

# **Project-Specific Construction EHMP (C-EHMP)**

For

Hakalau Beach Park  
Lead Soil Removal Action Project

Located at

Mamalahoa Hwy, Hakalau, HI 96710

TMK (3) 2-9-002:080

August 2023

Reviewers note: This CHEMP has been developed by the project design team and HDOT to serve as a template for the prospective contractor. The EHMP will be part of the bid documents for the award and implementation of the Remedial Alternative Memorandum that identified the preferred remedial alternative to address lead contamination.

There are several areas that cannot be completed before identifying the contractor via the bid process (e.g., Table 4-1 and Appendices A through H).

## Signatures

This document is not finalized until it is signed. A signed copy will be present on-site at all times.

I certify that as property owner, I am responsible for ensuring all parties who work or reside at my site are aware of the contamination at my property, and the associated hazards and that the information in this document is true and accurate to the best of my knowledge. I am responsible for ensuring compliance with all land use controls as well as advance notifications to the Hawaii Department of Health (HDOH) of anticipated land use changes or groundbreaking activity at my property.

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Property Owner or Representative of Property Owner

I certify that I am a qualified environmental professional, capable of ensuring compliance with the requirements of this Construction Environmental Hazard Management Plan (C-EHMP). It is my duty on this project to understand the requirements of this document and be on-site during ground-breaking activities. I will communicate hazards, management protocols, and other C-EHMP requirements to construction professionals at the site. I will document such activities, and communicate with HDOH, as needed.

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Qualified Environmental Professional

As Construction Manager, I am responsible for understanding the requirements of this C-EHMP, effectively communicating the requirements and hazards to my crews and subcontractors and providing the required training and personal protective equipment to site workers. I will work with the Qualified Environmental Professional to ensure compliance with this C-EHMP during work at this property.

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Construction Manager

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## Table of Contents

1	Introduction.....	1
2	Background .....	2
2.1	Existing Environmental Conditions.....	2
2.2	Chemicals of Potential Concern.....	9
2.2.1	Chemicals of Potential Concern and Construction Materials.....	11
3	Summary of Potential Environmental Hazards.....	13
4	Notification Requirements .....	16
4.1	Key Project Personnel.....	16
5	Requirements for Onsite Environmental Oversight .....	18
6	Construction Activities .....	21
7	Soil Management Plan .....	25
7.1	Soil Management.....	25
7.1.1	Field Identification of Contaminated Soil.....	25
7.1.2	Dust and Erosion Control .....	26
7.1.3	Excavation and Stockpiling.....	27
7.2	Soil Reuse and Disposal .....	27
7.2.1	Stockpile Sampling for Disposal at a Disposal Facility .....	28
7.2.2	Record Keeping .....	29
8	Groundwater Management Plan.....	30
8.1	Groundwater Management.....	30
9	Storm Water Management Plan .....	31
10	Vapor Management Plan.....	32
11	Spill or Release Response .....	33
11.1	Release Response .....	33
11.2	Release Reporting.....	33
12	Worker Protection.....	35
13	Decontamination.....	36
13.1	Decontamination of Tools and Personnel .....	36
13.2	Decontamination of Vehicles and Equipment .....	37
14	Recordkeeping and Reporting Requirements .....	38

15 References ..... 39

**Tables**

Table 1-1: TMKs and Landowners ..... 1  
Table 2-1: 2016, 2020, and 2022 Combined Soil Sample Results at Hakalau Beach .....6  
Table 2-2: Hakalau Beach Park Southern Bank: Results above 800 mg/kg for Lead..... 10  
Table 3-1: Environmental Hazards..... 13  
Table 3-2: Chronic and Acute Direct Exposure Hazards..... 14  
Table 4-1: Key Project Personnel..... 16  
Table 5-1: Project Activities When QEP Must Be Present .....20  
Table 5-2: Frequency of QEP Monitoring Activities.....20  
Table 6-1: Soil Removal and Clean Fill: Locations and Cubic Yards .....22  
Table 6-2: DUs That Failed TCLP (2016) and Require Mainland Disposal.....23

**FIGURES**

- Figure 1a: Site Location Map
- Figure 1b: Site Location Map – Tax Map Key Parcels and Land Owners
- Figure 2a: Areas of Known Lead Contamination - 2016 and 2020 DU and Sample Results Hakalau
- Figure 2b: Areas of Known Lead Contamination – 2022 DU and Sample Results
- Figure 3: Environmental Hazard Map

**APPENDICES**

- Appendix A – NPDES Permit
- Appendix B – Remedial Design Approach
- Appendix C – Stormwater Pollution Prevention Plan (SWPPP)
- Appendix D – Site-Specific Health and Safety Plan
- Appendix E – Erosion and Sediment Control Plan (ESCP)
- Appendix F – Activity Hazard Analysis

Appendix G – Spill Prevention and Response Plan

Appendix H – Best Management Practices for Erosion and Stormwater  
Control

## Acronyms

bgs	below ground surface
BMP	Best management practices
C-EHMP	Construction Environmental Hazard Management Plan
COPC	Chemical of potential concern
CY	Cubic yard
DU	Decision Unit
EAL	Environmental Action Level
EHE	Environmental Hazard Evaluation
EHMP	Environmental Hazard Management Plan
EPA	Environmental Protection Agency
ESCP	Erosion and Sediment Control Plan
ESI	Environmental Science International, Inc.
HAR	Hawaii Administrative Rules
HASP	Health and Safety Plan
HAZWOPER	Hazardous Waste Operations and Emergency Response Standard
HDOH	Hawaii Department of Health
HEER	Hazard Evaluation and Emergency Response
HIOSH	Hawaii Department of Labor and Industrial Relations, Occupational Safety and Health
HRS	Hawaii Revised Statutes
KPC	Kealahahi Pacific Consultants LLC
LBP	Lead-based paint
LCP	Lead-containing paint
LEL	Lower explosive limit
LEPC	Local Emergency Planning Committee
mg/kg	milligram per kilogram
mg/L	milligrams per liter
MI	Multi-increment
N/A	Not Applicable
NRC	National Response Center
PEL	Permissible exposure limit
PID	Photoionization detector
PPE	Personal protective equipment
PQL	Practical Quantitation Limit
QEP	Qualified environmental professional
RCRA	Resource Conservation and Recovery Act
ROW	Right Of Way
SAP	Sampling and Analysis Plan
SHWB	Solid and Hazardous Waste Branch
sq ft	square feet
SWPPP	Stormwater Pollution Prevention Plan
TBD	To Be Determined
TCLP	Toxicity Characteristic Leach Procedure
TGM	Technical Guidance Document
TMK	Tax Map Key
USCG	United States Coast Guard
VOC	Volatile organic compound
XRF	X-Ray Fluorescence

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# 1 Introduction

This Project-Specific Construction Environmental Hazard Management Plan (C-EHMP) provides guidance to environmental consultants, owners, operators, tenants, and construction/utility workers, who are proposing construction-related and ground-disturbing activities for the Hakalau Beach Park Lead Soil Removal Action project. These guidelines will be used by all who may be hired to assist in any of the activities described above to keep workers, site users, the environment, and the general public safe from contact with contamination on site and prevent Contaminants of Potential Concern (COPCs) from leaving the site without proper management. Not adhering to this plan may have serious consequences including, but not limited to stopping construction and being liable for any damage or harm caused by onsite contamination.

This C-EHMP addresses site activities that the contractor plans to perform for the Hawaii Department of Transportation (HDOT) under the Hakalau Beach Park Lead Soil Removal Action project. The Hakalau Beach Park is located at Mamalahoa Hwy, Hakalau, HI 96710 (Tax Map Key (TMK): (3) 2-9-002:080) (Figure 1a). The site is used as a public park for general recreation, swimming, surfing, and fishing. The table below (Table 1-1) lists the TMKs and landowners of the properties in this project (Figure 1b).

**Table 1-1: TMKs and Landowners**

<b>TMK</b>	<b>Landowner</b>
329002080	County of Hawaii
329002999	State of Hawaii Department of Transportation
331001002	Maria and Steven Wolf
331001001	Marian Land Company
329002025	Maria and Steven Wolf

The objective of this project is to remove all soil within the open park and surrounding area that exceeds the Hawaii Department of Health (HDOH) Tier 1 Unrestricted Land Use Environmental Action Level (EAL) of 200 milligrams per kilogram (mg/kg) for lead offsite for disposal and will be replaced with clean fill. This will achieve substantial risk reduction, remove the source of contamination, eliminate the need for an Environmental Hazard Management Plan (EHMP), and remove the possibility of lead-impacted soil or sediment becoming exposed during future flooding or erosion events.

This C-EHMP has been prepared to identify the location of the known COPC, the concentrations of the COPC, the proper worker safety considerations, the handling and management of the COPC-impacted soil, sampling of soil stockpiles, and procedures for disposal of any soil from this site.

## 2 Background

The C-EHMP applies to the property shown in Figure 1a. The property is also identified by the following.

<b>Address</b>	Mamalahoa Highway, Hakalau, HI 96710
<b>TMK #</b>	(3) 2-9-002:080, 999, and 025; (3) 3-1-001:002 and 001
<b>Latitude/Longitude</b>	19.899469734896783, -155.1296997144229

### Site Conditions

<b>Distance to Nearest Surface Water Body</b>	Project is adjacent to Hakalau Stream
<b>Approximate Depth to Groundwater</b>	3 feet below ground surface (bgs)
<b>Is the Property Above or Below UIC Line</b>	Below
<b>Is the first-encountered groundwater classified as a potential source of drinking water in the Mink &amp; Lau Aquifer Identification and Classification Report?</b>	No.
<b>Current Property Use Type (Residential, Commercial, Zoning, etc.)</b>	Formerly a public beach park but temporarily shut down due to lead-impacted soil concerns
<b>Proposed/Future Property Use Type (Residential, Commercial, Mixed Use Zoning, etc.)</b>	Public park
<b>Typical Soil Profile from Surface to Groundwater (Include Depth Range, Lithology)</b>	Fill and fine sediment to approximately 6 inches below ground surface and gravel and cobbles occurring a greater than 6 inches bgs
<b>Utilities Serving Site (e.g., Storm Drains, Electrical, Gas, Water, Sewer [specify-C&amp;C, Cesspool, Septic, Other])</b>	None.

### 2.1 Existing Environmental Conditions

Hakalau Beach Park is located in Hakalau, Hawaii, approximately 14 miles north of Hilo. The Tax Map Key (TMK) is (3) 2-9-002 Parcel 080 which is owned by the county. The site is located in a steep gulch and is bisected by the wide and rocky Hakalau Stream which opens to the Pacific Ocean (Figure 1a). A paved road descends into Hakalau Gulch on the southern side and crosses to the north of Hakalau Stream via a segment of the old Mamalahoa Highway (and bridge). The HDOT owns an easement under the Hakalau Bridge that extends out ten feet on either side of the bridge which is TMK (3) 2-9-002 Parcel 999. The easement continues via the Old Mamalahoa Highway crossing

over the old concrete Mamalahoa Stream bridge. After crossing the bridge, the access road turns right (seaward/makai) and runs along the north side of the Hakalau stream transiting across two privately owned triangular parcels which straddle the stream (Parcels 331001004 and 331001002). Approximately, 100 yards from the bridge, the access road turns right after reaching a stabilized channel crossing that connects back over to the south side of the stream (Figure 1b).

Often a thin flow of water covers the concrete causeway in the middle of the crossing. After crossing over, the road becomes asphalt/cement. This roadway leads back over to the southern embankment which includes the County of Hawaii Park parcel. This parcel is open and grassy, with a concrete-floor pavilion, and partial walls from the former Hakalau Sugar Mill. Another dirt/rock road serves the northern embankment. The area under the Bridge on the south embankments is rocky with tall grasses. The area under the bridge on the north embankment is silt and rock with tall grass. The site is a public park used for general recreation, surfing, and fishing.

The area had been used for agricultural purposes, and the Hakalau Sugar Mill was built in 1881 on the southern embankment. Like the other Hamakua bridges, the Hakalau Stream Bridge was originally constructed for a railway. The original footings remain, but it was rebuilt after the 1946 tsunami as a highway bridge. The Hakalau Stream Bridge was constructed in 1953 and consists of a concrete deck with steel girders and concrete footings (ESI 2016). The lead-based paint used on the metal support structure flaked and dispersed into the soil below causing the contamination. The abatement of lead-based paint (LBP) was completed sometime in early 2000 based on the State of Hawaii Department of Transportation (HDOT) records.

Surface soil near some of the bents of the Hakalau Bridge as well as in the park itself was examined in November 2015 by the Hazard Evaluation and Emergency Response (HEER) Division of the HDOH. Additionally, they conducted a screening evaluation to see if lead, arsenic, or mercury impacted the soil. A few surface soil samples that were taken from the area near the bents and the park were screened by the HDOH using an X-ray fluorescence (XRF) instrument for the presence of lead, arsenic, and mercury. The range of average lead concentrations detected by the XRF instrument was 528 to 19,360 milligrams per kilogram (mg/kg). The range of average arsenic concentrations determined by the XRF instrument was 29 to 1,062 mg/kg mercury concentrations on average as determined by the XRF instrument.

An LBP and soil evaluation was carried out in March and April 2016 in connection with Hakalau Bridge's planned bridge footing repair work (ESI 2016). In order to conduct the assessment, samples of paint chips from the bridge, rocks beneath the bridge, and surface soil (0 to 3 inches below ground surface (bgs)) were taken in eight different locations. The assessment's goals were to find out whether lead and arsenic were present in the paint used to cover the steel bridge girders' bases and whether there were any elevated levels of lead, arsenic, or mercury in the soil near the areas where bridge footing repairs were planned. The inferences that were drawn from the assessment's findings are listed below.

- The grayish-black paint on the bridge contains Lead-Containing Paint (LCP) (paint with lead concentrations below 5,000 mg/kg).
- LCP and LBP are present on rocks along the stream bed. The LBP (paint with lead concentrations equal to or greater than 5,000 mg/kg) on the rocks consists of black and red paint and is possibly residual old paint that was removed from the bridge in early 2000.
- Neither lead, arsenic, nor mercury was detected at concentrations above the HDOH HEER Office Environmental Action Level (EALs) in the surface soil samples collected from the two stream banks. Based on field observations, the stream banks are within the ordinary high-water areas. This is consistent with the original assumption that any paint chips that may have fallen into the stream water have been washed away.
- Mercury was not detected in any of the surface soil samples at concentrations above the HDOH HEER Office EAL.
- Arsenic was detected at concentrations slightly above the HDOH HEER Office EAL in three (3) of the eight (8) areas sampled. However, bioaccessible arsenic was not detected at concentrations above the HDOH HEER Office EAL and is thus no longer considered a contaminant of concern.
- Lead was detected at concentrations above HDOH HEER Office EAL in six (6) of the eight (8) areas sampled. The highest lead concentrations were detected around the base of the bridge bents located outside the stream.

In 2016, an additional assessment was conducted (ESI 2017). The assessment involved collecting 25 additional soil samples ranging in depth from 0 to 6 inches bgs. The samples were submitted for total lead and Toxicity Characteristic Leach Procedure (TCLP) lead laboratory analyses. Lead was detected at concentrations ranging from 14.1 to 9,480 mg/kg in all samples collected. Nineteen out of 25 soil samples contained lead at concentrations above the HDOH HEER Office EAL of 200 mg/kg. Lead concentrations in soils closest to the bridge footers were substantially higher than in the park areas.

TCLP lead concentrations ranging from 0.084 to 31.8 milligrams per liter (mg/L) were detected in all samples. Three areas contained TCLP lead at concentrations above the Resource Conservation and Recovery Act (RCRA) listed hazardous waste criterium (5 mg/L).

Follow-up sampling in 2020 and 2022 expanded the Decision Units (DUs) areas and included additional depth profiles. The sampling confirmed that the southern embankment HDOT Right Of Way (ROW) contained the highest lead concentration

sample results. The area under the Hakalau bridge had lead concentrations that exceeded the gross contamination levels (<1,000 mg/kg) in soil beginning from surface soil to a depth of 12-inches bgs. The highest results in the ROW were 25,000 mg/kg of total lead.

Ultimately every DU in the HDOT ROW exceeded the construction/trench worker action level of 800 mg/kg of total lead. The area was not confined to the ROW. Lead-impacted soil was found in the adjacent properties (Figures 2a and 2b), primarily upstream on the southern embankment. In total approximately 6,000 sq. feet on the Northern Embankment and approximately 43,000 sq. feet on the southern embankment exceeded the 800 mg/kg lead EAL for Construction/Trench Workers. Impacts decreased at greater distances from the bridge. Total lead remained between 200 mg/kg and 800 mg/kg even 80 to 100 feet from the bridge in the northern embankment. Lead-impacted soils were found approximately 225 feet from the bridge on the southern embankment.

The County of Hawaii park area DUs were between 200 mg/kg and 800 mg/kg within the primary park area. No DUs exceeded 800 mg/kg. Lead-impacted soils covered an area of approximately 43,000 square feet (sq. ft.) of the parcel (the majority of the park space). Some DU depth profiles in the County of Hawaii parcel met the HDOH Tier I EALs for unrestricted land use. Below is a table of the combined 2016, 2020, and 2022 soil sample results at the Hakalau Beach Park (Table 2-1) (EnviroQuest 2020, KPC 2022, and KPC 2023).

**Table 2-1: 2016, 2020, and 2022 Combined Soil Sample Results at Hakalau Beach**

	Lead results below HDOH Tier 1 EAL Unrestricted Land Use (200 mg/kg)
	Lead results above HDOH Tier 1 EAL Unrestricted Land Use (200 mg/kg), but below Construction/Trench Worker Scenario (800 mg/kg)
	Lead results above HDOH Tier 1 EAL above Construction/Trench Worker Scenario (800 mg/kg), but below gross contamination (1,000 mg/kg)
	Lead results above gross contamination (1,000 mg/kg)

2020/2022 DU	2016 DU	Previous Sample ID	Sample Date	Depth (inches)	Previous Lead Results (mg/kg)	Current Use Description	Owner
	1	DU-1	2016	0-3	25,000	Area around the bents 4 and 5 under the bridge on the south side stream.	HDOT
	1	DU-1D	2016	0-3	23,700		
	1	DU-1T	2016	0-3	23,600		
	1	DU-1B	2016	3-6	7,880		
32/33	1	DU-1B	2020	6-12	3,250*; 3,360*; 2,960*		
	2	DU-2	2016	0-3	10,200	Between the road and stream around bent 6	HDOT
	2	DU-2B	2016	3-6	9,480		
32/33	2	DU-2B	2020	6-12	3,250*; 3,360*; 2,960*		
	3	DU-3a	2016	0-6	69.4	Southern stream bank	HDOT
	4a	DU-4a	2016	0-6	3.81	Northern stream bank.	HDOT
Observed scour in Feb. 2020	4a	DU-9+	2016	0-6	2.8		
	4a	DU-10+	2016	0-6	2.52		
	4b	DU-4b	2016	6-18	2.99		
	5	DU-5	2016	0-3	3,730	Northern stream bank. Areas around the bridge bents.	HDOT
34	5	DU-5	2020	0-6	221*		
34	5	DU-5	2020	6-12	918*		
34	6	DU-6	2016	0-3	282	Northern bank: Access road between Bents 9-10	HDOT
	7	DU-7	2016	0-3	2,530	Road on S. Embankment, between Bents 5 and 6.	HDOT
	7	DU-7B	2016	3-6	Refusal		
33	7	DU-7B	2020	6-12	3,538*		
	8	DU-8	2016	0-3	1,850	Vegetated area on S. embankment south of the access road to park area.	Wolf Property
32	8	DU-8	2020	3-6	13,500*		
8B	8	DU-8	2020	3-6	2,680**		
32	8	DU-8	2020	6-12	7,510*		
8B				12+	Refusal		

2020/2022 DU	2016 DU	Previous Sample ID	Sample Date	Depth (inches)	Previous Lead Results (mg/kg)	Current Use Description	Owner
	11	DU-11A	2016	0-3	8,820	Narrow DU south of DU1	HDOT
	11	DU-11B	2016	3-6	Refusal		
32/33	11	DU-11B		6-12	3,538*; 7510*		
	12	DU-12A	2016	0-3	1,410	Grassy area, likely used by public.	Marian Land Co.
	12	DU-23A	2016	0-3	1,040		
	12	DU-24A	2016	0-3	897		
12	12	DU-12A/B, 24A/B	2016	4-6	738**		
	12	DU-12B	2016	3-6	773		
	13	DU-13A	2016	0-3	357	Grassy area, likely used by public.	Marian Land Co.
	13	DU-13B	2016	3-6	372		
	14	DU-14A	2016	0-3	57	Driveway area, acceptable for public use	Marian Land Co.
	14	DU-14B	2016	3-6	93.4		
	15	DU-15A	2016	N/A	Paved	Paved drainage swale.	Marian Land Co.
	15	DU-15B	2016	N/A	Paved		
	16	DU-16A	2016	0-3	339	Park area. Heavy use by public.	County of Hawaii
	16	DU-16B	2016	3-6	348		
37	16	DU-16B		6-12	368*		
	17	DU-17A	2016	0-3	232	Grassy area south of park.	County of Hawaii
	17	DU-17B	2016	3-6	161		
37	17	DU-17B	2020	6-12	368*		
	18	DU-18A	2016	0-3	104	Grassy Park area at mouth of Hakalau stream.	County of Hawaii
	18	DU-18B	2016	3-6	226		
38	18	DU-18B	2020	6-12	764*		
	19	DU-19A	2016	0-3	28.4	Grassy strip west of DU 18. Acceptable for public.	County of Hawaii
	19	DU-19B	2016	3-6	14.1		
	20	DU-20A	2016	0-3	760	Vegetated area west of DU-8.	Wolf Property
	20	DU-20B	2016	3-6	570		
20	20	DU-20A and DU20B	2020	3-6	1,640**		
20				6+	Refusal		
	21	DU-21A	2016	0-3	5,080	Directly below bridge south bank.	HDOT ROW
	21	DU-21B	2016	3-6	2,720		
32	21	DU-21B	2020	6-12	3,538*; 7510*		
	22	DU-22A	2016	0-3	3,830	Wolf Property:	HDOT/

2020/2022 DU	2016 DU	Previous Sample ID	Sample Date	Depth (inches)	Previous Lead Results (mg/kg)	Current Use Description	Owner
32	22	DU-22B	2016/2020	3-6	2,870; 13,500*	Area between driveway and stream. Potential high use.	Wolf Property
32	22	DU-22B		6-12	7,510*		
26			2020	0-3	1,320**	Southern bank upstream of DU22	Wolf Property
				3+	Refusal		
				6-18			
27			2020	0-3	1,680**	Southern bank upstream of DU26	Wolf Property
27				3+	Refusal		
34			2020	0-6	221*	Northern bank: renumbered from DU35 in 2020 SAP	HDOT
34			2020	6-12	918*		
39			2022	0-6	490	Northern bank: adjacent to bridge downstream	Marian Land Co.
39			2022	6-12	737		
40			2022	0-6	131	Northern bank: downstream from DU 39	Marian Land Co.
41			2022	0-6	386	Northern bank: adjacent to ROW upstream	Majority Wolf Property
41			2022	6-12	360		
42a			2022	0-6	99	Northern bank: upstream of 41.	Wolf Property
42b			2022	0-6	76.8 (arithmetic mean)	Northern bank: upstream of 42A.	Wolf Property
43			2022	0-6	146	Southern bank: streambank	Wolf Property
44			2022	0-6	402	Southern bank: across from 43.	Wolf Property
44			2022	6-12	339		
45			2022	0-6	83.7 (arithmetic mean)	Southern bank: upstream of 44	Wolf Property

Notes: DU=Decision Unit  
mg/kg=milligram per kilogram  
HDOT=Hawaii Department of Transportation

## **2.2 Chemicals of Potential Concern**

Lead paint was used for decades on the Hakalau Bridge and may have been used on the Hakalau Plantation Flume (destroyed in 1946). Other bridges in the Hamakua Coast have also been identified as sources of lead-based paint which have flaked off and been deposited below the structure on the valley floor.

Lead-impacted soil has been documented at Hakalau Beach Park (Figures 2a and 2b) and potential impacts on human health, several site investigations were conducted in 2016, 2020, and 2022 to identify and delineate the extent of lead-impacted soil within DUs at the site.

Initial studies performed at Hakalau Beach Park assessed lead, arsenic, and mercury as chemicals of potential concern (COPC). Sampling identified lead as the chemical of concern. Lead-based paints were used as a corrosion-inhibiting coating on the Hakalau Bridge for decades until removed in 2000.

During previous analyses, lead was found to exceed the HDOH Tier 1 EALs for construction/trench worker direct exposure scenario of 800 mg/kg for lead within multiple DUs (see Table 2-2 below for results above 800 mg/kg for Lead at the Hakalau Beach Park Southern Bank) for a total area of approximately 46,550 sq. ft. Approximately 103,390 sq. ft. were found to be above the HDOH Tier 1 EALs for unrestricted land use (200 mg/kg) (KPC 2022).

**Table 2-2: Hakalau Beach Park Southern Bank: Results above 800 mg/kg for Lead**

Exceeds Commercial/Industrial Scenario	Above HDOH Tier 1 EALs for construction/trench worker direct exposure (800 mg/kg)
Gross Contamination	Exceeds HDOH EALs for Gross Contamination (1000 mg/kg)
NA	Not sampled

2020/2022 DU	2016 DU	Depth (inches)	Previous Lead Results (mg/kg)	Current Use Description	Owner	
<b>HDOT ROW DUs</b>						
	1	DU-1	0-3	25,000	Area around the bents 4 and 5	HDOT
		DU-1D	0-3	23,700		
		DU-1T	0-3	23,600		
		DU-1B	3-6	7,880		
32/33		DU-1B	6-12	3,250*; 3,360*; 2,960*		
	2	DU-2	0-3	10,200	Between the road and stream around bent 6	HDOT
		DU-2B	3-6	9,480		
32/33		DU-2B	6-12	3,250*; 3,360*; 2,960*		
	7	DU-7	0-3	2,530	Road on South stream bank, between Bents 5 and 6.	HDOT
		DU-7B	3-6	Refusal		
33		DU-7B	6-12	3,538*		
	11	DU-11A	0-3	8,820	Narrow DU south of DU1	HDOT
		DU-11B	3-6	Refusal		
32/33		DU-11B	6-12	3,538*; 7510*		
	21	DU-21A	0-3	5,080	Directly below bridge south bank.	HDOT ROW
		DU-21B	3-6	2,720		
32		DU-21B	6-12	3,538*; 7510*		
	22	DU-22A	0-3	3,830	Wolf Property: Area between driveway and stream. Potential high use.	HDOT/ Wolf Property
32		DU-22B	3-6	2,870; 13,500*		
32		DU-22B	6-12	7,510*		
<b>PRIVATELY OWNED PARCELS DUs</b>						
	8	DU-8	0-3	1,850	Vegetated area On southern stream bank south of the access road to park area.	Wolf Property
32		DU-8	3-6	13,500*		
8B		DU-8	3-6	2,680**		
32		DU-8	6-12	7,510*		
8B			12+	Refusal		
	12	DU-12A	0-3	1,410	Grassy area, likely used by public.	Marian Land Co.
		DU-23A	0-3	1,040		
		DU-24A	0-3	897		
	20	DU-20A	0-3	760	Vegetated area west of DU-8.	Wolf Property
		DU-20B	3-6	570		

2020/2022 DU	2016 DU	Depth (inches)	Previous Lead Results (mg/kg)	Current Use Description	Owner	
20	DU-20A and DU20B	3-6	1,640**			
20		6+	Refusal			
	22	DU-22A	0-3	3,830	Wolf Property: Area between driveway and stream. Potential high use.	HDOT/ Wolf Property
32		DU-22B	3-6	2,870; 13,500*		
32		DU-22B	6-12	7,510*		
26		0-3	1,320**	Southern stream bank upstream of DU22	Wolf Property	
		3+	Refusal			
		6-18				
27		0-3	1,680**	Southern bank upstream of DU26	Wolf Property	
27		3+	Refusal			

\*DU10 consists of a sample, duplicate, and triplicate. For the purposes of this table, the highest total lead sample result is identified. 2016/2017/2019: Year Sampled  
 ### mg/kg: Total Lead Results  
 mg/kg=milligram per kilogram  
 DU=Decision Unit  
 HDOT=Hawaii Department of Transportation

**Media: Soil**

COPC	Concentration Range	EAL <sup>2</sup>
Lead	2.8 mg/kg – 25,000 mg/kg <sup>1</sup>	200 mg/kg – Unrestricted 800 mg/kg – Construction/ Industrial

<sup>1</sup>Adjusted Results in accordance with HDOH TGM, Section 4.2.8 Evaluation of Data Representativeness  
<sup>2</sup> EAL for Unrestricted Use and Commercial/Industrial Use > 150m from surface water; above drinking water  
 mg/kg=milligram per kilogram  
 EAL=Environmental Action Level  
 COPC=Chemical of Potential Concern

Areas with concentrations exceeding the EALs are depicted in Figure 3.

**2.2.1 Chemicals of Potential Concern and Construction Materials**

Question	Yes	No
Are storm drains (including interceptors) or will storm drains be present at the site?		X
Will any portion of a storm drain (including interceptors) be present at an elevation that is potentially in contaminated groundwater?		X
Will any portion of a utility corridor be present at an elevation that is potentially in contaminated groundwater?		X
Will a portion of any other utility or subsurface structure (other than foundations) extend potentially into contaminated groundwater?		X

Question	Yes	No
Are any potentially flammable or explosive COPCs present at the site (e.g., methane, total petroleum hydrocarbons as gasoline, etc.)?		X
Will any electrical lines/utility corridors be subsurface?		X
Are any COPCs in vapors present at or above 10 % of the LEL?		X
Will any elevator shafts or escalator pits, potentially extend into contaminated groundwater?		X

\* LEL=Lower explosive limit  
COPC=Chemical of Potential Concern

### Construction Materials Assessment

Construction Material in Contact with Contaminated Media	COPC, Concentration and Media	Proposed Material to be used	Material Safe with COPC	
			Yes*	No
Vehicles, Equipment and Supplies	Lead in surface and near surface soil	Metal, Concrete, and Fill	X	

\* Documentation that material is safe to use, and will remain functional, in the presence of the identified contamination should be included as an attachment to the C-EHMP.  
COPC=Chemical of Potential Concern

### 3 Summary of Potential Environmental Hazards

Table 3-1: Environmental Hazards

COPC	Media			Hazard					Potential Receptors				
	Soil	Water	Vapor	Direct Exposure	Leaching	Gross Contamination	Ecotoxicity	Vapor Intrusion	Construction Workers	Site Visitors	Site Occupants	General Public	Future Site Users
Lead	X			X	X	X			X	X			

COPC=Chemical of Potential Concern

A detailed description of the effects of lead exposure is provided below.

Lead is persistent in the environment and accumulates in soils and sediments through deposition. Once absorbed into the body, lead may be stored in mineralizing tissue (e.g., teeth, bones, etc.) for long periods. The stored lead may be released again into the bloodstream, especially in times of calcium stress (e.g., pregnancy, lactation, osteoporosis, etc.) or calcium deficiency.

Depending on the level of exposure, lead can adversely affect the nervous system, kidney function, immune system, reproduction and developmental systems, and the cardiovascular system. Lead exposure also affects the oxygen-carrying capacity of the blood.

The lead effects most commonly encountered in current populations are neurological in children and cardiovascular effects (e.g., high blood pressure, heart disease, etc.) in adults. Infants and young children are especially sensitive to even low levels of lead, which may contribute to behavioral problems, learning deficits, and lowered IQ.

Ecosystems near point sources of lead demonstrate a wide range of adverse effects including losses in biodiversity, changes in community composition, decreased growth and reproductive rates in plants and animals, and neurological effects in vertebrates.

The following are identified as potential human receptors:

- On-site construction workers – including personnel involved in repair or construction/trenching during future site activities; and
- On-site landscapers/site workers – personnel who may maintain landscaped areas and may mow, weed whack, and perform general site maintenance (trash pickup, re-seeding, shrub trimming).

- General Public/Site Users – Including individuals of all ages, who may camp, recreate, or otherwise use the park setting and may potentially dig, touch, drive, lie, or be exposed to lead-impacted soil or dust.
- Ecological Receptors – including native and non-native birds, and mammals that may nest, loaf, hunt, or transit across the site (AECOS 2019).

Direct exposure to lead-impacted soil is a potential exposure pathway to human receptors at the site via the following pathways (Table 3-2):

- Direct Contact: Incidental ingestion or dermal contact with soil;
- Air: Inhalation of fugitive dust;
- Surface Runoff and Sediment Exposure: Contaminants bourn by water or revealed by erosion; and
- Groundwater Exposure: Contaminants leaching from soil or impacting flowing groundwater.

**Table 3-2: Chronic and Acute Direct Exposure Hazards**

COPC	Direct Exposure Hazard				Acute Exposure	Chronic Exposure
	Ingestion	Inhalation	Absorption	Injection		
Lead	X	X			<ul style="list-style-type: none"> <li>• Pain</li> <li>• Muscle weakness</li> <li>• Numbness</li> <li>• Abdominal Pain</li> <li>• Nausea</li> <li>• Vomiting</li> <li>• Diarrhea</li> <li>• Constipation</li> </ul>	<ul style="list-style-type: none"> <li>• Abdominal Pain</li> <li>• Constipation</li> <li>• Depressed</li> <li>• Distracted</li> <li>• Forgetful</li> <li>• Irritable</li> <li>• Nausea/Sick</li> </ul> <p>People with prolonged exposure to lead may also be at risk for high blood pressure, heart disease, kidney disease, and reduced fertility.</p>

COPC=Chemical of Potential Concern

The Remedial Action Contractor will be responsible for updating this C-EHMP or preparing a C-EHMP Addendum describing their specific means and methods to perform the scope of work, including a Site-Specific Health and Safety Plan (HASP).

No work involving the C-EHMP, or C-EHMP Addendum shall be performed until the updated C-EHMP or C-EHMP Addendum is approved by both the HDOH HEER Office and the DOT.

### **Environmental Hazard Maps**

A Detailed Environmental Hazard Map is included as Figure 3 in the Figures Section of this C-EHMP. The Environmental Hazard Map delineates the location of known or presumed contamination at the Site and what type of hazard the contamination presents. All known and suspected contaminated media will be properly handled and disposed of in accordance with the guidance in this C-EHMP. Mishandling of contaminated media could result in spreading the contamination to uncontaminated areas of the Site or to off-site locations, which could result in fines and other penalties.

## 4 Notification Requirements

The effective environmental management of any project requires a coordinated effort from all individuals involved. The following sections outline the responsibilities of key personnel involved in the project.

### 4.1 Key Project Personnel

The project owner (owner/developer) is expected to maintain a list of project contacts throughout the construction phase of the project.

The key project personnel are as follows (Table 4-1). An updated key project personnel list needs to be maintained throughout the project and submitted to HDOH in writing whenever a change in key project personnel occurs.

**Table 4-1: Key Project Personnel**

<b>Role</b>	<b>Company</b>	<b>Name</b>	<b>Phone #</b>	<b>e-mail</b>
Construction Project Manager	To Be Determined (TBD)			
Construction Foreman	TBD			
Onsite Qualified Environmental Professional	Kealahahi Pacific Consultants LLC	Julie Anne Hall	(937) 818-3244	julie@kpchawaii.com
Qualified Environmental Professional (Project Manager)	Kealahahi Pacific Consultants LLC	Scott Moncrief	(808) 286-0222	scott@kpchawaii.com
Owner	Multiple Landowners	County of Hawaii, HDOT, Maria and Steven Wolf, and Marian Land Company		
Operator	HDOT	Harry Takiue	(808) 692-7563	Harry.takiue@hawaii.gov
Developer/Contractor	TBD			
National Pollutant Discharge Elimination System (NPDES) Permit contact	HDOH Clean Water Branch			
HDOH HEER Office Project Manager	HDOH HEER	Thomas Gilmore	(808) 586-4353	Thomas.gilmore@doh.hawaii.gov
Landfill Disposal Contact	West Hawaii Sanitary Landfill	TBD	(808) 886-0940	

<b>Role</b>	<b>Company</b>	<b>Name</b>	<b>Phone #</b>	<b>e-mail</b>
Waste Transporter Contact	TBD			
Contact Import Site (if importing soil)	TBD			

Table 4-1 (continued)

In addition, if site conditions or planned building configurations change following submittal and acceptance of this C-EHMP by the HDOH HEER Office, then the following agencies will be notified at least 90 days prior to conducting ground-disturbing activities or as soon as the change has been identified. Please note that if HDOH is notified of a change in site conditions or planned building configuration less than 90 days prior to ground-disturbing activities, there could be delays in construction if additional assessment work needs to be conducted. The initial notification of construction activities and any changes can be submitted through the HDOH e-permitting portal using the website link below.

<b>Agency</b>	<b>Phone</b>	<b>Link/Website</b>
HDOH HEER Office	(808) 586-4249	<a href="https://eha-cloud.doh.hawaii.gov/epermit/app/#/formversion/ed9ca916-7863-459b-b5dd-e66f881381d5">https://eha-cloud.doh.hawaii.gov/epermit/app/#/formversion/ed9ca916-7863-459b-b5dd-e66f881381d5</a>

## 5 Requirements for Onsite Environmental Oversight

On-site monitoring is a key component of ensuring that the procedures documented in this C-EHMP are implemented properly and function as intended (e.g., appropriate installation and location of erosion and sediment control measures, cleanliness of equipment, suitability of secondary containment for fuel storage, screening of potentially contaminated material, and stockpile segregation, etc.). A qualified environmental professional (QEP) will be retained as the environmental monitor to provide guidance on implementing the recommended measures and to develop additional mitigation measures if the need arises. The onsite QEP will have completed Hazardous Waste Operations and Emergency Response (HAZWOPER) 40-hour training with a current 8-hour refresher.

Monitoring events will be conducted at an appropriate frequency based on specific work tasks/procedures and the potential for adverse impacts to occur (Table 5-1). An appropriate schedule (frequency and duration of site visits) will be established between the QEP, and all involved regulatory agencies regarding when the QEP is onsite. In general, the QEP will be familiar with the day-to-day conduct of project activities and be on-site during activities with the potential to impact human health or the environment, when contaminated media will be disturbed, when mitigation measures are implemented, or as determined in discussion with the regulatory agencies. Monitoring will be conducted with greater frequency during periods of inclement weather (e.g., heavy precipitation, and strong winds) and during critical components/tasks of the project, such as working in contaminated groundwater. The QEP will be onsite whenever potentially contaminated soil or groundwater may be disturbed and when hazardous vapors may be present. If demolition activities include abatement of lead-based paint or asbestos, abatement activities will be completed in accordance with all State and Federal laws and regulations before demolition. This is necessary to ensure the protection of construction workers, the general public, and the environment. Key monitoring stages may include, but are not necessarily limited to:

- Performing work in the Hakalau Beach Park and adjacent private parcels.
- Soil movement activities (e.g., drilling, excavation, transportation, soil disposal, etc.).
- Dewatering activities.
- Installation of erosion and sediment control measures.
- Decontamination of vehicles and equipment.
- Soil sampling.
- Waste profiling and disposal.

The primary responsibility of the QEP is to ensure that the environmental and human health protection measures are implemented and adhered to and that any movement, transport, and disposal of contaminated material (onsite and to an offsite location) is properly documented.

Typical responsibilities of the QEP include those identified below:

- Direct the segregation of contaminated soil.
- Communicate the requirements of the C-EHMP to project members during pre-job and tailgate meetings.
- Remain onsite as per the schedule established between parties prior to project start. The QEP will remain on-call during non-critical work periods to respond to emerging environmental issues.
- Review the contractor's work procedures to ensure functionality and compliance with the C-EHMP and applicable regulations, standards, and Best Management Practices (BMP).
- Provide advice in preparing for work activities in a manner that mitigates adverse environmental or health effects.
- Exercise the authority to modify and/or halt any construction activity at any time if deemed necessary for the protection of human health and the environment.
- Advise project members if project activities have caused or are likely to cause an environmental incident and make recommendations for corrective action.
- Monitor compliance with the C-EHMP and relevant permit conditions.
- Liaise directly with project members and provide technical advice to resolve situations that may impact human health and the environment as they arise.
- Maintain complete records of activities related to the implementation of the C-EHMP. This includes any measurements taken (e.g., pH, turbidity, temperature, conductivity, photoionization detector [PID] screening, air monitoring, equipment calibration, manifests, truck receipts, truck counting spreadsheets, etc.), photographs, and incident reports.
- Complete and submit environmental monitoring reports to the HDOH HEER and report any unanticipated adverse effects on the environment. Such reports will include the nature of the effect, its cause, mitigation and/or remediation implemented, and whether a work stoppage was ordered, as well as photographs, analyses, and measurements, if applicable.
- Report unanticipated encounters with contamination at the site in accordance with Hawaii Revised Statutes (HRS) 128D. Reportable releases include contamination not already identified at the site, as well as tanks, drums, and/or abandoned pipelines that are not identified in advance and are encountered during excavation.

**Table 5-1: Project Activities When QEP Must Be Present**

Activity	Planned at Site?		QEP Will Be Present?		Monitoring Equipment to be Used by QEP
	Yes	No	Yes	No	
Environmental Sampling	X		X		Sampling Supplies
Geotechnical Sampling		X		X	Sampling Supplies
Silt Fence Installation	X		X		Logbook and Camera
Grading	X		X		Gilian Pumps (personal cassettes) General Air Monitoring
Excavation	X		X		Gilian Pumps (personal cassettes) General Air Monitoring, photoionization detector (PID)
Soil Stockpiling	X		X		None
Soil Import	X		X		Manifests, Truck Receipts
Engineering Control Installation and Testing	X		X		Logbook
Installation of Erosion/Sediment Controls	X		X		Logbook

**Table 5-2: Frequency of QEP Monitoring Activities**

QEP Monitoring Activities	Monitoring Required Site?		Frequency		Monitoring Equipment to be Used by QEP
	Yes	No	Daily	Weekly	
Discharge of Sediment to Stream- Narrow Stream on South side of valley floor	X		X		Horiba U-10 Multiprobe Meter
PID		X		NA	Not applicable for Lead as a COPC
pH, Turbidity, Temperature, conductivity.	X		X		Horiba U-10 Multiprobe Meter
Air Monitoring	X		X		Gilian Pumps (personal cassettes) General Air Monitoring.
Checking for Proper Manifests	X		X		None
Counting Trucks Leaving Site	X		X		None
Collecting Photographs	X		X		None
Documenting Incidents	X		X		None
Daily Monitoring/Production Reports	X		X		None

Note: QEP monitoring will be downgraded from daily monitoring and switched to every two weeks (or two times per month).

Additional details regarding the QEP monitoring schedule shall be included in the Contractor's updated CEHMP or C-EHMP Addendum.

## 6 Construction Activities

This C-EHMP is specific to the removal of the soil at the Site as part of a larger project which includes the rehabilitation or repairs to the Hakalau Bridge above. This is in conjunction with the bridge being repaired. Per the Remedial Action Memorandum (KPC 2023), the remedial action objectives for Hakalau Beach Park as identified by the site owners and as recommended by the state guidance is to remove the lead-impacted soil that exceeds 200 mg/kg of lead from direct contact with site users, site workers, and potential ecological receptors. This will achieve substantial risk reduction, remove the source of contamination, eliminate the need for an environmental hazard management plan, and remove the possibility of lead-impacted soil or sediment from becoming exposed during flooding/erosion in the future. The Remedial Action Contractor will be responsible for updating this C-EHMP or preparing a C-EHMP Addendum describing their specific means and methods that will provide site-specific information about what type of construction activities will be conducted in detail and provide construction plans or drawings on where these activities take place. The following will also be provided by the Remedial Action Contractor:

- NPDES Permit
- Remedial Design approach
- Stormwater Pollution Prevention Plan (SWPPP)
- Site-Specific Health and Safety Plan
- Erosion and Sediment Control Plan (ESCP)
- Activity Hazard Analysis
- Spill Prevention and Response Plan
- Best Management Practices for Erosion and Stormwater Control

Lead-impacted soil has been documented at Hakalau Beach Park and potential impacts on human health, several site investigations were conducted in 2016, 2020, and 2022 to identify and delineate the extent of lead-impacted soil within Decision Units (DUs) at the site.

Remedial action will begin at the area with the lowest level (200 mg/kg) of lead contamination to the highest. A general staging area will be set up adjacent to the outside of the areas with the highest levels of lead contamination, for general equipment parking. Super sacks will be filled in the areas with higher levels of lead contamination and then staged in a support zone outside of these areas but within the lower levels of lead contamination. A gravel road will be placed on the geotextile in the staging area connecting it to where the filled super sacks are located. This is subject to be modified during the project planning effort.

A total of 3,811 Cubic Yards (CY) of soils that exceeded the 200 mg/kg lead criteria for soil removal will be removed off-site. This includes approximately 2,087 CY of soil

exceeding 200mg/kg and approximately 1,724 CY of soil exceeding 800 mg/kg (see Table 6-1 below).

**Table 6-1: Soil Removal and Clean Fill: Locations and Cubic Yards**

Ownership	Sq Ft	DU ID	Remove soil (12" estimate) that exceeds 200 mg/kg (CY)	Clean fill 18" (CY)	Clean fill 24" (CY)
County of Hawaii 200-800 mg/kg	36017	16, 17,18,37,38	1334	2001	2667
HDOT ROW (North) 800+ mg/kg	5885	5,6,34	218	327	436
HDOT ROW (South) 800+ mg/kg	19341	1,2,7, 11, 21, 22, 32, 33	716	1075	1433
Private Parcels (North) 200 - 800 mg/kg	9947	202241, 202239	368	553	737
Private Parcels (South) 200 - 800 mg/kg	10390	13, 202244	385	577	770
Private Parcels (South) 800+ mg/kg	21325	8, 12, 13, 22,27, 26	790	1185	1580
<b>Total</b>	<b>102905</b>		<b>3811</b>	<b>5718</b>	<b>7623</b>

DUs that pass TCLP and exceed HDOH Tier I unrestricted land use EALs for lead (200 mg/kg) (Figure 3) will be excavated, hauled to West Hawaii Sanitary Landfill, and replaced with clean fill at a design fill depth of 24 inches. DUs in the County of Hawaii parcel meet this standard. Other locations, particularly the HDOT ROW area and some private parcels, do not meet this standard and may require disposal off-island (see table above).

DU1, DU2, DU11, and DU21 failed TCLP at different depth profiles, (0 to 3-inches bgs), and near-surface soil (3 to 6-inches bgs) (see Table 6-2 below). This is approximately 8,390 sq ft. It is possible that DU2, which was not tested at the time, could also fail TCLP due to its high total lead concentrations. DU2 is approximately 2,444 sq ft but both 0.25-inch depth layers are likely to fail TCLP so at least 0.5 feet would be removed and would require off-island disposal.

**Table 6-2: DUs That Failed TCLP (2016) and Require Mainland Disposal**

DU	Owner	sq. ft.	Depth*	CY	Total Lead mg/kg	TCLP
<b>DU-1B</b>	HDOT	5847	3 - 6 inches	54.14	7880	26.2
<b>DU-11</b>	HDOT	1228	0 - 3 inches	11.37	8820	31.8
<b>DU-21</b>	HDOT	1315	0 - 3 inches	12.18	5080	14.2
<b>DU-2A</b>	HDOT	2444	0 - 3 inches	22.63	10200	Fails TCLP*
<b>DU-2B</b>	HDOT	2444	3 - 6 inches	22.63	9480	Fails TCLP*
<b>Total</b>		13278		122.94		

Notes:

CY=Cubic Yard

DU=Decision Unit

HDOT=Hawaii Department of Transportation

mg/kg = milligrams per kilogram

sq ft=Square Feet

TCLP= Toxicity Characteristic Leaching Procedure

Soil Excavation, and Off-Site Disposal of all soil that exceeds the HDOH Tier 1 EAL for unrestricted land use for lead (200 mg/kg) Replace contaminated soil with clean fill.

Note = DUs 2A and 2B are assumed to fail TCLP based on total lead concentrations (ESI 2016)

\* As a conservative measure assume that an entire 0.5 will be removed from each of these DUs total of 246 cubic yards (123 CY x 2=246 CY).

Confirmation sampling will be conducted to ensure that all targeted soil is removed from each DU. All DUs would be excavated in 6-inch lifts until confirmation samples indicated that soil concentrations were below the HDOH EAL for unrestricted land use (200 mg/kg). Approximately 103,000 sq ft of soil would need to be removed to various depths. An estimated depth of 12 inches was used. The depth may be less on a site-wide average.

It is the responsibility of the contractor implementing the remedial alternative to plan the process as efficiently as possible and to manage all excavated soil in a manner that will ensure there is no accidental contamination of clean areas. Stockpiles of lead-impacted soil will be staged separately from clean soil. The remedial contractor should consider a work-staging approach where the contaminated soil removal, confirmation testing, and subsequent backfilling with clean soil can be optimized to reduce the number of trips into the valley floor to lessen the disturbance to the neighboring community.

Clean fill would then be brought in and overlaid across the impacted site at a depth of 24 inches and grass would be maintained to prevent potential exposure. Additional clean soil for drainage grading would be needed.

An archaeological consultation and monitoring would be required during the excavation. Once removal is completed, soil onsite would not require an Environmental Hazard Management Plan (EHMP). The primary maintenance item

would be cutting grass and addressing any erosional issues to the grass cover over the new layer of imported soil.

The specific equipment and Contractor's means and methods will be provided by the Contractor's Remedial Design.

Planned Types of Excavations:

<b>Excavation Type</b>	<b>Maximum Depth</b>
Excavation	12 inches
Grading	TBD

## 7 Soil Management Plan

The purpose of this section is to ensure that lead-contaminated soil is properly handled and managed. The management of potentially contaminated soil will be overseen by an onsite QEP.

### 7.1 Soil Management

Soil disturbed at the Site will be continuously monitored and documented by a QEP. Where known or suspected contaminated soil is encountered during excavation, the appropriate response actions will be taken that conform with HDOH and Environmental Protection Agency (EPA) guidance, laws, and regulations. This includes proactive planning to ensure that workers have the appropriate level of Personal Protective Equipment (PPE), and that contaminated soil is managed properly when excavated. Tasks associated with properly managing contaminated soil include the following:

- Since contaminated soil is located at the entire area of excavation, a QEP will provide field oversight to ensure:
  - that known or suspected contaminated soil is segregated from clean soil,
  - that known or suspected contaminated soil is properly stored and covered with plastic sheeting or otherwise segregated.
  - that the contaminated soil is managed properly during and following excavation,
  - and that health and safety guidance related to the potential exposure of workers to COPCs is provided.
- Workers who may come into contact with contaminated soil will wear the appropriate level of PPE.
- Workers who may come into contact with contaminated soil will have required training (at a minimum, 40-hour HAZWOPER certification and current 8-hour annual refresher training).
- Workers who may be exposed to lead-contaminated soil shall be trained in accordance with the State of Hawaii Department of Labor and Industrial Relations, Occupational Safety and Health (HIOSH) Lead Construction Standard (Hawaii Administrative Rules (HAR) 12-148.1).
- Soil trucked offsite will be drained of fluids and the load will be covered with a dust screen during transport.
- If newly encountered soil contamination is discovered at a previously unknown source or location, the HDOH HEER Office will be immediately notified of its discovery by reporting it as a new release.

#### 7.1.1 Field Identification of Contaminated Soil

Lead cannot be identified in the field through visual and olfactory observations;

Therefore, the contaminated soil will be managed in a manner protective of site workers, the public, and the environment. Areas of known or suspected contaminated soil are depicted in Figures 2a and 2b. Soils in this area will be segregated and stockpiled separately from clean soil. Additional testing when needed will be performed (e.g., air monitoring, waste disposal, and potentially confirmation sampling).

During the excavation of known contaminated soil, the QEP will perform the following activities:

- Monitor the location of excavation activities to ensure that the soil depicted on hazard maps is properly managed as contaminated, even when there is no field evidence of contamination.
- Visually screen soils for staining, debris, soil waste, discoloration, or other evidence of contamination as the soils are removed from the excavation.

#### *7.1.2 Dust and Erosion Control*

Dust and erosion controls at the Site will be continuously monitored and documented by a QEP. Prior to excavation activities, the Contractor and the QEP will evaluate and establish erosion control and dust control measures. The erosion control and dust control measures will prevent impacted soils from migrating away from the excavation area. Typically, BMPs are employed to control erosion and prevent the spread of contamination via runoff or wind.

Dust control measures will ensure compliance with ambient air quality standards established in the Hawaii Administrative Rules (HAR) 11-59 and will comply with air pollution control requirements specified in HAR 11-60.1. During excavation and handling of impacted soil, the following dust control measures will be implemented to minimize dust generation:

- Dust/silt fences: BMPs associated with erosion control measures will include the installation of silt fencing in the vicinity of the excavation and along the site perimeter. Dust barriers will be used where extensive excavation is anticipated.
- Equipment decontamination: BMPs to control the transport of contaminated soil from the site and within the site will be used to limit the tracking of soil away from the excavation area. Decontamination areas will be set up adjacent to excavation areas where contaminated media will be disturbed, adjacent to stockpile areas, and where vehicles and equipment leave the site. Decontamination protocols are described in Section 14.0.
- Wetting/misting: BMPs associated with dust control measures will include the use of water to be sprayed on the soil during excavation activities. During excavation, water will be sprayed on the surface of the soil to prevent dust from being

generated. However, the amount of water used for dust control will be minimized to not create run-off away from the excavation.

### *7.1.3 Excavation and Stockpiling*

Suspect lead-contaminated soil will be stockpiled and segregated from clean soil. The following tasks will be performed with respect to managing lead-contaminated soil.

- Contaminated soil will be segregated from uncontaminated soil.
- Water contained within excavated soils will be allowed to drain back into the excavation before stockpiling the soil.
- Soil may be loaded directly from the excavation into bins or managed as temporary stockpiles on-site. Excavated soil temporarily stockpiled on-site will be placed in piles and/or Super Sacks® (or another Flexible Intermediate Bulk Container of equivalent quality) on top of a 20-mil plastic-lined sheeting to reduce potential contamination of underlying soil. The covered stockpiles (pending storage into Super Sacks®) will be labeled to identify the location/extent of suspected contamination.
- Underlay the edges of the plastic sheeting with clean soil or other material to create a berm around the stockpile.
- Ensure that the height of the berm will be sufficient to prevent stormwater runoff or run-on from breaching it. The contaminated soil will be placed inside the bermed area on top of the plastic sheeting.
- Soil stockpiles or Super Sacks® will be located away from storm drain inlets, surface waters, and stormwater drainage pathways/channels.
- Soil stockpiles and/or Super Sacks® will remain on-site and cannot be transported or stored off-site without prior authorization or characterization. The stockpiles will be covered with plastic sheeting at the end of each day and during any major wind or rain events. The plastic sheeting will be secured with enough ballast so that it will not be dislodged by strong winds.
- Confirmation sampling of the underlying soil may be required following stockpile or Super Sacks® removal to ensure that COPCs did not leach into the ground. The QEP will prepare a plan for confirmation sampling post-stockpiling.

## **7.2 Soil Reuse and Disposal**

Prior to the disposal of the lead-contaminated soil at a licensed disposal facility, all soil will be sampled to ensure that it is appropriately characterized so the final disposition of the soil may be determined. Below are the planned location(s) for soil disposal. If other locations are later planned following approval of this plan, then the HEER Office will be notified and provide approval prior to any material being transported.

Soil samples will be collected in accordance with the HDOH HEER Technical Guidance Manual and the HDOH Material and Stockpile Guidance (<https://health.hawaii.gov/heer/files/2019/12/Clean-Fill-Guidance-HDOH-Oct-2017-1.pdf>).

Confirmation Soil Sampling Procedures

Soil samples will be collected at a frequency indicated in Sections 7.2.1 and 7.2.2. Each Multi-increment (MI) sample will consist of 50 soil increments. The soil increments will be collected using a 20-gram capacity plastic disposable scoop. The soil increments will be dispensed into a clean, unused Ziploc bag. One MI sample will consist of approximately 1,200 grams of soil.

Following sample collection, the sample bag will be sealed, labeled, placed in a cooler with ice, and transported to the designated laboratory for analysis. A chain of custody will be used to track the samples from collection to final disposition at the laboratory. Soil samples will be collected in accordance with the HDOH HEER Office Technical Guidance Manual (TGM).

Chemicals to Analyze	Analytical Method	Sampling Frequency (CY per Sample)
Total and TCLP Lead EPA	EPA 6020B/EPA3050B	100

All soil samples will be collected in accordance with the HEER Office TGM. This requires the collection of multi-increment soil samples to properly characterize the soil.

Off-site Disposal

	Disposal Location
Name of Disposal Location	West Hawaii Sanitary Landfill
Address of Disposal Location	71-1111 Queen Ka'ahumanu Hwy, Waikoloa Village, HI 96738
Land Use (Site Zoning)	TBD

This information will be communicated to the soil hauler, and it will be ensured that the hauler only disposes of soil at locations approved in this plan. The QEP will monitor and review hauling manifests and disposal records to ensure adherence to the plan. Disposal of soil at a location not previously approved could result in fines.

*7.2.1 Stockpile Sampling for Disposal at a Disposal Facility*

Soil that is below 800 mg/kg for lead will be disposed of at West Hawaii Sanitary Landfill, a permitted waste disposal facility. The MI sampling requirements are as follows:

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	<b>Disposal Facility Requirements</b>
<b>Stockpile Volume (cy) per sample</b>	400
<b># of increments per MI sample</b>	50

### 7.2.2 Record Keeping

A log of all soil that leaves the Site and its final disposition will be maintained by the QEP. All waste manifests, truckload counts at the source and receiving site, weigh tickets and soil profiles will be included in a final report documenting the environmental oversight conducted during the project. The report will be submitted to the HEER Office at the conclusion of the project. For all soil disposed of at a disposal facility a manifest with all required signatures will be submitted. If the soil will be imported to the site, then the QEP will collect and maintain similar records and provide them to the HEER Office for review and approval. Documentation that the imported material is clean will be provided by the soil generator and a soil agreement will be signed between the generator and the site owner.

## 8 Groundwater Management Plan

Estimated Depth to Groundwater at Site:	3 feet bgs		
Proposed Maximum Excavation Depth:	12 inches		
Estimated Direction of Groundwater Flow:	East		
Will Contaminated Groundwater be Encountered During this Project?	Yes	No	Unknown
		X	
Will Groundwater from this Site be Dewatered into the Sanitary Sewer System?		X	
Will Groundwater from this Site be Dewatered into the Storm Sewer System?		X	
Does the Contractor have a Dewatering Permit Issued by the County and/or HDOH Clean Water Branch?			X
Is Free Product Known or Suspected to be Present at the Site?		X	

### 8.1 Groundwater Management

The current remedial action plan does not anticipate impacting groundwater at this site; therefore, a groundwater management plan is not needed for this C-EHMP. If plans change or new information indicates that groundwater will be impacted, then this C-EHMP will be revised and re-submitted to the HEER Office for review and approval at least 90 days prior to conducting groundwater disturbing activities or as soon as the change has been identified.

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## 9 Storm Water Management Plan

Proactive actions will be taken to prevent stormwater from coming into contact with contaminated soil at the site. The actions listed below will minimize the potential for contaminating stormwater. The Remedial Action Contractor will have an NPDES and a SWPPP/ECSP developed for the removal action project.

- Place lead-contaminated soil in Super Sacks® or temporarily stockpiled on-site on top of a 20-mil plastic-lined sheeting in a lined, bermed area to prevent stormwater from contacting contaminated soil.
- Open excavations will be backfilled as soon as practicable to prevent stormwater and direct precipitation from entering the excavation. When possible, open excavations will be bermed to prevent stormwater run-off from entering the excavation.
- In the event of heavy rain, ensure that all stockpiles and/or Super Sacks® of contaminated soil are covered with plastic sheeting and substantially secured.
- Regularly monitor the weather throughout the day for signs of approaching storms and/or heavy rains.

## **10 Vapor Management Plan**

None of the COPCs identified or suspected to be present at the site contain significant volatile constituents that are anticipated to create a soil vapor hazard at the site during construction. Therefore, a vapor management plan is not needed for this C-EHMP. If new information indicates that hazardous soil vapors may be present, then this C-EHMP will be revised and re-submitted to the HEER Office for review and approval at least 90 days prior to conducting soil/groundwater disturbing activities or as soon as the change has been identified.

## 11 Spill or Release Response

Releases, should they occur, will be reported in accordance with HRS 128D and HAR 11-451. In addition to contractor releases, a release may include pre-existing contamination encountered during construction activities. If new contamination is discovered that is different from any known previously reported releases, the release will be reported as described in the abovementioned regulations.

### 11.1 Release Response

If a release occurs, the following actions will be taken:

- Determine the identity of what was spilled, the source of the spill, the volume of the spill, the severity of the spill, and if immediate emergency response actions are necessary.
- Stop work if contaminant releases are extremely large and cannot be contained. If an imminent threat to human health or the environment exists, or if human or environmental receptors are impacted (e.g., human receptors falling ill or suffering sudden illness), notify the Hawaii County Fire Department by calling 911.
- If the spill is of a volatile, flammable, or combustible liquid or vapor, possible ignition sources will be eliminated, and workers will be directed to remain upwind. In addition, monitor for explosive vapors using a lower explosive limit (LEL) meter.
- Stop work if an unusually large release or contaminated area is encountered unexpectedly or if there is any release of chemicals or hazards not covered by the plan.
- Stop work and take immediate emergency response actions if a worker or member of the general public is injured.
- Eliminate the source of the spill to the extent practicable (e.g., shutting off a valve, righting an overturned container), if it is safe to do so. Do not attempt to stop a release from an active fuel pipeline.
- Protect sensitive ecological receptors threatened by the spill.

### 11.2 Release Reporting

In the event of a release of a hazardous substance that causes an imminent threat to human health or the environment, the first call will be to 911.

All releases will be reported to the HEER Office (808-586-4249 or 808-247-2191 after work hours) and the Local Emergency Planning Committee (LEPC) at (808) 936-8181.

Both agencies will be contacted by telephone or in person immediately following a release. Note, that there is no penalty for reporting a release unnecessarily, but there are large penalties for not reporting a release.

If petroleum is observed on surface water, then notify the U.S. Coast Guard (USCG) through the National Response Center (NRC) at (800) 424-8802. Please note, that petroleum observed in groundwater is not reportable to the NRC. For oil and hazardous substance spills that threaten or occur in navigable waters, the USCG is the lead agency.

The on-site personnel responsible for ensuring that the appropriate release notifications are conducted are listed below. Please note, that in the case of an emergency or imminent threat to the environment, any on-site personnel can contact 911.

**Personnel Responsible for Release Notifications**

Name	Company	Title	Phone Number
QEP	Kealahahi Pacific Consultants LLC	Project Manager	(808) 286-0222

## 12 Worker Protection

A Site-Specific Health and Safety Plan (HASP) will be prepared for the site in accordance with the appropriate occupational health and safety regulations. These regulations and requirements include but are not limited to the use of the appropriate level of PPE and appropriate personal hygiene steps associated with the identified COPCs at the site. The Contractor's Site-Specific HASP shall be included in the updated C-EHMP or C-EHMP Addendum.

Administrative Controls for Protecting Workers from COPC Hazards (further detailed in the Site-Specific HASP) include:

- 40-hour HAZWOPER training and current 8-hour refresher are required for all workers who may come into contact with contaminated media.
- HIOSH Lead Construction Standard training for workers who may be occupationally exposed to lead (HAR 12-148.1).
- A discussion of COPC hazards that may be encountered will be discussed during daily tailgate safety meetings.
- A QEP will be present when contaminated media is moved or disturbed.
- Work will be restricted to the areas where lead was not detected at concentrations above the HDOH HEER Office Commercial/Industrial EALs or Construction/Trench Worker Direct Exposure EALs.

Engineering Controls for Protecting Workers from COPC Hazards (further detailed in the Site-Specific HASP) include:

- The appropriate level of PPE will be selected based on the potential hazards and COPCs associated with the individual construction tasks. The level of PPE may be upgraded or downgraded depending on the tasks being conducted and the level of contact with the soil. At a minimum, Modified Level D PPE consisting of Tyvek suits, chemical-resistant boots, and nitrile gloves is to be required for workers directly exposed to contaminated soils within the trenches and excavations.
- Conduct air monitoring to properly select respiratory protection and assure the safety of the workers.
- Stanchions (delineators) and hazard tape will be used to delineate exclusion areas where COPCs are present and access is restricted.

## 13 Decontamination

Prior to excavation activities, the Contractor and the QEP will designate areas for decontamination activities. The QEP will also evaluate and establish decontamination procedures for personnel, tools, equipment, and vehicles, prior to construction. Decontamination procedures for personnel and BMPs to limit direct exposure to COPCs will also be discussed in the Site-Specific HASP.

### 13.1 Decontamination of Tools and Personnel

Appropriate personal hygiene practices will be adhered to at all times when handling contaminated soil. Washing facilities will be made available on the jobsite to allow workers to wash their hands and avoid cross-contamination before eating, drinking, smoking, and/or heading home for the day.

After contact with the impacted soil, proper decontamination procedures will be conducted including the removal, segregation, and disposal of PPE. Any used PPE will be placed in plastic garbage bags, double-bagged, and deposited in the site dumpster, or a municipal landfill.

Hand-held and manual tools in direct contact with impacted soil will be decontaminated to remove any contaminated soil or water before handling unimpacted materials that are assumed to be uncontaminated and before they are removed from the work area. The decontamination of tools will include the following:

- At the excavation location, physically remove soil adhering to the surface of the equipment using appropriate hand tools. Soil removed during this step will be placed back into the impacted area, excavation, or the appropriate stockpile following removal.
- Rinse off contaminated groundwater at the excavation location, allowing rinse water to drain back into the excavation or be collected in a container for proper disposal.
- While the tools are located at the excavation, water will be used to wash the surfaces of the tools that were exposed to lead-impacted soil. The water used to wash the exposed surfaces will be directed back to the impacted area or excavation and allowed to infiltrate.

During equipment decontamination, proper PPE will be employed to minimize exposure to COPCs. Proper PPE will include Modified Level D PPE with nitrile gloves, rubber boots, waterproof Tyvek, and an appropriate face shield to protect against splash back during decontamination. The QEP will designate Decontamination Areas for the donning and doffing of disposable PPE and for the cleaning of materials.

### **13.2 Decontamination of Vehicles and Equipment**

Vehicle and equipment decontamination will occur following the use of vehicles and equipment (including haul trucks and heavy machinery) in direct contact with lead-impacted soil. The equipment decontamination procedures are intended to describe methods for reducing and controlling the spread of site COPCs to unimpacted portions of the site or unimpacted materials, and to off-site locations.

Equipment and vehicles in direct contact with impacted soil will be decontaminated to remove any contaminated soil before they leave the work area. The decontamination of vehicles and equipment will include the following:

- At the excavation location, physically remove soil adhering to the surface of the equipment using appropriate hand tools. Soil removed during this step will be placed back into the impacted area, excavation, or the appropriate stockpile following removal.
- While the vehicle/equipment is located at the excavation, water will be used to wash the surfaces of the vehicle/equipment that were exposed to the lead-impacted soil. The water used to wash the exposed surfaces will be directed back to the impacted area or excavation and allowed to infiltrate.

During equipment decontamination, proper PPE will be employed to minimize exposure to COPCs. Proper PPE may include Modified Level D PPE with nitrile gloves, rubber boots, waterproof Tyvek, and an appropriate face shield to protect against splash back during decontamination. The Contractor and QEP will designate Decontamination Areas for the decontamination of vehicles and heavy machinery.

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## 14 Recordkeeping and Reporting Requirements

Detailed records of all environmental activities conducted during construction will be kept. These records may include air monitoring results, stockpile sampling, soil segregation, soil and/or groundwater sampling methodologies and results, dewatering activities, soil disposal, and any other environmental activities conducted in association with construction activities.

In addition to maintaining these records, within 30 days of the completion of ground-disturbing activities, a removal action report summarizing the environmental activities conducted during construction is to be submitted to HDOH for review and comment. Guidance for the preparation of a removal action report can be found in Section 18 of the HEER Office Technical Guidance Manual. The report will also include copies of all disposal receipts, truck logs, and laboratory analytical results, as well as a map illustrating the approximate GPS location(s) where any lead-contaminated soil was encountered onsite.

If lead-contaminated soil is left on site following the construction activity, the property owner will complete an Environmental Hazard Evaluation (EHE) and prepare an EHMP to manage the contamination in the long term. If the site already has an EHMP, then the EHMP will be updated following redevelopment to incorporate changes to the site. EHEs and EHMPs will be submitted to the HDOH for review and approval following the completion of construction activities detailed in this C-EHMP.

## 15 References

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## Figures

Figure 1a: Site Location Map

Figure 1b: Site Location Map – Tax Map Key Parcels and Land Owners

Figure 2a: Areas of Known Lead Contamination - 2016 and 2020 DU and Sample Results  
Hakalau

Figure 2b: Areas of Known Lead Contamination – 2022 DU and Sample Results

Figure 3: Environmental Hazard Map

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Figure 1a: Site Location Map  
Hakalau Beach Park  
Mamalahoa Hwy, Hakalau, HI 96710



TMK	Landowner
329002080	County of Hawaii
329002999	State of Hawaii Department of Transportation
331001002 and 331001004	Maria and Steven Wolf
331001001	Marian Land Company
329002025	Maria and Steven Wolf



Figure 1b: Tax Map Key Parcel Numbers and Land Owners  
 Hakalau Beach Park  
 Mamalahoa Hwy, Hakalau, HI 96710

Source: KPC 2022

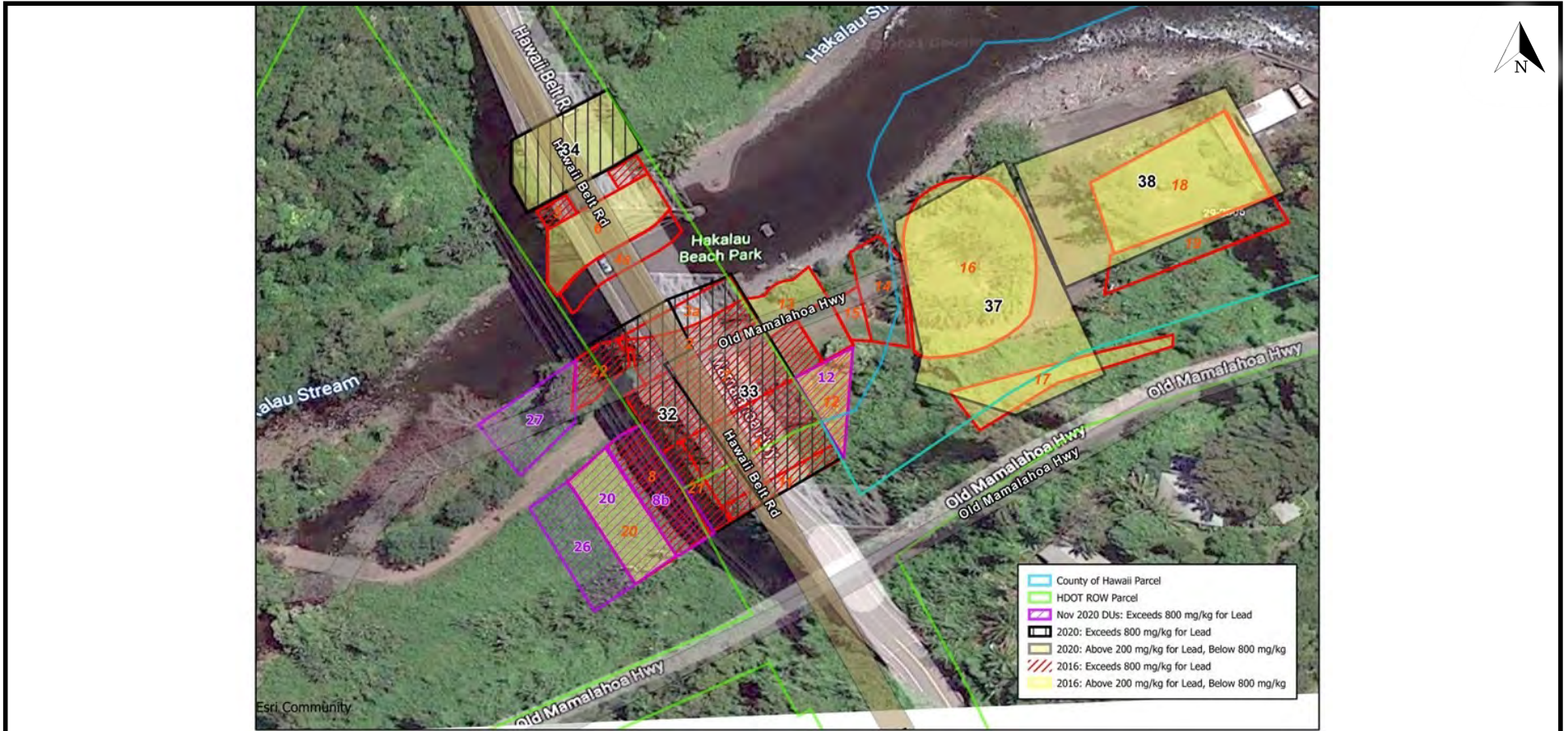


Figure 2a: Areas of Known Lead Contamination - 2016 and 2020 DU and Sample Results Hakalau  
 Hakalau Beach Park  
 Mamalahoa Hwy, Hakalau, HI 96710



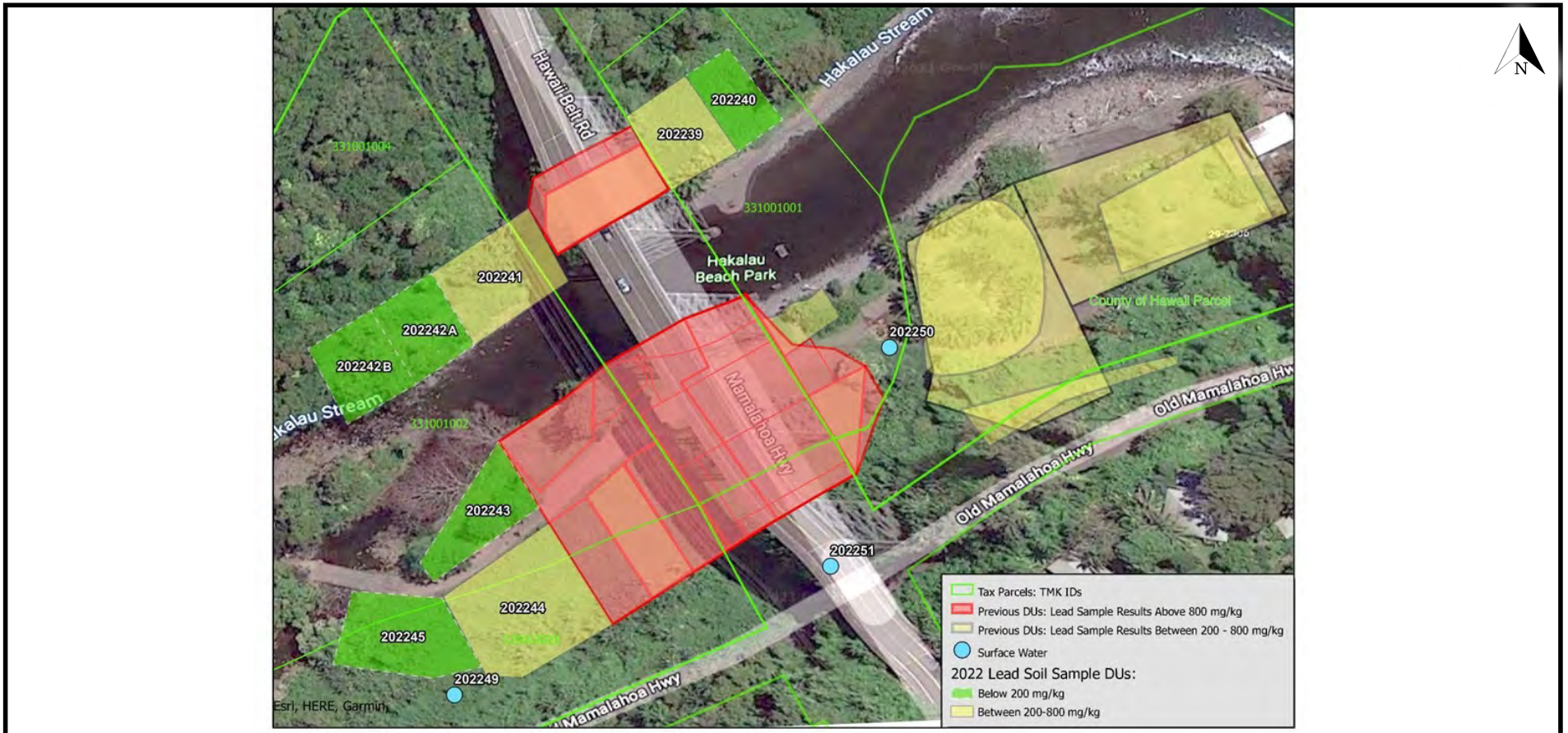


Figure 2b: Areas of Known Lead Contamination – 2022 DU and Sample Results  
 Hakalau Beach Park  
 Mamalahoa Hwy, Hakalau, HI 96710



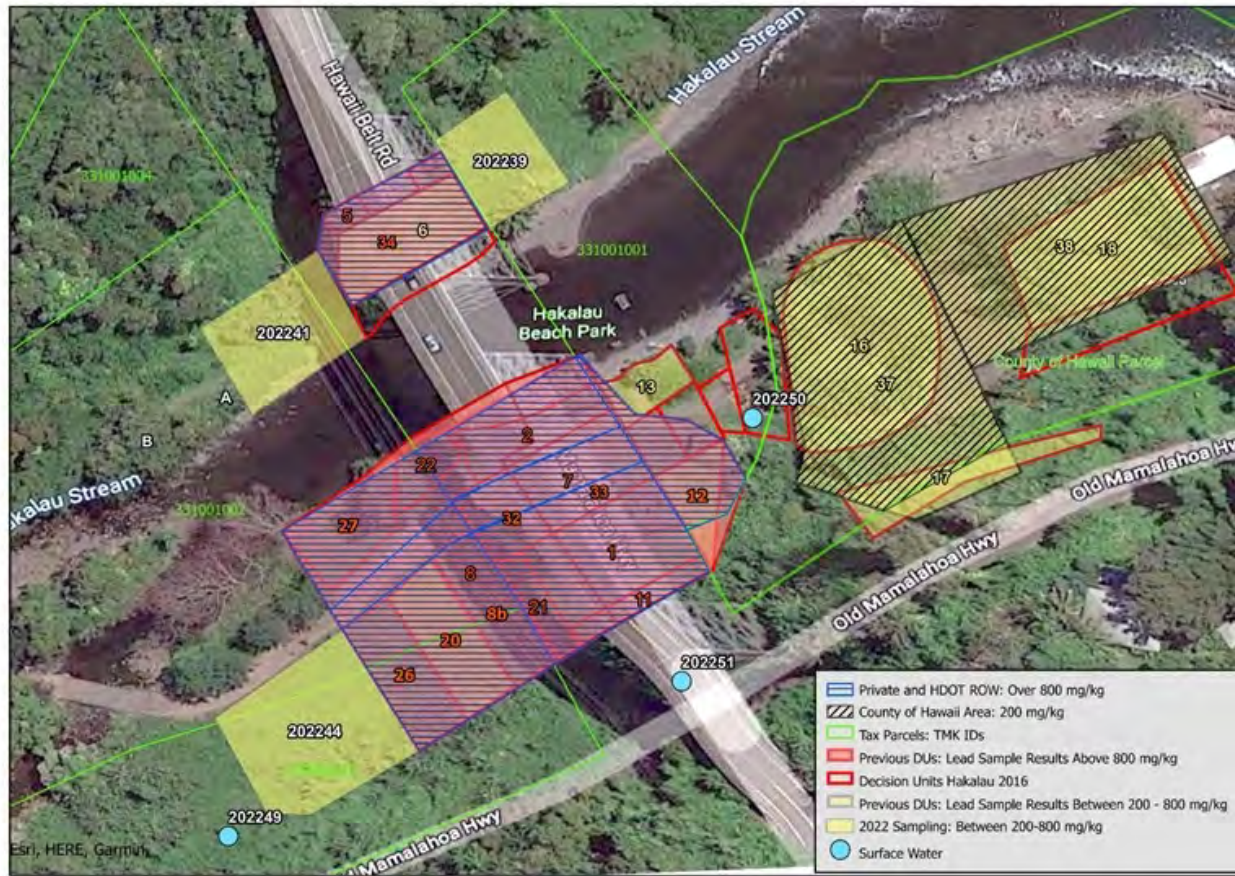


Figure 3: Environmental Hazard Map  
 Hakalau Beach Park  
 Mamalahoa Hwy, Hakalau, HI 96710

Source: KPC 2022

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## Appendix A – NPDES Permit

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Appendix B – Remedial Design Approach - to cover excavation, stockpiling, confirmation sampling, and backfilling (can be a conceptual plan)

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## Appendix C – Stormwater Pollution Prevention Plan (SWPPP)

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## Appendix D – Site-Specific Health and Safety Plan

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## Appendix E – Erosion and Sediment Control Plan (ESCP)

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## Appendix F – Activity Hazard Analysis

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## Appendix G – Spill Prevention and Response Plan

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## Appendix H – Best Management Practices for Erosion and Stormwater Control

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