

Cover Sheet —EHMP Template

ENVIRONMENTAL HAZARD MANAGEMENT PLAN (EHMP) TEMPLATE

*This document, provided by the Hawaii Department of Health (HDOH) Hazard Evaluation and Emergency Response (HEER) Office and the Solid and Hazardous Waste Branch (SHWB), is a **TEMPLATE** to help you to create an Environmental Hazard Management Plan (EHMP) for your project.*

The purpose of an EHMP is for long-term management of identified environmental hazards posed by known or suspected environmental contaminants at your site, and to provide clear procedures for how to safely manage these environmental hazards. The purpose of an EHMP is NOT to characterize the site. Your site is required to have an EHMP because environmental contaminant levels that exceed HDOH Environmental Action Levels (EALs) were identified to remain following characterization and any remedial action(s). Should areas of the site be unable to be investigated (e.g. presence of existing aboveground or underground structures) and the full extent of contamination unknown, HDOH may require that an interim EHMP be placed on the property until a time at which full characterization may be completed. This template may be used as both a template for an Interim and Long-term EHMP.

Because contaminated media has been left on-site following the completion of site activities, a site-specific Environmental Hazard Evaluation (EHE) must be conducted and included in this EHMP. The full EHE must be included as an appendix to this EHMP with a summary provided in the appropriate section as indicated in this document.

*Use this EHMP template to create your own EHMP for your site. Review and complete ALL SECTIONS. For any sections that do NOT apply to your site, you will leave the header in place and simply state that the section is “Not Applicable”; then delete the rest of the section and move on. Portions of this EHMP template document in **RED** font provide instructions for the creation of the EHMP or provide optional language to be used where appropriate in the EHMP. These **RED** font sections should be modified or deleted, as appropriate, from the resulting EHMP.*

NOTE: If this EHMP is for remaining contamination due to an Underground Storage Tank (UST), the document name should state: Long-Term or Interim UST EHMP on the cover page and footers (if added). The introduction section should clearly state that this EHMP only applies to the area impacted by the UST and not the entire site. As described above, label sections of the EHMP that are not relevant to the UST EHMP as “Not Applicable”.

Proper preparation and adherence to the EHMP you create will allow your site to maintain its regulatory status and helps to avoid costly fines. The site EHE and EHMP must be submitted to the HDOH for review and approval. If you unexpectedly encounter contamination at your site after receiving HDOH approval of this EHMP, you should immediately address the contamination and notify HDOH so this EHMP can be updated accordingly.

Long-Term (or Interim)
**Environmental Hazard
Management Plan**

For
(Site Name)

Located at
(Site Address)
(Site TMK #)

(Date)

HDOH Office or Section Providing Oversight:
(HEER, UST, Hazardous Waste, Solid Waste)

Prepared by:
(Name)
(Address)

Signatures

HDOH does not recognize this document as finalized until it is signed. A signed copy shall be maintained by the designated person listed below and will be made available by request to future residents, tenants and site workers.

I certify that as property owner (or duly appointed representative of the property owner), I am responsible for ensuring all parties who reside or work 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.

Property Owner or Representative of Property Owner

Title and/or relationship to the Property Owner

This document must be signed. Any signature type is acceptable including wet signatures, e-signatures, and Adobe signatures.

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Appendix B – Engineering Control Inspection and Maintenance Form (*edit/update with specific control name*)

Appendix C – Institutional Controls: Documentation, Inspection and Maintenance Forms (*edit/update with specific document name, include blank inspection and maintenance forms*)

Additional Info Regarding Figures

Please include figures using the following labels and nomenclature:

Notes:

- If multiple maps are required under each topic, use the nomenclature Figure 1a, 1b, 1c, for example.*
- Modifications to this nomenclature are acceptable, however, please be sure all elements are included, i.e., site location, known contaminants, hazard maps, and engineering controls.*

Figure 1 – Site Location Map (*if multiple maps are submitted to show the site location, **Figure 1a** may be a Google Earth image or Topo Map with an arrow pointing to the site, **Figure 1b** may then be a close-up of the block with the site property outlined and adjoining businesses labeled, etc.*)

Figure 2 – Known Residual Site Contamination Exceeding HDOH Tier 1 EALs *Figures may include delineated plumes, areas of soil contamination, location of designated soil decision units, depth of contamination, well location, etc. and/or may depict the locations of historic structures from Sanborn or other historic maps. Where sample data is available for the site, contaminants of potential concern (COPCs) at concentrations that exceed the Tier 1 EAL should be listed on the map(s), including known concentrations or concentrations ranges.*

*Multiple figures may be appropriate to avoid the drawings becoming too busy, e.g., **Figure 2a** may depict historic structures, **Figure 2b** may depict the extent of soil contaminants, **Figure 2c** may depict water well locations and concentrations, etc.*

Figure 3 – Environmental Hazard Map *The environmental hazard map(s) should be simple and easy to follow. The hazard map(s) should be to-scale and summarize the location and nature of potential environmental hazards at the site where COPCs were detected at concentrations above the HDOH unrestricted use EALs. For details regarding hazard maps, please see the HEER Office Technical Guidance Manual. Separate figures for hazards associated with different areas may be appropriate. However, to the extent possible, the number of hazard maps should be limited so that the reader can easily see where all known and suspected hazards associated with COPCs at the site are located. If you are unsure of the necessary amount of detail to provide, please contact the HEER Office and/or SHWB for guidance.*

Figure 4 – Engineering Controls *Provide a figure for each engineering control on site that is required and discussed in this EHMP.*

Figure 5– Engineering Controls – Cross-Sectional Depiction (A-A') *Provide a cross-sectional diagram that lists the depths of each engineering control, depth of groundwater and directional flow, and other relevant information. If soil vapor intrusion is an issue at the site, make sure to state this on this figure as well.*

Additional Info Regarding Appendices

Update the appendices according to site-specific information

Acronyms & Abbreviations

This is a template for an acronym list.

Delete or add acronyms, based on what you use in your EHMP.

BMP	Best management practices
COPC	Contaminant of potential concern
EAL	Environmental Action Level
EHE	Environmental Hazard Evaluation
EHMP	Environmental Hazard Management Plan
EPOC	Environmental Point of Contact
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
IDW	Investigative Derived Waster
LEL	Lower Explosive Limit
LEPC	Local Emergency Planning Committee
NRC	National Response Center
OSHA	Occupational Safety and Health Administration
PEL	Permissible exposure limit
PPE	Personal protective equipment
QEP	Qualified Environmental Professional
SHWB	Solid and Hazardous Waste Branch
TGM	Technical Guidance Manual
UIC	Underground Injection Control
USCG	U.S. Coast Guard
UST	Underground Storage Tank

Contact List

Update these tables as needed. These tables are also embedded in the text and should match what is listed in the body of this document. If these contacts change, the document must be updated and resubmitted to HDOH.

Primary Point of Contact for the Site

Role	Name	Company	Phone	Email
<i>(ex. Owner or Lessee)</i>				

Release/Discovery Notification

Immediate Threat to Human Health/Environment:

- Call 911 first
- Example of releases requiring a call to 911 include, but are not limited to, fuel or gas leaking from an active pipeline, an ammonia tank leak, or workers and/or the public becoming ill

After Immediate Threats Are Addressed:

- Notify the HEER Office (808-586-4249; or 808-247-2191 after work hours)
- Notify the Local Emergency Planning Committee (LEPC) at *insert appropriate phone number*.

For Petroleum Observed on Surface Waters:

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

HDOH e-permitting Portal (for uploading documentation/notifications)

Agency	Phone	Link/Website
HDOH HEER Office	808-586-4249	https://eha-cloud.doh.hawaii.gov/epermit/app/#/formversion/ed9ca916-7863-459b-b5dd-e66f881381d5 https://health.hawaii.gov/heer/submit-documents-to-heer/submit-documents/
HDOH SHWB	808-586-4226	N/A

Unless directed otherwise, for sites overseen by the HDOH SHWB, a hard copy of the EHMP should be submitted for review and approval to:

Hawaii Department of Health
Solid and Hazardous Waste Branch
2827 Waimano Home Road #100
Pearl City, Hawaii 96782

1.0 Introduction

This Environmental Hazard Management Plan (EHMP) provides long-term management of contaminated media that remains onsite at concentrations that exceed the Tier 1 unrestricted use (residential) Environmental Action Levels (EAL) or alternative levels approved by the Hawaii Department of Health (HDOH) on the property located at *(insert address and Tax Map Key)* herein called “the site”.

This EHMP provides a framework for managing the environmental hazards identified in the Environmental Hazard Evaluation (EHE) contained in this document until such time that remedial actions reduce those concentrations to below levels of concern. This includes sites under a closure with institutional controls (including sites where the only control is commercial/industrial land use restriction).

This EHMP documents the presence of contaminated environmental media *(indicate here which of the following media is affected: soil, soil vapor, sediment, surface water, and/or groundwater)* on this site at levels that could pose potential environmental concerns and describes how the contamination must be managed in the absence of further remediation. Following HDOH Guidance (2008, 2017a) as well as the HDOH HEER Office Technical Guidance Manual (TGM) (2008), this EHMP presents all necessary information that identifies:

- Site background conditions and previous environmental investigations;
- Specific contaminants of potential concern (COPC) that have been identified to be present at the site above the most conservative unrestricted/residential-use EAL screening criteria;
- The approximate lateral and vertical extent of this residual contamination;
- Potential environmental hazards posed by this residual contamination;
- Institutional or engineering controls required to manage remaining contamination;
- Appropriate handling and disposal instructions for contaminated media encountered during future site activities or utility work;
- Responsibilities of individual parties (owners and operators) to ensure that all requirements outlined in the EHMP are followed;
- Applicable use restrictions; and
- Construction worker protections and notifications required.

The purpose of this EHMP is to manage residual contamination at the site by the use of *(insert a list of engineering and institutional controls here)*. *(If the extent of contamination is not adequately delineated at the site, then the site figures should depict a conservative estimate of the boundaries of known contamination with a notation that site characterization is incomplete. If necessary, the estimated boundaries may extent to the property boundary or beyond. Where contamination potentially extends off-site but has not been delineated, the potential extent of contamination off-site should be depicted (e.g., with a dashed line) and a note should state that contamination potentially extends*

onto the adjoining property and an explanation why delineation onto that property is incomplete. In cases of insufficient contaminant delineation, the preceding sentence may be edited as appropriate). This EHMP provides guidance to owners, tenants, future construction/utility workers and environmental consultants, who use and access the site areas with known or presumed contamination (renovation/redevelopment). The guidelines contained in this document should be used to keep site users, workers, the environment, and the general public safe from contact with contamination on site and prevent COPCs from leaving the site without proper management. Not adhering to this plan may have serious consequences including, but not limited to revocation of site closure status and liability for any damage or harm caused by onsite contamination.

At the site, contamination remains in-place. This site-specific EHMP, which includes the EHEs contained herein, has been reviewed and approved by HDOH. **This EHMP is long-term (or Interim) and may not be modified without HDOH approval.**

Additional Details Regarding the EHMP

Prepare this plan as soon as possible and submit to HDOH for review and approval.

A long-term EHMP is prepared for cases where site conditions have been adequately characterized in accordance with the HDOH TGM and contamination is relatively localized, and a HDOH approved response action may also have been completed and yet contamination remains in-place above the most conservative HDOH Environmental Action Levels . A long-term EHMP typically applies to a single land parcel and is site-specific. The EHMP is typically attached to the HDOH approved regulatory closure document and, if applicable, referred to to the environmental covenant restricting site use.

An interim EHMP is prepared for cases where site conditions have not been adequately characterized, and contaminant(s) are known or suspected to remain on-site at concentrations above the most conservative HDOH Environmental Action Levels.

2.0 Background and Site Description

The EHMP applies to the site shown in **Figure 1**. The property is also identified by the following.

Address	
TMK #	
Latitude/Longitude	
Acreage/Size	

Site Conditions

Current Property Use Type (Residential, Commercial, Mixed Use Zoning, etc.)	
Distance to Nearest Surface Water Body	
Approximate Depth to Groundwater	
Is the Property Above or Below UIC Line?	
Is the first-encountered groundwater classified as a potential source of drinking water in the Mink & Lau Aquifer Identification and Classification Report?*	
Typical Soil Profile from Surface to Groundwater (Include Depth Range, Lithology)	

* Mink & Lau 1990 Report for the Island of Oahu.

<https://scholarspace.manoa.hawaii.edu/handle/10125/1961> (for other islands, reference the correct report)

UIC Underground injection control

Provide a brief summary that includes site conditions, current and historical uses, development, previous ownership of the site, elevation, known contamination at the site (Phase I or Phase II Environmental Site Investigations) and any other relevant information.

The site is presently *(include if site is vacant, in use, and if so, with what)*. The site is zoned for **XXX** use and is anticipated to remain as **XXX** land use in the future. *(If there is planned redevelopment, include that information here and note that a C-EHMP will be created for the actual development. A C-EHMP template is available on the HEER Office*

website <https://health.hawaii.gov/heer/guidance/environmental-hazard-management-plans/>)

2.1. Summary of Environmental Investigations and Conditions

Provide a summary of the site background and history of contaminant releases and/or current or past environmental investigations. The level of detail provided should reflect the project complexity and context. Include dates of sampling and environmental investigations, removal/remedial actions, and other relevant activities.

List all COPCs based on all available data/information for the site. Provide a table of media containing contamination exceeding the most conservative HDOH EALs for unrestricted use. Discuss data gaps that should be considered when determining the COPCs. Describe the sampling procedures and results. Reference previous relevant reports and include these in the references section. Please contact the HEER Office and/or the SHWB if you have any questions regarding the necessary detail.

3.0 Environmental Hazard Evaluation Summary

An EHE has been performed to identify all potential environmental hazards remaining at this site in accordance with Section 13.0 of the HEER Office TGM. This EHE identifies all potential current and future exposures to contamination by human receptors (*include ecological receptors here too if applicable*). The complete EHE is included as Appendix A. This section summarizes the results of this EHE.

The EHE is the link between site investigation activities and response actions carried out to address hazards posed by the presence of contaminated media. Post-remedial *contaminated media (add the specific media)* concentrations were compared to the HDOH most conservative unrestricted EALs (HDOH EAL Surfer, *most current version year*) to identify potential environmental hazards as described in this section and in greater depth in Appendix A. Post-remedial *contaminated media (add the specific media) were/was* found to be impacted with residual COPC concentrations that exceed the most conservative unrestricted EALs. Figure 3 is an environmental hazard map that summarizes the location and nature of potential environmental hazards at the site, depicting the contaminated media that exceeded the most restrictive HDOH Tier 1 EALs. *Please identify the specific hazard(s) and the area(s) at which they have been identified to potentially be present on the hazard map(s).*

The following COPCs that may pose a hazard at the site in *contaminated media (add the specific media)* and are summarized in the following table(s).

Why Is This Information Important?

The level of detail needed in an EHE will vary, depending on the extent and nature of contamination. Please note that irrespective of the location and use of the site, all COPCs should be compared to any site-specific EALs as well as the most conservative Tier 1 HDOH EALs (unrestricted use where groundwater is a potential drinking water resource and the nearest surface water body is less than 150 meters). The purpose for this is to identify whether the contaminated media may pose a hazard under any potential conditions.

Include an evaluation of all hazards for all potential receptors. This should include evaluation of off-site residential receptors should soil potentially be transported off-site. Soil transported off-site that exceeds the most restrictive HDOH EAL is considered a waste and must be handled according to HDOH Solid and Hazardous Waste Rules and Regulations (Hawaii Revised Statutes [HRS] chapters 342H and 342J), Hawaii Administrative Rules [HAR] chapters 11-58.1 and 11-260.1 to 11-279.1). This includes the requirement to make a hazardous waste determination at the point of generation in accordance with 40 CFR §262.11, as incorporated and amended in chapter 11-262.1, HAR. Mishandling of waste may lead to fines.

A complete EHE must be included as Appendix A in this EHMP. Refer to Section 13.0 of the TGM for further information on how to complete the Environmental Hazard Evaluation.

Additional guidance on EHEs can be found here: <https://health.hawaii.gov/heer/guidance/ehe-and-eals/#ehe1>. A detailed description of EHE and associated Tier 1 Environmental Action Levels is presented in a separate guidance document entitled *Evaluation of Environmental Hazards at Sites with Contaminated Soil and Groundwater (HDOH, 2017a)*.

Readers unfamiliar with the concept of environmental hazard evaluation may be familiar with the concepts of human health risk assessment and ecological risk assessment. Traditional risk assessments may not adequately address all potential environmental concerns at a site and cannot be used as a replacement for the Environmental Hazard Evaluation.

Fill out the applicable tables below. For media that do not apply, delete these tables.

NOTE: For chemicals not listed in the lookup tables and therefore where EALs do not exist, refer to Section 13.4 of the TGM to determine the appropriate action levels with HDOH. Preparation of the action levels should be coordinated with the HEER Office and/or SHWB. Also refer to Section 13.4 of the TGM for the exception with petroleum compounds collectively measured under total petroleum hydrocarbons.

Media: Soil

COPC	Concentration Range	EAL*

* EAL for Unrestricted Use; < 150m from surface water; above drinking water

Media: Sediment

COPC	Concentration Range	EAL*

* EAL for Unrestricted Use; < 150m from surface water; above drinking water

Media: Surface Water

COPC	Concentration Range	EAL*

* EAL for Unrestricted Use; < 150m from surface water; above drinking water

Media: Groundwater

COPC	Concentration Range	EAL*

* EAL for Unrestricted Use; < 150m from surface water; above drinking water

Media: Soil Vapor

COPC	Concentration Range	EAL*

* EAL for Unrestricted Use; < 150m from surface water; above drinking water.

Areas with concentrations exceeding the EALs are depicted on **Figure 2** and **Figure 3**.

Include here a description of potential hazards posed by the COPCs to identified receptors (include at a minimum - construction workers, the general public, any current onsite workers).

Environmental Hazard Table

Contaminant of Potential Concern (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	Potential Off-site Receptors
<i>(ex. TPH-g)</i>	X	X		X	X	X			X				X	

Potential off-site receptors refer to off-site occupants, site workers/visitors and ecological receptors should contaminated media be transported off-site for reuse at an unrestricted use site.

*For the following table, **make a separate Conceptual Site Model table for each COPC with residual contamination onsite.***

Conceptual Site Model for (COPC X)

Primary Sources	Primary Release Mechanism	Secondary Sources	Potential Environmental Hazards		Hazards Present Under Current or Future Site Conditions	
					Current	Future
<i>Add here</i>	<i>Add here</i>	Soil	Risk to Human Health	Direct Exposure	<i>Yes/No/Not applicable</i>	<i>Yes/No/Not applicable</i>
				Vapor Intrusion	<i>Yes/No/Not applicable</i>	<i>Yes/No/Not applicable</i>
			Ecotoxicity		<i>Yes/No/Not applicable</i>	<i>Yes/No/Not applicable</i>
			Leaching		<i>Yes/No/Not applicable</i>	<i>Yes/No/Not applicable</i>

Primary Sources	Primary Release Mechanism	Secondary Sources	Potential Environmental Hazards		Hazards Present Under Current or Future Site Conditions	
					Current	Future
			Gross Contamination		Yes/No/Not applicable	Yes/No/Not applicable
<i>Add here</i>	<i>Add here</i>	Groundwater	Risk to Human Health	Direct Exposure	Yes/No/Not applicable	Yes/No/Not applicable
				Vapor Intrusion	Yes/No/Not applicable	Yes/No/Not applicable
			Ecotoxicity		Yes/No/Not applicable	Yes/No/Not applicable
			Gross Contamination		Yes/No/Not applicable	Yes/No/Not applicable

A detailed environmental hazard map (or maps) is included as **Figure 3** in the figures section at the end of this EHMP. Environmental hazard maps delineate the location of known or presumed contamination at the site and what type of hazard the contamination represents. Mishandling of contaminated media could result in spreading the contamination to uncontaminated areas of the site or to uncontaminated off-site locations, which could result in fines and other penalties.

Where contaminant concentrations exceed the Tier 1 EALs but exposure to the hazard is mitigated due to current and anticipated land use, include an explanation as to why there is no hazard present under current and future site conditions. For example, “Surface and shallow sub-surface concentrations of lead exceed the Tier 1 EAL of 200 mg/kg, but do not exceed the commercial /industrial (C/I) land use EAL of 800 mg/kg. Subsurface lead concentrations beneath Building 1 exceed the C/I EAL between 3 feet and 8 feet bgs. Current and future land use is C/I and there are no plans to excavate beneath the building, therefore there is no lead exposure hazard at the site under current and future land use. However, if lead-contaminated soil is exported for re-use at an off-site residential property or at a C/I site without a soil management plan, then lead-contaminated soil could be a hazard at those sites. In the event of future redevelopment of the site that may disturb lead-contaminated soil a C-EHMP will be prepared to ensure the soil is properly managed and disposed of.”

4.0 Site Closure Plan

Provide a summary of the remedial actions that were required to get HDOH approval for closure for the closure that allowed this site to be managed by this EHMP for the foreseeable future. Summarize specific remedial/removal actions, engineering and institutional controls, best management practices (BMPs) and other relevant details, including maps and figures, to clarify the measures used to secure the site and refer the reader to later sections that provide more detail on controls as needed.

Explain why these measures were necessary and include specific references to the subsequent documents/reports that HDOH reviewed and approved that were required for site closure. List these documents in the reference list at the end of this EHMP. The level of detail provided should reflect the complexity of the site. Please refer to Section 19.0 of the TGM and contact the HEER Office or SHWB if you have any questions regarding the necessary detail.

5.0 Long-Term Monitoring

If long-term monitoring is not required, mark this subsection as “Not Applicable”.

Note that at most sites HDOH will require some sort of annual reporting, even if it is only a simple form acknowledging that site conditions have not changed and that no contaminated media has been disturbed or removed from the site. Please confirm with the HEER Office or SHWB before selecting “Not Applicable” for this section.

Long-term monitoring will be conducted and documented by a designated Environmental Point of Contact (EPOC). Monitoring at the site will include the following:

- Cap Inspections
 - Conducted on an X (**annual, quarterly, etc.**) basis
 - Includes photo-documentation of the cap
 - Documents the condition of the cap (any cracks, holes, settlement, etc.), any breaches that may have occurred, any maintenance conducted, and any planned future disturbances
- If contaminated soil is discovered at a previously unknown source or location, the HDOH HEER Office must be immediately notified of its discovery. Instructions on how to report this to the HEER Office can be found in Section 10.1.
- Maintenance/sampling of any soil vapor monitoring or mitigation systems

Please provide site-specific information. The bulleted list above is not intended to be comprehensive and should be edited to reflect the site-specific monitoring necessary.

Include additional information such as frequency of monitoring, documentation and reporting requirements and other relevant information. Include a blank monitoring log in the relevant appendix.

Include equipment, monitoring procedures and investigation derived waste (IDW)/decontamination as necessary. Ensure the monitoring activities are in compliance with the relevant sections of the TGM and reference those sections.

Provide information about maintenance and the monitoring/inspection schedule that is required to effectively maintain the engineering control(s) to achieve its intended purpose(s).

In addition, provide information about measures for repair or replacement of engineering controls that are disturbed or breached during future site activities.

6.0 Engineering Controls

Engineering controls are tangible measures that prevent exposure pathways by physically preventing humans (and/or ecological receptors) from encountering contaminated media. Engineering controls require institutional controls for their long-term management. Institutional controls for the site are described in the following section. Engineering controls implemented at the site include *(insert the specific engineering controls here)*.

Refer to Section 19.7.2 of the TGM for examples of engineering controls for various contaminated media.

Describe how the specific engineering controls prevent exposure. Provide a description of the engineering control including the depth, location, and other information. Provide a location of the engineering control in a figure, as well as a cross-sectional depiction of the engineering control if relevant (and if sufficient data exists). In addition, if the engineering control was surveyed, present that location data in a table. Provide information about the location of the engineering control in relation to existing utilities.

If there are no Engineering Controls established for the site, mark this subsection as “Not Applicable”.

7.0 Institutional Controls

Institutional controls, such as administrative and legal controls, help to minimize the potential for human exposure to contaminated media by controlling activities that may affect exposure. Institutional controls are non-engineered and are typically restrictions on site use. Institutional controls alone are generally not sufficient to mitigate environmental hazards, except for commercial or industrial zoned sites where representative sampling has demonstrated contaminant levels are above residential or unrestricted use EALs, but below applicable commercial/industrial use EALs. Institutional controls play an important role in site remedies because they reduce exposure to contamination by limiting land or resource use.

HDOH's primary legal instrument for establishing institutional and/or engineering controls at a site is the site closure document. HDOH may, at its discretion, require an environmental covenant to provide additional long-term protection for sites with significant and persistent contamination. Discuss the planned institutional controls with HDOH prior to submittal of this EHMP to allow for greater efficiency in the approval of this document upon submittal.

Example text is included below. Revise and update this list with each institutional control that will be implemented at the site. Describe the requirements that must be followed for this institutional control to be effective and in compliance. The example text below is an incomplete list and is only meant to be an example.

A deed restriction will be placed on the property containing the following requirements:

- *Any site activities that may involve compromising the vegetative cover, soil cap, or containment cell area require written approval of HDOH. Additionally, HDOH will require an environmental covenant be placed on the property.*
- *The site is designated for commercial/industrial use only and shall not be used for residential purposes. Subsurface soil shall not be excavated and used onsite as surface soils. Soil from the containment cell and surface soils that do not meet unrestricted use EALs shall not be excavated and moved offsite without the written approval of HDOH.*
- *No future construction activities are planned for the site. However, if plans change, the following must be met:*
 - *During potential, future construction activities, contaminated soil must be appropriately handled and disposed.*
 - *During potential, future construction activities, precautions must be taken to prevent potential exposures to construction/trench workers. Future construction/trench workers shall also be informed about the potential exposures at the site.*

- *The soil cap, cover system, and containment area shall remain intact, be properly maintained, and be regularly inspected. The integrity of the system shall not be compromised without an updated EHMP and written approval from the HDOH.*

On-site monitoring and maintenance are key components of ensuring that the institutional controls documented in this EHMP are implemented properly and function as intended.

The property owner will designate an EPOC to provide guidance on implementing the recommended measures and to develop additional strategies if the need arises and communicate these with the owner and HDOH, if necessary.

Monitoring and maintenance will be conducted at an appropriate frequency based on specific work tasks/procedures and the potential for adverse impacts to occur. In addition, regularly recurring inspections of the institutional control are required. The owner or designated EPOC must submit this inspection documentation to HDOH.

An appropriate schedule (frequency and duration of site visits) has been established between the owner and all involved regulatory agencies and is described in further detail below. The designated EPOC will be familiar with and conduct the required monitoring and maintenance activities.

Provide information about maintenance, monitoring and inspection schedule that is required to effectively maintain the institutional control(s) to achieve its/their intended purpose(s).

If site conditions change unexpectedly or if the EPOC notices site conditions have changed that warrant reconsideration of the monitoring and maintenance schedule, the EPOC will immediately notify the owner who will then notify HDOH to initiate discussions.

8.0 EHMP Implementation

Implementation of this EHMP as well as additional responsibilities of the current and any future property owners are outlined in the following section.

8.1. EHMP Implementation and Primary Site Point of Contact

The function of this EHMP is to manage the engineering and institutional controls, abide by the site management plan, and fulfill the required site monitoring as documented in the previous sections of this EHMP. These are all required for the long-term management of the residual contamination at the site.

The primary point of contact for the site is responsible for the overall implementation of the EHMP. *(The primary point of contact for a site and implementation of this EHMP is the landowner. If there is an alternative site point of contact, the language should be updated.)* For this EHMP and site, the primary site point of contact responsible for the implementation of this EHMP is:

Role	Name	Company	Phone	Email
<i>(ex. Owner)</i>				

When there is a change of the owner (or lessee) of the site listed above, then a new primary site point of contact must be established, and this document is to be updated accordingly. This updated information must be relayed to HDOH in a timely manner.

8.2. EHMP Availability and Disclosure

The effective environmental management of any project requires a coordinated effort from all individuals involved. The following sections outline the need to notify all lessees and future property owners of the residual contamination on site and all monitoring, management, maintenance, and reporting requirements contained in this document.

The owner is required to make this EHMP available to tenants and potential buyers in the following manner:

- **Commercial Tenants:** The owner is to notify commercial tenants of the site conditions and associated requirements. All new lease agreements shall refer to the existence of this EHMP and its general requirements. A copy of this EHMP shall be provided to each tenant of the property for review. Commercial tenants shall be required to present the EHMP to each full-time employee working at the site, as applicable. The contents of this plan shall be reviewed with all employees working at the site annually and shall be included in orientation materials for any new employees.
- **Residential Tenants:** If applicable, the owner should notify residential tenants of the site conditions and associated requirements. All new lease agreements shall refer to

the existence of this EHMP and its general requirements. If requested, a copy of this EHMP shall be provided to each tenant of the property.

- **Property Sales and Disclosure:** The current owner is required to disclose the environmental site conditions of the property to prospective buyers and shall refer to the existence of this EHMP in the sales agreement. A copy of the EHMP shall be provided to any prospective buyer during the disclosure process.

To ensure that future property owners are aware of, and comply with, requirements of this EHMP, it is recommended that an environmental covenant be registered with the Bureau of Conveyances and attached to the property title. This is especially important for non-petroleum sites, where potentially harmful levels of contaminants in soil or groundwater might not be obvious in the field. The environmental covenant should reference restrictions and requirements presented in the EHMP and note that the EHMP shall be updated if conditions change.

8.3. Health and Safety

Provide a specific description of resident, employee or construction worker protections and required notifications.

8.4. EHMP Modification

This EHMP shall not be modified without written permission from HDOH. However, an EHMP is a living document and must be updated when conditions at the site change, with HDOH review and approval.

9.0 Site Management Plan

Compliance with this EHMP is critical to ensure that the environmental and human health protection measures are implemented and adhered to. Appropriate site management and documentation by the owner or a designated EPOC are required to fulfill this task.

The owner may self-perform any inspections, review protection measures, etc. However, especially for complex sites it is recommended to designate an internal environmental specialist and/or an environmental consultant to provide support.

In general, impacted media managed with institutional and engineering controls to mitigate potential exposure as documented in this EHMP should not be disturbed or otherwise handled. However, in the event that disturbance of the contaminated media is necessary, the purpose of this section is to ensure that contaminated media is properly handled and managed by the current and all future landowners. This EHMP is meant to cover **small projects and/or emergency repairs** (e.g., utility line repair, small unoccupied structures) where contaminated media may be exposed or encountered. Any such disturbance of media is to be reported to HDOH, either as part of the annual inspection report or in a separate after-action report that describes the activity and whether it complied with this EHMP.

Should other activities, such as the construction of a structure or redevelopment of the site be planned, HDOH is to be notified as the project will most likely require the preparation of a Construction Environmental Hazard Management Plan (C-EHMP) or C-EHMP Addendum. In addition, if the owner wishes at any time to propose changes in occupancy status that may impact this EHMP and site management, the owner must work with HDOH to address and mitigate these effects accordingly. Changing site conditions and site management without consultation with HDOH could result in violations, work stoppages, and fines.

Long-term management requirements imposed on the site and described in this EHMP are likely to be required indefinitely unless the contaminated media is treated or removed at a future date or naturally attenuates to below levels of potential concern. Be aware that this could affect future development of the property as well as the property value.

For the following sections – complete and update the relevant information for each type of contaminated media remaining at the site. For each subsection that follows, describe the management of contaminated media. Include recommendations for proper handling and management of contaminated soil, groundwater, sediment and/or soil vapor that could be encountered during future site activities.

If one of the media listed in the template below is not impacted and there is no residual contamination requiring long-term management/monitoring, then those sections may be

marked as “Not Applicable”. Add in additional sections for as many impacted media as there is onsite.

9.1. Soil Management Plan

Soil disturbed at the Site will be continuously monitored and documented by a qualified environmental professional (QEP) with at least five years’ experience in environmental oversight associated with excavation and/or construction projects. Where known or suspect contaminated soil is encountered during excavation, the appropriate response actions must be taken that conform with HDOH and EPA guidance, laws, and regulations. This includes proactive planning to ensure that workers have the appropriate level of PPE and that contaminated soil is managed properly when excavated. Tasks associated with properly managing contaminated soil include the following:

- Where contaminated soil is encountered, a QEP shall provide field oversight to ensure that:
 - known or suspect contaminated soil is segregated from clean soil,
 - known or suspected contaminated soil is properly stored and covered with plastic sheeting,
 - the contaminated soil is managed properly during and following excavation,
 - health and safety guidance related to potential exposure of workers to COPCs is provided.
- Workers who may come into contact with contaminated soil must wear the appropriate level of PPE.
- Workers who may come into contact with contaminated soil must have required training (at a minimum, 40-hour HAZWOPER certification and current 8-hour annual refresher training).
- Soil trucked offsite shall be drained of fluids and the load must 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 must be immediately notified of its discovery by reporting it as a new release.

9.1.1 Field Identification of Contaminated Soil

Some COPCs, including, but not limited to metals, dioxins, pesticides, and polychlorinated biphenyls, cannot be identified in the field through visual and olfactory observations. In some cases, previous sampling or historical research into previous industrial operations may have identified areas where these COPCs are likely present at concentrations above the most restrictive HDOH EALs that are targeted for excavation. If your site contains COPCs that are not identifiable via qualitative field observations, the contaminated soil must be managed in a manner protective of site workers, the

public, and the environment. Prior delineation is critical to ensure safe management practices.

Areas of known or suspected contaminated soil are depicted in **Figure 2** (*edit Figure number as appropriate*). Soils in these areas must be segregated and stockpiled separately from clean soil. *If soil contamination has not been delineated, then all soil at the site must be presumed to be contaminated with site-specific COPCs and identified as “suspect” or “presumed” contaminated in Figures and in this section.*

Other types of contaminated soil may be identified in the field through visual and olfactory observations. Petroleum contaminated soil typically exhibits petroleum staining and/or a petroleum hydrocarbon odor. Free product may or may not be observed. Solvent-contaminated soil typically exhibits a solvent or sweet-smelling odor, and in some instances free phase product may be present. Petroleum contaminated soil may also be detected indirectly via a rotten egg odor stemming from anaerobic degradation of the product that produces hydrogen sulfide in oxygen starved zones.

Suspect contaminated soil should be segregated from clean material. Soil with a strong petroleum or solvent odor and/or free phase product should be segregated separately from the moderately impacted soil, as soil that is considered grossly contaminated must be removed, may not be replaced in the excavation and must be properly disposed of. During excavation of known or suspected contaminated soil, the QEP must perform the following activities:

- Monitor the location of excavation activities to ensure that 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.
- Check for petroleum or other unusual chemical odors emanating from the soil.
- Collect soil screening samples in sealable inert bags and test the headspace within each bag for volatile organic compounds (VOCs) using a PID and following the Maine Department of Environmental Protection PID Bag Headspace Test procedure described in detail in Section 8.4.2 of the Technical Guidance Manual (TGM). Prior to testing, PID meters must be calibrated in accordance with device manufacturer instructions.
- Use the field observations, VOC measurements, and any other field screening tests, such as the glove and paper towel tests, to segregate the soil properly.

Please provide site-specific information and response actions. The guidelines listed are not intended to be comprehensive for all site conditions. Indicate the purpose of the screening (e.g., delineation, soil segregation) and how the screening will take place in detail (e.g., take the sample from the excavation site wall or cuttings, collect sample from the excavator bucket, collect sample from stockpile right after deposition). Include the frequency of screening (e.g., every 5 minutes, every 5 cy etc.). In general, if the site

has previously not been completely assessed due to surface obstructions such as buildings etc., additional delineation and removal of the main mass of contamination, followed by confirmation sample collection may be required (“opportunistic remediation”). The process on how this will be achieved should be discussed in detail for screening and confirmation sample collection.

9.1.2 Dust and Erosion Control

Dust and erosion controls at the site will be continuously monitored and documented by a QEP with at least five years’ experience in environmental oversight associated with construction projects. Prior to excavation activities, the contractor and the QEP must evaluate and establish erosion control and dust control measures. The erosion control and dust control measures must prevent impacted soils from migrating away from the excavation area. Typically, Best Management Practices (BMPs) are employed to control erosion and prevent the spread of contamination via runoff or wind.

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

- Dust/silt fences: BMPs associated with erosion control measures shall include the installation of silt fencing in the vicinity of the excavation and along the site perimeter. Dust barriers must be used where extensive excavation is anticipated.
- Equipment decontamination: BMPs to control the transport of contaminated soil from the site and within the site shall be used to limit the tracking of soil away from the excavation area. Decontamination areas should be set up adjacent to excavation areas where contaminated media will be disturbed, adjacent to stockpile areas, and where vehicles and equipment leaves the site. Decontamination protocols are described in Section 14.0 of this document.
- Wetting/misting: BMPs associated with dust control measures shall include the use of water to be sprayed on the soil during excavation activities. During excavation, water shall be sprayed on the surface of the soil to prevent dust from being generated. However, the amount of water used for dust control shall be minimized as to not create run-off away from the excavation.
- *{Add additional dust/erosion controls or modify the above as appropriate}*

9.1.3 Excavation and Stockpiling

Known and suspect contaminated soil must be stockpiled and segregated from clean soil. The following tasks must be performed with respect to managing contaminated soil.

- Contaminated soil will be segregated from uncontaminated soil.

- Water contained within excavated soils will be allowed to drain back into the excavation prior to stockpiling the soil.
- Stockpile contaminated soil in a 20-mil plastic-lined, bermed area. The stockpiles must be covered with plastic sheeting at the end of each day and during any major wind or rain events. The plastic sheeting must be secured with enough ballast so that it will not be dislodged by strong winds.
- 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 storm water runoff or run-on from breaching it. The contaminated soil must be placed inside the bermed area on top of the plastic sheeting.
- Soil stockpiles shall be located away from storm drain inlets, surface waters, and storm water drainage pathways/channels.
- Stockpile soil that has a strong petroleum or solvent odor and/or free phase product separately from both clean and moderately impacted soil and covered with plastic and weighted down to prevent nuisance concerns from petroleum odor. This soil may not be reused and must be properly disposed of.
- Soil stockpiles must remain on-site and cannot be transported or stored off-site without prior authorization or characterization. *(Off-site storage of soil will likely require a Solid Waste Management permit from the SHWB and may require other permits as well).*
- *Confirmation sampling of the underlying soil may be required following stockpile removal to ensure that COPCs did not leach into the ground. The QEP should prepare a plan for confirmation sampling post-stockpiling.*

Please provide site-specific information and response actions. The guidelines listed above are not intended to be comprehensive of all site conditions.

9.1.4 Soil Reuse and Disposal

Prior to reuse of soil off-site or disposal at a licensed disposal facility, all soil is to be sampled to ensure that it is appropriately characterized so the final disposition of the soil may be determined. Soil stockpile sampling is to be conducted using multi-increment (MI) sampling in accordance with the HEER Technical Guidance Manual (<http://www.hawaiidoh.org/tgm.aspx>) and the Fill Material and Stockpile Guidance (<https://health.hawaii.gov/heer/files/2019/12/Clean-Fill-Guidance-HDOH-Oct-2017-1.pdf>). Please also see the HDOH Solid and Hazardous Waste Branch (SHWB) policy and Q&A regarding MI sampling and use of the HEER Office TGM (https://health.hawaii.gov/shwb/files/2019/01/20190131_SHWB-TGM-Memo-Draft-complete.pdf).

In general, contaminated soil may be re-used on-site without additional characterization. Contaminated or suspect-contaminated soil must be replaced in the same area and at a

similar depth as where the soil was originally excavated. Exceptions may apply based on site-specific hazard situations. Soil that is grossly contaminated may not be re-used on-site and must be properly disposed of. HDOH HEER Office guidance should be reviewed to ensure proposed re-use is in line with current guidance. The QEP will ensure that contaminated soil with concentrations above the Tier 1 EALs is not spread to uncontaminated areas of the site without prior approval from HDOH. Following re-use of soil on-site, an update or addendum to the EHMP may be required if contaminated soil is consolidated in an area other than where it was originally excavated.

Should the soil be disposed of at a permitted disposal facility, sampling requirements for the receiving disposal facility should be followed. A hazardous waste determination must be made at the point of generation (i.e., before removing waste from the site) in accordance with 40 CFR §262.11, as incorporated and amended in chapter 11-262.1, HAR. Depending on the types of contaminants and detected concentrations, making this determination may require additional testing.

9.1.5 Recordkeeping

A log of all soil that leaves the Site and its final disposition will be maintained by the QEP (Example in **Appendix C**).

If contaminated soil will be brought onto the site and used for fill, then the QEP must document where the contaminated soil will be used, the volume of soil, and COPC concentrations. This information must be incorporated into an EHE/EHMP for the site following the completion of the project and the contaminated soil must be managed for as long as it remains present at the site.

9.2. Groundwater Management Plan

If groundwater does not have residual contamination that is covered under this EHMP, please state that and mark this subsection as “Not Applicable”.

Estimated Depth to Groundwater at Site:			
Estimated Direction of Groundwater Flow:			
Will Contaminated Groundwater be Encountered During Regular Site Use?	Yes	No	Unknown
Is Free Product Known or Suspected to be Present at the Site?			

This groundwater management plan is intended to ensure that contaminated groundwater at the site is properly managed should it be encountered during small projects or emergency repairs. Some COPCs may be detected through visual and olfactory

observations (e.g., petroleum, chlorinated solvents). However, many COPCs are not identifiable through field observations (e.g., non-volatiles, metals etc.). Therefore, this plan must be adhered to unless there is a HDOH-approved change in this management plan.

Groundwater encountered or disturbed at the Site during small construction projects or emergency maintenance will be continuously monitored and documented by a QEP with at least five years' experience in environmental oversight associated with construction projects. Where contaminated groundwater may be encountered during excavation activities, appropriate response actions must be taken that conform with HDOH and EPA guidance, laws, and regulations. This includes proactive planning to ensure that workers have the appropriate level of PPE and that free product, sheen, and groundwater are managed properly if dewatering is conducted. Tasks associated with properly managing groundwater include the following:

- Where groundwater is encountered, a QEP shall provide field oversight to direct appropriate dewatering if conducted, manage disposal of groundwater if necessary, and provide health and safety guidance related to potential exposure of workers to COPCs.
- Workers who may come into contact with contaminated groundwater must wear the appropriate level of PPE.
- Workers who may come into contact with contaminated groundwater must have required training (at a minimum, 40-hour HAZWOPER certification and current 8-hour annual refresher training).
- If free product is encountered it must be recovered to the extent practicable, which is further discussed in Section 9.3.
- If contaminated groundwater is discovered at a previously unknown source or location, the HDOH HEER Office must be immediately notified of its discovery.

9.2.1 Dewatering

Contaminated groundwater may be dewatered from one excavation into another (or into re-infiltration trenches/pits on site) as long as the following conditions are met:

- The excavations are within no more than 200 feet of each other.
- The receiving excavation is wider than it is deep, is less than 10 feet in depth, and does not meet the definition of an underground injection control well.
- The groundwater within both excavations is contaminated. Contaminated groundwater cannot be discharged into a clean excavation.
- Any free product present in the excavation has been removed (see Section 9.3 below). Under no circumstances can free product be transferred from one excavation to another.

- The receiving excavation is greater than 150 meters from a surface water body, storm drain inlet, or sensitive environment (e.g. bird sanctuary, endangered species, beach, park).

Contaminated groundwater may also be dewatered into tanks or other temporary storage containers. If the water temporarily stored in tanks or storage containers is to be discharged (e.g., into the sanitary sewer, storm drain) it must be sampled and analyzed for the appropriate COPCs to determine the appropriate disposal or discharge options. The discharge of the water must be in compliance with the *(name of County)*, HDOH, and the United States Environmental Protection Agency regulations and applicable permits. If it is desired that the water contained within the tanks or storage containers be re-infiltrated into a nearby excavation, the HDOH SHWB must be consulted to determine whether there are sampling or treatment requirements in accordance with their rules and regulations.

Dewatering into the sanitary sewer system or into the storm sewer is illegal, unless a Dewatering Permit is obtained from the County (sanitary sewer) and/or HDOH Clean Water Branch (storm sewer). Dewatering into a storm sewer requires sampling the groundwater for additional chemicals that may not be required by your permit. Advance coordination with the HEER Office and/or SHWB is required to ensure the appropriate screening criteria are met prior to discharge.

9.2.2 Groundwater Disposal

Generated groundwater must be treated and disposed of if re-infiltration within 200 feet of the area of generation is impracticable or if COPC concentrations are above appropriate site-specific EALs. Should disposal become necessary, the groundwater should be stored onsite in the appropriate containers, characterized (e.g., using generator knowledge, field screening, and/or laboratory analysis) to determine the disposal options, and disposed of properly at an HDOH permitted disposal facility.

The QEP will be responsible for overseeing the containerization of the water and for collecting water samples. Water samples will be analyzed for the following COPCs listed in Section 9.2.3 prior to disposal.

9.2.3 Existing Residual Contamination

Residual groundwater contamination is known or suspected to be present in the following area(s) of the site: _____ *(may be included as bullets)*. These areas are depicted in **Figure 2** and **Figure 3**.

Known or suspected groundwater COPCs include the following: _____ *(may be included as bullets)* (also depicted in **Figure 2** and **Figure 3**).

9.3. Free Product Management

If free product is not present at the Site, please state so and mark this subsection as “Not Applicable”.

The purpose of the free product management plan is to ensure proper handling and management of free product that may be encountered during small projects or emergency maintenance at the Site. Free product is generally encountered floating on the groundwater or at the capillary fringe, and typically presents as either free-flowing, black or brown, viscous product; a thin layer of black or brown product; a discontinuous layer of product (e.g., spots or globules); or a petroleum hydrocarbon sheen. In areas where groundwater level is tidally influenced there may be increase in the amount of free product at either high or low tide.

Free product is known or suspected to present in the following area(s) of the project site: _____ *(may be included as bullets)*. These areas are depicted in **Figure 2 and Figure 3**.

Known or suspected free product is composed of the following COPCs: _____ *(may be included as bullets)* (also depicted in **Figure 2 and Figure 3**).

Planning free product management proactively in areas with a high potential of release is essential. Free product should be expected to be encountered near gas stations, fuel terminals, refineries, harbors, airports, military bases, and pipelines.

Where free product is encountered, the appropriate response actions must be taken that conform with HDOH and EPA guidance, laws, and regulations. The anticipated response actions are summarized below.

- The QEP with at least five years’ experience in environmental oversight associated with construction projects must provide environmental oversight whenever free product is encountered.
- The QEP should also provide health and safety guidance related to the potential exposure of the onsite workers to free product.
- The QEP must assess flammability, explosivity and asphyxiation hazards by using a 4- gas monitor. Measure LEL, carbon monoxide, carbon dioxide, and hydrogen sulfide in the work zone.
- The free product must be recovered to the extent practicable. This may involve the use of absorbent pads/booms, oil-water separators, and/or vacuum trucks to skim free product off the water table. The following methods will be used to recover free product at the project site: *(modify as appropriate)*
 - *For sheens and small quantities of free product (less than 1/2”, absorbent pads will be placed on the surface of the water. Pads will be removed and replaced daily or as needed. Used pads will be disposed of in 55-gallon solid waste drums.)*

- *Thicker layers of free product will be removed using a vacuum truck and transferred into an on-site oil water separator (OWS). Oil from the OWS will be transferred in 55-gallon drums...etc.*
- Workers who may come into contact with free product must wear the appropriate level of PPE.
- Workers who may come into contact with free product must have required training (at a minimum, 40-hour HAZWOPER certification and current 8-hour annual refresher training).
- All oil-absorbent pads/booms, PPE, and other disposable equipment containing free product must be appropriately disposed of.
- Where dewatering is necessary and free product is floating on the water in the onsite infiltration pit(s), the product will be recovered to the extent practicable, and any absorbent material such as absorbent pads must be disposed of properly. Please note that free product may not be moved from one excavation to another and engineering measures must be taken to prevent the transfer of free product during dewatering (e.g., placing the intake of the pump at a level below the free product layer – deeper than the planned deepest part of excavation/sump, etc.).
- If free product produces vapors that could adversely affect air quality, then the Vapor Management Plan (Section 9.5) shall be followed. Please note, this may require that PPE be upgraded.

9.4. Storm Water Management Plan

Proactive actions must be taken to prevent storm water from coming into contact with contaminated groundwater and soil at the site. The actions listed below will minimize the potential for contaminating storm water.

- Place contaminated soil on plastic sheeting in a lined, bermed area to prevent storm water from contacting contaminated soil.
- Open excavations should be backfilled as soon as practicable to prevent storm water and direct precipitation from entering the excavation. When possible, open excavations should be bermed to prevent storm water run-off from entering the excavation.
- In the event of heavy rain, ensure that all stockpiles 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.

Please provide site-specific information and response actions. The guidelines listed above are not intended to be comprehensive for all site conditions.

9.5. Vapor Management Plan

If hazardous soil vapor will not be encountered at this site, please state so and mark this subsection as “Not Applicable.”

The purpose of the Vapor Management Plan is to identify VOC vapors and toxic gases that could adversely affect air quality during construction. Included are procedures to detect and mitigate potential fire and explosion hazards posed by explosive vapors. Below are the Contaminants of Potential Concern associated with potential vapors that may be encountered at the Site.

- *TPH-g*
- *TPH-d*
- *Benzene*
- *Toluene*
- *Methane (from anaerobic degradation of hydrocarbon contaminants)*
- *Hydrogen Sulfide (from anaerobic degradation of hydrocarbon contaminants)*
- *Modify COPCs as appropriate...*

Areas where soil vapor hazards are known or suspected to be present at the site are listed below and depicted in the Hazard Map(s) in **Figure 3**:

- *First location (COPC)*
- *Second location (COPC).*
- *Modify COPCs as appropriate...*

The principal hazards posed by volatilized COPCs are *direct exposure through inhalation, asphyxiation, flammability, and explosivity*. Where volatile COPCs are found during construction activities, the concentrations of these vapors must be controlled in accordance with HDOH and U.S. Environmental Protection Agency (EPA) regulations and guidelines, and Occupational Safety and Health Administration (OSHA) rules and regulations. This includes proactive planning to ensure workers and the general public are not exposed to hazardous volatilized COPC concentrations and that workers have the appropriate level of PPE. Tasks associated with adequate and proper vapor management include the following: *(modify as appropriate)*

- A QEP with at least five years' experience in environmental oversight associated with construction projects must provide field oversight where COPC vapors may be present and/or are detected at concentrations above EALs, 10% of LELs and/or PELs. The QEP should provide health and safety guidance related to potential exposure of workers to the vapors.
- The QEP shall establish exclusion areas around the areas of known or suspected COPC vapors and only workers with appropriate PPE and training will be allowed to work within the exclusion areas. Exclusion areas are depicted on **Figure 5**.

- Workers who may come into contact with COPC vapors must wear the appropriate level of PPE.
- Workers who may come into contact with COPC vapors must have required training (at a minimum, 40-hour HAZWOPER certification and current 8-hour annual refresher training).
- Air monitoring will be conducted by the QEP during excavation.
- Air monitoring will also occur when workers are required to enter excavations. Where workers will enter excavations or trenches, confined space restrictions may also apply. Confined space requirements are described in detail in the site-specific HASP.
- The monitoring will include both workspace and perimeter measurements of COPC vapors.
- If warranted by air monitoring results, the QEP will notify onsite workers to upgrade PPE to include respiratory protection. Requirements for the use of respiratory protection, including medical monitoring, are described in detail in the site-specific HASP.
- Air monitoring will be conducted using _____ (e.g., PID, 4 gas meter).
- Air monitoring associated with confined-space entry will be described in the site-specific HASP for construction.

Why Is This Information Important?

Please provide site-specific information and response actions. The guidelines listed above are not intended to be comprehensive for all site conditions. The site-specific information should include details regarding when air monitoring will be initiated, the frequency that air monitoring samples will be collected, at what concentration(s) response actions are triggered (e.g., upgrading PPE, stopping work, initiating vapor suppression, increased monitoring), etc.

The following soil vapor concerns should be assessed during construction planning and discussed in this section of the EHMP:

Acute Exposure and Explosive Hazards

EALs do not currently consider explosive hazards, acute toxicity, or asphyxiation hazards that are important for potential construction worker exposure. Vapor concentrations should be screened against 10% of the lower explosive limit (LEL) and permissible exposure limits (PELs). Mitigation measures and intrinsically safe tools need to be present if 10% of the LEL is exceeded. Engineering and Administrative Control measures for worker protection should be discussed in Section XX and specifically addressed in the site-specific Health and Safety Plan (HASP).

9.6. Future Site Activities

Property development activities that may impact the closure status of the site could include the following activities:

- *Site development or repairs that affect any engineering or institutional controls that are managing residual contamination.*
- *Site development that disturbs the subsurface soils or removes any hardscapes (e.g. existing foundation or parking lot surface).*
- *New construction or extensive redevelopment involving excavation to a depth exceeding XX inches below ground surface (bgs). (NOTE: Where “XX inches bgs” is referenced, throughout, the depth bgs is dependent upon the depth at which contamination is identified.)*
- *Landscaping activities extending more than XX inches bgs.*
- *Utility repair or installation of new utilities extending more than XX inches bgs.*
- *Alteration of soil grades requiring excavation more than XX inches bgs.*

This list above is an example and must be modified for the specific site conditions, types of contaminated media (e.g. soil, soil vapor, groundwater), residual contamination, and zoning designation for the site.

Significant redevelopment activities at the site with the potential to disturb impacted media will most likely require the development of a C-EHMP and revision of this EHE/EHMP to address remaining residual contamination following the activity. Consult with HDOH prior to the start of any significant redevelopment activities to determine what is required. Draft C-EHMPs must be submitted to HDOH at least 90 days prior to construction to ensure timely review and approval.

During any future activities, *contaminated soil (update with appropriate contaminated media)* must be appropriately handled and disposed. During future site activities, precautions must be made to prevent potential exposures to construction/trench workers. Future construction/trench workers shall also be informed about the potential exposures at the site.

A change in residential occupancy and/or zoning designation of the site would require the current or future owners to work directly with HDOH and would likely impact the closure status of the site. The owner would be responsible to mitigate site conditions appropriately and work directly with HDOH to restore the closure status.

Soil excavation activities extending below the surface soils are the responsibility of the current and future owners. Since known areas with potential residual contamination exist below the ground surface (as documented in *Section XX*), soil excavation activities may expose these otherwise contained contaminants.

Prior to excavation, the owner should consult with HDOH to determine if additional precautions need to be taken. Proper excavation, handling, stockpiling and disposal of the soil during site activities will be necessary.

If groundwater or soil vapor is included as a contaminated media, add appropriate and relevant paragraph here similar to the ones above for contaminated soils addressing dewatering, permits, health and safety issues, and other relevant issues encountered when working with contaminated groundwater and/or soil vapor.

Appropriate notification and protections for these expected and actual site conditions should be provided to construction workers and are the sole responsibility of the owner. Workers participating in the excavation and handling of impacted *soil (list appropriate impacted media)* require up-to-date Occupational Safety and Health Administration (OSHA) Hazardous Waste Operations and Emergency Response (HAZWOPER) training (as per 29 Code of Federal Regulations 1910.120). A hazard communication training program is required for construction workers exposed to contaminated media. All construction workers must be trained prior to initial assignment to areas where there is a possibility of exposure over the Hawaii Occupational Safety and Health (HIOSH) Air Contaminant Limits for the contaminants. The training program must be provided annually thereafter unless, during subsequent exposure assessments, exposures have been documented to be below the HIOSH Air Contaminant Limits. A site-specific health and safety plan (HASP), worker supervision by experienced personnel and other health and safety measures may be required.

Should site activities threaten the closure status of the site, it is the responsibility of the owner to mitigate site conditions and restore the closure status of the site with HDOH, as necessary.

10.0 Notification Requirements

This section discusses notification requirements to HDOH should site conditions or site plans change.

10.1. HDOH Notification for Changing Site Conditions

In addition, if site conditions change following submittal and acceptance of this EHMP by the HDOH HEER Office or SHWB, then the following agencies must 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 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 site activities and any changes can be submitted through the HDOH e-permitting portal using the website link below.

HDOH e-permitting Portal

Agency	Phone	Link/Website
HDOH HEER Office	808-586- 4249	https://eha-cloud.doh.hawaii.gov/epermit/app/#/formversion/ed9ca916-7863-459b-b5dd-e66f881381d5 https://health.hawaii.gov/heer/submit-documents-to-heer/submit-documents/
HDOH SHWB	808-586- 4226	N/A

10.2. Newly Discovered Contamination

If new contamination is discovered that is different from any known previously reported releases or contamination, the release must be reported as in accordance with Hawaii Revised Statutes (HRS) 128D and Hawaii Administrative Rules (HAR) 11-451. This includes immediately contacting HDOH to report the release to the on-duty State On-Scene Coordinator to discuss how to address and potentially manage this discovery. Depending on the nature of the contamination, take immediate appropriate steps to ensure human health and safety as well as environmental protection. Refer to the Contacts List at the beginning of the document as well as Section 8.1 to notify the primary site point of contact and HDOH immediately.

In the event of a discovery that causes an imminent threat to human health or the environment, the first call should be to 911. Example of releases requiring a call to 911

include, but are not limited to, fuel or gas leaking from an active pipeline, an ammonia tank leak, or workers and/or the public becoming ill or injured.

All releases must be reported to the HEER Office State On-Scene Coordinators (808-586-4249; or 808-247-2191 after work hours) and the Local Emergency Planning Committee (LEPC) at *insert appropriate phone number*. Both agencies must be contacted by telephone or in person immediately following a release. Note, 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. For oil and hazardous substance spills that threaten or occur in navigable waters, the USCG is the lead agency. Please note, petroleum observed on groundwater is not reportable to the NRC.

In addition, if there is a discovery of sensitive, threatened, or endangered species on site, or other potential site receptors, this could result in the need for modifications to the EHE and risk assessments which may require modifications to this EHMP.

Please provide site-specific information and release reporting actions. The guidelines listed above are not intended to be comprehensive for all site conditions.

11.0 References

(Insert references to previous site-specific documents, such as Phase II investigations, etc., and any other documents relevant to the preparation of this EHMP)

HAR 11-59. 2001. Hawaii Administrative Rules, Department of Health. Title 11, Chapter 59. Ambient Air Quality Standard. September 15.

HAR 11-60.1. 2014. Hawaii Administrative Rules, Department of Health. Title 11, Chapter 60.1. Air Pollution Control. June 30.

HAR 11-260.1. July 2017. Hawaii Administrative Rules, Department of Health. Title 11, Chapter 260.1 Hazardous Waste Management: General Provisions. July 17.

HAR 11-279.1. September 2018. Hawaii Administrative Rules, Department of Health. Title 11, Chapter 279.1. Hazardous Waste Management: Standards for the Management of Used Oil. September 30.

HAR 11-451. 1995. Hawaii Administrative Rules, Department of Health. Title 11, Chapter 451, State Contingency Plan (SCP). August 2.

State of Hawaii Department of Health (HDOH) Hazard Evaluation and Emergency Response (HEER). 2008 and updates. Technical Guidance Manual for the Implementation of the Hawaii State Contingency Plan. Website URL: <https://health.hawaii.gov/heer/tgm/>

HDOH 2017a. *Evaluation of Environmental Hazards at Sites with Contaminated Soil and Groundwater*. Fall 2017.

HDOH HEER Office 2017b. *Guidance for Stockpile Characterization and Evaluation of Imported and Exported Fill Material*. October.

HDOH Solid and Hazardous Waste Branch (SHWB). 2019. *Use of HEER Office Environmental Action Level Guidance and HEER Office Technical Guidance Manual for Characterization and Remediation of Contaminated Properties Overseen by the Solid and Hazardous Waste Branch*. January 30.

State of Hawaii, Hawaii Revised Statutes (HRS) 128D. Hawaii Environmental Response Law (HERL), Chapter 128D. Website URL: https://www.capitol.hawaii.gov/hrscurrent/Vol03_Ch0121-0200D/HRS0128D/HRS_0128D-0001.htm

Figures

Multiple maps under each heading should use the nomenclature Figure Xa, Xb, Xc, etc.

Figure 1 – Site Location Map

Figure 2 – Known Residual Site Contamination Exceeding HDOH Tier 1 EALs

Figure 3 – Environmental Hazard Map

Figure 4 – Engineering Controls

Figure 5 – Engineering Controls – Cross-Sectional Depiction (A-A')

Note: If changes occur at the site, updated figures should be provided to the HEER Office or the SHWB.

Appendices

Appendix A — Environmental Hazard Evaluation

Appendix B — Engineering Control Inspection and Maintenance Form
(edit/update with specific control name)

Appendix C — Institutional Controls: Documentation, Inspection and Maintenance Forms
(edit/update with specific document name, include blank inspection and maintenance forms)