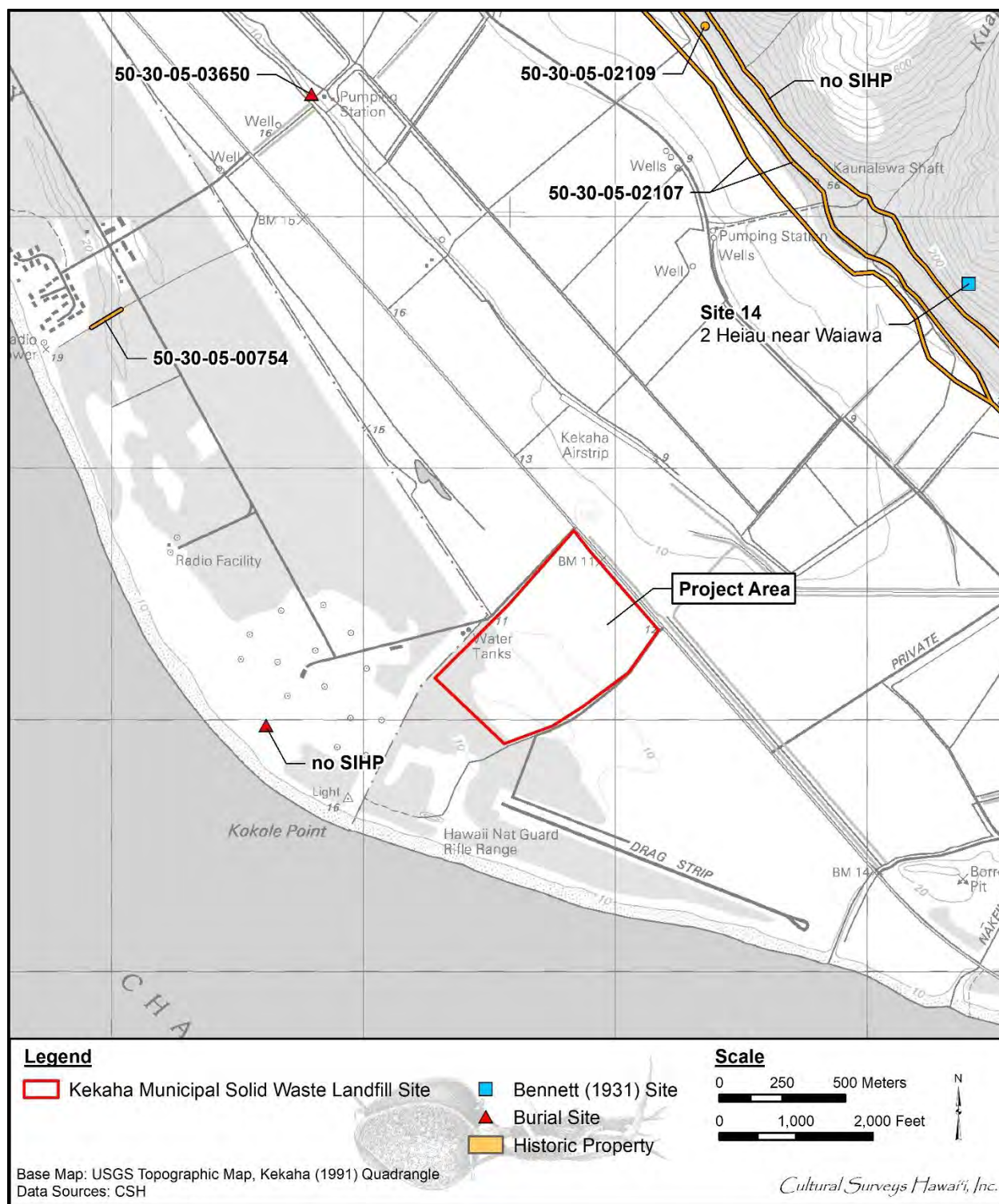


Figure 18. A portion of the 1991 Kekaha USGS 7.5-minute topographic quadrangle with overlay of historic properties in the vicinity of the project area

Table 5. Archaeological historic properties in the project area vicinity

SIHP # 50-30-05-	Type	Reference
00754	Drainage ditch	Kennedy 1991a and b
02107	Portions of New and Old Government Rd and associated structural remnants	Altizer and Hammatt 2010
02109	Basalt stacked wall remnants	Altizer and Hammatt 2010
03650	Human skeletal remains	Masterson, Folk, and Hammatt 1994
Site 14	<i>Heiau</i>	Bennett 1931
no SIHP	Kekaha ditch	Thrum 1908:158–159; 1910 USGS topo map; 1963 USGS topo map; 1970 USGS topo map; Altizer and Hammatt 2010:20–23; Lyman and Dega 2015
no SIHP	Bone fragments of unknown origin	Gonzalez et al. 1990

5.2 Previous Archaeological Research in the KLF (Ching 1982; Folk and Hammatt 1993)

In 1982, Archaeological Research Center Hawaii, Inc. (ARCH) conducted an archaeological reconnaissance survey for a proposed landfill site on a parcel adjacent to the south side of Barking Sands military installation. At the time of the reconnaissance, part of the area was already utilized as a “sanitary land fill” and the other part was used as a dump site for bagasse for Kekaha Plantation (Ching 1982:2). Ching noted the land prior to being a land fill and a dump site was once pasture lands owned by Kekaha Plantation. Holding pens for cattle and horses were also once there. The area, he stated, had “been bulldozed countless times” (Ching 1982:2). There were no historic properties present.

In 1993, CSH conducted an archaeological inventory survey with subsurface testing for the proposed Phase II of the existing landfill. The proposed Phase II area would extend to the east from the existing landfill toward Kaumuali'i Highway, what is now the current project area. During the surface survey, an abandoned irrigation canal and a low linear sand mound was observed (Folk and Hammatt 1993:26). Extensive subsurface testing was conducted throughout the proposed Phase II area. A total of 55 backhoe test trenches “were distributed roughly one per acre” and excavated (Folk and Hammatt 1993:25). The typical profile revealed the area, once a place of sand dunes, was modified and destroyed for plantation purposes. A weak A horizon was observed across the majority of the area since the removal of the upper portion of the sand dunes, except where it has been disturbed. Beneath the A horizon, loose coralline sand was observed overlying a layer of cemented coralline sand (Folk and Hammatt 1993:26–27). The linear mound and canal were excavated and revealed that stratigraphically, both features post-date the removal of the sand dunes. Through oral resources, residents and plantation employees, the features were constructed in the 1950s for experimental farming (Folk and Hammatt 1993:26, 28).

5.3 Discussion and Overview of Archaeological Historic Properties in the Project Area Vicinity

Seven historic properties were previously identified within the project area vicinity (see Figure 18). The closest historic property, southwest of the current project area, is a burial site with no SIHP number along the shoreline near Kokole Point. Other historic properties within the project area vicinity consist of ditches (SIHP #-00754; Kekaha Ditch with no SIHP #), portions of the New and Old Government Road (SIHP #-02107), wall remnants (SIHP #-02109), human skeletal remains (SIHP #-03650), and *heiau* (Site 14). Folk and Hammatt (1993) did identify an abandoned irrigation canal and a low linear sand mound, however, both features post-date the removal of the sand dune and were constructed in the 1950s for experimental farming (Folk and Hammatt 1993:26, 28). AECOM later concluded that these features were no longer present within the project area. No new historic properties were identified within the project area.

Section 6 Previous Cultural Research

6.1 Overview

A review of previous cultural impact assessments has been conducted for the study area. Unlike archaeological inventory survey reports, the study areas for CIAs include the immediate project area and extend to the wider land regions which can include the entire *ahupua'a* and possibly the *moku*. Since Native Hawaiian traditions recognize and value the relationship with land from *mauka* to *makai*, the project area denotes the location of the project; however, the term “study area” denotes the larger context of land that is critical in any CIA investigation. An effort was made to locate community members with ties to Waimea Ahupua'a who live or had lived in the region or who, in the past, used the area for traditional and cultural purposes. Previous CIA projects (Chiogioji et al. 2003; Mason 2007; Fernandes et al. 2010; Walden and Collins 2015) and a cultural study (Flores and Kaohi 1993) in close proximity to the project area are shown in Figure 19 and presented below in Table 6. A CIA was conducted in 2007 for the initial Kekaha Landfill Phase II Lateral Expansion, however, no report was produced. The EA report that this CIA was included in stated that there were no cultural practices identified within the project area (Earth Tech 2007:4-3).

Table 6. Previous cultural studies within the vicinity of the project area

Reference	Location	Community Participants	Traditional Cultural Practices Identified
Flores and Kaohi 1993	Nohili, Mānā	Anderson Kilauano, Margaret Aipoalani, Julia Smith Chandler, and Patrick Malama	Agricultural practices; marine resources; burial practices; gathering practices; <i>hula</i>
Chiogioji et al. 2003	Sandwich Isles Fiber Optic Cable Landing; TMK: (4) 1-3-001:999	Kaipo Akana, Aletha Goodwin-Kaohi, and Teruo Oshiro	Agricultural practices; marine resources; burial practices; <i>mele</i>
Fernandez-Farias et al. 2010	Along New and Old Government roads; TMK: (4) 1-2-002:001	Louis Parrage III, Antonio “Tony” Wong, Isabel Takekawa, Carolyn Uluwehi Kilauano, Osamu Ashiro, and Clisson Kunane Aipoalani	Burial practices; religious practices; marine resources; agricultural practices; recreational activities
Walden and Collins 2015	Mānā Drag Racing Strip; TMKs: (4) 1-2-002:009, 036, 040	Aletha Kaohi, Kunane Aipoalani, and Debbie Ruiz	<i>Wahi pana</i>

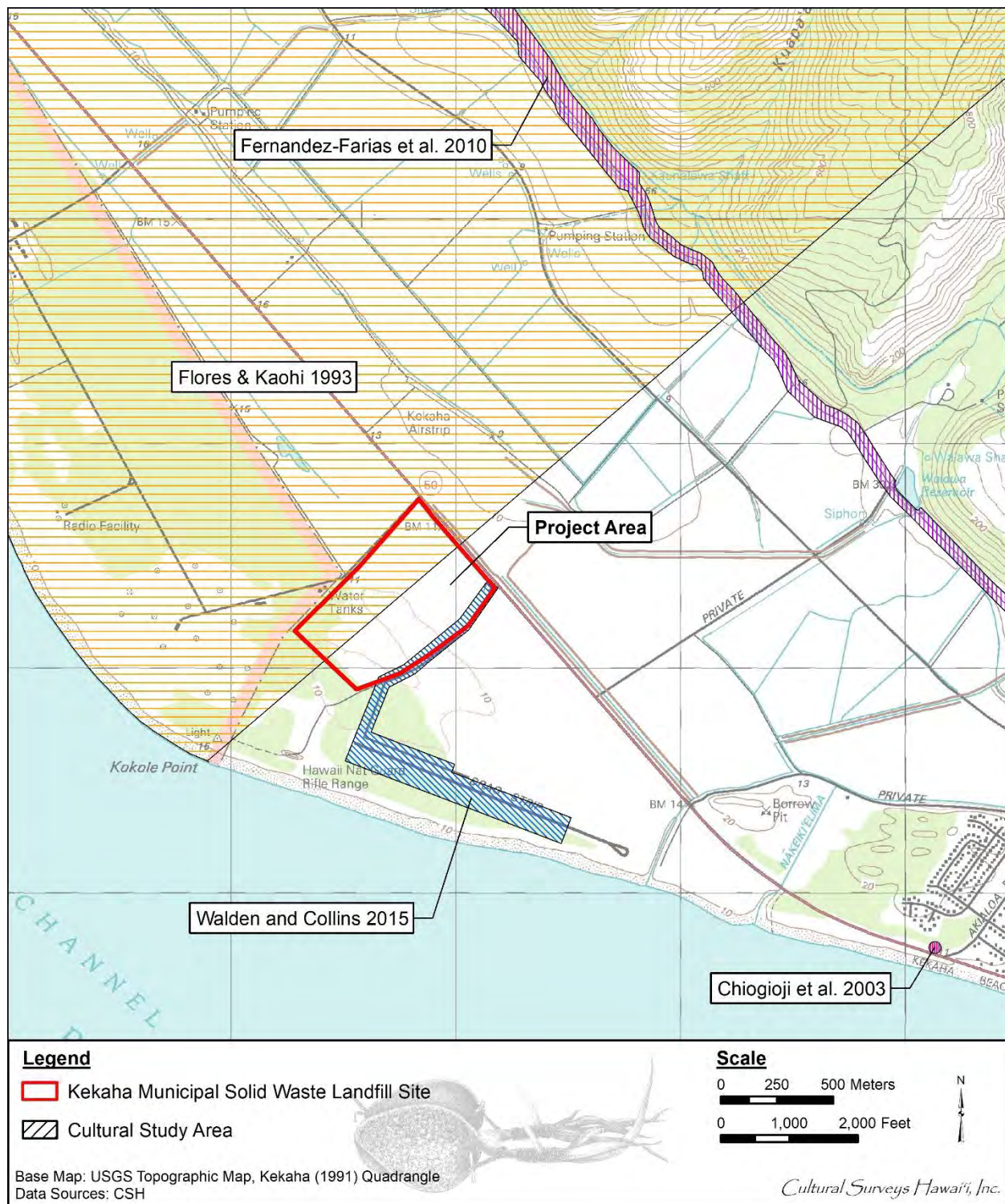


Figure 19. Portion of the 1991 Kekaha USGS 7.5-minute topographic quadrangle showing previous cultural studies in the vicinity of the project area

6.2 Hawaiian Cultural and Historical Survey of Nohili, Mānā (Flores and Kaohi 1993)

E. Kalani Flores and Aletha G. Kaohi conducted ethnographic and ethnohistorical research of Nohili, Mānā, on behalf of Advanced Sciences, Inc. to support the Archaeological Survey and Testing Report for the U.S. Army, Strategic Defense Command's Proposed EDX project in 1992. Four individuals were interviewed for this project (Anderson Kilauano, Margaret Aipoalani, Julia Smith Chandler, and Patrick Malama) and five other individual's oral histories are included within this project that were conducted in the early 1980s by David Penhallow (Howard Danford, Isabel Faye, Margaret Lindsey Faye, William Goodwin, and Ruth Knudsen Hanner). Their accounts are categorized and summarized below.

6.2.1 Agriculture

According to Flores and Kaohi (1993:IV-5), *kalo* (taro), *'uala* (sweet potatoes), and *ipu* (gourds) were some of the crops grown in the valley and gulches along the Mānā Ridges, as well as at Limaloa, Kaheluiki, and Kolo on the Mānā coastal plain. In Kolo, wetland taro cultivation was the typical method of taro cultivation used. According to Anderson Kilauano, everyone owned a taro patch in Kolo. Taro was being grown on rafts during the rainy seasons when the area flooded. At Limaloa, the Kilauano family once cultivated taro patches irrigated by freshwater springs. Anderson Kilauano cultivated the taro variety *lehua* and sometimes *kāi* during the 1940s, however, taro cultivation in Mānā is no longer practiced, especially after the swamps were drained and sugarcane came into the area.

6.2.2 Gathering Practices and Resources

Flores and Kaohi (1993:VI-16) describe the following gathering resources and practices from the uplands, streams, coastal plain, and shoreline of Mānā:

From the uplands—items such as *'ōhi'a lehua* wood for house posts, *pili* grass for thatching, *koa* trees for canoes & other wooden articles, *kauila* & *koai'e* wood for paddles, *'i'iwi* & other native birds for feathers, *'uwa'u* birds for food, *olonā* plants for cordage, or *wauke* plants for tapa making were collected. From the streams—items such as *'ōpae*, *'o'opu*, and *wī* were caught for food. From the coastal plain—items such as *makaloa* & *neki* rushes for weaving, *'a'ali'i* shrubs for firewood, *hi'aloa* & other plants for medicine, *limu pahapaha* & flowers for *lei* making, or *leho* shells for octopus lures were acquired. And from the shoreline—items such as *limu*, *wana*, *hā'u'ke'u'ke*, *'opihi*, *'ōhiki*, and *he'e* for food were collected. [Flores and Kaohi 1993:VI-16]

6.2.3 Fishing Practices and Resources

Various methods of fishing were utilized along the shoreline and in the deep ocean of Mānā. Some fishing methods mentioned by informants (Julia Smith Chandler, Patrick Malama, and Anderson Kilauano) include *hukilau*, throw net, lines with hooks and bait, torching with spears and scoop nets, lay nets, and hand gathering. These informants also discussed the different types of marine resources, "*pāpio*, *ulua*, *kala*, *'ū'ū*, *kūmū*, *āholehole*, *'anae*, *akule*, *manini*, *nenuē*, *'opihi*, *hā'u'ke'u'ke*, *pipipi*, and *paied*" (Flores and Kaohi 1993:V-14). Flores and Kaohi (1993:IV-5) also

mentioned fishing activities were not limited to the ocean and shoreline of Mānā, but also took place in the swamps and ponds on the coastal plain.

6.2.4 Hula

Margaret Kilauano Aipoalani, Anderson Kilauano's sister, and her sister were "taught *ōlapa* (a form of *hula* that was accompanied by chanting and drumming with an *ipu*) by their mother, [Kawehiwa Kaholoiki] who was taught by their grandfather, Kaholoiki (a *hula* instructor and schoolteacher from Kalalau)" (Flores and Kaohi 1993:V-21).

6.2.5 Weaving

Isabel Fayé described the following about the *makaloa nekis* of Mānā:

There was a great deal of connection between Hawaiians in Mānā and Hawaiians of Ni'ihau, because of the *nekis*. The *makaloa nekis* that were grown in swamps [of Mānā] are different from that of any other part of the Hawaiian Islands, that's why the *makaloa* mats are called *ni'ihau* mats, because the Ni'ihau Hawaiians traded with the Hawaiians of Mānā. They exchanged with shells and fish, and did a lot of trade [...] [Fayé 1981 in Flores and Kaohi 1993:V-66]

She continued and stated the following:

They [*makaloa* mats] were made from those *nekis* from Mānā. It's the only place in the Hawaiian Islands where this type of *neki* grew and they had to be prepared, cleaned out of this stiff outer portions, they were reeds that were fairly substantial reeds and they had to be undressed to get to the center.

Nekis [are] all gone. Kolo pond was one of the places where they grew—there was another pond. These were that places that Hawaiians also had their taro patches and they had areas that were swampy that were left to the *nekis*.

First they soaked them and got the right ingredients from the pieces that were too coarse and wouldn't bend were discarded and I still don't know all the details. I think it's all forgotten even by the Hawaiians. Then they could braid them or work on them because they didn't break as they twisted them because they were so pliable as silk. And the Hawaiians had this know-how, this knowledge that had come down through generations of know-how. I think it's one of the most exciting things in the Hawaiian islands. [Fayé 1981 in Flores and Kaohi 1993:V-67]

6.2.6 Burials

Anderson Kilauano mentioned four graves he oversees at Po'oahonu (Queen's Pond). The four graves consist of his grandfather, Kaholoiki, Pakana (his mother's sister), Eddie Ka'iwa's mother, and another whose name could not be recalled. He will bring flowers daily to the graves.

6.3 Kekaha Cable Landing Project (Chiogioji et al. 2003)

The following oral histories are interviews previously conducted by CSH in 2003 for the Proposed Sandwich Isles Fiber Optic Cable Landing project located on the outskirts of Kekaha, east of the current project area (see Figure 19). Below are the accounts of Kaipo Akana, Aletha

Goodwin-Kaohi, and Teruo Oshiro and their memories or knowledge of the Kekaha area and more broadly, Waimea Ahupua'a.

6.3.1 Habitation

A family member told Mr. Akana what Kekaha was like in traditional Hawaiian times before the plantation:

From what I learned from my great-grandmother, on my father's side of the family, she told me that in old Hawaiian times that was all beach land before, where Kekaha is now, and people used to live [more *mauka*] around Pōki'i, Kaunalewa, and Waiawa. But below [*makai* of these areas] nobody lived there because it was all beach. And toward Mānā it was all swamp land. [Chiogioji et al. 2003:29]

6.3.2 Trails

Mr. Akana mentioned the following:

As I remember there was no highway in the front around the beach at that time [in the early 1940s]. There was no highway. The sand extended, the beach extended, about a quarter- to a half-a-mile out from our house. There was a small dune and on the dune there were hau trees along the beach line. Actually, where you see the waves breaking right now, that's where the beach used to be. . . [T]he military put a road from just outside of Waimea, alongside the beach, headed for Barking Sands. Before that the road went up toward the *pali* side—Waiawa and Kaunalewa—and then ended up in Mānā itself. [Chiogioji et al. 2003:28]

6.3.3 Agriculture

Because of the low plantation wages (“\$1.27 one day—not one hour—one day”), Mr. Oshiro stated that Kekaha people also hunted and fished for their food. As for poi:

Well, they had some taro patches over here in Kanalewa, Limaloa, where Gaspar used to live. Where the pump was. Oh, Andy guys used to raise taro. I went to his taro patch [to] get taro. [Chiogioji et al. 2003:33]

Mrs. Goodwin-Kaohi also mentioned taro cultivation in Mānā and stated the following:

[...] Kekaha is a very arid area. You have to remember it's a plantation. So they go in and they drain the land so that they can cultivate it. So then there's no water for [the Hawaiians] to plant taro. And they were accustomed to planting taro out in Mānā, close to the *pali* and also on these little rafts. So they leased some properties further out into the Mānā area because Kekaha could not [provide] that kind of resource. [...] [Chiogioji et al. 2003:30]

6.3.4 Fishing

Informants (Mr. Akana, Mrs. Goodwin-Kaohi, and Mr. Oshiro) mentioned shoreline fishing occurred both in the past and the present day. Mr. Akana mentioned people shoreline fishing every day and stated the following:

They still fish. Mostly shoreline fishing. Casting from the shoreline. You always see people all along this beach here. Everyday. Weekdays and weekends. You'll

see people parked there and casting lines out there. So I would say, because of the reefs out there, that there's still good fishing in the area. [Chiogioji et al. 2003:29]

Mrs. Goodwin-Kaohi also mentioned shoreline fishing, throw net, and other fishing methods:

But I know they did fishing [in Kekaha] and part of it, they could have gone out on canoes and do deep-sea fishing. But [shoreline fishing] was throw net. They didn't do pole [fishing]. Mostly, it was throw net or go out and *hukilau*. [Chiogioji et al. 2003:31]

Mr. Oshiro was a fisherman in his youth and continues to fish today. He described fishing in his youth and some of the Kekaha mentors who guided him:

We caught only whatever we needed. Well, if you had anything extra you shared with the other guys. The neighbors were really happy because they weren't in a position to get fish. I was lucky because I had the connection with Joe Kumalama. He was the best [fisherman] over here. And next to him was Anderson Kilauano. I was bag boy for the two guys so I know. I know. When they catch fish they really catch fish. I was lucky because they took me on the boat. I used to be the smallest boy over there. Helping, all that. They appreciated me because I could do something. And I appreciated them because they took care of me. That's how it was—back and forth. [Chiogioji et al. 2003:33]

Mr. Oshiro also described the *hukilau* net fishing that occurred off the Kekaha coastline:

I tell you, this area here before—Those days, from here, somebody up on the hill look for where get fish. Now, it's so modern: they get a plane flying. But for us, in the old days, they had the one guy, the spotter, he had his special rock spot. And then they call all the guys, get the nets and go out. Then they set the nets.

All over here. You see, wherever the fish is. [Chiogioji et al. 2003:33]

He notes, however, that the fish were more plentiful where the plantation ditch emptied into the ocean:

But, like I say, like here [where the plantation ditch drains into the ocean] that's where [the fish] want to come back to. So the fish used to come close by where the fresh water goes out. So, it depends—anywhere over here. But, I say, [the fish] like the fresh water. In the old days you couldn't hold back anything. Anything come from the mountain it go right out to the ocean. But now these guys stop 'em, lock up this and that. That's why they get lots of problems. [Chiogioji et al. 2003:33]

Mr. Oshiro was asked if there were any special fishing, diving, or reef areas:

As far as diving over there, not much. I used to dive more toward the Mānā side, the ditch area [where the ditch emptied into the ocean]. Right inside here [where the ditch emptied] get the reef over here. I used to work up Kōke'e. We see: 'Ooh, the water nice today.' Take my spear and go down. Get lobster. [Chiogioji et al. 2003:34]

6.3.5 Burials

Mr. Akana mentioned three burials were found in the sand (referring to a 1994 archaeological survey he participated in). Mrs. Goodwin-Kaohi also mentioned skeletal remains were identified when Kekaha Gardens was created. She also shared that there were burial grounds at the sand dunes in Mānā where Queen's Pond is located as well as in the caves. She stated,

The families still went out to Mānā because they had burial grounds in the sand dunes there, which they now call Queen's Pond, toward the base. South of Queen's Pond, the families still had [burial grounds] and they maintained them. And family buried up in the caves. [Chiogioji et al. 2003:30–31]

6.3.6 Mele

Mrs. Goodwin-Kaohi did note that songs have been written about the area, including one “about the ‘ūlili bird. That’s about the plovers and that refers to Kekaha. Because that’s where the ‘ūlili birds would come—on the beach there, in that area. Of course, you know, it was not developed, like now, so there used to be flocks of ‘ūlili birds” (Chiogioji et al. 2003:31).

6.4 Proposed Rock Crushing Establishment Project (Fernandes-Farias et al. 2010)

CSH conducted consultation in 2010 for the Proposed Rock Crushing Establishment project located along the New and Old Government roads in Waimea Ahupua‘a, *mauka* of the current project area (see Figure 19). Six individuals (Louis Parrage III, Antonio “Tony” Wong, Isabel Takekawa, Carolyn Uluwehi Kilauano, Osamu Ashiro, and Clisson Kunane Aipoalani) were interviewed, and their oral histories are summarized below.

6.4.1 Habitation

When asked about the locations of houses in the region, Mrs. Goodwin-Kaohi and Ms. Kilauano shared,

AK: The houses were always close to the cliff side.

UK: Built *mauka* by the cliff, above the water, cause of the swamp and the water from *mauka* that came down the hills, so the houses were built up high, so the water could flow underneath.

[...]

AK: You know Hawaiians knew where to build. They knew the terrain, they watched the waves. The sand dunes are important you know, to keep the water out of the low lands. The swamp water is separated from the ocean by sand. [Fernandes-Farias et al. 2010:58]

6.4.2 Trails

Regarding the Old Government/Mānā Road, Mrs. Takekawa mentioned the following:

This road used to go all the way to Mānā. There was Mānā camp, with the old Mānā store and movies. But it's gone now. All the workers used this road. The surrounding areas were all in sugar cane. There was no other agriculture out here, no *lo'i*, gardens...just sugar cane. There used to be lots of plum trees along the road too. I don't see too many of them growing now. We used to walk all the way from Kekaha, to get the plums. [Fernandes-Farias et al. 2010:54]

Mrs. Goodwin-Kaohi, Ms. Kilauano, and Mr. Aipoalani mentioned the Old Government/Mānā Road as well in the following:

UK: From Kekaha all the way along this road from Pōki'i we traveled on that road, a one way lane. All along the ditch all the way we go till Limaloa, and then we follow the ditch and go to the beach. That's the road you folks are using for this Project. That's the old road. We go that road all the way, to Mānā, Limaloa, Kaunalewa. Because never have that highway. That highway is 1945. So before that we used this road, along the ditch.

AK and UK and KA: They call it the Old Government Road and the Mānā Road, same difference, same thing.

AK: It's the old road is along the cliff-side, along the foot of the hill. The new road is different. From Waiawa you go all

UK: That was the ditch right there. The road followed the ditch.

KA: The original road. That was the drag. The plantation people built it up to reinforce the road, where it is higher in places, or whatever.

AK: They had to, cause of the swamp. The ditch probably, cause the ditch is close by, yeah.

UK: That's the only road we use, going to Mānā. We go up to a certain point, if you like go Polihale, you go a little bit more and you walk to Polihale. You park the car and you walk. [Fernandes-Farias et al. 2010:59–60]

6.4.3 Freshwater Resources

Regarding stream resources, Mr. Wong stated the following about *'o'opu* :

The *'o'opu* was there, it's just that, because now they get da kine, the *'o'opu* no can go back anymore up there. You see, they're raised up there, they like the cold water.

And when they gonna *hānau* [give birth] they come down, and then they *make* [die] down here. And then they—the small ones go back up, you know? But now get plenty things going, so, the *'o'opu* no go. Used to get plenty back then, but, now get water in control. Before there was plenty more water coming over. They gather the *'a'a* now. Because, when get big water, like, I was up there in 1949, right, had a big flood in Waimea. And, what happened was, when the stones would move, and the *'o'opu*, he get the suction, but he no like stay on the stones because they move, so he go by the side, so when the water flows really hard, they no can hold on. When the big water come and they stay *hānau*, or *hāpai* [pregnant], is when they end up *hānau* in *makai*. And then the *hinana* [the offspring of the *'o'opu*] go back

up. That's how see, the 'o'opu no come down because the stones shake, and they no like go in the stone. So they go by the side and the water bring 'em down. [Fernandes-Farias et al. 2010:50]

Mr. Wong also mentioned the following regarding freshwater resources:

[...]

So, on top from Camp 6 and Camp 8, Okay? That waters not enough. So they went make one road by the *pali* to catch Koai'e River water, but the bank went broke, so, they no could get the water. They was getting the water from Koai'e, yeah? It would flow to Camp 8, and at the tunnel go inside, go into Koai'e Stream, and then come underneath, out by the *pali*, and come underneath the da kine and come behind by Julia Nataya's house, and then go inside the reservoir. That's how the thing go. Not enough water, see, from Alakai and, ah, Waipahoe Stream. They leased the water rights for the plantation to use. The *mauka* hydroplant was where the tunnel comes in to Waiawa *mauka*, in Waihulu.

So Camp 8, they went make one ditch along the *pali* but the bank broke, the ditch was broke. That ditch never had name. They was taking water from the other river, Koai'e River. [Fernandes-Farias et al. 2010:51]

6.4.4 Agriculture

Regarding upland plant resources and the growing of vegetables, Mr. Wong stated the following:

But that's where the Hawaiian Homes stay, they used to make garden before that. They raise vegetables up there for the store, or they raise 'em for the people, for the market. So, Masao Okamoto the supervisor for the garden was there when I came in 1943. He was up there.

Maile stay more up, on top the mountain. Stay loaded on top Wai'alae. We go with the horse and gather *mokihana* in the uplands, it is loaded in *mokihana*, because, you know how you see the coffee? That's how the *mokihana* stay, up there, not along the ridges. Each plant has its certain level of elevation where you can find them. *Mokihana* cannot grow any kind place, just like the *maile*. No can grow down here, 'cause would die. [Fernandes-Farias et al. 2010:51]

Mrs. Goodwin-Kaohi stated the following:

AK: I would say that the early use of the property, that area, was probably heavily populated by native Hawaiians, many of them were related to one another, they were family, and it was a community related by koko [blood, common—Hawaiian blood]. And then Knudsen got the lease and moved a lot of the people out of the Mānā area. Later sugar plantation, which Knudsen is an uncle to H. P. Faye and so then the sugar plantation began to drain the entire area, cause it had a lot of water in the area so they drained it cause you can't plant cane in wetland, and so much prior to what there is there now was pretty much sugar, and then there was, maybe not in the area that you're looking at, but Mānā as a whole, there was prawn at one time, they had prawn patches in that area. Today it's pretty much corn, but then

sugar was king, and it is getting to be that corn is king. Pretty much that's how it was. They drained the wetlands. You see Nohili ditch, it was built to drain. So, lots of pumps along the shoreline to drain the wetland. [Fernandes-Farias et al. 2010:57]

Ms. Kilauano and Mrs. Goodwin-Kaohi mentioned Kekaha and Kaunalewa had *lo'i* for taro and watercress. Regarding taro, Mrs. Goodwin-Kaohi stated, "Mānā swamps were the only place in all of Hawai'i that we planted our taro on rafts. They built them because the *huli* [taro top] would drown, and so they built these wooden rafts and they put the mud inside and they planted. They floated on the water" (Fernandes-Farias et al. 2010:57). She further described it by stating,

They would attach it so maybe it was close to the shoreline so it's floating, take the mud and fill up these rafts, because they put sides, and plant the *huli*. Cause you have enough water, but you can't plant in the swap 'cause it was too deep yeah. They used the swamp for fish, mullet and ducks too. [Fernandes-Farias et al. 2010:57]

Ms. Kilauano and Mrs. Goodwin-Kaohi mentioned *makaloa* mats:

UK: And the *makaloa*, I think it was *makaloa* reeds [stalks] were used to make mats. They used to dry them, and our Tutu used to make mats. Ni'ihau is the home of the *makaloa*.

AK: Because *makaloa* grew in the Mānā area and Ni'ihau. Ni'ihau was where they had the most *makaloa*, so our mats, many of our mats came from Ni'ihau. The *makaloa* mats. So it was probably *makaloa* that grew in the swamp. It's an interesting area. [Fernandes-Farias et al. 2010:58]

6.4.5 Fishing

Regarding ocean fishing, Mr. Wong stated the following:

I used to fish, from McBride, I'd fish all the way from Ni'ihau Island. Fish, lobster, you know. I catch fish every week.

Before time, right there by the office, at McBride, we'd go straight out, over there had one boat house over there. But wasn't Hawaiians, one Korean, he had one, a boat over there. When they made the boat harbor, that's when they had to make the wall, the current would change and beat up on the road before. You see it now, no more sand.

Before, I would cast-net over there, that's where I learn to cast-net, I stay learning all the other kind [fishing styles]. You know I can do any kind, because I learn. [Fernandes-Farias et al. 2010:50]

6.4.6 Hunting

Regarding hunting, Mr. Parrage III mentioned hunting up *mauka*:

Been hunting up *mauka* most of my life. Nobody goes now to the old hunting places because now the cornfield takes over, and they get gates all over the place. Sometimes I used to go hunting mostly alone, sometimes with some other people, and with my father. With my father for pheasant, sometimes pig, but mostly

pheasant, we do in pheasant season. My father taught me how to hunt. Then I taught my cousin to hunt and I taught my sons to hunt. I had two sons, but one son died. He was gonna be 54 years old, my oldest son, Wayne. But people not hunting those areas now, too many gates, they hunt up in Kōke'e now...gotta be Kōke'e.

But when Robinson took over here, he would let the workers hunt around there...only the workers that were working for Robinson. Was Robinson that took over the cane field after the plantation had shut down, eh?

You know what Tony Wong used to do? Yeah, he goes hunting in that area but he circled around. He never comes back the same place. You know Tony Wong, he's the only guy I think could make one horse go down the ridge. Riding the horse! He never goes down from the horse! Straight down the ridge not sideways, front ways. His horses was unreal I tell you! Go down the ridge, the horse gonna fall down, or you gonna fall down! But his horse was so trained, he never, he never walk! [Fernandes-Farias et al. 2010:47]

Mr. Wong stated the following regarding hunting, "I hunt all the time when I was 27 years old or so, I used to go nighttime, late, about ten, eleven o'clock in the night. And you go through inside the valley, inside the place, you go up to the ridge, you know" (Fernandes-Farias et al. 2010:50).

Mrs. Takekawa mentioned, "My husband and I used to come pheasant hunting in this area, though. But, I don't know if they still use this area for that. I know that some people used to do some hunting, around here" (Fernandes-Farias et al. 2010:55).

6.4.7 Historical and Cultural Properties

Informants (Mr. Parrage III, Mr. Wong, Mrs. Takekawa, Mrs. Goodwin-Kaohi, Ms. Kilauano, and Mr. Aipoalani) mentioned a variety of cultural and historical properties. Mr. Parrage III mentioned many pre-Contact cultural properties throughout Waimea Ahupua'a. On the ridges, Mr. Parrage III shared that he would often come across adzes and fireplaces while hunting. In Pōki'i and Waiawa, Mr. Parrage III saw a *heiau* and described it in the following:

Waiawa, we had a house, the poison house, in the back there, had a big *heiau*. I think it's still—do they still get the remains of the poison house, eh, there? Yeah. In the back there, that's where they had one big *heiau*, the remains of a *heiau*...Waiawa. The poison house was to store the pesticides to spray the weeds [...]

Cause see this one... 'cause it starts right...right *mauka* of Kekaha, yeah [pointing at the ridges on the map]? Then get Pōki'i right here...and then Waiawa...and then all to Mānā. So it starts around the beginning of Waiawa starts around like Pōki'i, yeah? I think it would be right about here, the *heiau*. I think so [pointing at Waiawa ridge, *mauka*]. That's the only thing I saw of *heiau*...nothing else...all through that place that I used to go...ah, hunt, whatever. By the *heiau* up there get plenty obake [spooky] stories...by the *heiau* at Waiawa. And you know when I used to go through there...thinking about it I'd get a feeling. Hard to explain...like...some kind of energy. Because you know the *heiau* was so big, and it's right in the bottom of that valley, and, when I walked—the cow trail used to be right through. The

heiau all broken, eh, you know? Ho, that thing is big! like one big enclosure. I would say, maybe from here to that house I think! And had a trail right through the *heiau*. But like I say, if you don't know it, you know...cannot tell, because all the stones all scattered, eh? Oh! In the *heiau*, ah...Kimo...ah, what's their last name now...they claim because I used to see flowers, once in a while and *tī* leaf one place. That was one of their families or what, had something to do with that. Ah...Michael and Kimo Nakahiki. Had something to do with that *heiau*. But let me see who was the other, ah...Benny was the last one I think and he just died some years, not too long ago. So, they said, one of their families or what? Was something to do with that, so they used to go put *tī* leaf and flowers sometimes. The Nakahiki family is still around, the girls I think is. That you gotta ask some Hawaiians I think. [Fernandes-Farias et al. 2010:46–47]

Mr. Wong and Mrs. Takekawa also mentioned a *heiau* in Waiawa. Mrs. Takekawa stated, “You know back there [in Waiawa] I think there was a *heiau*. But I don't see any rocks around there now” (Fernandes-Farias et al. 2010:55). Mr. Wong shared, “Inside Waiawa get plenty *heiau*. And Waiawa Valley get the—the oven, and all da kine inside there. That the people used to bake in. None by the road, but up inside the valley *mauka* side. Robinson put in a lot of roads up *mauka*, with plenty gates. Some of the roads go by the *heiau*. So, I not sure about that” (Fernandes-Farias et al. 2010:51). Mr. Wong also mentioned a *heiau* on top of Niu and a canoe factory above Kōke'e Road.

Informants (Mrs. Goodwin-Kaohi, Ms. Kilauano, and Mr. Aipoalani) also mentioned a birthing *heiau* located near Saki Mānā (“Second Mānā,” a former plantation camp). They shared that the birthing rock is shaped naturally like a chair with a stirrup for your feet. There was also a flat area to lay the baby when it was born. Mrs. Goodwin-Kaohi stated,

AK: This is unusual, cause Hawaiians as a whole they squat yeah when they give birth. But this is kind of an inclined because it's the gravitation yeah that you want. Gravity that the baby comes naturally, that's why they squat when they deliver. But this one is natural. I went there years and years ago, but I cannot remember where it is. [Fernandes-Farias et al. 2010:61]

Ms. Kilauano also mentioned the following:

UK: It's a big big *heiau*, with all the big stones. That *heiau* is where they offer food instead of sacrifices, not human, they bring all their food that they harvest from the fields, a Lono Heiau. They bring and they lay over there. Get that baby place, and there's an image of a dog, and that dog is the *nakoa*, the watch person over there.

UK: It has a stone like that and that stone tells the story of the island. It doesn't have writing or petroglyphs, it has like a river... it's... um...It's...It's a stone this high, and she says this water comes from Hā'ena [Fernandes-Farias et al. 2010:61]

Both Mrs. Goodwin-Kaohi and Ms. Kilauano shared that there was a groove on the stone that says “[...] the water came from Hā'ena. She says this... the water comes and was bringing the water to this land. This water came from Hā'ena, Wai'ale'ale, goes to all this land in Mānā, to raise their food” (Fernandes-Farias et al. 2010:61).

6.4.8 Burials

Mr. Wong mentioned seeing a *heiau* and burials while hunting up *mauka*. While Mrs. Goodwin-Kaohi, Ms. Kilauano, and Mr. Aipoalani mentioned burials located in Polihale, Kaunalewa and Pōki'i. In Polihale, Mrs. Goodwin-Kaohi and Ms. Kilauano stated there was a cemetery in the sand dunes that they continued to maintain. Mr. Aipoalani continued and stated why *iwi* were buried in the sand dunes, "Cause during those days when you *hala*, you just go in the backyard and bury your loved one. This made it convenient to visit the gravesite. So the *iwi* was placed in the sand dunes" (Fernandes-Farias et al. 2010:58).

Mrs. Goodwin-Kaohi and Ms. Kilauano mentioned their family burials are in Kaunalewa above the ditch. While Mr. Aipoalani stated that his family's burials are in Pōki'i. Mr. Aipoalani further described burial practices in the following:

KA: For others hunting, for us it is about our spiritual purposes regarding our *iwi kūpuna* and our burials up there on the ridges and in the valleys, and in the caves that we *mālama*. We need to be able to access the ridges and valleys behind the old Government road and Kekaha ditch. It is our right and a part of our cultural practices for generations...before 1700s. Even though they are gone they are still part of the family. [Fernandes-Farias et al. 2010:63]

6.5 Lighting and Electrical Improvements at the Mānā Drag Racing Strip in Kekaha (Walden and Collins 2015)

Consultation for the CIA for the Lighting and Electrical Improvements at the Mānā Drag Racing Strip in Kekaha project was conducted in 2014, however, since no organization or individuals responded to the request for consultation, separate consultations were conducted in support of the archaeological inventory survey (AIS) for this project. The Mānā Drag Racing Strip is located adjacent to the current project area (see Figure 19). Three individuals responded (Ms. Alethea Kaohi, Mr. Kunane Aipoalani, and Ms. Debbie Ruiz), however, only Ms. Kaohi had information regarding traditional cultural practices associated with the area. According to Walden and Collins (2015:19), "Ms. Kaohi stated that the former place name for lands in the vicinity of what is now the Mānā Drag Racing Strip was 'Limaloa'."

Section 7 Community Consultation

7.1 Overview

Throughout the course of this assessment, an effort was made to contact and consult with Native Hawaiian Organizations (NHO), agencies, and community members including descendants of the area, in order to identify individuals with cultural expertise and/or knowledge of the *ahupua'a* of Waimea. CSH initiated its outreach effort in February 2023 and letters requesting consultation (Appendix A along with a map, an aerial photograph, and profile drawing were sent via email and USPS. CSH completed the community consultation in May 2023. CSH reached out to 72 individuals and organizations; 14 responded, three provided written testimonies, and one informant, Leanora “Lea” Kaiaokamalie, participated in an in-depth interview. Unfortunately, we did not review approval in time for one written testimony to be included in this report.

7.2 Acknowledgements

The authors and researchers of this report extend our deep appreciation to everyone who took the time to speak and share their *mana'o* (perspective) and *'ike* (knowledge) with CSH, whether in interviews or brief consultations. We request that if these interviews are used in future documents, the words of contributors be reproduced accurately and in no way altered, and that if large excerpts from interviews are used, report preparers obtain the express written consent of the interviewee/s.

7.3 Community Consultation Table

A total of 72 NHOs, individuals, organizations, and agencies were sent letters requesting consultation for this project. Table 7 contains names, affiliations, dates of contact, and comments from those who responded.

Table 7. Summary of community consultation efforts

Name	Affiliation	Notes
Castillo, Wendy	Principal, St. Theresa Catholic School Kauai	Letter and figures sent via email 27 February 2023 Second round letter and figures sent via USPS 3 April 2023 Second round letter and figures sent via email 4 April 2023 Ms. Castillo responded via email the same day asking if she could distribute the letter to some of the school families who may be interested in participating. CSH responded on 6 April 2023 stating that the letter was for her, but she can share it with others who may want to participate. CSH sent a follow-up email on 1 May 2023

Name	Affiliation	Notes
Farden, Hailama	President, Association of Hawaiian Civic Club	Letter and figures sent via email 27 February 2023 Mr. Farden responded on 28 February 2023 and recommended Mālia Nobrega-Olivera CSH responded same day
Fayé, Chris	Executive Director, Hui O Laka – Kōke'e Natural History Museum; Family ties to Waimea; Former Curator of the Kaua'i Museum	Letter and figures sent via email 28 February 2023 Ms. Fayé responded on 1 March 2023 via email with the sample interview questions answered as an attachment. CSH responded via email on 2 March 2023 with authorization form attached. Ms. Fayé responded via email same day: <i>Ok to use as is, maybe take out the questions as I didn't quite answer them in any particular order.</i> Chris CSH responded via email same day and stated a summary of her answer's will be drafted for her review. Ms. Fayé responded via email 3 March 2023 CSH sent Ms. Fayé a summary of the interview question answers for review via email on 10 March 2023 CSH sent a follow-up email with a revised summary of her answers for review via email on 6 April 2023 CSH sent another follow-up email on 1 May 2023 Ms. Fayé responded on 2 May 2023 with revisions of the summary, signed authorization form, and requested a copy of the CIA report when it's finished. CSH responded same day.
Griffin, Pat	Former Chair, Kaua'i Historic Preservation Review Commission; Member, Hawai'i Historic Places Review Board; Hawai'i Historic Foundation; Historian	Recommended by Chris Fayé Letter and figures sent via email 13 March 2023 Ms. Griffin responded on 15 March 2023 and recommended Leanora Kaiaokamalie CSH responded on 16 March 2023
Hussey, Sylvia	Chief Executive Officer, Office of Hawaiian Affairs (OHA)	Letter and figures sent via email 27 February 2023 Second round letter and figures sent via email 4 April 2023 Mrs. Hussey responded same day and asked to send consultation request to OHA's Compliance Unit CSH responded on 6 April 2023

Name	Affiliation	Notes
Ing, Nicholas	Planner, Watershed Partnerships Program Department of Land and Natural Resources (DLNR) Division of Forestry and Wildlife (DOFAW)	Nicholas Ing responded to the consultation request sent to Katie Ersbak via email and cc'd Leimana DaMate and Katie Roth on 9 March 2023: CSH responded same day and sent an authorization form to include comment in report CSH sent a follow-up email on 6 April 2023 CSH sent another follow-up email on 1 May 2023 Did not receive signed authorization form in time
Kaiaokamalie, Lenora "Lea"	Lineal descendant of Mānā	Letter and figures sent via USPS 1 March 2023 Ms. Kaiaokamalie called on 10 March 2023 Ms. Kaiaokamalie wanted to know if she could respond as both a cultural practitioner and as a planner. CSH responded with yes, as long as cultural related information is shared since this is a CIA and we want to focus on the cultural aspects. Letter and figures sent via email 16 March 2023 Second letter and figures sent via email 4 April 2023 Ms. Kaiaokamalie responded on 2 May 2023 asking if CSH is still accepting interviews CSH responded same day Interview via Microsoft Teams on 8 May 2023 CSH sent an email on 11 May 2023 with clarification questions for the interview summary Ms. Kaiaokamalie responded on 16 May 2023 CSH sent interview summary via email on 19 May 2023 Ms. Kaiaokamalie responded same day with revisions CSH sent authorization form on 20 May 2023 CSH sent follow-up email on 25 May 2023 Received signed authorization form same day
Markell, Kai	OHA Compliance Enforcement	Letter and figures sent via email 27 February 2023 Mr. Markell responded via email on 28 February 2023: <i>Aloha and mahalo Tehani!</i> <i>We added this to our case intake.</i> <i>Mālama...kai</i> Second round letter and figures sent via email 4 April 2023 Mr. Markell responded same day: <i>Aloha and mahalo! I will add it to our intake.</i> <i>Malama all and much Aloha...kai</i>

Name	Affiliation	Notes
Nobrega-Olivera, Mālia	Moku o Manokalanipō; Pelekikena (President), Kaua'i Council of the Association of Hawaiian Civic Clubs	<p>Letter and figures sent via email 27 February 2023</p> <p>Mālia responded on 28 February 2023 through the email thread with Hailama Farden:</p> <p><i>Aloha kākou!</i></p> <p><i>Mahalo e Hailama for sharing this info with us. This is the first time I'm seeing this information and haven't received a letter as indicated below. Which email did you send it to or was it by snail mail? I'll definitely review the info to share some feedback before the deadline.</i></p> <p><i>Mahalo,</i></p> <p><i>Malia</i></p> <p>CSH responded same day</p> <p>Mālia responded same day:</p> <p><i>Mahalo e Tehani! I did a search earlier and couldn't find it and only now went to check the spam folder and of course I found it buried there.</i></p> <p><i>ke aloha,</i></p> <p><i>Malia</i></p> <p>CSH sent a follow-up email on 6 April 2023</p> <p>CSH sent another follow-up email on 1 May 2023</p>
Rodrigues, Vincent Hinano	History & Culture Branch Chief, SHPD	<p>Letter and figures sent via email 27 February 2023</p> <p>Second round letter and figures sent via email 4 April 2023</p> <p>Mr. Rodrigues responded same day:</p> <p><i>Mahalo for asking.</i></p> <p><i>The main purpose of a CIA is to discuss whether or not a defined area was subject to past traditional and customary uses and practices, whether those uses and practices are still continuing, and whether a specific project may affect the same in the future. The most meaningful way of obtaining that information is to visit the location, knock on doors, and ask questions. Another way is to use social media. As our lifestyles changed over the last 200 years and people moved away, there still are many who continue their cultural practices not on a daily basis, but perhaps when they return home for a visit. Thus, knowledgeable persons may not necessarily be living there either.</i></p>

Name	Affiliation	Notes
		<p><i>Hope this helps.</i></p> <p><i>Hinano</i> CSH responded on 6 April 2023</p>
Solis, Ka'āhiki	Cultural Historian (O'ahu, Kaua'i, and Ni'ihau)	<p>Letter and figures sent via email 27 February 2023 Ms. Solis responded on 28 February 2023: <i>Please submit all inquiries to HICRIS. Thank you! Self-check for you-- see the checklist I created so that you understand if your work meets the guidelines.</i> <i>Mahalo</i> CSH responded same day</p>
Tabata, Lyle	Part-owner, B&T Contractors; Kauai County Member, Agribusiness Development Corporation (ADC) Board of Directors	<p>Letter and figures sent via USPS 1 March 2023 Second round letter and figures sent via USPS 3 April 2023 Mr. Tabata called on 6 April 2023 and asked for a copy of the sample questions mentioned in the letter. He left his phone number and email. CSH sent an email with a copy of the interview questions same day Mr. Tabata responded same day: <i>I am available to either respond to the questions in person or other means. I have Team and Zoom on my computer, Live in Lihue, and office in Hanamaulu Kauai. Let me know. My history of the area was that I grew up in Kekaha from 1966 before relocating to Oahu in 1972. Then coming back to Kauai after college to work for AMFAC Sugar, both Lihue and Kekaha, and was the last Manger for AMFAC Sugar Kauai overseeing both Lihue and Kekaha Sugar Companies. Then spent much time on the West as the County of Kauai County Engineer under Mayor Bernard Carvalho Jr. Cabinet.</i></p> <p><i>Mahalo</i> CSH responded same day Mr. Tabata responded with the sample interview questions answered via email on 24 April 2024 CSH responded on 28 April 2023 with clarification questions</p>

Name	Affiliation	Notes
		Mr. Tabata responded same day with questions answered CSH responded same day CSH sent Mr. Tabata's interview summary for his review via email on 19 May 2023 CSH received approval and signed authorization form same day
Valenciano, Marisa	Planner, County of Kaua'i, Planning Department	Letter and figures sent via email 27 February 2023 Ms. Valenciano responded via phone on 28 February 2023 asking about the timeline and permits for this project. CSH returned phone call 13 March 2023 and left a voicemail Ms. Valenciano called on 21 March 2023 and stated that the commission wouldn't comment until permitting or section 106 was triggered.
Wichman, Randy	Former Historian, Kaua'i Historical Society President	Letter and figures sent via email 27 February 2023 Kauai Historical Society replied same day: <i>E Komo Mai and Aloha!</i> <i>Thank you for your email. Our staff will get back to you as soon as possible. We look forward to being of service.</i> <i>For a sales, order pickups, donations, or membership inquiries, please email:</i> info@kauaihistoricalsociety.org . <i>For a research archive appointments or volunteer inquiries, please email:</i> archives@kauaihistoricalsociety.org . <i>For society business, please email:</i> director@kauaihistoricalsociety.org . Second round letter and figures sent via USPS 3 April 2023

7.4 Written Responses

7.4.1 Ms. Christine "Chris" Fayé

On 28 February 2023, CSH sent Chris Fayé a set of interview questions along with a letter requesting consultation for the Kekaha Municipal Solid Waste Landfill Phase II Vertical

Expansion project. Ms. Fayé responded the following day having completed the interview questions (Appendix C Ms. Fayé's answers are summarized below.

Ms. Fayé is the executive director of Hui o Laka (Koke'e Museum) and a former curator of Kauai Museum. She was born in Woodland, California to Barbara Grace Cleghorn Fayé, from Wahiawa and Lana'i, and Lindsay Anton "Tony" Fayé Jr., from Kekaha, in 1957. Ms. Fayé resided in Hawai'i for 65 years, and she was living on and off in Kekaha for 45 of those years.

While discussing the changes in the landscape over time, Ms. Fayé described the following:

The general history of the area was unique due to the landscape. The plain is the output of sediment from the Waimea River. The highest elevation is along the sea where the sediment buried a barrier reef. The land then dips down to nearly sea level and sometimes lower until it starts to rise at the base of the foothills. The foothills, fortunately had many springs, and that is where people lived at the time my great grandfather came to Kauai. There were many small villages. He settled next to a large spring, Kumumao (more recently in plantation times called 'Cold Pond'). He employed a Hawaiian water finder to seek out other sources of water.

Up until the late 1890s there were forests of 'Ohi'a Lehua above Mana. There was a very bad fire that burnt even the roots in the ground so nothing regenerated. My grandfather, Lindsay Faye, remembered there would be freshets when it poured, and water would run off the mountain in the gullies.

Ms. Fayé described her family connection to the area in the following excerpt:

My family, the Fayes, have been living in Polihale to Waimea for 6 generations. My great grandfather Hans Peter Faye started a sugar plantation at Mana – H.P. Faye and Co. in 1884 after 4 years on Maui and Kauai learning the trade. He served as manager of Kekaha Sugar Co from 1898 to 1928. His son, my grandfather Lindsay Anton Faye was manager from 1933 to 1963 and his son, my father Lindsay Anton 'Tony' Faye, was manager twice from the 80s to his retirement in 1992. My great-grandfather Hans Peter Faye came to Kauai to work for his maternal uncle Valdemar Knudsen. Other members of the family also worked for or leased land from Knudsen including Captain Henrich Christian L'Orange and Anton Faye.

I opened a visitor center for Gay & Robinson's sugar operations at Kaumakani in 1999. We provided a field and factory tour based on what used to be given for sugar planters. We had engineers from all over the world on the tour from farmers to space engineers and received many compliments. During that time, between my father and many plantation supervisors, my staff and I learned a lot about the industry and were able to share it.

The second portion of the sample interview questions focused on historical information within the vicinity of the project area. As mentioned previously, the Fayés have a long history that dates to the plantation era. Ms. Fayé went into further detail of her family's history in the following:

The original family member that came to west Kauai was Valdemar Knudsen. He took over a lease from Scots/Norwegian named Archibald Archer about 1854.

Archer and a partner had been growing tobacco which failed. I'm not sure if the lease was renegotiated. Knudsen's lease was a portion of crown lands from Kamehameha V. It was from Kekaha to Milolii to Kokee. I would have to look up what the lease rent was, but it was something like \$2000. My memory serves that the reason the land was crown land was its unusual and unique products. Like Niihau, the Hawaiian people on the plain produced makaloa mats and the decorated gourds which were highly prized by alii in the past. Knudsen settled at Waiawa at the mouth of Hoea Valley which was also his ranch headquarters. Today the landfill would block the view of the ocean. There was a big spring there and a famous heiau Hauola where the menehune were paid their shrimp for completing the Kikiaola or Peekauai Ditch.

With the Reciprocity Treaty in 1875, sugar ventures started up all over the islands. George Wilcox and Paul Isenberg worked it out to put a mill at Kekaha while Valdemar Knudsen teamed up with a nephew-in-law, Henrick Christian L'Orange to plant some cane in 1879. Knudsen and L'Orange were too much alike and hot tempered so the partnership failed quickly. Knudsen was too old for the physicality of the job by that time and his sons were young, but on his wedding trip to Norway a decade before, he had bragged about all his land and easily enticed relatives to come that were the right age. Anton Faye arrived and with a partner harvested the cane and then leased out the lands around Kekaha. Hans Peter Faye arrived in 1880, but Knudsen had left for a trip with his family that took several years. So he joined L'Orange who was married to his sister at a plantation near Paia. That lasted two years and was good training. L'Orange was the agent that brought Norwegian labor to Hawaii. H.P. Faye met and admired Henry Perrine Baldwin on Maui who was building his first irrigation ditch. Due to his brother's death in a flash flood on Maui, H.P. Faye returned to Kauai to organize and plant the first cane for the Sinclair Family in Hanapepe. The crop went to the Eleele mill. He did well but realized he would never prosper working for other people. By that time his uncle had returned and was able to lease the last but worst piece of land from Mana to Polihale. He had two Norwegian assistants E.K. Bull and K.S. Gierdrum and a number of Hawaiians from Mana that worked for him for years. Both Norwegians eventually became managers of sugar plantations on Oahu and Maui. For the planting and harvest, Faye rented Chinese rice baron Pa On's laborers and eventually cleared the land of rocks. H.P. Faye put in the second artesian well in Hawaii (the first was in Ewa). He used a Hawaiian waterfinder. His supplies came in at the old canoe landing (it sounds like it was at Major's Bay.) To fund the expenses of his first crop, he received a \$2000 loan from Paul Isenberg who was then head of Hackfeld & Co. the predecessor of American Factors. He got the loan on the fact that he wore a nice suit his father had made for him in Norway prior to coming to Hawaii. He only wore the suit once to impress Isenberg.

Otto Isenberg managed the mill until he retired before WWI. George Wilcox remained Chairman of the Board for a long time – maybe until he died. When they consolidated the plantations and mill into Kekaha Sugar in 1998, Wilcox was one third owner as well as Faye. The remaining interests were bought and sold so that

the original sugar planters could retire or go elsewhere. The Knudsen lease was soon to expire, and the land was still government land with 20 year leases that had to be negotiated for in Washington D.C. The takeover by the United States was soon to be completed and many incorporations took place about the same time. Many plantation interests were European and Kingdom of Hawaii citizens and there was a rush to incorporate under U.S. law.

The Knudsen lease was over in 1907, although they did try to retain some of the land, they failed. Kekaha Sugar eventually purchased their ranch. Because they paid lease rent on all the land, the cattle could be raised where sugar couldn't. They were generally in the valleys between foothills or near the ocean.

One of the things my great grandfather Hans Peter was instrumental in was expanding the plantation from a small holding to what it became was in the creation of irrigation projects. By the time Kekaha Sugar was formed, the use of artesian wells had pulled up much of the fresh water below the fields. Fresh water from springs and rainfall forms a layer underground over salt water. So, the roots of the cane were becoming saltier and not producing well. The crops were declining. Kekaha was located far from any freshwater source. My great-grandfather developed the Kekaha Ditch that used no electricity to bring water from about 8 miles up the Waimea River up to the foothill above Waimea Town all the way to Polihale. He had to convince the company's board that this would work. George Wilcox had a degree in engineering and also experience with his own ditch projects and backed him up. They also consulted with engineers in California, and it took several redesigns to bring the cost down. Most of the project was conceived and executed by the plantation and local crews. Remember that they only had a 20 year lease and any capital projects had to pay off quickly.

After obtaining the lease again in 1920 the Kokee Ditch project was started in 1922. It was a very ambitious project and the Kawaikoi Dam was and is still the highest elevation reservoir in Hawaii. My grandfather Lindsay's first job in the sugar industry was on that project. He oversaw Camp 10 far in Mohihi. His experience on a US Army supply train in World War I made him a good candidate. Of my great grandfather's 6 sons, only Lindsay was interested in becoming a sugar man. He then was groomed at Waimea Sugar and, when his father died, he was put in place as assistant manager at Kekaha under William Danford.

Lindsay was at Kekaha a long time and was young when he started as manager in 1932. He was keen on athletics and made sure there were physical outlets on the plantation. He was on numerous boards that promoted the welfare of Kauai people. He rode a horse in the fields for years and actively maintained the ranching activities. There was a lot of fallow land at Kekaha and remote areas on the plains that were used for pasturage for not just the plantation work animals but also for food production. The area where the landfill is now was pasture. It was very sandy and considered "wasteland" in the early years of the Territory.

He witnessed and participated actively in the early years of aviation when an 'international airfield' was created at Mana. His wife packed sandwiches and

thermos of coffee for the crew of the Southern Cross as they continued their hop across the Pacific in the first cross-Pacific flight in 1928. In World War II, the airfield began as an Army base. World War II was a challenge, and although he didn't serve in the military, Lindsay took his role as manager and head of civil defense for Kekaha and its surrounds seriously. He claimed the first troops that arrived in March of 1942 were family men called up by the National Guard, but those that came after were totally different and it was a fine line to protect the community. He made sure his people were fed and the plantation's truck farm at Puu Opae was exceptional. Even his children worked with the rest of the schoolchildren in the gardens and farms. After the war, the plantation continued to excel and became one of the world's best producers of sugar per acre in the world. One field, until the end, had the world's record of 29 tons of sugar per acre.

Gradually over the years, more and more stock came into the hands of Amfac. In 1972, the remaining stockholders, including the Fayses who now had about 25% of the company, were forced to sell out and Kekaha was no longer an independent plantation.

The plantation shrunk from about 1200 employees to about 200 through attrition during my dad's tenure starting in 1980. In a way my great grandfather built the plantation, my grandfather nurtured it through its peak and the upheavals of post war labor unionization, while my father had the sad duty of keeping things going as long as possible facing the reality of closure at any time by its mainland ownership. He was proud that he managed to talk Amfac/JMB into taking care of the employees when they decided on selling off nonstrategic holdings. Amfac owned most of Lihue then and Kekaha was mostly leased land except for the camps and mill. The results were subdividing and selling off plantation houses to employees and working with the county to create a retirement complex for all the retired single men.

I have memories of Kekaha Sugar Plantation. I was 3 when we first lived there as Dad was a trainee I was 4-6 years of age when my dad had his first full-time job with Amfac. I remember a Christmas party at the Supervisor's clubhouse in Mana (my great grandfather's original house), and plantation parties with backyard singing and dancing on the cement lanais. Food was memorable, especially fresh fish and whole sides of plantation beef roasting on the rotisserie. Cowboys, ditchmen, canefires, the rumbling of the factory, the silence during the offseason, sound of trucks downshifting as they came down the steep hills loaded with cane. The stink of ditchwater. The whole gamut.

I also spent 5 years from first through fifth grade walking home from school through the camps of Oahu Sugar in Waipahu. I gained a very thorough background in what the camps were like. Kekaha was different in that it was on a much smaller scale and well organized around the mill and business district.

Regarding land use in Kekaha:

There were 3 large brackish water lakes seen on maps prior to 1920. The sugar acreage was quite small when it started. It was said when it flooded (not necessarily a yearly occurrence) the lakes would fill up and become one and with a flat-bottomed boat you could pole your way to Waimea. There were lots of ducks in the lakes and people enjoyed shooting them for food and sport. We have a photo of one of the boats and shooters.

The village of the mirage was near Limaloa Pond. Limaloa was Lohiau's brother.

Rice farming started early on in Waimea Valley and the 'lakes', especially Limaloa, by Chinese after the Gold Rush. Pa On Leong, who made money in the gold fields, became a rice baron and employed many single men. His mill was in Waimea where the library is now. He had barracks for them at Kaunalewa and Mana. Some of these men were rented by my great grandfather to bring in his sugar crop. He and Pa On had a handshake agreement regarding the swampy land which was eventually overthrown by other investors in Kekaha Sugar around 1920.

There were plantation villages or Hawaiian villages at Polihale, Saki Mana, Mana, Kaunalewa, Waiawa, Pokii, Kekaha near the foothills, and another I forgot the name too between Kekaha and Waimea, and Waimea. Up on the foothills there was Puu Opae and Hukipo. My great aunt Isabel said there was a carriage road near the ocean (the highway is fairly modern) that in good weather the Hawaiian rode carriages to Church on Sundays. A government dirt road ran along the pali. There were no roads elsewhere because of the swamps.

There was a ship landing at Kekaha by what is now called 'first ditch.' There was a shed and pasture for holding livestock in transit. It isn't so much a ditch as a drainage canal first dug by hand by the Knudsens to expand farming and ranching near Kekaha. It was named Keikielima (5 children) after Knudsen's five children. My great grandfather purchased salvage equipment and pumps from the Sacramento, California reclamation project to begin draining the swamps between Kekaha and Polihale and at Waimea. It took decades to drain. The pumps are what made a difference and there were several on the canals that drained at the shoreline. One of them, I think Kiele, had an engine that was used at Senator Miyake's power company in Waimea. It was a diesel ship engine that is now by the Waimea Mill. The company that made the engine still exists and the serial number identified it as one of the oldest of their engines still in existence.

Kekaha is a plantation town. It was the site chosen to put the sugar mill. The area's Hawaiian people generally lived close to the foothills where springs were located. Along the shore were temporary fishing shelters, but water had to be carried there so it wasn't someplace to permanently live then.

The plantation railroad was a bit different than others. It was operated from about 1898 to 1945 on nearly flat land. Like other plantations, flumes were used to transport cane from the top of the hills down to the flat where it could be taken to the mill for processing. It was one of the first plantations to convert to mechanical harvesting, only keeping its rail through the war for military use. The plantation has

the claim to the only train robbery in 1920 where a masked man held up the railroad between Kaunalewa and Mana and ran off with about \$10,000 in cash including the payroll books for the Mana Division. The paymaster was instrumental in locating the suspected robber because he didn't want to recreate the payroll books. The railroad also had an interesting tradition of being the first party train. For its opening inaugural run, cane cars were cleaned and chairs put in for dignitaries in their finest to ride from Kekaha to Polihale (there are photos!). For special occasions, this occurred including the last run of the train in 1946.

Regarding any cultural or historic sites near the project area, Ms. Fayé stated, "As far as I know, the nearest house and heiau was at Waiawa/Hoea and Kekaha." Ms. Fayé then discussed a historic site, "The Mana Drag Strip was the old Mana Airport in use as the principal public airport during and after the war until the present Lihue airport was built."

When asked about cultural practices, Ms. Fayé stated, "Most of the activities take place at or near first ditch and Kekaha. Currently there are agricultural companies around the landfill as well as military activities and housing." She continued with the following:

The uplands above Kekaha were important in Hawaiian culture for farming koa at PuukaPele.. Kokee was integral to plantation life – many of the families of Kekaha had summer camps at Kokee and the plantation had a cabin for employees. The heat in Kekaha made the summer months miserable. My family spent easily spent 3 months a year at Kokee either with the Knudsens and later from 1904, at our own cabin Maluapoha.

Ms. Fayé mentioned some *wahi pana* and *mo'olelo* in the following excerpt:

Some of the unique cultural things that were mentioned by Eric Knudsen (Kanuka of Kauai) was that the dead gathering at the hills above Polihale to enter Po and the wandering spirits could be trapped in homes – all the villagers had two doors in their homes to allow them to pass through.

Another story is of the unfolding mat – the view from Nohili of the long white sand beach as far as the eye can see.

Another is the unusual way taro was cultivated on floating mats in the brackish water lakes. There was also a saying that the Hawaiians at Polihale never needed to make poi – they traded fish for poi because they were such good fishermen and could trade for all the poi they needed.

Many of the place names in the landscape are named for the story of the arrival of Pele's sisters.

There were three trails Ms. Fayé mentioned:

Trail from Mana to Puuopae, which used to be a village, to Kokee.

Canoe road from PuukaPele to Mana (the road still exists)

Trail made by the Knudsens to PuukaPele to travel every summer to Halemanu.

Finally, the last portion of the sample interview questions focused on any concerns or recommendations Ms. Fayé may have regarding this project:

Besides the drastic change to the landscape by creating mountains near the ocean of what used to be flat land, it concerns me that a whole hillside is being mined of dirt as part of the project. I hope the same scrutiny of the cultural landscape is being made for the new project.

We need to acknowledge that native water fowl are thriving in the settling pond at the landfill. Taking away reservoirs and ditches/canals reduces their habitat. The newly created bird sanctuaries don't have the nutrients for the bugs and fish they eat to thrive – they are too clean.

The cane fields were a habitat for bats, pueo, and nonnative ground birds that people like to hunt. Maybe lands that are going fallow or returning to swamp need to be managed better for habitat purposes rather than making new habitats out of dry land.

7.4.2 Mr. Lyle Tabata

On 6 April 2023, CSH emailed Mr. Lyle Tabata a set of interview questions along with a letter requesting consultation for the Kekaha Municipal Solid Waste Landfill Phase II Vertical Expansion project. Mr. Tabata responded on 24 April 2023 via email having completed the interview questions (Appendix C Mr. Tabata's answers are summarized below.

Lyle Tabata is currently part-owner of B&T Contractors and sits on the Agribusiness Development Corporation (ADC) Board of Directors. He previously worked as the County Engineer of Public Works for the County of Kaua'i for nine years, from 2011 to 2020, eight years in Mayor Carvalho's cabinet, and one year with Mayor Kawakami.

Mr. Tabata was born on 28 June 1956 in Lāhaina, Maui to Marilyn Tagomori and Teruo Tabata from Maui. Mr. Tabata stated that he grew up in Wailua, Kaua'i (from 1959-1966), Kekaha (1966-1972), Waipahū (1972-1974), went to college in Illinois at Bradley University (1974-1978), then finally moved back to Kaua'i (1978-present). He currently resides in Līhu'e, Kaua'i.

Regarding Mr. Tabata's connection to Waimea Ahupua'a, as mentioned previously, he grew up in Kekaha from 1966-1972. He shared a memory of how he spent many days traveling on his bicycle with friends from Mānā camp to Waimea during the six years he lived in Kekaha. He was also the Factory Manager of American Factors (Amfac) Sugar Kaua'i and in charge of the Kekaha Sugar Mill and Lihue Plantation Mill operations from 1993-1997. Then from 1997-2000, he was the last Plantation Manager for Amfac Sugar Kaua'i and oversaw the operations of both Lihue Plantation and Kekaha Sugar Companies.

Regarding historic or cultural events practiced in the area, Mr. Tabata stated the following:

The renaissance of the push to reintroduce the Hawaiian culture of the day is in terms of years only recently re-established. I did, however, during my elementary school days at Kekaha School attend the summer schools while Bertha Kawakami was principal and taught the Kamehameha School curriculum of what we know as Explorations today. We learned the language, the music, games and culture in more detail than was taught in the public schools.

Mr. Tabata continued and described a memory of attending Kekaha Summer Fun and being told the stories and tales of the area, such as night marchers and burial caves.

When asked to describe those stories told by Ms. Martha Kruse at Summer Fun, Mr. Tabata responded with the following:

Well, I remember she said that if you hear them, they will be chanting while marching, not to wake up and look for them, they will take you with them. No can't remember others; I only remember I couldn't sleep for days after hearing them. She did mention that the royal kupuna were buried in caves in the walls of the valleys, we were not to disturb them.

Regarding cultural practices in the project area, Mr. Tabata shared,

I lived a block in from Davidson Beach where I learned to surf, we would dive for fish, pole fish out all over from 1st ditch to Polihale. Catch o'opu nakea when the first fall rains would push them down from Kōke'e to the Waimea River out to sea, in Waimea valley with makeshift spears made for us by the plantation welders. Hunt up in Kōke'e for pigs, goats, and newly introduced deer, Hawaiian 'moose' the plantation run away cattle, bird hunt for pheasant, quail, and franklins.

When asked where the first ditch is located, Mr. Tabata explained the following:

1st ditch the canal drains to the ocean, is right next to the shrimp hatchery at the concrete bridge after MacArthur Beach Park at what is called 'Inters' today. 2nd ditch is further down toward the County Landfill also a concrete bridge crossing. Then the next fishing spot was Target Range, behind the landfill was a shooting range, then next was on base they call it Majors Bay, then Kinikini, then Barking Sands point or Rocket Launcher, then Queens Pond, then Polihale all the sand until the rocks at the end.

Regarding past land use, Mr. Tabata mentioned agricultural uses and stated, "Rice and taro were grown in the area." He also mentioned the Mānā Swamp that was drained during plantation time and stated, "I remember Martha Kruse telling us in the old days you could paddle canoe from Waimea to Mānā in the wetlands."

Regarding *mauka-makai* relationships, Mr. Tabata described the Mill Ditch ravine in the ocean and stated, "The water used to come from *mauka* and today this location is where the black and white sand intersect and dive down in this ravine separating the two types of sand in Kekaha."

Mr. Tabata did not have any concerns with the current project, however, within the vicinity of the current project area, Mr. Tabata shared the following, "As the County Engineer, I had the County obtain [a] permit to execute [the] clearing of stone and soil from the sugar operations. Rock and mud removal from the mill came cleaner which was disposed at Paua Valley gulch to restore the location back to what it was." When asked if there were any negative impacts by disposing of stone and soil at Paua Valley, he stated the following:

Well during the day the valley used to open and in its natural state, the plantation filled much of the valley during its time with mud and rock, by clearing these rocks and the dirt now being used as cover soil for the present landfill. Restoration back to the valley's original state is always good if it can be done in a respectful way.

Mr. Tabata stated, "I support the project as the island does not have alternatives for refuse disposal if not approved."

7.5 Summaries of Community Interviews

7.5.1 Ms. Leanora "Lea" Dizol Kaiaokamalie

On 8 May 2023, CSH interviewed Leanora "Lea" Dizol Kaiaokamalie via Microsoft Teams regarding the Kekaha Municipal Solid Waste Landfill Phase II Vertical Expansion project. Ms. Kaiaokamalie is a lineal descendant and 'ohana (family) representative of the Kilauano family for projects in the Mānā area. She is also a community planner and GIS analyst for the County of Kaua'i.

The Kilauano family are part of the 'Ohana Papa O Mānā group, lineal descendants of the Mānā area, which includes areas such as Kekaha, Nohili, and Polihale. Ms. Kaiaokamalie stated that her family coordinates with the Pacific Missile Range Facility (PMRF) for any activities that occur on the base. She also described how the PMRF recently built the Lua Kupapa'u O Nohili Crypt that their 'ohana goes to every year during the solstice. Her family reinters the *iwi kūpuna* (ancestral Hawaiian skeletal remains) that have been exposed either by erosion or by, unfortunately, construction or other activities on the base. The PMRF will call her 'ohana and hold the *iwi kūpuna* until her family comes down to do a ceremony and then reinter the *iwi kūpuna* or ask to leave them in situ. Ms. Kaiaokamalie also explained they have connections to the State of Hawai'i DLNR, however, this is still a work in progress. The 'ohana are currently participating in other projects such as the Polihale Master Plan and the Mānā Plain Wetland Restoration.

Other responsibilities her family oversees include taking care of the family grave sites located at Po'oahonu (also known as "Queen's Pond") in Polihale. Ms. Kaiaokamalie described her great-great-grandparents, Kaholoiki and Niho, buried at Po'oahonu. Her great-great-grandparents are from Kalalau, Kaua'i and her great-great-grandfather, Kaholoiki, was a schoolteacher there. Her grandfather, Anderson Kaholoiki Kilauano, was the caretaker of the graves and her family continues to take care of those graves. As Ms. Kaiaokamalie stated, it became an "unbroken chain of *mālama 'āina* of Mānā [passed on from generation to generation] from Saki Mānā in Polihale to Kekaha." She also stated that although there were other recognized families in the area, her family has "never really moved out of the area mentally. Although the parents have passed and the children moved away, they continued to take care of the graves."

Regarding burials in the project area or within the project area vicinity, Ms. Kaiaokamalie shared that her family never spoke of burials near the project area. Her family's concentration of burials is in Nohili and Polihale. She did question whether sand dunes existed before the landfill was built since it's located along the shoreline and Jaucas sand is present. According to previous archaeological studies of the current project area, a low linear sand mound was observed (Folk and Hammatt 1993:26). The area was once a place of sand dunes but was modified and destroyed for plantation purposes. The sand mound post-dates the removal of the sand dunes and previous oral history states it was constructed in the 1950s for experimental farming (Folk and Hammatt 1993:26, 28). Ms. Kaiaokamalie noted that the landfill is located along the shoreline, meaning there is a possibility of encountering a burial even though previous archaeological studies within the area say otherwise. However, the proposed action would take place on top of the Phase II landfill and no new areas or native soil would be disturbed as part of the proposed action.

Ms. Kaiaokamalie stated she lived in Kōloa, Kaua'i, however, she was often in the Kekaha-Mānā area with her mother's side of the family on most weekends. She was the youngest girl and granddaughter of her family, and her brother was the only grandson and youngest grandchild. She spoke of not being allowed to swim at Kekaha Beach because of the strong currents and she wasn't a great swimmer. Ms. Kaiaokamalie stated that the currents were strong and there was a saying, "yeah watch out, you gonna end up in Ni'ihau." She further explained that when there were a lot more cows around the area, sometimes the current would take wayward cows and they would end up in Ni'ihau.

There have always been concerns about the impact to the ocean in the vicinity of the project area due to the strong currents. Ms. Kaiaokamalie stated that people would often say, "oh they bringing more fish" or "oh, they bringing more sharks," meaning the currents would bring in more marine species or other things into the area. Also, the smell from trash from the landfill and the "dirty" or murky water would attract more predators, like hammerhead sharks, to the area.

While describing the area as it was in the past, Ms. Kaiaokamalie mentioned there was a lot more access along the shoreline. During her grandfather's time, you could drive from Kekaha to Polihale on the sand. However, after the PMRF base and other developments were established along the shoreline, it was no longer possible to do so. She mentioned some of the cane roads were built on the old trails or ditches and would lead more inland. Ms. Kaiaokamalie did state that in the area Roads in Limbo (RIL) were created by the plantation. Her family used them to access the beach, to fish, and drive around.

Regarding previous land use, Ms. Kaiaokamalie stated there was no known previous land use she is aware of where the landfill is located. However, Mānā was known for *kalo* and her grandfather, Anderson Kilauano, had pig farms and produced salt. Ms. Kaiaokamalie also mentioned Mānā had many springs.

Mauka of the landfill, rice and sugarcane was being cultivated. Ms. Kaiaokamalie's great-grandfather, Louis Kilauano, was a *luna* (supervisor) for Hans Peter Fayé, who developed and filled in the wetlands in Mānā for cane fields.

Regarding native birds in the area, Ms. Kaiaokamalie stated there were "‘*auku‘u* (black-crowned night heron), ‘*ae‘o* (Hawaiian stilt), ‘*alae‘ula* (Hawaiian common moorhen), ‘*koloa maoli* (Hawaiian duck), ‘*nēnē* (Hawaiian goose), ‘*iwa* (great frigatebird), ‘*pueo* (Hawaiian short-eared owl), and ‘*ōpe‘ape‘a* (Hawaiian hoary bat)." When asked about the vegetation in the area, Ms. Kaiaokamalie mentioned there used to be *kulu‘i* (*Nototrichium humile*) and *wiliwili* (*Erythrina sandwicensis*). In the past, there also used to be sandalwood; now you can find random flora such as mango or banana trees.

Regarding marine resources and cultural practices, Ms. Kaiaokamalie mentioned there used to be more "lettuce-looking" *limu* that could be found up and down the shoreline. She stated she hasn't seen this type of *limu* around for at least a couple decades. They used to pick *limu* off the rocks and eat them. Ms. Kaiaokamalie also shared that they would fish at 1st and 2nd Ditch, as well as use them as markers for where to swim.

Regarding *mo‘olelo* and *wahi pana* about the area, Ms. Kaiaokamalie shared that the area was frequented by Pele and Poliahu. She also mentioned a story about how the ridge, Pōki‘ikauna, received its name. Pele left her youngest sister, Moeha‘una, in Mānā with her lover Limaloa. Pele

and the rest of her siblings headed toward Waimea Village and stopped on a ridge; missing their sister they looked back toward Mānā. To commemorate this spot, Kahuila (Pele's brother) suggested they name the ridge Pōki'ikauna, meaning "the yearning for the little sister."

Regarding cultural and historical sites, Ms. Kaiaokamalie mentioned many sites documented by SHPD and published in CSH reports. There was a *heiau* where the Proposed Rock Crushing Establishment project occurred, located along the New and Old Government roads, *mauka* of the current project area. She noted there were some sites around MacArthur Park ("Kekaha Beach") and at the PMRF. One site Ms. Kaiaokamalie mentioned was Saki Mānā ("Second Mānā"), a former plantation camp located closer to Mānā. She further described the site being located near "Cold Pond," where her family would often swim, a spring created by the plantation. According to Kaohi and Flores (1993:II-16), "Saki later became a varied pronunciation of the word Second." The site itself is "completely razed to the ground," and can no longer be viewed from above by satellite.

A concern Ms. Kaiaokamalie had regarding cultural sites is that there were no previously identified cultural sites within the project area even though previous archaeological studies have identified multiple sites in the surrounding areas. There were sites located in Kekaha, PMRF, and *mauka* of the project area. The project area is also located along the shoreline, meaning there's a higher possibility of sites or burials in the area. Ms. Kaiaokamalie said she was not questioning whether the people who did the original surveys of the project area did their jobs or not. She understands the landfill was built when laws for cultural resource management and land use were just being developed and were less strict than they currently are. There were also a lot of developments, such as subdivisions, and changes in the land such as the drainage of the wetlands in Mānā and the development of rice and cane fields, that may have resulted in the destruction of many historic and cultural sites. She recommends integrating the initial report of the project area and including in the current report how the site was studied for future reference. If another survey were to be conducted in the future, she's hoping it can be done more thoroughly.

Regarding land use laws, Ms. Kaiaokamalie mentioned they were established around the time that people were coming back from the Vietnam War. During this time, veterans were using their G.I. Bills to buy land, land use laws allowed the first subdivisions and first zoning codes to be established, the landfill was being built, and plantations were operating. After the war, a lot of money was coming into the economy and the land was changing.

The main concern Ms. Kaiaokamalie has regarding the vertical expansion of the Kekaha Landfill is the impact on natural and cultural resources. The landfill already impacts the visual beauty of the landscape and she's worried about it going higher. She stated that when you "look out into the places that you love, you expect to see them." Before the landfill was developed, the land was flat, now there is a *pu'u* (hill) where the landfill stands. She had an emotional reaction when she realized the size of the landfill and stated that it felt as if she was robbed of something. She felt sick. Ms. Kaiaokamalie stated that people have asked her, "well what's the difference between that and a building?" and her response was that she would react the same, it doesn't make a difference. She continued and said, "there's nothing else there. There's nothing else, but that. It's not right."

A recommendation Ms. Kaiaokamalie discussed was the county implementing more recycling and upcycling opportunities. It could be economically and environmentally advantageous. She

stated, "There is so much for us to reuse and recover before it gets to the landfill." She understands it's difficult to do, especially financially for the county.

Her main recommendation is for the county to develop a long-term solution for getting rid of the *pu'u*. She stated, "If gotta go higher, can we at least have an eye toward looking or keeping an eye on technologies that would help us recover the things that were buried or at least recover and just incinerate it or something." She wants the county to make mitigation efforts toward removing the vertical expansion once a long-term solution for the landfill is established. The vertical expansion is not something that should remain long-term. Ms. Kaiaokamalie stated, "Long-term, the County needs to remove it or flatten it down. Recover the views. Try to design out of what they're creating." She's tired of seeing the next generation having to deal with the issues the previous generation left behind:

Today, left by the generation not so far removed from us, all this stuff that we are needing to deal with now. All the shoreline entitlements, all these infrastructures along the coast, and all these filled in wetlands. Like thanks man, you know? And now we're in this project, where it's staring in front of us. If we have to do it, can we help the people in the future, or us in the future, to say hey...this is a little bit of a stub out to undo this later on, if we can't get away with doing it now cause we kind of have to. I just want us to stop throwing things to the next generation because it sucks having to clean that kind stuff up.

She continued and stated that the solution doesn't need to be discovered today, but gathering data on ideas and designs that people around the world with similar issues are dealing with will allow more ideas to be created and that will lead us closer to discovering a solution. At least by creating a "trail," it will help guide others to creating a possible solution in the future. She suggested that when drafting a project, they need to input possible impacts and solutions others have come up with, as well as the outcome of those solutions. The county should have a working group or policy where they must revisit the issues and determine how to implement the ongoing feasible technologies for solid waste study.

She also stated the county should be more involved in terms of projects like wetland restoration. There is currently a lot of movement toward supporting wetland restoration in the entire Mānā area. The State of Hawai'i Division of Forestry and Wildlife (DOFAW), DLNR, PMRF, and watershed *hui* (groups) and landowners are contributing to this movement. Flooding and draining issues are impacting Kekaha and Waimea. The land was previously wetland and now that the land changes are exacerbated, Ms. Kaiaokamalie stated that "maybe it's not us who will have to deal with the *pu'u*. It's gonna come down naturally because the tides are gonna take it out." Ms. Kaiaokamalie asked, "Where does the landfill stand in this? What is the County doing to look toward that and support those efforts [wetland restoration], even if we have to go this way [horizontal expansion] and this way [vertical expansion] for a little while?"

Section 8 Traditional Cultural Practices and Resources

8.1 Overview

Timothy R. Pauketat succinctly describes the importance of traditions, especially regarding the active manifestation of one's culture or aspects thereof. According to Pauketat,

People have always had traditions, practiced traditions, resisted traditions, or created traditions [...] Power, plurality, and human agency are all a part of how traditions come about. Traditions do not simply exist without people and their struggles involved every step of the way. [Pauketat 2001:1]

It is understood that traditional practices are developed within the group, in this case, within the Hawaiian culture. These traditions are meant to mark or represent aspects of Hawaiian culture that have been practiced since ancient times. As with most human constructs, traditions are evolving and prone to change resulting from multiple influences, including modernization as well as other cultures. It is well known that within Hawai'i, a "broader "local" multicultural perspective exists" (Kawelu 2015:3). While this "local" multicultural culture is deservedly celebrated, it must be noted that it has often come into contact with "traditional Hawaiian culture." This contact between cultures and traditions has undoubtedly resulted in numerous cultural entanglements. These cultural entanglements have prompted questions regarding the legitimacy of newly evolved traditional practices. The influences of "local" culture are well noted throughout this section, and understood to represent survivance or "the active sense of presence, the continuance of native stories, not a mere reaction, or a survivable name. Native survivance stories are renunciations of dominance, tragedy and victimry" (Vizenor 1999:vii). Acknowledgement of these "local" influences help to inform nuanced understandings of entanglement and of a "living [Hawaiian] contemporary culture" (Kawelu 2015:3). This section strives to articulate traditional Hawaiian cultural practices as were practiced within the *ahupua'a* in ancient times, and the aspects of these traditional practices that continue to be practiced today; however, this section also challenges "tropes of authenticity," (Cipolla 2013) and acknowledges the multicultural influences and entanglements that may "change" or "create" a tradition.

This section integrates information from Sections 3–7 in examining cultural resources and practices identified within or in proximity of the project area in the broader context of the encompassing Waimea landscape. No traditional cultural practices or resources were identified within the current project area. Those listed below were identified within the project area vicinity and the broader Waimea *ahupua'a*. Excerpts from interviews are incorporated throughout this section where applicable.

8.2 Habitation and Freshwater Resources

Ms. Fayé mentioned the Native Hawaiian people in Kekaha "[...] generally lived close to the foothills where springs were located. Along the shore were temporary fishing shelters, but water had to be carried there so it wasn't someplace to permanently live then." Ms. Kilauano also stated that houses were "Built *mauka* by the cliff, above the water, cause of the swamp and the water from *mauka* that came down the hills, so the houses were built up high, so the water could flow underneath." Mr. Akana also shared that "[...] people used to live [more *mauka*] around Pōki'i,

Kaunalewa, and Waiawa” (Chiogioji et al. 2003:29). This is backed by Yent (2005 in DLNR 2013:73), who stated that “Hawaiian settlements on the Mana Plain were small and concentrated along the foothills and mauka or upland valleys and temporary habitation, including fishing camps, occurred on the coastal sand dunes.”

According to Knudsen and Noble (1945:62), Kekaha was watered by a spring called Kauhika, located at the base of the *pali*. The spring has a fishpond, then taro *lo'i* and rice fields before flowing into the swamp. Ms. Fayé mentioned another large spring, Kumumao (also known as “Cold Pond”) next to which her grandfather. Ms. Kaiaokamalie also mentioned “Cold Pond,” while describing Saki Mānā and stated that her family would often swim there, and a spring was created by the plantation. Ms. Fayé also mentioned another spring and famous *heiau*, Hau'ola, where “the menehune were paid their shrimp for completing the Kikiaola or Peekauai Ditch.”

The second artesian well in Hawai'i was placed on the land leased to Hans Peter Fayé by Valdemar Knudsen, which consisted of Mānā to Polihale. Ms. Fayé further described the artesian well in the following:

By the time Kekaha Sugar was formed, the use of artesian wells had pulled up much of the fresh water below the fields. Fresh water from springs and rainfall forms a layer underground over salt water. So, the roots of the cane were becoming saltier and not producing well. The crops were declining. Kekaha was located far from any freshwater source.

Mr. Wong shared that the plantations needed water for the sugarcane and took it from Koai'e river:

[...] So, on top from Camp 6 and Camp 8, Okay? That waters not enough. So they went make one road by the *pali* to catch Koai'e River water, but the bank went broke, so, they no could get the water. They was getting the water from Koai'e, yeah? It would flow to Camp 8, and at the tunnel go inside, go into Koai'e Stream, and then come underneath, out by the *pali*, and come underneath the da kine and come behind by Julia Nataya's house, and then go inside the reservoir. That's how the thing go. Not enough water, see, from Alakai and, ah, Waipahoe Stream. They leased the water rights for the plantation to use. The *mauka* hydroplant was where the tunnel comes in to Waiawa *mauka*, in Waihulu.

So Camp 8, they went make one ditch along the *pali* but the bank broke, the ditch was broke. That ditch never had name. They was taking water from the other river, Koai'e River. [Fernandes-Farias et al. 2010:51]

Ms. Fayé also mentioned that since “Kekaha was located far from any freshwater source,” her great-grandfather developed the Kekaha Ditch to “bring water from about 8 miles up the Waimea River up to the foothill above Waimea Town all the way to Polihale.” The ditch was created for the purpose of providing freshwater for sugarcane. Ms. Fayé also mentioned the Kokee Ditch started in 1922 and the Kawaikoi Dam was developed as well and is known as the highest elevation reservoir in Hawai'i.

Mr. Wong mentioned how *‘o‘opu* was once abundant in the streams and stated the following:

The 'o 'opu was there, it's just that, because now they get da kine, the 'o 'opu no can go back anymore up there. You see, they're raised up there, they like the cold water.

And when they gonna *hānau* [give birth] they come down, and then they *make* [die] down here. And then they—the small ones go back up, you know? But now get plenty things going, so, the 'o 'opu no go. Used to get plenty back then, but, now get water in control. Before there was plenty more water coming over. They gather the 'a 'a now. Because, when get big water, like, I was up there in 1949, right, had a big flood in Waimea. And, what happened was, when the stones would move, and the 'o 'opu, he get the suction, but he no like stay on the stones because they move, so he go by the side, so when the water flows really hard, they no can hold on. When the big water come and they stay *hānau*, or *hāpai* [pregnant], is when they end up *hānau* in *makai*. And then the *hinana* [the offspring of the 'o 'opu] go back up. That's how see, the 'o 'opu no come down because the stones shake, and they no like go in the stone. So they go by the side and the water bring 'em down. [Fernandes-Farias et al. 2010:50]

8.3 Trails

Ms. Fayé mentioned that her great aunt Isabel told her about a carriage road near the ocean and a government dirt road along the *pali*:

My great aunt Isabel said there was a carriage road near the ocean (the highway is fairly modern) that in good weather the Hawaiian rode carriages to Church on Sundays. A government dirt road ran along the *pali*. There were no roads elsewhere because of the swamps.

There were three trails Ms. Fayé mentioned:

Trail from Mana to Puuopae, which used to be a village, to Kokee.

Canoe road from PuukaPele to Mana (the road still exists)

Trail made by the Knudsens to PuukaPele to travel every summer to Halemanu.

Informants (Mrs. Takekawa, Mrs. Goodwin-Kaohi, Ms. Kilauano, and Mr. Aipoalani) have mentioned the Old Government/Mānā Road, which ran from Waiawa to Mānā. Mrs. Takekawa mentioned there was “Mānā Camp, with the old Mānā store and movies. But it's gone now. All the workers used this road. The surrounding areas were all in sugar cane. There was no other agriculture out here, no *lo'i* gardens...just sugar cane” (Fernandes-Farias et al. 2010:54) Ms. Kilauano stated,

From Kekaha all the way along this road from Pōki'i we traveled on that road, a one way lane. All along the ditch all the way we go till Limaloa, and then we follow the ditch and go to the beach. [...] That's the old road. We go that road all the way, to Mānā, Limaloa, Kaunalewa. Because never have that highway. That highway is 1945. So before that we used this road, along the ditch.

[...]

That was the ditch right there. The road followed the ditch. [Fernandes-Farias et al. 2010:59]

Mrs. Goodwin-Kaohi mentioned the Old Government Road was along the cliff-side, at the foot of the hill. Mr. Aipoalani added, "The original road. That was the drag. The plantation people built it up to reinforce the road, where it is higher in places, or whatever." Ms. Kilauano also shared that it was the only road they used to go to Mānā and stated, "We go up to a certain point, if you like go Polihale, you go a little bit more and you walk to Polihale. You park the car and you walk" (Fernandes-Farias et al. 2010:59-60).

Mr. Akana mentioned the following:

As I remember there was no highway in the front around the beach at that time [in the early 1940s]. There was no highway. The sand extended, the beach extended, about a quarter- to a half-a-mile out from our house. There was a small dune and on the dune there were hau trees along the beach line. Actually, where you see the waves breaking right now, that's where the beach used to be. . . [T]he military put a road from just outside of Waimea, alongside the beach, headed for Barking Sands. Before that the road went up toward the *pali* side – Waiawa and Kaunalewa – and then ended up in Mānā itself. [Chiogioji et al. 2003:28]

Ms. Kaiaokamalie mentioned some of the old can roads were built on the old trails or ditches that would lead more inland. She also shared that in the area there were Roads in Limbo (RIL) created by the plantation. Her family used them to access the beach, fish, and drive around.

8.4 Flora and Fauna

Waterfowl present in the wetlands provided a food resource for the area residents. Among them the *kōloa* (Hawaiian duck) and especially the '*alae* (Hawaiian gallinule) and *āe'o* (*kukuluāe'o*; Hawaiian stilts) were numerous (Von Holt 1985:78). All three were traditionally caught and consumed by the Hawaiians (Malo 1951:39).

Regarding native birds in the area, Ms. Kaiaokamalie stated there were "‘*auku'u* (black-crowned night heron), *ae'o* (Hawaiian stilt), '*alae'ula* (Hawaiian common moorhen), *koloa maoli* (Hawaiian duck), *nēnē* (Hawaiian goose), '*iwa* (great frigatebird), *pueo* (Hawaiian short-eared owl), and '*ōpe'ape'a* (Hawaiian hoary bat)." When asked about native plants, Ms. Kaiaokamalie mentioned there used to be *kulu'i* (*Nototrichium humile*) and *wiliwili* (*Erythrina sandwicensis*). In the past, there used to be sandalwood. Now, you can find random flora such as mango or banana trees.

Mrs. Takekawa also mentioned plum trees along the Old Government/Mānā Road stating, "[...] There used to be lots of plum trees along the road too. I don't see too many of them growing now. We used to walk all the way from Kekaha, to get the plums" (Fernandes-Farias et al. 2010:54).

8.5 Agriculture

Mauka of the landfill, rice and sugarcane was being cultivated. Ms. Kaiaokamalie's great-grandfather, Louis Kilauano, was a *luna* for Hans Peter Fayé, who changed and filled in the wetlands in Mānā for cane fields. Mrs. Goodwin-Kaohi mentioned the sugar plantation draining

the wetlands of Mānā to plant cane. She also mentioned prawn patches in that area at one point in time.

The perpetual swamplands of the plain apparently were greatly enlarged during periods of heavy winter rains. It was possible on these occasions to paddle a canoe from Mānā to Waimea on this inland waterway (Knudsen 1991:99; Von Holt 1985:77–78). Mr. Tabata mentioned the Mānā Swamp that was drained during plantation time and stated, “I remember Martha Kruse telling us in the old days you could paddle canoe from Waimea to Mana in the wetlands.” Ms. Fayé shared something similar and mentioned three large brackish water lakes that were seen on maps prior to 1920:

The sugar acreage was quite small when it started. It was said when it flooded (not necessarily a yearly occurrence) the lakes would fill up and become one and with a flat-bottomed boat you could pole your way to Waimea. There were lots of ducks in the lakes and people enjoyed shooting them for food and sport. We have a photo of one of the boats and shooters.

Ms. Fayé mentioned the following regarding rice farming:

Rice farming started early on in Waimea Valley and the ‘lakes’, especially Limaloa, by Chinese after the Gold Rush. Pa On Leong, who made money in the gold fields, became a rice baron and employed many single men. His mill was in Waimea where the library is now. He had barracks for them at Kaunalewa and Mana. Some of these men were rented by my great grandfather to bring in his sugar crop. He and Pa On had a handshake agreement regarding the swampy land which was eventually overthrown by other investors in Kekaha Sugar around 1920.

Informants (Mr. Tabata, Ms. Kilauano, Mrs. Goodwin-Kaohi, Mr. Oshiro, and Ms. Kaiaokamalie) have mentioned that *kalo* was grown in the Kekaha-Mānā area. According to Flores and Kaohi (1993: IV-5), *kalo*, *‘uala*, and *ipu* were some of the crops grown in the valley and gulches along the Mānā Ridges, as well as at Limaloa, Kaheluiki, and Kolo on the Mānā coastal plain. Yent (2005 in DLNR 2013:73) also mentioned that “The majority of inhabitants on the Mana Plain were fishermen and gourd cultivators whose products were traded for poi and other upland products with other inhabitants of the island.” Ms. Kilauano and Mrs. Goodwin-Kaohi mentioned Kekaha and Kaunalewa had *lo ‘i* for taro and watercress, while Mr. Oshiro shared that there were taro patches in Kaunalewa and Limaloa.

In Kolo, wetland taro cultivation was the typical method used for taro cultivation. According to Anderson Kilauano, everyone owned a taro patch in Kolo. Taro was being grown on rafts during the rainy seasons when the area flooded. Ms. Fayé mentioned taro being cultivated on floating mats in the brackish water lakes. Mrs. Goodwin-Kaohi stated, “Mānā swamps were the only place in all of Hawai‘i that we planted our taro on rafts. They built them because the *huli* [taro top] would drown, and so they built these wooden rafts and they put the mud inside and they planted. They floated on the water” (Fernandes-Farias et al. 2010:57). She further described it by stating,

They would attach it so maybe it was close to the shoreline so it’s floating, take the mud and fill up these rafts, because they put sides, and plant the *huli*. Cause you have enough water, but you can’t plant in the swap ‘cause it was too deep yeah.

They used the swamp for fish, mullet and ducks too. [Fernandes-Farias et al. 2010:57]

At Limaloa, the Kilauano family once cultivated taro patches irrigated by freshwater springs. Anderson Kilauano cultivated the taro variety *lehua* and sometimes *kāī* during the 1940s, however, taro cultivation in Mānā is no longer practiced, especially after the swamps were drained and sugarcane came into the area. Ms. Kaiaokamalie also mentioned that her grandfather, Anderson Kilauano, had pig farms and produced salt. According to Pukui (1983:110), “The salt of Waimea, Kaua‘i is known for its reddish-brown color.”

8.6 Fishing and Marine Resources

Fishing occurred all along the shoreline from what is known as “first ditch” to Polihale. According to Mr. Tabata, “first ditch” is where “the canal drains to the ocean, is right next to the shrimp hatchery at the concrete bridge after MacArthur beach park at what is called ‘inters’ today. 2nd ditch is further down toward the County Landfill also a concrete bridge crossing.” Ms. Kaiaokamalie shared that they would fish at first and second ditch, as well as use them as pointers for where to swim.

Mr. Tabata also shared the following:

[...] Then the next fishing spot was target range, behind the landfill was a shooting range, then next was on base they call it Majors Bay, then Kinikini, then Barking Sands point or rocket launcher, then Queens Pond, then Polihale all the sand until the rocks at the end.

Mr. Wong mentioned where he would do ocean fishing in the following:

I used to fish, from McBride, I’d fish all the way from Ni‘ihau Island. Fish, lobster, you know. I catch fish every week.

Before time, right there by the office, at McBride, we’d go straight out, over there had one boat house over there. But wasn’t Hawaiians, one Korean, he had one, a boat over there. When they made the boat harbor, that’s when they had to make the wall, the current would change and beat up on the road before. You see it now, no more sand.

Before, I would cast-net over there, that’s where I learn to cast-net, I stay learning all the other kind [fishing styles]. You know I can do any kind, because I learn. [Fernandes-Farias et al. 2010:50]

There were various methods of fishing utilized along the shoreline and in the deep ocean of Mānā. Some fishing methods mentioned by informants (Julia Smith Chandler, Patrick Malama, and Anderson Kilauano) include *hukilau*, throw net, lines with hooks and bait, torching with spears and scoop nets, lay nets, and hand gathering. Shoreline fishing was a common method used by many informants (Mr. Akana, Mrs. Goodwin-Kaohi, and Mr. Oshiro). Mr. Akana often saw people along the shoreline every day casting lines. He also stated, “[...] So I would say, because of the reefs out there, that there’s still good fishing in the area” (Chiogioji et al. 2003:29). Mrs. Goodwin-Kaohi also mentioned shoreline fishing consisted of throw net or they would go out and *hukilau*.

Mr. Oshiro also mentioned the fish were more plentiful where the plantation ditch emptied into the ocean. He described *hukilau* net fishing that occurred off the Kekaha coastline:

I tell you, this area here before – Those days, from here, somebody up on the hill look for where get fish. Now, it's so modern: they get a plane flying. But for us, in the old days, they had the one guy, the spotter, he had his special rock spot. And then they call all the guys, get the nets and go out. Then they set the nets.

All over here. You see, wherever the fish is. [Chiogioji et al. 2003:33]

Mr. Tabata mentioned he would use makeshift spears made by the plantation welders in Waimea Valley to catch 'o 'opu *nakea* "when the first fall rains would push them down from Kokee to the Waimea River." According to Pukui (1983:146), "When it was the season for *hinana*, the spawn of 'o 'opu, at Waimea, Kaua'i, they were so numerous that one couldn't go into the water without rubbing against them."

Flores and Kaohi (1993:IV-5) mentioned fishing activities were not limited to the ocean and shoreline of Mānā, but also took place in the swamps and ponds on the coastal plain. Informants (Julia Smith Chandler, Patrick Malama, and Anderson Kilauano) also discussed the different types of marine resources, "*pāpio, ulua, kala, 'ū'ū, kūmū, āholehole, 'anae, akule, manini, nenuē, 'opihi, hā'uke'uke, pipipi, and paiea*" (Flores and Kaohi 1993:V-14). The Kaulakahi channel that runs between Waimea and Ni'ihau was said to be plentiful in marine resources supplying "such fishes as the *ulua* (jackfish), *mahimahi* (dolphin), *ono* (mackerel), and *a'u* (marlin), all large enough to feed many people" (Wichman 2003:6). Furthermore, Wichman states that people in Waimea benefited from the "reef fish, sea urchins, squid, and seaweeds" (Wichman 2003:6) of the shallow water.

Ms. Kaiaokamalie stated there used to be more "lettuce-looking" *limu* that could be found up and down the shoreline. She stated she hasn't seen this type of *limu* around for at least a couple decades. They used to pick them off the rocks and eat them.

8.7 Hunting

Informants (Mr. Tabata and Mr. Wong) have mentioned hunting in Kōke'e. Mr. Wong stated he would go at night at about ten or eleven o'clock on the ridge. Some of the animals they would hunt in Kōke'e included pigs, goats, newly introduced deer, Hawaiian "moose," the plantation run away cattle, pheasant, quail, and franklins. Mrs. Takekawa also mentioned hunting with her husband and coming across pheasant. Mr. Parrage III shared that no one goes to the old hunting area because it has become cornfields and there are gates that restrict access to those areas. He also shared that he would hunt mostly alone, sometimes with other people, and other times with his father. He would catch pheasants and sometimes pigs with his father.

8.8 Gathering Practices and Resources

Ms. Fayé mentioned *koa* farming in the uplands of Kekaha:

The uplands above Kekaha were important in Hawaiian culture for farming *koa* at PuukaPele.. Kokee was integral to plantation life – many of the families of Kekaha had summer camps at Kokee and the plantation had a cabin for employees. The heat in Kekaha made the summer months miserable. My family spent easily spent

3 months a year at Kokee either with the Knudsens and later from 1904, at our own cabin Maluapoha.

Regarding upland plant resources, Mr. Wong mentioned *maile* and *mokihana* in the following:

Maile stay more up, on top the mountain. Stay loaded on top Wai'alae. We go with the horse and gather *mokihana* in the uplands, it is loaded in *mokihana*, because, you know how you see the coffee? That's how the *mokihana* stay, up there, not along the ridges. Each plant has its certain level of elevation where you can find them. *Mokihana* cannot grow any kind place, just like the *maile*. No can grow down here, 'cause would die. [Fernandes-Farias et al. 2010:51]

Flores and Kaohi (1993:VI-16) described gathering resources and practices from the uplands, streams, coastal plain, and shoreline of Mānā:

From the uplands—items such as 'ōhi'a *lehua* wood for house posts, *pili* grass for thatching, *koa* trees for canoes & other wooden articles, *kauila* & *koai'e* wood for paddles, 'i'iwi & other native birds for feathers, 'uwa'u birds for food, *olonā* plants for cordage, or *wauke* plants for tapa making were collected. From the streams—items such as 'ōpae, 'o'opu, and wī were caught for food. From the coastal plain—items such as *makaloa* & *neki* rushes for weaving, 'a'ali'i shrubs for firewood, *hi'aloa* & other plants for medicine, *limu pahapaha* & flowers for lei making, or *leho* shells for octopus lures were acquired. And from the shoreline—items such as *limu*, *wana*, *hā'u*ke'u'ke, 'opihi, 'ōhiki, and *he'e* for food were collected. [Flores and Kaohi 1993:VI-16]

Wichman (2003) described unique cultural developments on the island saying:

From the beginning the Kaua'i people developed unique tools never seen on other islands. These included *pohaku ku'i poi* (ring and stirrup pounders), double-grooved stone club heads, and a broad anvil for beating kapa. They learned how to weave intricately designed mats of *makaloa* (sedge) so soft it could be used for clothing. They discovered a method for decorating their *ipu* (bottle gourds), which they used as containers for food and water. They strung the tiny seashells found on the beaches into necklaces. Brightly feathered birds abounded from seashore to mountaintop, and their feathers were collected and woven into wreaths, capes, and helmets. Throughout their entire history, the people of Kaua'i created things of beauty from even the most ordinary objects. [Wichman 2003:6–7]

Many informants (Ms. Fayé, Ms. Kilauano, Mrs. Goodwin-Kaohi, and Isabel Fayé) mentioned the *makaloa nekis* of Mānā. Ms. Fayé mentioned, "Like Niihau, the Hawaiian people on the plain produced makaloa mats, and the decorated gourds which were highly prized by ali'i in the past." She stated this was the reason the land was classified as "Crown Land." Ms. Kilauano and Mrs. Goodwin-Kaohi also mentioned *makaloa* reeds (stalks) were grown in the swamps and used to make mats by drying them. They also mentioned that many of the *makaloa* mats came from Ni'ihau.

Isabel Fayé described in greater detail the *makaloa nekis* of Mānā:

There was a great deal of connection between Hawaiians in Mānā and Hawaiians of Ni'ihau, because of the *nekis*. The *makaloa nekis* that were grown in swamps [of Mānā] are different from that of any other part of the Hawaiian Islands, that's why the *makaloa* mats are called *ni'ihau* mats, because the Ni'ihau Hawaiians traded with the Hawaiians of Mānā. They exchanged with shells and fish, and did a lot of trade [...] [Fayé 1981 in Flores and Kaohi 1993:V-66]

She continued and stated the following:

They [*makaloa* mats] were made from those *nekis* from Mānā. It's the only place in the Hawaiian Islands where this type of *neki* grew and they had to be prepared, cleaned out of this stiff outer portions, they were reeds that were fairly substantial reeds and they had to be undressed to get to the center.

Nekis [are] all gone. Kolo pond was one of the places where they grew—there was another pond. These were that places that Hawaiians also had their taro patches and they had areas that were swampy that were left to the *nekis*.

First they soaked them and got the right ingredients from the pieces that were too coarse and wouldn't bend were discarded and I still don't know all the details. I think it's all forgotten even by the Hawaiians. Then they could braid them or work on them because they didn't break as they twisted them because they were so pliable as silk. And the Hawaiians had this know-how, this knowledge that had come down through generations of know-how. I think its one of the most exciting things in the Hawaiian islands. [Faye 1981 in Flores and Kaohi 1993:V-67]

8.9 Hula

Margaret Kilauano Aipoalani, Anderson Kilauano's sister, and her sister were “taught ‘*ōlapa* (a form of *hula* that was accompanied by chanting and drumming with an *ipu*) by their mother, [Kawehiwa Kaholoiki] who was taught by their grandfather, Kaholoiki (a *hula* instructor and schoolteacher from Kalalau)” (Flores and Kaohi 1993:V-21).

8.10 Historical and Cultural Properties

Many *heiau* were mentioned by informants (Ms. Fayé, Mr. Parrage III, Mrs. Takekawa, Mr. Wong, Mrs. Goodwin-Kaohi, Ms. Kilauano, and Mr. Aipoalani) within the Kekaha and Mānā region. Mr. Wong mentioned a *heiau* on top of Niu Ridge. Another *heiau* in Waiawa was also mentioned by many informants (Mr. Fayé, Mr. Parrage III, Mrs. Takekawa, and Mr. Wong). Mr. Parrage III mentioned the following regarding the *heiau* in Waiawa:

[...] Cause see this one...‘cause it starts right...right *mauka* of Kekaha, yeah [pointing at the ridges on the map]? Then get Pōki'i right here...and then Waiawa...and then all to Mānā. So it starts around the beginning of Waiawa starts around like Pōki'i, yeah? I think it would be right about here, the *heiau*. I think so [pointing at Waiawa ridge, *mauka*]. That's the only thing I saw of *heiau*...nothing else...all through that place that I used to go...ah, hunt, whatever. By the *heiau* up there get plenty obake [spooky] stories...by the *heiau* at Waiawa. And you know when I used to go through there...thinking about it I'd get a feeling. Hard to

explain...like...some kind of energy. Because you know the *heiau* was so big, and it's right in the bottom of that valley, and, when I walked—the cow trail used to be right through. The *heiau* all broken, eh, you know? Ho, that thing is big! like one big enclosure. I would say, maybe from here to that house I think! And had a trail right through the *heiau*. But like I say, if you don't know it, you know...cannot tell, because all the stones all scattered, eh? Oh! In the *heiau*, ah...Kimo...ah, what's their last name now...they claim because I used to see flowers, once in a while and *tī* leaf one place. That was one of their families or what, had something to do with that. Ah...Michael and Kimo Nakahiki. Had something to do with that *heiau*. But let me see who was the other, ah...Benny was the last one I think and he just died some years, not too long ago. So, they said, one of their families or what? Was something to do with that, so they used to go put *tī* leaf and flowers sometimes. The Nakahiki family is still around, the girls I think is. That you gotta ask some Hawaiians I think. [Fernandes-Farias et al. 2010:46-47]

Mrs. Goodwin-Kaohi, Ms. Kilauano, and Mr. Aipoalani mentioned a birthing *heiau* with a birthing rock that was naturally shaped like a chair, with a stirrup for your feet, and a flat area to place your baby after giving birth. These informants also mentioned the following regarding the *heiau*:

AK: This is unusual, cause Hawaiians as a whole they squat yeah when they give birth. But this is kind of an inclined because it's the gravitation yeah that you want. Gravity that the baby comes naturally, that's why they squat when they deliver. But this one is natural. I went there years and years ago, but I cannot remember where it is.

UK: It's a big big *heiau*, with all the big stones. That *heiau* is where they offer food instead of sacrifices, not human, they bring all their food that they harvest from the fields, a Lono Heiau. They bring and they lay over there. Get that baby place, and there's an image of a dog, and that dog is the *nakoa*, the watch person over there.

AK: I cannot remember what valley it is in.

UK: It has a stone like that and that stone tells the story of the island. It doesn't have writing or petroglyphs, it has like a river... it's... um...It's...It's a stone this high, and she says this water comes from Hā'ena

AK: Like a groove. It has like a groove, right. It's a groove on the stone.

UK: Yeah. And she says the water came water from Hā'ena. She says this... the water comes and was bringing the water to this land. This water came from Hā'ena, Wai'ale'ale, goes to all this land in Mānā, to raise their food.

AK: That's not a legend you know, that's true. And so sometimes you got to...

UK: Yeah, and so you go on... it's flat...Big stones all set, but flat. And you walk on. [Fernandes-Farias et al. 2010:61]

Other pre-Contact sites mentioned by informants (Mr. Parrage and Mr. Wong) included adzes along the ridges, an oven in Waiawa Valley, fireplaces, and a canoe factory above Kōke'e Road. According to Ms. Kaiaokamalie, there were sites around MacArthur Park and at the PMRF.

Regarding historic sites, Ms. Fayé mentioned the Mānā Drag Strip and how it used to be the old Mānā Airport during and after the war until the present Līhue Airport was built.

Another historic site mentioned by many informants (Ms. Kaiaokamalie, Mrs. Goodwin-Kaohi, and Ms. Kilauano) is Saki Mānā, also known as “Second Mānā,” a former plantation camp. Ms. Kaiaokamalie mentioned it was located near “Cold Pond,” where her family would often swim, and a spring was created by the plantation. According to Kaohi and Flores (1993:II-16), “Saki later became a varied pronunciation of the word Second.” The site itself is “completely razed to the ground,” it is unable to be seen from the satellite anymore. Mrs. Goodwin-Kaohi and Ms. Kilauano mentioned the camp was established after everyone was forced to move away from Mānā so that the plantations could plant sugarcane.

8.11 Burials

Regarding burials, many are found in caves along the cliff sides of the valley or along the shoreline in sand dunes. Informants who mentioned burials in caves included Mr. Tabata and Mrs. Goodwin-Kaohi. Mr. Tabata stated that Martha Kruse told him about the royal *kūpuna* buried in caves in the walls of the valleys. Mrs. Goodwin-Kaohi also mentioned there were families buried up in the caves and in the sand dunes located in Mānā.

Ms. Kaiaokamalie shared that her family’s (Kilauano) concentration of burials is located in Nohili and Polihale. Her family grave sites are located at Po‘oahonu (“Queen’s Pond”). Anderson Kilauano, Ms. Kaiaokamalie’s grandfather, mentioned four graves that he oversees at Po‘oahonu. The four graves consist of his grandfather, Kaholoiki, Pakana (his mother’s sister), Eddie Ka‘iwa’s mother, and another whose name could not be recalled. He brings flowers daily to the graves. Mrs. Goodwin-Kaohi also described these burial grounds with the following:

[...] The families still went out to Mānā because they had burial grounds in the sand dunes there, which they now call Queen’s Pond, toward the base. South of Queen’s Pond, the families still had [burial grounds] and they maintained them. [Chiogioji et al. 2003:30–31]

Mrs. Goodwin-Kaohi, Ms. Kilauano, and Mr. Aipoalani also mention burials at Polihale, as well as Kaunalewa and Pōki‘i. Mrs. Goodwin-Kaohi mentioned a cemetery in the sand dunes that her family continues to maintain. Mr. Aipoalani explained why Native Hawaiians buried their people in sand dunes, “Cause during those days when you *hala*, you just go in the backyard and bury your loved one. This made it convenient to visit the gravesite. So the *iwi* was placed in the sand dunes” (Fernandes-Farias et al. 2010:58). His family was buried in Pōki‘i, while Mrs. Goodwin-Kaohi’s family was buried in Kaunalewa. The PMRF base also has many burials due to the sand dunes.

8.12 Wahi Pana, Mo‘olelo, and Mele

According to Walden and Collins (2015:19), “Ms. Kaohi stated that the former place name for lands in the vicinity of what is now the Mānā Drag Racing Strip was ‘Limaloa’.” Ms. Fayé stated, “The village of mirage was near Limaloa Pond. Limaloa was Lohiau’s brother.”

Ms. Fayé also mentioned some *wahi pana* and *mo‘olelo* in the following excerpt:

Some of the unique cultural things that were mentioned by Eric Knudsen (Kanuka of Kauai) was that the dead gathering at the hills above Polihale to enter Po and the wandering spirits could be trapped in homes – all the villagers had two doors in their homes to allow them to pass through.

Another story is of the unfolding mat – the view from Nohili of the long white sand beach as far as the eye can see.

Many of the place names in the landscape are named for the story of the arrival of Pele's sisters.

Ms. Kaiaokamalie shared that the area was frequented by Pele and Poliahu. She also mentioned a story about how the ridge, Pōki'ikauna, received its name. Pele left her youngest sister, Moeha'una, in Mānā with her lover Limaloa. Pele and the rest of her siblings headed toward Waimea village and stopped on a ridge, missing their sister, and looked back toward Mānā. To commemorate the spot, Kahuila (Pele's brother) suggested they name the ridge Pōki'ikauna, meaning "the yearning for the little sister."

Mr. Tabata did mention hearing stories about Night Marchers from Martha Kruse. When asked to describe those stories, he stated, "Well, I remember she said that if you hear them, they will be chanting while marching, not to wake up and look for them, they will take you with them."

Mrs. Goodwin-Kaohi noted songs have been written about the area, including one about the 'ūlili bird. That's about the plovers and refers to Kekaha. Because that's where the 'ūlili birds would come—on the beach there, in that area. Of course, you know, it was not developed, like now, so there used to be flocks of 'ūlili birds" (Chiogioji et al. 2003:31).

Section 9 Summary and Recommendations

9.1 Results of Background Research

Background research for the proposed project yielded the following information:

1. Kekaha lies in the *ahupua‘a* of Waimea on the southwest side of the island of Kaua‘i, part of the traditional Hawaiian *moku* of Kona and the current district of Waimea. Waimea Ahupua‘a is by far the largest *ahupua‘a* on the island, comprising 92,646 acres and accounting for more than a quarter of the total land area of Kaua‘i (Gray 1875:146).
2. Many legends are associated with the Hawaiian gods, such as Pele and her siblings, and *ali‘i*, such as Ola‘a (Wichman 1998:23–24; Wichman 2001:17).
3. Hawaiian legends concerning Waimea focus on the engineering feats that made the agricultural abundance of the *ahupua‘a* possible, such as the Kīkīola Ditch, also known as the “Menehune Ditch” (Wichman 1998:9).
4. Waimea, Kaua‘i was also a site of great significance for *po‘e kuhikuhi pu‘uone* and *po‘e kilo hoku holo moana* of the pre-Contact time. *Po‘e kilo hoku* of O‘ahu and Kaua‘i, “who were very skilled in discerning the ways of the sun, the moon, and the stars, as well as knowing the configuration of the earth (*papa huluhonua*)” (Kamakau 1976:14), gathered in Waimea, Kaua‘i to make their observations.
5. While Waimea may have always been a royal center for the *ali‘i* of Kaua‘i, this position was greatly reinforced after Western Contact (Zulick et al. 2000:14).
6. Over 150 *kuleana* awards were granted in Waimea, however, only three claims were made in and nearby Kekaha (LCAs 5362, 6698, and 8841) (OHA 2022; Waihona ‘Aina 2022).
7. Valdemar Knudsen assumed the lease of government land from Archibald Archer and a Mr. Gruben. The two men were involved in a failing tobacco farming enterprise. A Mr. Clifford, who made cigars, was also associated with the enterprise (Lydgate 1991:92). Eventually Knudsen controlled the entire district, excluding *kuleana* lands, from Nu‘alolo to Waimea, including all the *mauka* area (Knudsen and Noble 1945:35).
8. Waterfowl present in the wetlands provided a food resource for the area residents. Among them the *kōloa* (Hawaiian duck) and especially the *‘alae* (Hawaiian gallinule) and *āe‘o* (*kukuluāe‘o*; Hawaiian stilts) were numerous (Von Holt 1985:78). All three were traditionally caught and consumed by Hawaiians (Malo 1951:39).
9. Rice cultivation by Chinese farmers began in Waimea Valley in the 1860s. At Waimea, as in other locales, groups of Chinese began leasing former taro lands for conversion to rice farming. By the 1930s the rice industry had ceased entirely on the islands of Hawai‘i, Maui, and Moloka‘i (Coulter and Chun 1937:62).
10. In 1898, Kekaha Sugar Company was established through the consolidation of three Kaua‘i sugar interests (Wilcox 1996:93).

11. Valdemar Knudsen, founder of Kekaha Sugar Company, looked to the Waimea River as a source of sugarcane irrigation—pushing forward the Kekaha Ditch project. Construction of the Kekaha Ditch started in May 1906 and was completed in September 1907 (Wilcox 1996:93).
12. Hans Fayé founded H.P. Fayé & Company, a sugar plantation in Mānā, the westernmost town in Kaua'i. In 1906 Fayé acquired the Waimea Sugar Mill, which had been founded in 1884. In 1910 the Waimea Sugar Mill Company was bought by Hans Peter Fayé, Ltd., operator of the neighboring Kekaha Sugar Company. From 1923 to 1926 the construction of the Koke'e Ditch was undertaken by the Kekaha Sugar Company to further irrigate plantation lands (Wilcox 1996:93–97).
13. The railroad line was built by the Kekaha Sugar Company in about 1884, and was used to transport sugar from its own mill to the pier at Waimea Landing. Initially the train stopped at the Waimea Sugar Mill Company to also transport their sugar to the landing (Condé and Best 1973:203).
14. In 1950, the Waimea Sugar Mill Company was reorganized into the Waimea Sugar Mill Inc., which continued to process cane, and the Kikiaola Land Company, which was created to manage the property.
15. At the time of statehood in 1959, H.P. Fayé & Company was incorporated as Kikiaola Land Company and it is still owned by about 100 of the founder's descendants. Linda Collins, a granddaughter of H.P. Fayé, is now the president of Kikiaola Land Company.
16. Kekaha Sugar Company continued to produce sugar until 17 November 2000 when the parent company, AmFac, closed the factory down due to financial hardship (Kojima 2000).
17. In September 2003, land situated in Kekaha, Kaua'i was transferred through Executive Order No. 4007 to the Agribusiness Development Corporation (ADC) for agricultural and related purposes.
18. Seven historic properties were previously identified within the project area vicinity. Folk and Hammatt (1993) identified an abandoned irrigation canal and a low linear sand mound for irrigation control within the project area (Folk and Hammatt 1993:26, 32). These historic properties were confirmed by AECOM to no longer be present within the project area.
19. There were three cultural studies that included the current project area. One CIA was conducted for the KLF in 2007 as part of the EA process, however, no report was produced. The EA report did state that no cultural practices were identified during consultation (Earth Tech 2007:4-3). The other two cultural studies included a portion of the current project area (Flores and Kaohi 1993; Walden and Collins 2015) and no ongoing cultural practices were identified as well.

9.2 Results of Community Consultation

CSH attempted to contact Hawaiian organizations, agencies, and community members as well as cultural and lineal descendants to identify individuals with cultural expertise and/or knowledge of the project area and vicinity. Community outreach letters were sent to 71 individuals or groups;

14 responded, three provided written testimony, and one *kama 'āina* met with CSH for a more in-depth interview. Unfortunately, we received approval in time to include only two of three written testimonies. Consultation was received from the following:

1. Christine “Chris” Fayé, Executive Director of Hui o Laka – Kōke'e Natural History Museum
2. Lyle Tabata, Part-owner of B&T Contractors and Kauai County Member of the Agribusiness Development Corporation (ADC) Board of Directors
3. Leanora “Lea” Dizol Kaiaokamalie, Lineal descendant and family representative for the Kilauano family

9.3 Identification of Cultural Practices

Consultation identified the following cultural, historical, and natural resources where cultural practices (including traditional and customary Native Hawaiian rights) are being exercised in Waimea Ahupua'a:

1. Freshwater resources
2. Flora and Fauna
3. Marine resources
4. *Iwi kūpuna*

Based on the results of community consultation and background research conducted as part of this CIA, CSH has identified the following cultural practices within Waimea Ahupua'a:

1. Fishing
2. Farming (*kalo*, rice, and sugarcane)
3. *Limu* gathering
4. Hunting
5. Salt production
6. Canoe production
7. Recreational activities
8. Weaving practices
9. Hula
10. *Mo'olelo*, *wahi pana*, and *mele*
11. Religious activities and burial practices

No ongoing cultural practices were identified within the project area during background research and community consultation. However, the project area is located in the general vicinity of ongoing cultural practices such as burial practices, fishing, and recreational activities.

9.4 Identification of Impacts to Cultural Practices

No impacts to ongoing cultural practices were identified within the project area during community consultation for this CIA. Consultation has identified a number of concerns related to the environment and the broader community:

1. Ms. Fayé is concerned about the reduction of native bird habitats and food sources. Native waterfowl use reservoirs and ditches/canals as habitats and food sources, and currently thrive in the settling pond at the landfill.

2. Ms. Fayé and Ms. Kaiaokamalie are concerned with altering the cultural landscape by creating mountains near the ocean where it was originally flat. This also impacts the visual aesthetics of the area.
3. Ms. Kaiaokamalie is concerned about the depletion of marine resources in the area due to the strong currents and increase of predators, like hammerhead sharks, which are attracted to the smell of the trash from the landfill and the murky water.

9.5 Conclusions and Recommendations

As no impacts to ongoing cultural practices were identified within the project area, no mitigation actions are necessary. There is no construction as part of the proposed action, meaning no native soil will be excavated and there will be no new disturbance. Therefore, inadvertent cultural finds are unlikely, however, CSH recommends the following in the unlikely event of inadvertent cultural finds:

1. Landfill personnel should be informed of the possibility of inadvertent cultural finds, including human remains. In the unlikely event that any potential historic properties are identified during landfill operations, all activities will cease and the SHPD will be notified pursuant to HAR §13-280-3. In the unlikely event that *iwi kūpuna* are identified, all earth moving activities in the area will stop, the area will be cordoned off, and the SHPD and Police Department will be notified pursuant to HAR §13-300-40. In addition, in the event of an inadvertent discovery of human remains, the completion of a burial treatment plan, in compliance with HAR §13-300 and HRS §6E-43, is recommended.
2. In the event that *iwi kūpuna* and/or cultural finds are encountered during landfill operations, project proponents should consult with cultural and lineal descendants of the area to develop a reinterment plan and a cultural preservation plan for proper cultural protocol, curation, and long-term maintenance.

As detailed in Section 7, community participants provided broad recommendations related to environmental stewardship and landfill management. These should be considered by the county as appropriate:

1. In response to Ms. Fayé's concern for the reduction of native bird habitats, she recommends better management of the lands that are becoming fallow or return to wetlands for habitat purposes rather than making new wetlands out of dry land.
2. Ms. Kaiaokamalie recommends integrating previous archaeological studies conducted within the project area and including in the current CIA report how the site was studied for future reference. If another archaeological survey was to be conducted in the future, she's hoping it can be done more thoroughly.
3. Ms. Kaiaokamalie also recommends the county of Kaua'i implement more recycling and upcycling opportunities to prevent overfill at the landfill.
4. Ms. Kaiaokamalie suggests the county develop mitigation efforts toward removing the vertical expansion once a long-term solution for the landfill is established. It needs to be removed or flattened to recover the cultural landscape.
5. Ms. Kaiaokamalie also suggests including possible impacts, solutions, and outcomes from projects around the world with similar solid waste management issues. This will create a trail that allows people in the future to further develop a solution. She also

recommends the county have a working group or policy where they must revisit the issue and discuss how to implement ongoing solid waste management technologies.

Section 10 References Cited

Aiona, James R. Jr.,

- 2003 *Executive Order No. 4007 Setting Aside Land for Public Purposes, Agribusiness Development Corporation, A Public Body Corporate and Politic and Instrumentality and Agency of the State of Hawaii*. Department of Hawaiian Home Lands, Honolulu.

Akana, Collette Leimomi with Kiele Gonzales

- 2015 *Hānau Ka Ua, Hawaiian Rain Names*. Kamehameha Publishing, Honolulu.

Alameida, Roy Kakulu

- 1993 Land Tenure and Land Use in Kawaihapai, O'ahu. Master's thesis in History. University of Hawai'i at Mānoa, Honolulu.

Altizer, Kendy and Hallett H. Hammatt

- 2010 *An Archaeological Inventory Survey for a Rock Crushing Project Along Portions of the New and Old Government Roads, Waimea Ahupua'a, District of Waimea, Island of Kaua'i, TMK: [4] 1-2-002:001*. Cultural Surveys Hawai'i, Inc., Kailua, Hawai'i.

Apple, Russell A.

- 1978 *Pahukanilua: Homestead of John Young, Kawaihae, Kohala, Island of Hawai'i*. National Park Service, Hawai'i State Office, Honolulu.

Awana, T. Y.

- 1952 Map compiled from survey and map by R.M. Towill dated December, 1952, adjacent Land Court Applications and available records on file in the Survey Office by T. Y. Awana and Joseph A. Aiu, December, 1952. HTS Plat 3087. Hawai'i Land Survey Division, Department of Accounting and General Services, Honolulu. Available online at <http://dags.hawaii.gov/survey/search.php>

Beckwith, Martha

- 1970 *Hawaiian Mythology*. University of Hawaii Press, Honolulu.

Bennett, Wendell C.

- 1931 *The Archaeology of Kaua'i*. Bishop Museum Bulletin 80. Bernice Pauahi Bishop Museum, Honolulu.

Bernard, H. Russell

- 2006 *Research Methods in Anthropology: Qualitative and Quantitative Approaches*. Fourth edition. Rowman Altamira, Lanham, Maryland.

Bingham, Hiram

- 1847 *A Residence of Twenty-One Years in the Sandwich Islands*. Hezekiah Huntington, Hartford, Connecticut.

Blackwell, Chad and Jeanne Barnes

- 2014 *Historic Building Survey and Evaluation Report at Six Facilities, Hawai'i Army National Guard, Project No. CA-1330*. HDR, Honolulu.

Board of Commissioners

- 1929 *Indices of Awards by the Board of Commissioners to Quiet Land Titles in the Hawaiian Islands, Native Register and Native Testimony*. Hawai'i State Archives, Honolulu.

Bordner, Richard M.

- 1977 *Cultural Reconnaissance Report for Kekaha Beach Shore Protection, Kekaha, Kona, Kaua'i, State of Hawaii*. Archaeological Research Center Hawaii, Inc., Lawa'i, Kaua'i, Hawai'i.

Chang, Melissa

- 1988 Kikiaola: Waimea's Sugar Shacks. *Hawaii Business*, July 1899:49–52.

Chinen, Jon J.

- 1958 *The Great Mahele, Hawaii's Land Division of 1848*. University of Hawaii Press, Honolulu.

Ching, Francis K.W.

- 1982 *Archaeological Reconnaissance of 3 Sites for Proposed Kauai Central Sanitary Landfill Project, Kekaha, Kipu, and Kumukumu, Kauai Island TMK 1-2-02:1, 9, 21, 40; 3-4-06:12; and 4-7-04:1*. Archaeological Research Center Hawaii, Inc., Honolulu.

Chiogioji, Rodney, Gerald Ida, and Hallett H. Hammatt

- 2003 *Cultural Impact Assessment in Support of the Proposes Sandwich Isles Fiber Optic Cable Landing at 'Akialoa Road, Kekaha, Waimea Ahupua'a, Kona District, Island of Kaua'i (TMK 4-13-001:999)*. Cultural Surveys Hawai'i, Inc., Kailua.

Cipolla, Craig N.

- 2013 Native American Historical Archaeology and the Trope of Authenticity. *Historical Archaeology*. Vol. 47, ed. 3:12–22.

Clark, John R.K.

- 1977 *The Beaches of O'ahu*. University of Hawaii Press, Honolulu.
- 2002 *Hawaii Place Names: Shores, Beaches, and Surf Sites*. University of Hawai'i Press, Honolulu.

Clark, Stephen, Katharine A. Shiroma, Melanie A. Mintmier, Jackie Walden, and Sara Collins

- 2015 *Archaeological Inventory Survey and Testing in Support of Lighting and Electrical Improvements at the Mānā Drag Racing Strip Waimea Ahupua'a, Kona District, Island of Kaua'i, Hawai'i, TMK (4) 1-2-02: 009, 036, & 040*. Pacific Consulting Services, Inc., Honolulu.

Condé, Jesse C. and Gerald M. Best

- 1973 *Sugar Trains*. Glenwood Publishers, Felton, California.

Cook, James P.

- 1821 *The Three Voyages of Captain James Cook Round the World*. Vol. VI. Longman, Hurst, Rees, Orme, and Brown, London.

Coulter, John Wesley and Chee Kwon Chun

1937 *Chinese Rice Farmers in Hawaii*. Bulletin 16:5. University of Hawai'i, Honolulu.

Coward, Erin and Hallett H. Hammatt

2011 *An Archaeological Literature Review and Field Inspection for a 10-acre Agricultural Field Office, Kekaha, Waimea Ahupua'a, District of Waimea, Island of Kaua'i, TMK: [4] 1-2-002:001(por.)*. Cultural Surveys Hawai'i, Inc., Kailua, Hawai'i.

Damon, Ethel M.

1931 *Koamalu*. 2 vols. Privately printed by the Honolulu Star-Bulletin Press, Honolulu.

Dixon, George

1789 *A Voyage Round the World: But More Particularly to the North-West Coast of America*. Geo. Goulding, London.

1968 *A Voyage Round the World: But More Particularly to the North-West Coast of America*. Da Capo Press, New York.

DLNR

2013 *Mānā Plain Wetland Restoration Project at the Mānā Plains Forest Reserve, Island of Kaua'i*. State of Hawai'i Department of Land and Natural Resources Division of Forestry and Wildlife, Honolulu.

Donn, John M.

1906 Based on 1903 map of "Kauai Hawaiian Islands" by Walter E. Wall with data from private surveys by John M. Donn. Land use as of 1906 added to map. Registered Map 2375. Hawai'i Land Survey Division, Department of Accounting and General Services, Honolulu. Available online at <http://dags.hawaii.gov/survey/search.php>

Drolet, Robert, James Powell, and Allan J. Schilz

1999 *Archaeological Monitoring at the Site of Project H-134, New Family Housing, Pacific Missile Range Facility (PACMISRANFAC), Kaua'i, Hawai'i*. Ogden Environmental and Energy Services Company, Inc., Honolulu.

Dye, Kekapala and Thomas S. Dye

2008 *Archaeological Monitoring Report for the Extended High Accuracy Network Determination System, Pacific Missile Range Facility, Barking Sands, Kaua'i, Hawai'i, TMK:(4)1-2-002:013*. T.S. Dye & Colleagues, Archaeologists, Inc., Honolulu.

Earth Tech

2007 *Final Environmental Assessment Kekaha Landfill Phase II Lateral Expansion Kekaha, Kaua'i, Hawai'i*. Earth Tech, Inc. Honolulu, HI.

Emerson, Nathaniel B.

1965 *The Unwritten Literature of Hawaii: The Sacred Songs of the Hula*. Collected by Nathaniel B. Emerson. Charles E. Tuttle Company, Rutland, Vermont and Tokyo.

engineering-environmental Management, Inc. (e²M)

2009 *Historic Buildings Survey and Evaluation Report of Ten Facilities Hawaii Army National Guard*. engineering-environmental Management, Inc. Englewood, Colorado.

ESRI, Inc.

2021 *Map Image Layer*, Raster. ESRI, Inc. Redlands, California.

Fayé, Christine

1997 *Touring Waimea*. Kaua'i Historical Society, Līhu'e, Kaua'i, Hawai'i.

Fernandes-Farias, Malia Luika, Aulii Mitchell, and Hallett H. Hammatt

2010 *Cultural Impact Assessment for a Proposed Rock Crushing Establishment Along Portions of the New and Old Government Roads, Waimea Ahupua'a, Waimea District, Island of Kaua'i TMK: [4] 1-2-002:001*. Cultural Surveys Hawai'i, Inc., Kailua, Hawai'i.

Finney, Ben and James D. Houston

1996 *Surfing. A History of the Ancient Hawaiian Sport*. Pomegranate Artbooks, Rohnert Park, California.

Flores, Kalani E. and Aletha G. Kaohi

1993 *Hawaiian Cultural & Historical Survey of Nohili, Mānā, Kona District, Island of Kaua'i, State of Hawai'i*. dba Hawai'i Pono'i, 'Ele'ele, Hawai'i.

Folk, William H. and Hallett H. Hammatt

1993 *Archaeological Inventory Survey and Subsurface Testing at the Kekaha Phase II Landfill Site (TMK 1-2-02:9)*. Cultural Surveys Hawai'i, Kailua, Hawai'i.

1994 *Archaeological Inventory Survey and Subsurface Testing at the Hawaii Army National Guard Firing Range at Kekaha, Kaua'i (TMK 1-2-02:21), with Historical Research by Gerald K. Ida*. Cultural Surveys Hawai'i, Kailua, Hawai'i.

Fong, Jeffrey W.K.

2012 *Archaeological Monitoring Report in Support of the Installation of RFID, Seismic, Microwave/Infrared and LIDAR Sensors, Sensormatic Hawaii Response Technology Group Video Sensors, and Six Runway Markers along Runway 34 at Pacific Missile Range Facility (PMRF), Niihau and Waiawa Ahupua'a, Waimea District, Kaua'i, TMK: [4] 1-2-02: 13, 26*. Naval Facilities Engineering Command Pacific, Pearl Harbor, Honolulu.

Foote, D.E., E.L. Hill, S. Nakamura, and F. Stephens

1972 *Soil Survey of the Islands of Kauai, Oahu, Maui, Molokai, and Lanai, State of Hawaii*. U.S. Department of Agriculture, Soil Conservation Service. Government Printing Office, Washington, D.C.

Gay, Francis

1873 *Kauai Place Names in Laauokala, Mahinauli, and Ukula*. Hms. Misc. 4. Bishop Museum Library, Honolulu.

Giambelluca, T., M. Nullet, and T. Schroeder

1986 *Rainfall Atlas of Hawaii Report R76*. State of Hawai'i, Department of Land and Natural Resources, Division of Water and Land Development, Honolulu.

Gonzalez, Tirzo, Judy Berryman, and Daniel Welch

1990 *Archaeological Survey and Testing Department of Energy, Kauai Test Facility Barking Sands, Kauai, Hawaii. Prepared as Supplement for the Kauai Test Facility*

Environmental Assessment. International Archaeological Research Institute, Inc., Honolulu.

Gray, James W.

1875 *No. 28 Certificate of Boundaries, Land of Waimea, District of Waimea, Island of Kaua'i*. Commissioner of Boundaries for the Island of Kaua'i, Hawai'i.

Gutmanis, June

1983 *Na Pule Kahiko: Ancient Hawaiian Prayers*. Editions Limited, Honolulu.

Hammatt, Hallett H. and Gerald K. Ida

1993 *Archaeological Assessment of Two Locations for a Proposed State Agricultural Park Waimea, Kaua'i*. Cultural Surveys Hawai'i, Kailua, Hawai'i.

Hammatt, Hallett H. and David W. Shideler

2011 *Archaeological Literature Review of Eight Possible Locations for a Kaua'i Municipal Solid Waste Landfill: Kekaha-Mauka, Kekaha Ahupua'a, Pu'u o Pāpa'i, Makaweli Ahupua'a, Umi, Wahiawa Ahupua'a, Kōloa, Pā'ā Ahupua'a, Kīpū, Ha'ikū Ahupua'a, Kālepa, Hanamā'ulu Ahupua'a, Ma'alo, Wailua Ahupua'a, and Kumukumu, Keālia Ahupua'a*. Cultural Surveys Hawai'i, Inc., Kailua, Hawai'i.

2013 *Archaeological Monitoring Report for the Kaumualii Highway Emergency Shoreline Improvements, Vicinity of Kekaha, MP 27 Project No. 50A-01-13, Waimea Ahupuaa, Waimea District, Kauai Island TMK: (4) 1-2-002: Kaumualii Highway ROW por. and 007 por.* Cultural Surveys Hawai'i, Inc., Kailua Hawai'i.

Handy, E.S. Craighill and Elizabeth G. Handy

1972 *Native Planters in Old Hawaii: Their Life, Lore, and Environment*. Bishop Museum Bulletin 233. Bishop Museum Press, Honolulu.

Hawaii TMK Service

2014 Tax Map Key [2] 5-1-003. Hawaii TMK Service, Honolulu.

Hawaiian Electric Company and Partners

2002 *Common Hawaiian Trees*. Hawaiian Electric Company Arbor Day Program. Hawaiian Electric Company, Honolulu.

Hawaiian Native Plant Propagation Database

2001 *Jacquemontia ovalifolia*. Available online, <https://www.ctahr.hawaii.edu/hawnprop/plants/jac-oval.htm>. University of Hawai'i, Mānoa, Honolulu.

Heilbron, W.L.

1907 *Mana Lots Waimea Kauai*. Registered Map 2422. Hawai'i Land Survey Division, Department of Accounting and General Services, Honolulu. Available online at <http://dags.hawaii.gov/survey/search.php>

Ho'oulumāhie

2008a *Ka Mo'olelo o Hi'ikaikapoliopole*. Original Hawaiian text taken from series of articles in *Ka Na'i Aupuni* 1905-1906. Awaiaulu Press, Honolulu.

2008b *The Epic Tale of Hi'ikaikapoliopole. As Told by Ho'oulumāhie*. M. Puakea Nogelmeier, translator. Awaiaulu Press, Honolulu.

Huapala.org

n.d. *Hele On To Kaua'i*. Electronic document, [https://www.huapala.org/Hea/Hele To Kauai.html](https://www.huapala.org/Hea/Hele%20To%20Kauai.html)

‘I‘i, John Papa

1959 *Fragments of Hawaiian History as Recorded by John Papa ‘I‘i*. Bishop Museum Press, Honolulu.

Joerger, Pauline King and Charles F. Streck, Jr.

1979 *A Cultural Resource Reconnaissance of the Waimea River Flood Control Study Area, Kauai, Hawaii*. Hawai'i Marine Research, Inc., Honolulu.

Joesting, Edward

1984 *Kauai, The Separate Kingdom*. University of Hawaii Press and Kauai Museum Association, Ltd., Honolulu.

Kamakau, Samuel M.

1976 *The Works of the People of Old, Na Hana a ka Po'e Kahiko*. Bishop Museum Special Publication 61. Bishop Museum Press, Honolulu.

1992 *Ruling Chiefs of Hawaii*. Revised edition. Kamehameha Schools Press, Honolulu.

Kauai Bicentennial Committee

1977 *Waimea, Island of Kauai, 1778-1978*. Kaua'i Bicentennial Committee, Līhu'e, Kaua'i, Hawai'i.

Kawelu, Kathleen L.

2015 *Kuleana and Commitment: Working Toward a Collaborative Hawaiian Archaeology*. University of Hawai'i Press, Honolulu.

Kelly, Marion

1971 *Kekaha: 'Āina Malo 'o: Historical Survey and Background of Kaloko and Kuki'o ahupua'a, North Kona, Hawaii*. Department of Anthropology Report 71-2, Bernice Pauahi Bishop Museum, Honolulu.

Kennedy, Joseph

1991a *Archaeological Subsurface Testing Results for the Proposed Family Housing Project Area, Pacific Missile Range Facility, Barking Sands. Island of Kauai, TMK 1-2-02:13, Por.25 Revised October 1991*. Archaeological Consultants of Hawaii Inc., Hale'iwa, Hawai'i.

1991b *Supplement to Archaeological Testing Results for the Proposed Family Housing Project Area, Pacific Missile Range Facility, Barking Sands. Island of Kauai, TMK 1-2-02:13, Por.25*. Archaeological Consultants of Hawaii Inc., Hale'iwa, Hawai'i.

Kent, Harold Winfield

1986 *Treasury of Hawaiian Words in One Hundred and One Categories*. Masonic Public Library of Hawai'i, Honolulu.

Knudsen, Eric A.

1991 *Early Days at Waiawa. The Kauai Papers*. Kauai Historical Society, Līhu'e, Kaua'i, Hawai'i.

Knudsen, Eric A. and Gurre P. Noble

1945 *Kanuka of Kauai*. Tongg Publishing Company, Honolulu.

Knudsen, Valdemar

1866 Letter to John Dominis, Commissioner of Lands for the Crown and Land Agent, Dated 1 August 1866. Hawai'i State Archives, Honolulu.

Kojima, Craig T.

2000 Final Harvest for Sugar Fields. *Honolulu Star-Bulletin*. 16 November 2000.

Landgraf, Anne Kapualani

1994 *Nā Wahi Pana O Ko'olau Poko: Legendary Places of Ko'olau Poko*. Fred Kalani Meinecke, translator. University of Hawai'i Press, Honolulu.

Luomala, Katharine

1951 *The Menehune of Polynesia and other Mythical Little People of Oceania*. Bishop Museum Bulletin 203. Bernice Pauahi Bishop Museum, Honolulu.

1955 *Voices on the Wind. Polynesian Myths and Chants*. Bishop Museum Press, Honolulu.

Lydgate, John M.

1991 William E. Rowell's Reminiscences of Waimea. *The Kauai Papers*. Kauai Historical Society, Līhu'e, Kaua'i, Hawai'i.

Lyman, Kepa and Michael Dega

2015 *Archaeological Inventory Survey of a 17-Acre Parcel at the Kekaha Ditch Siphon Headwall, Waimea Ahupua'a, Waimea District, Island of Kaua'i [TMK: (4) 1-5-001:001 por. and 002 por.]*. Scientific Consultant Services, Inc., Honolulu.

Macdonald, Gordon A. and Agatin T. Abott

1974 *Volcanoes in the Sea*. University of Hawaii Press, Honolulu.

Malo, David

1951 *Hawaiian Antiquities (Moolelo Hawaii)*. Second edition. Nathaniel B. Emerson, translator. Bishop Museum Press, Honolulu.

Masterson, Ian, Hallett H. Hammatt, William H. Folk, and Gerald K. Ida

1994 *Archaeological Inventory Survey of Kekaha Housing Project (TMK 1-2-12:38, 1-2-02:32, 34 & 38)*, Cultural Surveys Hawai'i, Inc., Kailua, Hawai'i.

Masterson, Ian A., William H. Folk, and Hallett H. Hammatt

1994 *Archaeological Inventory Survey and Sub-surface Testing of the Proposed Kekaha Agricultural Park in 157 Acres at Kekaha, Kaua'i, (TMK 1-2-02:1 portion)*, Cultural Surveys Hawai'i, Inc., Kailua, Hawai'i.

Mays, Nicholas and Catherine Pope

1995 Rigour and Qualitative Research. *British Medical Journal* 311:109–112.

McGregor, Davianna Pomaika'i

1996 *Nā Kua'āina: Living Hawaiian Culture*. University of Hawai'i Press, Honolulu.

McMahon, Nancy

- 1988 *Field Check of Northrup King Digging, Mana, Waimea, Kauai, TMK 1-2-02:40*. State Historic Preservation Division, Honolulu.

Menzies, Archibald

- 1920 *Hawaii Nei: 128 Years Ago*. W.F. Wilson, Honolulu.

Mills, Peter R.

- 1996 Transformations of a Structure: The Archaeology and Ethnohistory of a Russian Fort in a Hawaiian Chiefdom, Waimea, Kaua'i. Dissertation. University of California at Berkley, California.

Nakuina, Moses K.

- 1992 *The Wind Gourd of La'amaomao*. Second edition. Esther T. Mookini and Sarah Nākoa, translators. Kalamakū Press, Honolulu.

Office of Environmental Quality Control

- 1997 *Guidelines for Assessing Cultural Impacts*. Office of Environmental Quality Control, Honolulu.

Office of Hawaiian Affairs

- 2015 *Papakilo Database*. Office of Hawaiian Affairs cultural and historical database. Electronic document, <http://papakilodatabase.com/main/index.php>.

Pauketat, Timothy R.

- 2001 *The Archaeology of Traditions*. University Press of Florida, Gainesville, Florida.

Pukui, Mary Kawena

- 1949 Songs (meles) of Old Ka'u Hawai'i. In *Journal of American Folklore*, Volume 26, No. 245 July to September 1949:247–258.
- 1983 *Ōlelo No 'eau: Hawaiian Proverbs and Poetical Sayings*. Bishop Museum Special Publication No.71. Bishop Museum Press, Honolulu.
- 1995 *Na Mele Welo: Songs of Our Heritage*. University of Hawai'i Press, Honolulu.

Pukui, Mary Kawena and Samuel H. Elbert

- 1986 *Hawaiian Dictionary*. Second edition. University of Hawaii Press, Honolulu.

Pukui, Mary K., Samuel H. Elbert, and Esther Mookini

- 1974 *Place Names of Hawaii*. University of Hawaii Press, Honolulu.

Pukui, Mary Kawena and Laura C.S. Green

- 1995 *Folktales of Hawai'i*. Bishop Museum Press, Honolulu.

Rice, William Hyde

- 1923 *Hawaiian Legends*. Bishop Museum Bulletin 3. Bernice Pauahi Bishop Museum, Honolulu.
- 1977 *Hawaiian Legends*, Bishop Museum Press, Honolulu

Schmitt, Robert C.

- 1973 *The Missionary Censuses of Hawaii*. Bernice Pauahi Bishop Museum, Honolulu.
- 1977 *Historical Statistics of Hawaii*. University of Hawaii Press, Honolulu.

Soehren, Lloyd J.

2014 *Hawaiian Place Names*. Electronic database, ulukau.org/cgi-bin/hpn?l=haw.

Spear, Robert L.

1992 *Archaeological Survey of a Portion of the Known Boundaries of Site 50-30-07-4000, Island of Kaua'i*. Scientific Consulting Services, Honolulu.

Thrum, Thomas G.

1908 Kekaha–Waimea Ditch. *The Hawaiian Almanac and Annual for 1908*. Thomas G. Thrum, Honolulu.

1922 Hawaiian Place Names. In *A Dictionary of the Hawaiian Language*. Originally published 1865. Revised by Henry Parker. Board of Commissioners of Public Archives of the Territory of Hawaii, Honolulu.

1923 *More Hawaiian Folk Tales: A Collection of Native Legends and Traditions*. A.C. McClurg & Company, Chicago.

Titcomb, Margaret

1972 *Native Use of Fish in Hawaii*. With the collaboration of Mary Kawena Pukui. University of Hawaii Press, Honolulu.

Tomonari-Tuggle, M.J. and Ann Yoklavich

2005 *Integrated Cultural Resources Management Plan for the Pacific Missile Range Facility (PMRF), Kauai, State of Hawaii*. International Archaeological Research Institute and Mason Architects, Honolulu.

Ulukau

2014 *Māhele Database*. Hawaiian Electronic Library, <http://ulukau.org/cgi-bin/vicki?l=en>.

University of Chicago

n.d. Photograph of Kekaha irrigation ditch. University of Chicago, Illinois.

USDA (U.S. Department of Agriculture)

2001 Soil Survey Geographic (SSURGO) database. U.S. Department of Agriculture, Natural Resources Conservation Service. Fort Worth, Texas. <http://www.ncgc.nrcs.usda.gov/products/datasets/ssurgo/>.

USGS (U.S. Geological Survey)

1910 Mana USGS 7.5-minute topographic quadrangle. USGS Information Services, Denver, Colorado.

1963 Kekaha USGS 7.5-minute topographic quadrangle. USGS Information Services, Denver, Colorado.

1968 Kekaha USGS 7.5-minute topographic quadrangle. USGS Information Services, Denver, Colorado.

1970 Kaua'i Island USGS 7.5-minute topographic quadrangle. USGS Information Services, Denver, Colorado.

1977 USGS Orthophotoquad aerial photograph of Kekaha quadrangle. USGS Information Services, Denver, Colorado.

- 1991 Kekaha USGS 7.5-minute topographic quadrangle. USGS Information Services, Denver, Colorado.
- Vancouver, George**
 1798 *A Voyage of Discovery to the North Pacific Ocean and Round the World Performed in the Years 1790-95*. 3 vols. G.G. and J. Robinson and J. Edwards, London.
- Veech, J.A.**
 1979 *Ruth Knudsen Hanner*. The Watumull Foundation, Oral History Project. Honolulu.
- Vizenor, Gerald**
 1999 *Manifest Manners: Narratives on Postindian Survivance*. University of Oklahoma Press, Lincoln, Oklahoma.
- Von Holt, Ida Elizabeth Knudsen**
 1985 *Stories of Long Ago Niihau, Kauai, Oahu*. Daughters of Hawaii, Honolulu.
- Waihona 'Aina**
 2022 *The Māhele Database*. Electronic document, <http://waihona.com>
- Walden, Jackie and Sara L. Collins**
 2015 *Cultural Impact Assessment in Support of Lighting and Electrical Improvements at the Mānā Drag Racing Strip in Kekaha, Waimea Ahupua'a, Kona District, Island of Kaua'i, Hawai'i TMK (4) 1-2-02:009, 036, 040*. Pacific Consulting Services, Inc., Honolulu.
- Walker, Alan T. and Paul H. Rosendahl**
 1990 *Archaeological Inventory Survey USN Radio Telescope Project Area, Land of Waimea, Waimea District, Island of Kauai*. Paul H Rosendahl, Inc., Hilo, Hawai'i.
- Watanabe, Tae, Jackie Walden, Stephen D. Clark, Melanie Mintmier, and Sara Collins**
 2014 *Archaeological Monitoring Report in Support of Improvements to the Western Portion of the Mānā Drag Racing Strip in Kekaha, Waimea Ahupua'a, Kona District, Island of Kaua'i. TMK (4) 1-2-002: 001, 009, 035, 036, 040*. Pacific Consulting Services, Inc., Honolulu.
- Whitney, Leo D., F.A.I. Bowers, and M. Takahashi**
 1939 *Taro Varieties in Hawaii*. Agricultural Experiment Station, Honolulu.
- Wichman, Frederick B.**
 1985 *Kaua'i Tales*. Bamboo Ridge Press, Honolulu.
 1991 *Polihale and other Kaua'i Legends*. Bamboo Ridge Press, Honolulu.
 1998 *Kaua'i. Ancient Place-Names and Their Stories*. University of Hawai'i Press, Honolulu.
 2001 *Pele Mā: Legends of Pele from Kaua'i*. Bamboo Ridge Press, Honolulu.
 2003 *Nā Pua Ali'i o Kaua'i., Ruling Chiefs of Kaua'i*. University of Hawai'i Press, Honolulu.
- Wilcox, Carol**
 1996 *Sugar Water: Hawai'i's Plantation Ditches*. University of Hawai'i Press, Honolulu.

- 2003 *He Mele Aloha: A Hawaiian Songbook*. 'Oli 'Oli Productions, L.L.C., Honolulu.
- Zulick, Loren A., Ka'ohulani McGuire, Leilani Pyle, Victoria S. Creed, David W. Shideler, Gerald K. Ida, and Hallett H. Hammatt**
- 2000 *Archaeological Inventory Survey Report for 170 Acres including a 6-Acre Inland Fish Pond for the Proposed Kapalawai Resort, Kapalawai, Kaua'i, Hawai'i, (TMK 1-7-05:Por. 1)*. Cultural Surveys Hawai'i, Inc., Kailua, Hawai'i.

Appendix A Community Outreach Letter

CULTURAL SURVEYS HAWAII

ARCHAEOLOGICAL, CULTURAL, AND HISTORICAL DOCUMENTATION SERVICES - SINCE 1982



P.O. Box 1114

Kailua, Hawai'i 96734

Ph: (808) 262-9972

Fax: (808) 262-4950

Aloha mai kākou,

With this letter, Cultural Surveys Hawai'i (CSH) humbly requests your *mana'o* and *'ike* (experience, insights, and perspectives) regarding past and ongoing cultural, practices, beliefs, and resources within the Waimea Ahupua'a.

Consultation with traditional cultural practitioners, *kūpuna*, *kama'āina*, and Hawai'i's diverse ethnic communities is an important and deeply valued part of our work and the environmental review process for proposed projects in Hawai'i. Your contributions will revitalize and keep alive knowledge of cultural practices, storied places, and life experiences that will remind Hawai'i's children of their history for generations to come.

Project Background and Proposed Action

The County of Kaua'i, Department of Public Works, Solid Waste Division (County) is proposing a vertical expansion of Phase II of the Kekaha Municipal Solid Waste Landfill (KLF) (Proposed Action). The KLF is a municipal solid waste (MSW)¹ landfill comprised of two distinct refuse fill areas identified as Phase I and Phase II. The Proposed Action would extend Phase II upward from the currently permitted maximum height of 120 feet (ft) above mean sea level (msl) to a new permitted maximum height of 171.5 ft above msl. This proposed vertical expansion would be within the existing permitted footprint of the Phase II landfill area. The location and boundaries of the existing KLF and approximate extent of the proposed vertical expansion are delineated on a map (Figure 1) and aerial photo (Figure 2) attached to this invitation. Information regarding the purpose and need for this Proposed Action is provided below.

The County is preparing an Environmental Assessment (EA) under Hawaii Revised Statutes (HRS) Chapter 343 for the Proposed Action. As part of the EA process, the County of Kaua'i has requested CSH to conduct a cultural impact assessment (CIA) for the Proposed Action located in Waimea Ahupua'a, Waimea District, Kaua'i Island. Under Act 50, the Hawaii State Department of Health "Guidelines for Cultural Impact Assessments" mandate that the subject property be studied as well as surrounding areas where construction or development have impact potential. These guidelines also recommend personal interviews with traditional cultural practitioners and knowledgeable informants on cultural practices.

The existing KLF is located 1.3 miles northwest of the town of Kekaha on the southwest side of the Island of Kaua'i. The KLF site encompasses approximately 98 acres of land within Tax Map Keys (TMK) 1-2-002:009 and 1-2-002:001 (por.), which are owned by the State of Hawai'i and administered by the Department of Land and Natural Resources (DLNR). Executive Order 1558 (signed April 27, 1953) and Executive Order 2872 (signed October 6, 1977) places the

¹ MSW is waste collected by County of Kauai from residential, commercial, industrial, and construction and demolition sources. The KLF accepts both organic wastes such as paper, cardboard, food, yard trimmings, and plastics, and inorganic wastes such as metal and glass. The KLF does not accept toxic or hazardous waste.

WAIMEA 49 – CIA for the Kekaha Municipal Solid Waste Landfill Phase II Vertical Expansion

Page 2

control and management of the lands underlying the KLF to the County of Kaua'i. The KLF is situated adjacent to Kaumuali'i Highway and approximately 1,700 ft from the shoreline of the Pacific Ocean.

History of KLF

As discussed above, the KLF is comprised of two distinct refuse fill areas: Phase I and Phase II. The KLF Phase I is a closed, unlined landfill that began accepting solid waste in 1953 and ceased operations October 8, 1993. The KLF Phase II is an active, lined² landfill that began accepting solid waste on October 9, 1993 and is predicted to reach its capacity in October of 2026.

KLF Phase II has undergone three vertical expansions and two lateral expansions since the initial permitting of the refuse area. Phase II was originally permitted to reach a height of 37 ft above msl, but was permitted for vertical expansion in 1998, 2004, and 2013; the current maximum permitted landfill height of Phase II is 120 ft above msl. Phase II was also expanded laterally to include Cell 1 and Cell 2 in 2009 and 2019, respectively, reaching the currently permitted landfill area of 44 acres.

The purpose of the previous vertical and lateral expansions was to provide additional air space volume for placement of refuse while the siting, designing, and construction phases for a new landfill facility or other long-term landfill capacity solutions was completed. The County has previously attempted to site a new MSW landfill at another location on the island and continues to investigate alternative landfill sites. The County completed landfill siting studies in 2001/2002, 2007, and 2012. In 2018, the County completed an engineering design and Environmental Impact Statement (EIS) for a new MSW landfill and resource recovery park at Ma'alo. However, during the permitting process, the County had to abandon its plans to develop a new MSW landfill facility at Ma'alo due to the potential for the landfill to increase bird strikes at Lihue Airport. The County understands there is a critical need to identify a long-term MSW capacity solution for the Island of Kaua'i and continues to evaluate alternative landfill sites and other long-term options for increasing the landfill capacity on Kaua'i.

Purpose and Need

KLF is Kaua'i Island's only permitted MSW landfill and is predicted to reach its capacity in October of 2026. However, the planning, permitting, and implementation of any potential long-term landfill capacity solution is anticipated to require more than five years (i.e., would not be available for MSW disposal until after October 2026). Therefore, there is a need to provide landfill capacity beyond October 2026 while a long-term landfill capacity solution is planned, permitted, and implemented. The purpose of the vertical expansion of the Phase II portion of the KLF is to add landfill capacity to the existing landfill while a long-term landfill capacity solution is implemented.

² The Phase II portion of the landfill was constructed with Resource Conservation and Recovery Act (RCRA) Subtitle D base liner which protects the underlying soils and aquifer from landfill leachate.

WAIMEA 49 – CIA for the Kekaha Municipal Solid Waste Landfill Phase II Vertical Expansion

Page 3

Proposed Action

The major components of the Proposed Action would include:

- **Vertical Landfill Expansion:** The proposed Phase II vertical expansion would extend the existing waste disposal area upwards to a maximum height of 171.5 ft above msl, without expanding the existing permitted footprint. The approximate extent of the proposed vertical expansion is shown in Figure 2 and Figure 3 (attached). The proposed vertical expansion would be designed for slope stability, positive drainage off the landfill surface, and to maximize disposal capacity. New, access roads would be constructed to access the upper reaches of the landfill area.
- **Landfill Gas Collection and Control System (GCCS)³:** Modern MSW facilities require GCCSs to collect and properly dispose of landfill gas. KLF's existing GCCS consists of a network of high-density polyethylene (HDPE) pipes, gas collection devices (i.e., gas wells), and an enclosed landfill gas flare that is designed to minimize and control emissions. The existing GCCS would be expanded to accommodate the increased height of Phase II by raising or relocating the existing GCCS infrastructure within the footprint of the vertical expansion and installing additional landfill gas extraction wells and related lateral piping in the areas of new waste.
- **Stormwater Management⁴:** Current design and operation of KLF includes stormwater management that diverts stormwater away from the active refuse areas to infiltration ditches around the perimeter of the landfill and to an existing stormwater infiltration basin. Under the Proposed Action, existing surface water drainage features that currently divert stormwater away from the refuse areas would need to be modified slightly (i.e., extended upwards) to accommodate the increase in height of the Phase II waste disposal area.

In addition to the landfill gas GCCS and stormwater management infrastructure, KLF currently incorporates engineering and operational controls⁵ to minimize and avoid adverse impacts to the environment and public. These controls include, but are not limited to, groundwater and leachate monitoring, litter control, dust control, odor control, and vector control. KLF also implements a spill prevention, control, and countermeasures plan, emergency management procedures, and other operational plans. KLF would continue to implement its

³ Landfill gases are produced when bacteria break down organic waste. Landfill gases are primarily made up on methane and carbon dioxide but may also be made up of small amounts of nitrogen, oxygen, ammonia, sulfides, hydrogen, and various other gases. Gas Collection and Control Systems (GCCS) are a common and major component of most landfills. They are designed to help control odors, minimize releases to the atmosphere, and increase safety by controlling migration and reducing landfill fire risk.

⁴ Stormwater is water from rain and can soak into the soil (infiltrate), be held on the surface and evaporate, or run off and end up in a nearby stream, river, or other water body. Stormwater management systems are a common and major component of most landfills. They are designed to prevent stormwater from coming into contact with waste and other contaminants, control the flow of stormwater into drainage features, and prevent run-off into nearby water bodies.

⁵ Engineering and operational controls are measure to keep our environment (groundwater, surface water, air, and ecosystem) clean from the gas, leachate, and stormwater contamination caused by a landfill.

WAIMEA 49 – CIA for the Kekaha Municipal Solid Waste Landfill Phase II Vertical Expansion

Page 4

operational controls and plans under the Proposed Action. No substantial changes to KLF's operations are proposed.

As no construction is required to begin operating the vertical expansion, the Proposed Action can begin once all approvals are received.

Purpose of this Study

The purpose of a CIA is to gather information on Hawai'i's cultural resources, practices, or beliefs that have occurred or still occur within the KLF site and Waimea Ahupua'a. This is accomplished through consultation and background research using previously written documents, studies, and interviews. This information is used to assess potential impacts by the proposed project to the specific identified cultural resources, practices, and beliefs in the KLF site and throughout Waimea Ahupua'a. As a traditional cultural practitioner and holder of long-term knowledge, your insight, input, and perspective provide a valuable contribution to the assessment of potential effects of this project and an understanding of how to protect these resources and practices.

Insights focused on the following topics in the KLF site (shown on the attached Figure 1 and Figure 2) are especially helpful and appreciated:

- Your knowledge of traditional cultural practices of the past within the KLF site and the Waimea Ahupua'a
- Your specific traditional cultural practice and its connection to the KLF site and the Waimea Ahupua'a
- The different natural resources associated with your specific traditional cultural practice
- Legends, stories, or chants associated with your specific traditional cultural practices and their relationships to the KLF site and the Waimea Ahupua'a
- Referrals to other *kūpuna*, *kama'āina*, and traditional cultural practitioners knowledgeable about the KLF site and the Waimea Ahupua'a
- Your comments or thoughts on the potential impacts the proposed project may have on your ongoing traditional cultural practices and natural resources within the KLF site and the Waimea Ahupua'a
- Your knowledge of cultural sites and *wahi pana* (storied places) within the KLF site and the Waimea Ahupua'a
- Your comments or thoughts on the potential impacts the proposed project may have on cultural sites and *wahi pana* within the KLF site and the Waimea Ahupua'a

Consultation Information

Consultation is an important and deeply valued part of the CIA and environmental review process. With your agreement to participate in this study, your contributions will become part of the comprehensive understanding of traditions of the area, and part of the public record. The study will be included as an appendix to the project's EA. The EA and CIA will be available for future access through the State Office of Planning and Sustainable Development (OPSD), Environmental

WAIMEA 49 – CIA for the Kekaha Municipal Solid Waste Landfill Phase II Vertical Expansion

Page 5

Review Program (ERP) (<https://planning.hawaii.gov/erp>) and at the State Historic Preservation Division Library (<https://dlnr.hawaii.gov/shpd/about/research-resources-library>). The County anticipates publication of the Draft EA (including the CIA report) later this year.

As a part of this process, your knowledge may be used to inform future CIAs and other heritage studies of cultural practices and resources that need protection from impacts of proposed future projects. If you engage in consultation, and the *mana'o* and *'ike* you provide appears in the study, we would like to recognize your contribution by including your name. If you prefer not to allow your name to be included, your information can be attributed to an anonymous source.

The consultation interview structure and format are flexible. We will accommodate your preference on how to get together; talk story, over the phone, by email correspondence, remotely via Zoom, MS Teams, Google Chat or other remote meeting platforms.

Your knowledge of the resources and potential effect of the project on traditional practices in the KLF site and Waimea Ahupua'a focusing on the topics in the bullet points above can also be submitted in a written statement. CSH will provide return postage of your written statement on request.

Along with this letter, CSH has provided a structured questionnaire of sample interview questions for your usage. CSH is happy to provide any other assistance that might be helpful.

If you have questions regarding consultation, or are interested in participating in this study, please contact CSH Cultural Researcher Tehani Baculpo by email at tbaculpo@culturalsurveys.com and Kellen Tanaka at ktanaka@culturalsurveys.com. We are both available by phone at (808) 965-6478. **Please respond no later than 3/29/2023.**

Mahalo mui loa for your time and attention to this request for consultation.

Yours with much aloha and appreciation,

Tehani Baculpo


CSH Cultural Researcher

Appendix B Permissions/Release Forms

Cultural Surveys Hawai'i, Inc.
Archaeological and Cultural Impact Studies
Hallett H. Hammatt, Ph.D., President

P.O. Box 1114 Kailua, Hawai'i 96734 Ph: (808) 262-9972 Fax: (808) 262-4950

Job code: WAIMEA 49 ibaculpo@culturalsurveys.com www.culturalsurveys.com



AUTHORIZATION AND RELEASE FORM

Cultural Surveys Hawai'i (CSH) appreciates the generosity of the *kūpuna* and *kama'āina* who are sharing their knowledge of cultural and historic places, experiences of past and present cultural practices. At the request of Tetra Tech, Inc., on behalf of the County of Kaua'i, Cultural Surveys Hawai'i (CSH) is conducting a Cultural Impact Assessment (CIA) for the proposed Kekaha Municipal Solid Waste Landfill Phase II Vertical Expansion Project.


We understand our responsibility to respect the wishes and concerns of the interviewees participating in our study. Here are the procedures we promise to follow:

1. The interview will not be tape-recorded without your knowledge and explicit permission.
2. You will have the opportunity to review the written transcript or notes of our interview with you. At that time, you may make any additions, deletions, or corrections you wish.
3. You will be given a copy of the interview transcript or notes for your records.
4. You will be given a copy of this release form for your records.

For your protection, we need your written confirmation that:

1. You consent to use the complete transcript and/or interview quotes for reports on cultural sites and practices, historical documentation, and/or academic purposes.
2. You agree that the interview shall be made available to the public.

I, Christine Faye, agree to the procedures outlined above and, by my signature, give my consent and release for this interview and/or photograph to be used as specified.



(Signature)

5/2/2023
(Date)

Cultural Surveys Hawai'i, Inc.
Archaeological and Cultural Impact Studies
Hallett H. Hammatt, Ph.D., President



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4. You will be given a copy of this release form for your records.

For your protection, we need your written confirmation that:

1. You consent to the use of the complete transcript and/or interview quotes for reports on cultural sites and practices, historic documentation, and/or academic purposes.
2. You agree that the interview shall be made available to the public.

I, Lyle Tabata, agree to the procedures outlined above and, by my
(Please print your name here)
signature, give my consent and release for this interview and/or photograph to be used as specified.


(Signature)

May 19, 2023
(Date)

Cultural Surveys Hawai'i, Inc.
Archaeological and Cultural Impact Studies
Hallett H. Hammatt, Ph.D., President



P.O. Box 1114

Kailua, Hawai'i 96734

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AUTHORIZATION AND RELEASE FORM

Cultural Surveys Hawai'i (CSH) appreciates the generosity of the *kūpuna* and *kama'āina* who are sharing their knowledge of cultural and historic places, experiences of past and present cultural practices. At the request of Tetra Tech, Inc., on behalf of the County of Kaua'i, Cultural Surveys Hawai'i (CSH) is conducting a Cultural Impact Assessment (CIA) for the proposed Kekaha Municipal Solid Waste Landfill Phase II Vertical Expansion Project.

We understand our responsibility in respecting the wishes and concerns of the interviewees participating in our study. Here are the procedures we promise to follow:

1. The interview will not be tape-recorded without your knowledge and explicit permission.
2. You will have the opportunity to review the written transcript or notes of our interview with you. At that time you may make any additions, deletions or corrections you wish.
3. You will be given a copy of the interview transcript or notes for your records.
4. You will be given a copy of this release form for your records.

For your protection, we need your written confirmation that:

1. You consent to the use of the complete transcript and/or interview quotes for reports on cultural sites and practices, historic documentation, and/or academic purposes.
2. You agree that the interview shall be made available to the public.

I, Leanora Kaiaokamalie, agree to the procedures outlined above and, by my
(Please print your name here)
signature, give my consent and release for this interview and/or photograph to be used as specified.

Leanora Kaiaokamalie

(Signature)

5/25/23

(Date)

Appendix C Interview Questionnaires

Chris Fayé

Cultural Surveys Hawai'i, Inc.
Archaeological and Cultural Impact Studies
Hallett H. Hammatt, Ph.D., President



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INTERVIEW QUESTIONS

**Cultural Impact Assessment for the
Kekaha Municipal Solid Waste Landfill Phase II Vertical Expansion Project,
Waimea Ahupua'a, Waimea District, Kaua'i Island,
TMKs: [4]1-2-002-009 and 001 (por.)**

Part I: Contact information

1. Name
Chris Faye
2. Where were you born?
Woodland, California (father going to UC Davis)
3. Where did you grow up?
Hawaii
4. When were you born?
1957
5. Parents. Mother. Father.
Barbara Grace Cleghorn (Wahiawa and Lanai) and Lindsay Anton (Tony) Faye Jr. (Kekaha)
6. Occupation/Affiliation
Executive Director Hui o Laka (Kokee Museum) and former curator (Kauai Museum)
7. Area of residence:
Kekaha
8. How long have you lived here?
On and off for 45 years in Kekaha. 65 years in Hawaii.

9. Personal and/or family connection to *ahupua'a*:

My family, the Faye's have been living in Polihale to Waimea for 6 generations. My great grandfather Hans Peter Faye started a sugar plantation at Mana – H.P. Faye and Co. in 1884 after 4 years on Maui and Kauai learning the trade. He served as manager of Kekaha Sugar Co from 1898 to 1928. His son, my grandfather was manager from 1933 to 1963 and his son, my father, was manager twice from the 80s to his retirement in 1992. My great-grandfather Hans Peter Faye came to Kauai to work for his maternal uncle Valdemar Knudsen. Other members of the family also worked for or leased land from Knudsen including Captain Christian L'Orange and Anton Faye. I opened a visitor center for Gay & Robinson's sugar operations at Kaumakani in 1999. We provided a field and factory tour based on what used to be given for sugar planters. We had engineers from all over the world on the tour from factory to space engineers and received many compliments. During that time, between my father and many plantation supervisors, we learned a lot about the industry and were able to share it.

10. Referrals

Aletha Kaohi, Waimea Sugar Mill Museum visitor center manager
 Pat Griffin, historian and author
 Kirsten Faulkner, Historic Hawaii Foundation

Part II: Historical information

11. Is there anything you would like to say about the general history of the area, or past and present land use?

The general history of the area was unique due to the landscape. The plain is the output of sediment from the Waimea River. The highest elevation is along the sea where the sediment buried a barrier reef. The land then dips down to nearly sea level and sometimes lower until it start so rise at the base of the foothills. The foothills, fortunately had many springs, and that is where people lived at the time my great grandfather came to Kauai. There were many small villages. He settled next to a large spring, Kumumao (more recently in plantation times as Cold Pond.) He employed a Hawaiian water finder to seek out other sources of water.

Up until the late 1890s there were forests of Lehua above Mana. There was a very bad fire that burnt even the roots in the ground so nothing regenerated. My grandfather remembered there would be freshets when it poured, and water would run off the mountain in the gullies.

Some of the unique cultural things that were mentioned by both Eric Knudsen (Kanuka of Kauai) was that because of the dead gathering at the hill above Polihale to enter Po, the wandering spirits could be trapped in homes – all the villagers had two doors in their homes to allow them to pass through.

Another story is of the unfolding mat – the view from Nohili of the long white sand beach as far as the eye can see.

Another is the unusual way taro was cultivated on floating mats in the brackish water lakes. There was also a saying that the Hawaiians traded fish for poi because it wasn't easy to grow in Polihale and Mana.

Many of the place names in the landscape are named for the arrival of Pele's sisters.

12. Do you have any memories of what existed in that area or cultural events that were practiced?

I have memories of Kekaha Sugar Plantation. I was 3 when we first lived there as Dad was a trainee, then 4-6 years of age when my dad had his first full-time job with Amfac. Then in the 80s until the plantation folded and the post plantation days. I remember a Christmas party at the Supervisor's clubhouse in Mana (my great grandfather's original house), and plantation parties with backyard singing and dancing on the cement lanai's. Food of course, especially fresh fish and whole sides of plantation beef roasting on the rotisserie. Cowboys, ditchmen, canefires, the rumbling of the factory, the silence during the offseason, sound of trucks downshifting as they came down the steep hills loaded with cane. The stink of ditchwater. The whole gamut. I also spent 5 years from first through fifth grade walking home from school through the camps of Oahu Sugar in Waipahu. Very thorough background in what the camps were like. Kekaha was different in that it was much smaller and well organized around the mill and business district.

13. How about personal and/or family history in the area?

The original family member that came to west Kauai was Valdemar Knudsen. He took over a lease from Scots/Norwegian named Archibald Archer about 1854. Archer and a partner had been growing tobacco which failed. I'm not sure if the lease was renegotiated. Knudsen's lease was a portion of crown lands from Kamehameha V. It was from Kekaha to Milolii to Kokee. I would have to look up what the lease rent was, but it was something like \$2000. My memory serves that the reason the land was crown land was its unusual and unique products. Like Niihau, the Hawaiian people on the plain produced makaloa mats and the decorated gourds which were highly prized by ali'i in the past. Knudsen settled at Waiawa at the mouth of Hoesa Valley which was also his ranch headquarters. Today the landfill would block the view of the ocean. There was a big spring there and a famous heiau Hauola where the menchune were paid their shrimp for completing the Kikiaola or Peekauai Ditch.

With the Reciprocity Treaty in 1875, sugar ventures started up all over the islands. George Wilcox and Paul Isenberg worked it out to put a mill at Kekaha while Valdemar Knudsen teamed up with a nephew-in-law, Christian L'Orange to plant some cane in 1879. Knudsen and L'Orange were too much alike and hot tempered so the partnership failed quickly. Knudsen was too old for the physicality of the job by that time and his sons were young, but on his wedding trip to Norway a decade before, he had bragged about all his land and easily enticed relatives to come that were the right age. Anton Faye arrived and with a partner harvested the cane and then leased out the lands around Kekaha. Hans Peter Faye arrived in 1880, but Knudsen had left for a trip with his family that took several years. So he joined L'Orange who was married to his sister at a plantation near Paia. That lasted two years and was good training. L'Orange was the agent that brought Norwegian labor to Hawaii. H.P. Faye met and admired Henry Perrine Baldwin on Maui who was building his first irrigation ditch. Due to his brother's death in a flash flood on Maui, H.P. Faye returned to Kauai and planted the first cane for the Sinclair Family in Hanapepe. The crop went to the Elele mill. He did well but realized he would never prosper working for other people. By that time his uncle had returned and was able to lease the worst piece of land from Mana to Polihale. He had two Norwegian assistants E.K. Bull and Gjerdum and a number of Hawaiians from Mana that worked for him for years. Both Norwegians eventually became managers of sugar plantations on Oahu and Maui. For the planting and harvest, Faye rented Pa On's laborers and eventually cleared the land of rocks. H.P. Faye put in the second artesian well in Hawaii (the first was in Ewa). He used a Hawaiian waterfinder. His supplies came in at the old

canoe landing (it sounds like it was at Major's Bay.) To fund all his first crop, he received a \$2000 loan from Paul Isenberg who was then head of Hackfeld & Co. the predecessor of American Factors. He got the loan on the fact that he wore a nice suit his father had made for him in Norway prior to coming to Hawaii. He only wore the suit once to impress Isenberg.

Otto Isenberg managed the mill until he retired before WWI. George Wilcox remained Chairman of the Board for a long time – maybe until he died. When they consolidated the plantations and mill into Kekaha Sugar in 1998, Wilcox was one third owner as well as Faye. The remaining interests were bought and sold so that the original sugar planters could retire or go elsewhere. The Knudsen lease was soon to expire, and the land was still government land with 20 year leases that had to be negotiated for in Washington D.C.. The takeover by the United States was soon to be completed and many incorporations took place about the same time. Many plantation interests were European and Kingdom of Hawaii citizens and there was a rush to incorporate under U.S. law. The Knudsen lease was over in 1907, although they did try to retain some of the land, they failed. Kekaha Sugar eventually purchased their ranch. Because they paid lease rent on all the land, the cattle could be raised where sugar couldn't. They were generally in the valleys between foothills or near the ocean.

One of the things my great grandfather was instrumental in was expanding the plantation from a small holding to what it became was in the creation of irrigation projects. By the time Kekaha Sugar was formed, the use of artesian wells had pulled up much of the fresh water in below the fields. Fresh water from springs and rainfall forms a layer underground over salt water. So, the roots of the cane were becoming saltier and not producing well. The crops were declining. Kekaha was located far from any freshwater source. My great-grandfather developed the Kekaha Ditch that at the time, used no electricity, to bring water from about 8 miles up the Waimea River up to the foothill above Waimea Town all the way to Polihale. He had to convince the company's board that this would work. George Wilcox had a degree in engineering and also experience with his own ditch projects and backed him up. They also consulted with engineers in California, it took several redesigns to bring the cost down but most of the project was conceived and executed by the plantation and local crews. Remember that they only had a 20 year lease and any capital projects had to pay off quickly. After obtaining the lease again in 1920, despite real competition, the Kokee Ditch project was started in 1922. It was a very ambitious project and the Kawaikoi Dam was and is still the highest elevation reservoir in Hawaii. My grandfather had his first job in the sugar industry on that project. He oversaw Camp 10 far in Mohihi. His experience on a US Army supply train in World War I made him a good candidate. Of my great grandfather's 6 sons, only Lindsay was interested in becoming a sugar man. He then was groomed at Waimea Sugar and then when his father died put in place as assistant manager at Kekaha under William Danford.

Lindsay was at Kekaha a long time and was young when he started as manager. He was keen on Athletics and made sure there were athletic outlets on the plantation. He was on numerous boards that promoted the welfare of Kauai people. He rode a horse in the fields for years and actively maintained the ranching activities. There was a lot of fallow land at Kekaha and remote areas on the plains that were used for pasturage for not just the plantation animals but also others. The area where the landfill is now was pasture. It was very sandy and considered "wasteland" in the early years of the Territory. He witnessed and participated actively in the early years of aviation when an "international airfield" was created at Mana. His wife packed sandwiches and thermos of coffee for the crew of the Southern Cross as they continued their hop across the Pacific in the first cross Pacific flight in 1928. The airfield eventually became an Army base then a Navy base. World War II was a challenge, and although he didn't serve in the military, he took his role as manager and head of civil defense for Kekaha and its surrounds seriously. He claimed the first troops that arrived in March of 1942 were family men called up by the National Guard, but those

that came after were totally different and it was a fine line to protect the community. He made sure his people were fed and the plantation's truck farm at Puu Opae was exceptional. Even his children worked with the rest of the school children in the gardens and farms. After the war, the plantation continued to excel and became one of the world's best producers of sugar per acre in the world. One field, until the end, had the world's record of tons of sugar per acre. Gradually over the years, more and more stock came into the hands of Amfac. In 1972, the remaining stockholder, including the Fayes who now had about 25% of the company, were forced to sell out and Kekaha was no longer an independent plantation.

The plantation shrunk from about 1200 employees to about 200 during my dad's tenure starting in 1980. Much of it was through attrition. In a way my great grandfather built the plantation, my grandfather nurtured it through its peak and the upheavals of post war labor unionization, while my father had the sad duty of keeping things going as long as possible with heavy cost cutting and facing the reality of closure at any time by its mainland ownership. He was proud that he managed to talk Amfac/JMB into taking care of the employees when they decided on selling off nonstrategic holdings. Remember they owned most of Lihue then and Kekaha was mostly leased land except for the camps and mill. The results were subdividing and selling all the plantation houses to employees and working with the county to create a retirement complex for all the retired single men.

14. Past land use? Past agricultural, fisheries or other uses of the area?

There were 3 large brackish water lakes seen on maps prior to 1920. The sugar acreage was quite small when it started. It was said when it flooded (not necessarily a yearly occurrence) the lakes would fill up and become one and with a flat bottomed boat you could pole your way to Waimea. There were lots of ducks in the lakes and people enjoyed shooting them for food and sport. We have a photo of one of the boats and shooters. The village of the mirage was near Limaloa Pond. Limaloa was Lohiau's brother.

Rice started early on in Waimea Valley and the "lakes", especially Limaloa, by Chinese after the Gold Rush. Pa On Leong, who made money in the gold fields, became a rice baron and employed many single men. His mill was in Waimea where the library is now. He had barracks for them at Kaunalewa and Mana. Some of these men were rented by my great grandfather to bring in his sugar crop. He and Pa On had a handshake agreement regarding the swampy land which was eventually overthrown by other investors in Kekaha Sugar around 1920. There were plantation villages or Hawaiian villages at Polihale, Saki Mana, Mana, Kaunalewa, Waiawa, Pokii, Kekaha near the foothills, and another I forgot the name too between Kekaha and Waimea, and Waimea. Up on the foothills there was Puu Opae and Hukipo. My great aunt said there was a carriage road on near the ocean (the highway is fairly modern) that in good weather the Hawaiian rode carriages to Church on Sundays. A government dirt road ran along the pali. There were no roads elsewhere because of the swamps.

There was a ship landing at Kekaha by what is now called "first ditch." There was a shed and pasture for holding livestock in transit. It isn't so much a ditch as a drainage canal first dug by hand by the Knudsen's to expand farming and ranching near Kekaha. It was named Keikielima (5 children) after Knudsen's five children. My great grandfather purchased salvage equipment and pumps from the Sacramento, California reclamation project to begin draining the swamps between Kekaha and Polihale and the one at Waimea. It took decades to drain. The pumps are what made a difference and there were several on the canals that could take out at the shoreline. One of them, I think Kiele had an engine that was used at Senator Miyake's power company in

Waimea. It was a diesel ship engine that is now by the Waimea Mill. The company still exists and the serial number identified it as one of the oldest of their engines still in existence.

Kekaha is a plantation town. It was the site chosen to put the sugar mill. The people of the area generally lived close to the foothills where springs were located. Along the shore were shelters, but water had to be taken there so it wasn't someplace to live then.

The plantation railroad was a bit different than others. It was operated from about 1898 to 1945 on nearly flat land. Like other plantations, flumes were used to transport cane from the top of the hills down to the flat where it could be taken to the mill for processing. It was one of the first plantations to convert to mechanical harvesting, only keeping its rail through the war for military use. The plantation has the claim to the only train robbery in 1920 where a masked man held up the railroad between Kaunalewa and Mana and ran off with about \$10,000 in cash including the payroll books for the Mana Division. The paymaster was instrumental in locating the suspected robber because he didn't want to recreate the payroll books. The railroad also had an interesting tradition of being the first party train. For its opening inaugural run, cane cars were cleaned and chairs put in for dignitaries in their finest to ride from Kekaha to Polihale (there are photos!). For special occasions, this occurred including the last run of the train in 1946.

Part III: Cultural and historic sites

15. Are there any cultural, archeological, historic, and/or burial sites in or around the proposed project area (e.g., *heiau*, *hale*, *kū'ula*, *ilina*)?

As far as I know, the nearest house and heiau was at Waiawa/Hoea and Kekaha.

The Mana Drag Strip was the old Mana Airport in use as the principal public airport during and after the war until the present Lihue airport was built.

Part IV: Gathering/hunting/fishing/etc. practices

16. Are you, or is anyone you know, involved in any cultural practices in the project area – for example plant gathering, fishing, hunting, surfing, etc.?

Most of the activities take place at or near first ditch and Kekaha. Currently there are agricultural companies around the landfill as well as military activities and housing.

17. If you are, how did you learn the activity/ies and how long have you engaged in _____?

By living in the area.

18. Can you tell me about any cultural practices from the past?

19. Knowledge of past or present cultural protocols observed

Part V: Legends, stories and place, and sense of place

20. Is there anything you would like to say about legends, or stories about the project area?

21. Are there any names, traditions, or practices associated with the area and features of the landscape? Origin stories...?

22. Trails ancient or contemporary in the area? Who used/uses them?

Trail from Mana to Puuopae, which used to be a village, to Kokee.

Canoe road from PuukaPele to Mana (the road still exists)

Trail made by the Knudsens to PuukaPele to travel every summer to Halemanu. (Described by Ruth Hanner Knudsen on the back of a photograph that is very hard to decipher due to her poor penmanship.

23. *Mauka-makai* relationships?

Koa farming at PuukaPele. Kokee was integral to plantation life – many of the families of Kekaha had summer camps at Kokee and the plantation had a cabin. The heat in Kekaha made the summer months miserable. My family spent easily 3 months a year at Kokee either with the Knudsens and later from 1904, at our own cabin Maluapoha.

Part VI: What else?

24. Do you have any, or do you know of any concerns the community might have related to Hawaiian or other cultural practices within or in the vicinity of the project area?

Besides the drastic change to the landscape by creating mountains near the ocean of what used to be flat land, it concerns me that a whole hillside is being mined of dirt as part of the project. I hope the same scrutiny of the cultural landscape is being made for that portion of the project. There were at least two villages between Pokii and Waimea with springs.

25. Do you have any recommendations regarding site management or protection, and development in the proposed project area?

We need to acknowledge that native water fowl are thriving in the settling pond at the landfill. Taking away reservoirs and ditches/canals reduces their habitat. The newly created ponds don't have the nutrients for the bugs and fish they eat to thrive – they are too clean.

The cane fields were a habitat for bats, pueo, and non native ground birds that people like to hunt. Maybe lands that are going fallow or returning to swamp need to be managed better for habitat purposes rather than making new habitat.

26. Did CSH miss anything? Is there anything else you would like to add?

27. Is there anyone else we should talk to about this cultural study?

28. If so, may I say that you referred CSH to him/her?

Sources:

Plantation Newspapers: Waimea Planter and KekaMana

1919 US Geological Survey map

1920 map of Government Lands of Kekaha and Waimea (Kekaha Sugar)

F.B. Wichman – both his Kauai Tales series and Placenames of Kauai books

Carol Wilcox Sugar Water (not the first edition – Kekaha Sugar information is totally incorrect.)
Photographs from the Faye and Knudsen families both at Kauai Museum and Kikiaola Land Co.
Isabel Faye and Ruth Knudsen Hanner's oral histories (Kauai Museum) Isabel's oral history transcript for a lost tape was edited by myself and reviewed by my father. The transcriber was fresh off the plain and didn't know the spellings of placenames or plantation terms or people involved.
Conversations with Lindsay Faye and Tony Faye as well as many others over the years.

Lyle Tabata

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INTERVIEW QUESTIONS

**Cultural Impact Assessment for the
Kekaha Municipal Solid Waste Landfill Phase II Vertical Expansion Project,
Waimea Ahupua'a, Waimea District, Kaua'i Island,
TMKs: [4]1-2-002-009 and 001 (por.)**

Part I: Contact information

1. Name
Lyle Tabata
2. Where were you born?
Lahaina, Maui
3. Where did you grow up?
Many places in the state, Wailua Kauai 1959-66, Kekaha 1966-72, Waipahu 72-74, College in Illinois Bradley University, 1974-78, Moved back to Kauai 1978-now
4. When were you born?
6/28/1956
5. Parents, Mother, Father.
Mother Marilyn Tagomori, Father Teruo Tabata from Maui.
6. Occupation/Affiliation Presently
Part owner of B&T Contractors. Sit on the ADC Board of Directors, Was the County Engineer of Public Works CoK from 2011 to 2020 8 yrs on Mayor Carvalho cabinet, 1 yr Mayor Kawakami.
7. Area of residence
Lihue

8. How long have you lived here?

1978-present

9. Personal and/or family connection to *ahupua'a*

I grew up in Kekaha from 1966-72, was the Factory Manager of Amfac Sugar Kauai in charge of the Kekaha Sugar Mill and Lihue Planation Mill operations from 1993 to 1997, then the last Plantation Manager for Amfac Sugar Kauai and oversaw the operations of both Lihue Plantation and Kekaha Sugar Companies, 1997 to closing in 2000.

10. Referrals

Part II: Historical information

11. Is there anything you would like to say about the general history of the area, or past and present land use?

I spent 6 years as a youth growing up in Kekaha, spent many days traversing on my bicycle with my friends from Mana camp to Waimea, then as an adult spent time between Lihue Plantation and Kekaha Sugar, as we were sister companies spent time in both location of an on from 1978 to 2000.

12. Do you have any memories of what existed in that area or cultural events that were practiced?

Not particularly historic in the sense of the Hawaiian culture versus today. The renaissance of the push to reintroduce the Hawaiian culture of the day is in terms of years only recently re-established. I did, however, during my elementary school days at Kekaha School attend the summer schools while Bertha Kawakami was principal and taught the Kamehameha School curriculum of what we know as Explorers today. We learned the language, the music, games and culture in more detail than was taught in the public schools.

13. How about personal and/or family history in the area?

Remember after summer school attending Kekaha summer fun, which Martha Kruse oversaw us and knowing we attended the Kamehameha summer school she added the history of the stories and tales if the area. I do remember her telling us of the burial caves along the cliff sides of the valleys.

14. Past land use? Past agricultural, fisheries or other uses of the area?

I remember Martha Kruse telling us in the old days you could paddle canoe from Waimea to Mana in the wetlands. Rice and taro were grown in the area.

Part III: Cultural and historic sites

15. Are there any cultural, archeological, historic, and/or burial sites in or around the proposed project area (e.g., *heiau*, *hale*, *kū'ula*, *ilina*)?

See answer #13.

Part IV: Gathering/hunting/fishing/etc. practices

16. Are you, or is anyone you know, involved in any cultural practices in the project area – for example plant gathering, fishing, hunting, surfing, etc.?

I lived a block in from Davidson Beach where I learned to surf, we would dive for fish, pole fish out all over from 1st ditch to Polihale. Catch o'opu nakea when the first fall rains would push them down from Kokee to the Waimea river out to sea, in Waimea valley with makeshift spears made for us by the plantation welders. Hunt up in Kokee for pigs, goats, and newly introduced deer, Hawaiian "moose" the plantation run away cattle, bird hunt for pheasant, quail, and franklins.

17. If you are, how did you learn the activity/ies and how long have you engaged in them?

6 years I lived in Kekaha before I left for Oahu?

18. Can you tell me about any cultural practices from the past?

See previous comments.

19. Knowledge of past or present cultural protocols observed.

see previous comments,

Part V: Legends, stories and place, and sense of place

20. Is there anything you would like to say about legends, or stories about the project area?

Yes several from my time with Martha Kruse, night marchers, Lol.

21. Are there any names, traditions, or practices associated with the area and features of the landscape?

Origin stories...?

22. Trails ancient or contemporary in the area? Who used/uses them?

23. *Mauka-makai* relationships?

One interesting one is the Mill ditch ravine in the ocean, the water used to come from Mauka and to day this location is where the black and white sand intersect and dive down in this ravine separating the two types of sand in Kekaha.

Part VI: What else?

24. Do you have any, or do you know of any concerns the community might have related to Hawaiian or other cultural practices within or in the vicinity of the project area?

As the County Engineer I had the County obtain permit to execute clearing of stone and soil from the sugar operations Rock and Mud removal from the mill cane cleaner which was disposed at Paua valley gulch to restore the location back to what it was.

25. Do you have any recommendations regarding site management or protection, and development in the proposed project area?

Not at this time.

26. Did CSH miss anything? Is there anything else you would like to add?

27. Is there anyone else we should talk to about this cultural study?

28. If so, may I say that you referred CSH to him/her?

Appendix F - Public Meeting Notes

Contents
Kekaha Community Meeting on Landfill - May 3, 2023 5:30pm – 8:00 pm
Public Meeting on Kekaha Landfill Vertical Expansion – August 31, 2023 5:30pm – 7:00 pm

Kekaha Community Meeting on Landfill
May 3, 2023 5:30pm – 8:00 pm

Location: Kekaha Elementary School Cafeteria

Attendance – approximately 100 people

Mayor Derek Kawakami addressed the meeting attendees to let them know the County appreciates the community hosting the Kekaha Landfill, and the County is there to listen to comments and answer any questions. The Mayor remained at the front of the crowd responding to questions the entire meeting. Others assisted with responses: Yvonne Hosaka, the facilitator of the Kekaha host community benefit (HCB) program, Therilynn Martin-Haumea of the Office of Economic Development, and Allison Fraley of the Solid Waste Division. While there was much discussion, the majority of the subject matter was the HCB program, the vertical expansion to Kekaha, waste diversion, and the potential future landfill site located mauka and west of the existing landfill.

Questions/ Comments:

- There were many questions on the host community benefit - history, annual and total fund amount, funded projects, and application process. Technical questions were answered by the Office of Economic Development and the HCB facilitator.
- What is ground water monitoring showing ? Response: High arsenic. Upgradient wells will be installed to see if the landfill is the source.
- County should post quarterly Ground Water Monitoring reports.
- Why doesn't Kaua'i ban packaging and non-recyclable items? Discussed extended producer responsibility programs and recent bills at the state legislature.
- Discussed potential for Waste to Energy system or alternative technology to landfill to manage waste. There may be limitations to technologies and high cost due to small waste stream. Recent study of technologies has been published on the County website, an RFP will be released soon.
- On the subject of waste diversion, discussed curbside recycling challenges of cost and minimal return. The County is currently studying the feasibility of construction of a materials recovery facility and operating a curbside recycling program.
- Provided information on the current disposal capacity at Kekaha landfill, proposed height of the vertical expansion, and the potential capacity with the vertical expansion.
- Discussed limitations of siting a new landfill in other locations throughout Kaua'i

Kekaha Community Open House
August 31, 2023, 5:30pm – 7:00 pm

Location: Kekaha Neighborhood Center

Attendance: Approximately 30 people

The purpose of the community open house meeting was to inform the public about the Proposed Action, share information on the design, answer questions, and take comments. Approximately 30 individuals attended the event, which was in an open-house format and included information stations on the vertical expansion design and draft EA, Kaua'i's landfill history, current landfill operations, host community benefits, and recycling and waste diversion. The meeting was publicized on the County website and in the online and print editions of The Garden Island on August 19 and August 21, 2023. Written comments received during the open house are included in Appendix D of the Final EA.

Summary of Questions/ Comments:

- Can we see more community beatification projects get done with some of the monies that are given to Kekaha.
- Is there a way to not have all those big trucks going back and forth all day hauling rubbish. Its noisy and not safe for the kids that are walking home from school.
- Can the Kekaha Host Community Committee use some of the funds to do more long-term projects that benefit the community as a whole and not just one-time events or only the kids.
- Can the county charge the residents of North Shore more money to haul their trash all the way to Kekaha.
- Can the county continue to be transparent and have more meetings like this to keep the community involved and updated on the entire process of the landfill.
- How do we make these Host community funding equitable for all residents or for the majority vs. one organization with the majority of the funding?
- Concern about heavy metal contamination including mercury and other toxic materials from the Kekaha Mudponds site, where daily cover soil was previously mined. Also concern that a tsunami would spread the contamination across the Mana Plain and so the County should not put more waste there.
- Question about the lateral expansion and how it was going to occur (either mining or over liner) and if that information was going to be included in the EA.
- Concern over contaminated water going back into the ocean.
- Comment that is it a waste of time and money pursuing the Maalo landfill site.
- Concern over items in the landfill acting as a potential landmine if a tsunami were to hit and general concern over landfilling in general.
- Question about how the largest portion of the waste stream- organics and construction and demolition debris - will be managed.
- Concern about the County's preparedness in the event of an emergency at the landfill site.
- Concern that the County continues to ask for expansions of the Kekaha landfill.