Programmatic Environmental Hazard Evaluation and Environmental Hazard Management Plan

State of Hawaii
Department of Transportation

AIRPORTS DIVISION

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

LIST OF ACRONYMS AND ABBREVIATIONS

Acronym	Definition
AIR-EE	HDOT-A Engineering Environmental Section
ARFF	Aircraft Rescue and Firefighting
bgs	below ground surface
BMP	Best Management Practice
BTEX	Benzene, toluene, ethylbenzene, and xylenes
C&D	Construction and Demolition
CAA	Civil Aeronautics Administration
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
COC	Contaminant of concern
CONRAC	Consolidated Rental Car Facility
COPC	Contaminant of potential concern
CSM	Conceptual site model
CWB	Clean Water Branch
cy	cubic-yard
DU	Decision unit
EAL	Environmental action level
EHE	Environmental Hazard Evaluation
EHMP	Environmental Hazard Management Plan
EPA	Environmental Protection Agency
FAA	Federal Aviation Administration
HAR	Hawaii Administrative Rules
HASP	Health and Safety Plan
HDOH	State of Hawaii Department of Health
HDOT-A	State of Hawaii Department of Transportation Airports Division
HEER	Hazard Evaluation and Emergency Response
HIOSH	Hawaii Occupational Safety and Health
HRS	Hawaii Revised Statute
HSERC	Hawaii State Emergency Response Commission
LEL	lower explosive limit
LEPC	Local Emergency Planning Committee
LNAPL	light non-aqueous phase liquid
LUC	Land use control
mg/kg	milligram per kilogram
MI	Multi-increment
Mil	thousandths of an inch
MS4	Municipal Separate Storm Sewer System
NOI	Notice of Intent
NAS	Naval Air Station
NPDES	National Pollutant Discharge Elimination System
OSHA	Occupational Safety and Health Administration

PAH	Polycyclic aromatic hydrocarbon
PCB	Polychlorinated biphenyl
PCS	Petroleum-contaminated soil
PEL	Permissible exposure limit
PID	Photoionization detector
PPE	Personal protective equipment
ppm	parts per million
PRP	potentially responsible party
RQ	Reportable Quantities
SCP	State Contingency Plan
SDWB	Safe Drinking Water Branch
SHWB	Solid and Hazardous Waste Branch
SOSC	State On-Scene Coordinator
STEL	Short-term exposure limit
SWPPP	Storm Water Pollution Prevention Plan
TAC	Territorial Aeronautical Commission
TCLP	Toxic Characterization Leaching Procedure
TGM	Technical Guidance Manual
TPH	Total petroleum hydrocarbon
TPH-d	Total petroleum hydrocarbons as diesel
TPH-g	Total petroleum hydrocarbons as gasoline
TPH-o	Total petroleum hydrocarbons as oil
TWA	Time-weighted average
UIC	Underground injection control
U.S.	United States
UST	Underground Storage Tank
VOC	Volatile organic compound

SECTION 1 INTRODUCTION

This Programmatic Environmental Hazard Evaluation and Environmental Hazard Management Plan [EHE/EHMP] was prepared on behalf of the State of Hawaii Department of Transportation's Airports Division [HDOT-A] for use by contractors performing construction activities within any of the 15 airports owned by the State of Hawaii and operated by the HDOT-A, hereinafter referred to as "the Airports". These 15 Airports are listed below and shown on Figure 1.

Oahu District

- Daniel K. Inouye International Airport (HNL)
- Kawaihapai Airfield (HDH)
- Kalaeloa Airport (JRF)

Maui District

- Kahului Airport (OGG)
- Kapalua Airport (JHM)
- Lanai Airport (LNY)
- Molokai Airport (MKK)
- Hana Airport (HNM)
- Kalaupapa Airport (LUP)

Kauai District

- Lihue Airport (LIH)
- Port Allen Airport (PAK)

Hawaii District

- Hilo International Airport (ITO)
- Ellison Onizuka Kona International Airport (KOA)
- Waimea-Kohala Airport (MUE)
- Upolu Airport (UPP)

This Programmatic EHE/EHMP is an overall, general plan that may be implemented for construction projects at any of these 15 Airports. Since multiple construction projects are planned at several Airports as part of the Hawaii Airports Modernization Program, construction activities may encounter potentially hazardous contaminants of concern [COC] that are present in soil, groundwater, and/or soil vapor, herein referred to as "media", at one or more locations within the Airports. This Programmatic EHE/EHMP evaluates existing data and identifies associated human health and environmental hazards, and provides a framework for management of contaminated media encountered during construction activities to prevent occurrences of potential exposures to COCs that pose hazards to human health and the environment.

Specific environmental information for each individual airport will be compiled in a searchable environmental database. The database will be updated on a regular basis, as new information

becomes available. The database will include the following site-specific information for each airport:

- Detailed site history;
- Exposure setting (climatologic conditions, geology, hydrogeology, land use, and surrounding population);
- COCs, and
- Areas of known, suspected, or historical contamination.

During the design phase of a construction project, HDOT-A will review the environmental database as part of a pre-construction environmental screening to identify known or suspected contaminated sites in the work area and if there is an existing site-specific EHMP. The environmental screening process will determine if this Programmatic EHE/EHMP should be implemented. If the project is not in a known contaminated area, or a site-specific EHMP has not been prepared for previously identified contamination, then the Programmatic EHE/EHMP will be provided with the construction bid specification. If a previous Phase II Environmental Site Assessment has identified contamination in the work area, then a site-specific EHMP may be required depending on the type of contamination. The construction bid specification will specify whether the Programmatic EHE/EHMP is applicable or a site-specific EHMP is needed.

Pursuant to the Environmental Response Law (Hawaii Revised Statutes [HRS] 128-D) and the State Contingency Plan [SCP] (Hawaii Administrative Rules [HAR] 11-451), parties are required to comply with this Programmatic EHE/EHMP when working within the Airports. Alternatively, parties can refine or modify the details of this Programmatic EHE/EHMP in order to better address site-specific requirements. So in effect, parties have the option to create their own site-specific EHMPs based on this Programmatic EHE/EHMP, provided the site is properly characterized. This Programmatic EHE/EHMP is intended to be implemented primarily for smaller construction projects, such as utility line replacement, road/runway repair, landscaping, etc. However, some larger projects may be able to use this Programmatic EHE/EHMP depending on the scope of work, future use of the site, and project location. Substantial construction projects, and projects that include occupied buildings, will likely require a site investigation or a site-specific EHMP. Approval from the State of Hawaii Department of Health [HDOH] would be necessary before this Programmatic EHE/EHMP can be used for substantial construction projects.

This Programmatic EHE/EHMP follows the Hawaii SCP (HAR §11-451), HAR §11-281, and the following HDOH guidance documents:

- *Technical Guidance Manual for the Implementation of the Hawaii State Contingency Plan Interim Final [TGM], November 12, 2009.*
- *Guidance for Soil Stockpile Characterization and Evaluation of Imported and Exported Fill Material, October 2017.*
- *Evaluation of Environmental Hazards at Sites with Contaminated Soil and Groundwater, Fall 2017.*

- *Long-Term Management of Petroleum-Contaminated Soil and Groundwater, June 2007.*

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SECTION 2 PURPOSE

The purpose of this Programmatic EHE/EHMP is to provide guidance on the proper management of contaminated media that may be encountered during construction activities associated with smaller construction projects at the Airports. Implementation of the EHMP is intended to identify releases and contamination that may be encountered during work activities, control contaminant migration and dispersion, and prevent worker contact with contaminated media encountered during construction. This document does not provide guidance for thorough characterization or remediation of contaminated sites.

Construction activities covered by this document may include one or more of the following: (1) demolition/removal of existing structures, pavement, and infrastructure; (2) construction of new facilities; (3) subsurface work to relocate or install utilities (e.g., water, natural gas, electricity, telephone, cable), box culverts and storm drain laterals, sanitary sewers, street lights, traffic lights, grease traps, and septic tanks; and (4) grading, paving, and landscaping.

Contractors will use the information presented in this document to:

- Understand the roles and responsibilities of all contractors and subcontractors in managing contaminated media.
- Identify contamination and potential immediate risk to human health or the environment (Section 5, EHE).
- Understand how to appropriately manage contaminated soil and groundwater, light non-aqueous phase liquid [LNAPL] (commonly referred to as free product), and/or other media, if encountered (see Section 6, EHMP for a list of the individual management plans).
- Understand how to identify and report a release (Section 7, Release Reporting).
- Appropriately manage site activities to prevent worker exposure to contaminated media when controls fail to function as planned (see contingency plans in Sections 11 through 15).

For certain areas within the Airports, site-specific EHMPs have been implemented that were developed by HDOT-A, their contractors, or other parties working within the Airports. Site-specific EHMPs are developed after completion of site characterization and implementation of any required engineered remedies. The searchable environmental database described in Section 1 will track the areas for which site-specific EHMPs have been established (and sites with land use controls [LUCs]). The site-specific EHMPs should be used to govern activities at the respective areas. Copies of these site-specific EHMPs are available at the HDOT-A Engineering Environmental Section [AIR-EE] office in Honolulu. As environmental impacts are identified at other sites or areas within the Airports, HDOH may require preparation of additional site-specific EHMPs in the future.

HDOT-A will conduct a pre-construction environmental screening for construction projects to identify known or suspected contaminated sites in the planned work area and if there is an existing site-specific EHMP. If the contractor is unsure whether this Programmatic EHE/EHMP is detailed enough to provide appropriate guidance for planned subsurface construction activities, the contractor must contact AIR-EE prior to commencing the project.

Important: Complete site characterization (i.e., delineation of magnitude and extent of COCs) must precede full-scale redevelopment (including construction of additional buildings or major building alterations) within areas of known or suspected contamination. If significant contamination is encountered during the site characterization, preparation of a site-specific EHE/EHMP must be prepared to address the proper management of contamination within the respective site boundary.

SECTION 3 AREA COVERED

The area covered by this document includes each of the Airports as shown in Figures 1 through 16. The Airports include terminals, access roads, parking structures, parking lots, cargo and maintenance facilities, ancillary structures, and runways.

3.1 PROPERTY LOCATION, SETTING, AND HISTORY

The locations, surrounding area, and a brief history of each of the 15 Airports is described below.

3.1.1 Daniel K. Inouye International Airport (HNL)

The Daniel K. Inouye International Airport is located on the southern coast of Oahu three miles northwest of Honolulu's central business district, within a commercial and light industrial area (Figure 2). In general, the airport is bordered to the north by North Nimitz Highway, to the east by Lagoon Drive, to the south by the Pacific Ocean, and to the west by Joint Base Pearl Harbor-Hickam. However, due to the irregular shape of the property, the northeastern portion of the airport is bordered by Aolele Street and several commercial/light industrial businesses. The nearest major bodies of surface water are Keehi Lagoon, Mamala Bay, and the Pacific Ocean, located on the south side of the airport (Figure 2). There are also several drainage canals within the airport.

The airport opened in March 1927 as John Rodgers Airport. John Rodgers Airport was renamed Honolulu Airport in 1947, and "International" was added to the name in 1951. In 2017, Honolulu International Airport was renamed to Daniel K. Inouye International Airport (State of Hawaii, 2019).

From 1939 to 1943, the adjacent Keehi Lagoon was dredged for use by seaplanes, and the dredged soil was moved to Honolulu Airport to provide more space for conventional airplanes. After the attack on Pearl Harbor in December 1941, the United States [U.S.] military took control of the airport and it was designated as Naval Air Station [NAS] Honolulu. John Rodgers Airport was returned to the Territory of Hawaii in October 1946. In 1946, John Rodgers Airport was one of the largest airports in the U.S. and comprised a total area of 4,019 acres, with four paved land runways and three seaplane runways (State of Hawaii, Department of Transportation, 2007). The buildings and other facilities at Honolulu Airport in 1947 were all of a temporary nature, having been constructed by the Navy during the War.

A new jet age passenger terminal (John Rodgers Terminal) was constructed on the north ramp and dedicated on August 22, 1962. The south ramp where the airport was originally located became home to cargo, general aviation and aircraft maintenance activities. A new Commuter Terminal was dedicated on June 2, 1988. A new Interisland Terminal was dedicated on July 20, 1993 (State of Hawaii, 2019).

In March 2006, Governor Linda Lingle unveiled a comprehensive plan to upgrade Hawaii airports. New facilities and improvements planned (or underway) for the multi-year Airport Modernization Program include:

- Mauka Concourse
- Diamond Head Commuter Terminal
- Consolidated Rental Car Facility [CONRAC]
- Aloha Air Cargo Facility
- Hawaiian Airlines Cargo/Maintenance Facility
- Widening of Taxilanes G & L
- New Employee Parking Lot

Construction of the various components of the Airport Modernization Program began in the summer of 2013 and is anticipated to be completed by the end of 2021 (Hawaii Airports Modernization Project, 2008).

3.1.2 Kawaihapai Airfield (HDH)

The Kawaihapai Airfield is located on the northern coast of Oahu, approximately three miles west of the town of Waialua, in a residential and agricultural area (Figure 3). In general, the airport is bordered to the north by the Pacific Ocean and Mokuleia Beach Park, to the east and south by isolated residences, agricultural land, and a military reservation, and to the west by the Waianae Mountains (Figure 3). The nearest major body of surface water is the Pacific Ocean, located adjacent to the north side of the airport (Figure 3). There is also a drainage canal that intersects the east end of the airport, and an unnamed stream located approximately 0.25 miles east of the airport.

U.S. Army use of 67 acres of land just south of the Oahu Railroad & Land Company railway in Mokuleia began in 1922 with the establishment of Camp Kawaihapai as a communications station. In the 1920s and 1930s, the site was also used as a deployment site for mobile coast artillery which was transported by railroad. By December 7, 1941, a fighter airstrip had been established on additional leased land and Mokuleia Airstrip had been established. Mokuleia Airfield was improved to a 9,000-foot by 75-foot paved runway, a crosswind runway and many aircraft revetments from 1942 to 1945.

In 1946, the U.S. Army acquired the additional 583 acres of leased land by condemnation with compensation. In late 1946, the U.S. Army Air Force became the U.S. Air Force by order of President Truman so Mokuleia Airfield became an Air Force installation. In 1948, the airfield was inactivated and renamed Dillingham Air Force Base in memory of Captain Henry Gaylord Dillingham. In the 1950s, a Nike Air Defense site was added near Mokuleia Beach Park but was obsolete by 1970.

The state leased Dillingham airfield from the Air Force in 1962 for general aviation use on a short-term basis. In about 1974, the U.S. Air Force transferred the base back to the U.S. Army.

The state acquired a longer term lease from the U.S. Army in 1974 and in 1983 signed a 25-year lease. Hangars for fixed wing aircraft and gliders, bathrooms, and a Unicom Tower/fire station were added in 1985 to 1986. The Defense Authorization Act of 1990 provided that the 67 acres of ceded land of old Camp Kawaihapai be transferred to the state after an agreement on future joint-use of the airfield was reached.

The 2001 Legislature passed Act 276 that changed the official name of the airfield located at Kawaihapai, formerly known as Dillingham Airfield, to Kawaihapai Airfield. In 2008, Dillingham Airfield was a general aviation airport operated by the HDOT-A under a 25-year lease from the U.S. Army. The state leased 272 acres of the 650 acre Dillingham Military Reservation and operated the single 5,000-foot runway primarily for commercial glider and sky diving operations. In 2009, the State entered into a new 25-year lease with the Army and has a Joint-Use Agreement with the Army for the field (State of Hawaii, 2019).

3.1.3 Kalaeloa Airport (JRF)

The Kalaeloa Airport is located on the southwestern coast of Oahu, just south of the city of Kapolei (Figure 4). In general, the airport is bordered to the north by commercial and industrial businesses, to the east by vacant land, to the south by the U.S. Coast Guard Air Station and the Pacific Ocean, and to the west by Campbell Industrial Park (Figure 4). The nearest major body of surface water is the Pacific Ocean, located adjacent to the south side of the airport (Figure 4). There is also a drainage canal approximately 0.2 miles west of the airport.

Barbers Point NAS was developed by the U.S. Navy in 1939 as a mooring station for airships. During World War II, both Ewa Marine Corps Air Station and Barbers Point NAS operated from the 3,709 acres. It was also the home of the Barbers Point Coast Guard Station. Kalaeloa (long point) is the original name for the southwestern tip of Oahu and was given to the airport by the HDOT and the Barbers Point Redevelopment Commission in the mid-1990s.

The state accepted 757 acres of surplus land at Barbers Point NAS as Kalaeloa Airport on July 1, 1999 for use by general aviation aircraft to practice pilot training, formerly conducted at Ford Island and Honolulu International Airport. Governor's Executive Order No. 3861 dated March 15, 2001 set aside 752.240 acres at the former Barbers Point NAS for Kalaeloa Airport.

Recent major improvements to the Kalaeloa facilities include a new airfield lighting system, partial runway paving, emergency power generating systems, firefighting, and communication equipment. In 2006, the Federal Aviation Administration [FAA] installed an Instrument Landing System on Runway 4R. Kalaeloa Airport provides a launch site for Coast Guard Search and Rescue operations, a training base for general aviation, an emergency response platform, alternate landing site for airlines and the military, and extension of the capacity of Daniel K. Inouye Airport (State of Hawaii, 2019).

3.1.4 Kahului Airport (OGG)

The Kahului Airport is located on the northern coast of Maui, just east of the city of Kahului (Figure 5). In general, the airport is bordered to the north by the Pacific Ocean and Kanaha

Beach Park, to the east and south by vacant land, and to the west by commercial and industrial businesses (Figure 5). The nearest major body of surface water is the Pacific Ocean, located adjacent to the north side of the airport (Figure 5). There is also a drainage canal that intersects the west end of the airport.

In 1942 construction started on NAS Kahului. After the war, extensive negotiations between the Territory of Hawaii and the Navy resulted in the airbase being turned over to the Hawaii Aeronautics Commission. A program of modernization was immediately undertaken. The Kahului Airport began commercial airline operations in June 1952.

In 1955, the airport consisted of 1,341 acres, and had three paved runways: Runway 2-20 was 200 feet wide and 7,000 feet long, Runway 5-23 was 300 feet wide and 5,000 feet long, and Runway 17-35 was 200 feet wide and 5,000 feet long. Facilities included a joint passenger terminal building, restaurant, freight terminal building, ground transportation services, paved taxiways and apron, wind socks, one lighted runway (5-23), a lighted tetrahedron, radio beacon, ceiling light projector, rotating beacon, small plane shelters, obstruction lights, field maintenance, crash and fire protection, and ramp lighting. A new tower and control building were completed in October 1958.

A new terminal building was constructed in 1965. As passenger traffic increased, improvements to the terminal building and the public parking facilities were completed in October and December 1975. In July 1978, a new 2,900 square foot holding wing for Aloha Airlines was dedicated. In December 1979, dedication ceremonies were held for the new airport maintenance building and baseyard that replaced a building converted from a warehouse after World War II.

Design of a new Kahului Airport Terminal Complex began in 1985. Work included additions and alterations to existing structures, roads, parking areas, aprons, a new terminal, taxiways, runways, landscaping, cargo terminal, and relocation of the FAA tower. Support facilities included a new helipad and cargo terminal. The new Kahului Airport Terminal Building was dedicated on October 17, 1990.

By the end of 1999, Kahului Airport contained 1,391 acres of land, including the Kanaha Pond National Natural Landmark, which was managed by the Fish and Wildlife Division of the Hawaii Department of Land and Natural Resources.

Additional terminal improvements were completed in 2005 and 2006. The Airport Modernization Program at Kahului focuses on major infrastructure improvements, including expanding capacity for passenger comfort and ease of travel, a CONRAC to centralize traveler's car rental needs, and a new airport access road along with taxiway and runway repairs. Upgrades inside the terminal include restroom renovations and a reroofing project (Hawaii Airports Modernization Project, 2008).

3.1.5 Kapalua Airport (JHM)

The Kapalua Airport is located on the western coast of Maui, approximately 0.3 miles east of the town of Napili-Honokawai (Figure 6). The airport is surrounded by vacant, agricultural land (Figure 6). The nearest major body of surface water is the Pacific Ocean, located approximately 0.5 miles west of the airport.

The Kapalua Airport, which was developed and constructed by Hawaiian Airlines, opened on March 1, 1987. The airport consists of a single non-precision and visual 3,000-foot runway, passenger terminal, Aircraft Rescue and Firefighting [ARFF] station, Universal Communications Tower, and a 500-gallon fuel storage tank.

The HDOT purchased Kapalua Airport from Hawaiian Airlines in October 1992. The airport began operating under ownership of HDOT-A on April 1, 1993, and Hawaiian Airlines ceased its operations at the airport.

An extension to the ARFF building was completed in February 2003 (State of Hawaii, 2019).

3.1.6 Lanai Airport (LNY)

The Lanai Airport is located on the southwest side of the island of Lanai, approximately 2.5 miles southwest of Lanai City (Figure 7). The airport is surrounded by vacant and agricultural land (Figure 7). The nearest major body of surface water is the Pacific Ocean, located approximately 2 miles west of the airport.

An emergency landing strip was established on Lanai in 1919. Inter-Island Airways, now Hawaiian Airlines, began operations to Lanai in 1930. The landing field was sod and owned by the Hawaiian Pineapple Company. Shortly after the start of World War II, air service to Lanai came to a halt because the field was not big enough to accommodate the larger planes that were being used by Inter-Island Airways.

A new airport site for Lanai was chosen and on September 18, 1946, Hawaiian Airlines resumed service there using Douglas DC-3s. The field was an unpaved sod strip and as a result was practically unusable in wet weather and almost untenable due to dust and dirt in dry weather. In view of these conditions, air service was not reliable and it was therefore decided to pave the runway and taxiway.

In April 1948, work was completed on the reconstruction of Lanai Airport, the first Territorial airport to be completed under the Federal Airport Act of 1946. The airport was officially dedicated on July 12, 1948 by the Hawaii Aeronautics Commission and the Civil Aeronautics Administration [CAA]. At the time the airport consisted of one paved runway 80 feet wide by 3,700 feet long, with necessary taxiways and parking aprons. The graded area was 400 feet in width and 3,900 feet in length. In 1952 a freight building was constructed, and resurfacing of the runway and other paved areas was completed in October 1955. By 1955, the airport consisted of 59 acres of land, and included Hawaiian Airlines' passenger terminal building, a freight

terminal building, a paved runway and warm up areas, paved taxiway and apron, wind socks, field maintenance, and crash and fire protection.

In 1966, extension of the runway and a new terminal building project was completed. Throughout the 1980s, there were minor upgrades to the airport. When the Douglas DC-3 was ultimately replaced by larger aircraft, the airport once again became obsolete. Between 1992 and 1994, major improvements were made to the airport and a new airport terminal building was constructed (State of Hawaii, 2019).

The Airport Modernization Program at Lanai includes a new general aviation apron and ARFF Station (Hawaii Airports Modernization Project, 2008).

3.1.7 Molokai Airport (MKK)

The Molokai Airport is located in the central area of the island of Molokai, approximately 6 miles northwest of Kaunakakai (Figure 8). The airport is surrounded by vacant and agricultural land (Figure 8). The nearest major body of surface water is the Pacific Ocean, located approximately 2.5 miles north of the airport.

On December 15, 1927 the Territorial Governor signed Executive Order No. 307 setting aside an area of 204.8 acres of Territorial land for an airport at Hoolehua, Molokai. The airport was originally named Hoolehua Airport and was placed under the control and management of the Territorial Aeronautical Commission [TAC]. This was the only public landing field on Molokai. Inter-Island Airways inaugurated interisland air service from Honolulu to Molokai in November 1929.

In July 1930, the name was officially changed to Molokai Airport. By 1937 Molokai Airport consisted of three runways – 1,000, 2,600 and 2,600 feet long, 300 feet wide with 100 feet of grading on each side. The U.S. Army maintained a radio station and Inter-Island Airways had a Station House at the field.

On December 7, 1941 the airport was taken over by the Army and Navy and the services remained in responsible possession of the airport in 1947. During this period the U.S. Army made extensive improvements, some of which were beneficial to the increased civilian use to come. By agreement with the U.S. Army, the Territory assumed responsibility for the operation and maintenance of the airport early in 1947. Act 32 of the 1947 Legislature, placed Molokai Airport under the management of the Hawaii Aeronautics Commission effective July 1, 1947. Commercial aviation activity increased considerably during 1950. During 1951 a comprehensive program of improvements was undertaken. A new Molokai Airport Terminal was constructed and officially dedicated on June 15, 1957. The terminal was expanded in 1969. The FAA dedicated a new air traffic control tower at Molokai Airport on July 13, 1978; a new baseyard facility was dedicated on June 5, 1992; the renovated passenger terminal and support facilities were dedicated on October 19, 1994 (State of Hawaii, 2019).

The Airport Modernization Program at Molokai includes airfield improvements and construction of a new ARFF Station (Hawaii Airports Modernization Project, 2008).

3.1.8 Hana Airport (HNM)

The Hana Airport is located on the northeastern coast of Maui, approximately 3 miles northwest of the town of Hana (Figure 9). The airport is surrounded by vacant land and bordered to the north by the Pacific Ocean (Figure 9). The nearest major body of surface water is the Pacific Ocean, located adjacent to the north side of the airport (Figure 9).

Construction of the Hana Airport began on November 16, 1948. In 1949, a small passenger terminal and a separate freight terminal, plus necessary water and power lines and cesspool, were constructed out of surplus materials taken from Maui Airport. The Hana Airport was officially opened on November 11, 1950. A Jeep crash fire truck was put into operation at Hana Airport in January 1951. A new paved runway 100 feet wide by 3,600 feet long was completed in June 1951. Facilities at this airport included a passenger terminal, freight terminal, maintenance shop, fire house, and fencing (State of Hawaii, 2019).

3.1.9 Kalaupapa Airport (LUP)

The Kalaupapa Airport is located on the Kalaupapa Peninsula on the northern coast of the island of Molokai (Figure 10). The airport is surrounded by vacant land and bordered to the north by the Pacific Ocean (Figure 10). The nearest major body of surface water is the Pacific Ocean, located adjacent to the north side of the airport (Figure 10).

Kalaupapa Airport was opened to operations in 1934 and was served by Inter-Island Airways, now Hawaiian Airlines. Service was discontinued by Hawaiian because the field was too small and too rough for use by the airplanes being used at the time. During World War II, Gambo Flying Service was authorized by the military to furnish emergency transportation of medical supplies, etc. direct to Kalaupapa. After the war, Andrew Flying Service and Cockett Airlines began serving Kalaupapa on a daily basis with Beechcraft and Cessna planes.

In 1951, a small passenger terminal with rest house was completed. Up to that time there were no passenger facilities available. The field was sod on sand and as a result was very rough, causing discomfort to passengers and excess wear to aircraft using the area. In 1954, a paved runway with sodded shoulders was completed. In 1955, the airport consisted of 17 acres, and had one paved runway, which was 50 feet wide and 1,658 feet long. The airport was served by Andrew Flying Service and Cockett Airlines. Facilities included a passenger terminal building, paved runway, wind socks and field maintenance. In 1970, the runway was extended from 1,658 feet to 2,760 feet (State of Hawaii, 2019).

The Airport Modernization Program at Kalaupapa includes construction of a new ARFF Station (Hawaii Airports Modernization Project, 2008).

3.1.10 Lihue Airport (LIH)

The Lihue Airport is located on the eastern coast of Kauai, just east of the city of Lihue (Figure 11). In general, the airport is bordered to the north by agricultural land, to the east by the Pacific Ocean, to the south by Kauai Lagoons Resort and Gold Club, and to the west by commercial businesses and residences (Figure 11). The nearest major body of surface water is the Pacific Ocean, located adjacent to the east side of the airport (Figure 11). There is also a drainage canal within the northern portion of the airport.

A proposed airport at Lihue was approved by the CAA as part of the 1947 National Airport Plan as submitted by the Territory on February 26, 1947. Ground breaking ceremonies were held October 28, 1948 and actual construction began November 4, 1948. The runway was finished in October 1949. The airport was opened to non-scheduled air carrier and air freight operators from this date, pending completion of radio and terminal facilities necessary for the operation of scheduled air carriers. The terminal was built and dedicated on January 8, 1950. Immediately on the opening of Lihue Airport in 1950, passenger traffic started a rate of increase beyond all expectations and the continued rise in 1951 taxed the facilities of the terminal building.

A Jeep crash fire truck was put into operation at Lihue Airport in January 1951. The air freight terminal was completed in February 1951. In 1952, the runway was extended to a total length of 5,100 feet, the terminal was enlarged to handle increased passenger traffic, and three steel frame T-hangars for private planes were completed. By 1955, the land area at Lihue Airport encompassed 160 acres, including one paved runway, which was 100 feet wide and 5,100 feet long. The airport included a terminal building, restaurant, ground transportation, parking lot, paved runway and warm-up apron, medium intensity lights, lighted wind cones, rotating beacon and obstruction lights, parking apron, T-Hangars, freight terminal, CAA Communications Station (24-hour), U.S. Weather Bureau (24 hours), 80 octane fuel and Crash & Fire protection.

In October 1958, a parking lot was added to the existing terminal area and a restaurant building connected to the terminal was completed in March 1959. Construction of a new Ground Transportation Building, and additional plane and auto parking was completed in September 1962. A new fire station was dedicated on September 22, 1978. A new 6,500-foot runway was dedicated on April 26, 1984. A groundbreaking ceremony was held on May 24, 1984 for a new Lihue Airport Terminal Complex. The new passenger terminal was dedicated on February 25, 1987. An expanded roadway system, parking lot and utility systems, and new maintenance baseyard were completed in 1987. A dedication was held for a new 30,000 square foot cargo building and a 4,800 square foot Commuter Terminal on March 14, 1991, including aprons and taxiways for the two facilities. A new ARFF station was dedicated on March 17, 1995. The facility replaced one built in 1978 when the airport had only interisland flights (State of Hawaii, 2019).

The Airport Modernization Program at Lihue includes upgrading the airport security system and adding a CONRAC (Hawaii Airports Modernization Project, 2008).

3.1.11 Port Allen Airport (PAK)

The Port Allen Airport is located on the southern coast of Kauai, approximately 0.7 miles southwest of the town of Eleele (Figure 12). The airport is situated on a peninsula that is surrounded on three sides by the Pacific Ocean (Figure 12). Vacant land borders the north side of the airport. The airport property also includes a salt pond located adjacent to the northwest side of the airport runway.

In the early 1920s the U.S. Signal Corps and U.S. Army Air Corps used a portion of land near Port Allen as a landing strip (Burns Field). The 1928 Legislature appropriated funding to purchase land at Port Allen to establish an airport. The Territory purchased 29.35 acres of land in Port Allen for this purpose. The land was adjacent to the Army's Burns Field which occupied 67 acres of land. The land was conveyed to the Territorial Aeronautics Commission by Executive Order No. 330, dated April 24, 1928.

Through the cooperation of the U.S. Army, the War Department granted use of the Army section of the field for commercial aviation on April 27, 1929. The first passenger air service to Kauai was inaugurated by Inter-Island Airways on November 11, 1929, on a twice weekly schedule to Port Allen Airport. In the 1935 annual report the Superintendent of Public Works reported that the airfield at Port Allen was on sparsely-grassed rocky soil. The Army maintained a barracks at the field. This field was used every other day by Inter-Island Airways. The principal needs were grading, paving and clearing. Port Allen Airport consisted of two runways, 3,600 and 2,600 feet long and approximately 89 percent of the grading had been completed.

At the outbreak of the World War II, Port Allen was taken over by the military and, as a safety precaution the runways were plowed up to prevent possible use by the enemy. Upon termination of hostilities, the field was regraded and opened to small aircraft operation. In 1947, the Army and the Territory provided funding for paving the field and developing it into a suitable field for use by charter or privately owned aircraft. Only minimum facilities for the convenience of operators and passengers were available. In May 1948, work was completed for the paving of a runway 2,500 feet in length, an aircraft parking apron and connecting taxiway. Other than the landing areas and a public waiting room with toilet facilities, the physical improvements by 1955 included three privately owned hangars and an office building.

Helicopter operations began at the airport in November 1997. By 2006, three helicopter operators used the airport, as well as an ultra-light airplane. On occasion, general aviation aircraft, military aircraft, and other helicopter operators use the airport (State of Hawaii, 2019).

3.1.12 Hilo International Airport (ITO)

The Hilo Airport is located on the eastern coast of the Big Island of Hawaii, just east of the city of Hilo (Figure 13). In general, the airport is bordered to the north and west by commercial businesses and residences, to the east by vacant land, and to the south by commercial businesses and vacant land (Figure 13). The nearest major body of surface water is the Pacific Ocean, located less than 0.1 miles from the northwest side of the airport (Figure 13). There is also a drainage canal within the airport.

Governor's Executive Order No. 186, dated April 2, 1925 set aside 100 acres of land in Keaukaha, Waiakea, South Hilo for an aviation landing field under the control and management of the Board of Supervisors of the County of Hawaii. Work on Hilo Airport began July 17, 1925. Work to clear the airport was done by 46 prisoners using hand tools. By mid-July 1926, 11 acres of the Hilo Airport had been leveled. By March 1927, 14 acres had been cleared and leveled by the prisoners. On July 6, 1927, the Territorial Aeronautics Commission approved the hauling of dredging material from the vicinity of Hilo Wharf to the Hilo Airport. From August 4 to September 8, 1927, enough coral was deposited to blanket an area 200 feet by 840 feet, suitable for an emergency landing field. A new access road was begun and eight more acres were cleared by the prisoners. The access road was completed on November 9. The airfield now stretched approximately 1,000 by 250 feet and consisted of dredged coral material. The runway was lengthened and as of February 2, 1929, the runway was 2,500 feet long with an average width of 300 feet.

In preparation for beginning scheduled interisland passenger service, the Territorial Aeronautics Commission approved a request from Hawaiian Airways for a hangar 100 by 126 feet at Hilo Airport. Inter-Island Airways began the first regularly scheduled passenger service between the islands on November 11, 1929. Inter-Island Airways' terminal was dedicated at Hilo Airport on March 22, 1930.

By 1935, Hilo Airport was composed of a grassy coral and a filled area with two runways along the lines of the prevailing winds. There was a prison camp located on the field, and maintenance as well as development of additional areas was carried out with this labor. In 1938, approximately 60,000 cubic-yards [cy] of lava rock material was moved to the airport. Runway 1 was extended to 3,600 feet long by 300 feet wide and Runway 2 was extended to 1,900 feet long by 300 feet wide. Runway 3 was extended an additional 800 feet by 300 feet roughly graded south of Runway 1, which gave a length of approximately 2,000 feet. Runway 1 was paved 2,550 feet by 100 feet.

A dedication ceremony for the renovated Hilo Airport was held on May 2, 1941. At the outbreak of World War II, Hilo Airport was taken over by the Army Engineers, and an Air Corps fighter squadron was stationed there. U.S. Army Engineers constructed military installations and continued the expansion of runways, taxiways, and parking aprons. In 1943, the Navy moved onto the field under an agreement with the Army and began construction of a Naval Air Station. The name of Hilo Airport was changed to General Lyman Field by Joint Resolution 5 of the Territorial Legislature on April 19, 1943.

After the war, military operations at Hilo Airport steadily decreased. Permission to operate General Lyman Field as a commercial airport was granted the Territory by letter from the Commanding General, Armed Forces, Mid-Pacific, dated September 30, 1946; however, operational control still remained with the Air Force pending formal cancellation of the existing lease. The Army ceased operations at Hilo Airport on October 1, 1948, and on November 1, 1948, the Air Force ceased operating the Airport Crash Station and Control Tower. The old terminal building used by Hawaiian Airlines during the war was renovated and rented to Trans-Pacific Airlines in March 1949. In 1950 Hilo Airport was still under lease to the War Department.

However, the Hawaii Aeronautics Commission continued to perform all maintenance and operational duties. Several construction and renovation projects were completed between 1949 and 1950. During 1951, extensive improvements to the main entrance and access road to Hilo Airport terminal area were completed and a Jeep crash fire truck was put into operation.

On April 8, 1952, the airport was returned to civilian control by the surrender of leases, easements, licenses and permits, and improvements were transferred to the Territory by the Federal government. A groundbreaking ceremony was held on July 16, 1952 for a new passenger terminal. A new maintenance area, consisting of five buildings and a large maintenance yard was also constructed.

By June 1954, General Lyman Field included a passenger terminal, freight terminal, and parking area. It had paved runways, taxiways and parking aprons; a lighted- free-swinging tetrahedron; a fuel truck available from Hilo; high intensity lights on Runway 8-26, a CAA Communications and Control Tower, rotating beacon, and omni-range beacon. A separate passenger terminal for military traffic was completed in 1957. In April 1963, grading for a new 9,800-foot jet runway extension was completed to accommodate overseas service. In 1965, work was completed on a fire and rescue equipment building to house State owned and Air Force aircraft fire fighting units. A new passenger terminal was dedicated and opened on April 30, 1976. The old terminal was kept in service, thus greatly enhancing General Lyman Field's capacity.

In July 1989, the name of the airport was changed to Hilo International Airport. Construction was completed on a new ARFF Training Facility in November 1993. Eight T-hangars were constructed for light aircraft in January 1994 (State of Hawaii, 2019).

The Airport Modernization Program at Hilo includes terminal modernization in terms of having better energy efficient equipment and overall passenger comfort experience. The modernization also includes a new 64,000 square foot cargo facility that will help to streamline cargo and freight operations (Hawaii Airports Modernization Project, 2008).

3.1.13 Ellison Onizuka Kona International Airport (KOA)

The Kona Airport is located on the western coast of the Big Island of Hawaii, approximately 10 miles north of the town of Kailua Kona (Figure 14). In general, the airport is bordered to the west by the Pacific Ocean, and to the north, east, and south by vacant land (Figure 14). The nearest major body of surface water is the Pacific Ocean, located adjacent to the west side of the airport (Figure 14).

Ceremonial charges of dynamite signaled the start of work for a new airport at Keahole in West Hawaii on May 27, 1969. The new airport would replace Kailua-Kona Airport and be located 7.5 miles north of the old airport. The initial facilities at Keahole included a 6,500-foot runway and parallel taxiway, high intensity lights, a control tower and 10 aircraft parking positions, terminal buildings, and motor vehicle parking areas. Keahole Airport was dedicated on July 1, 1970. Groundbreaking ceremonies were held for the new crash fire building on March 17, 1980. Additions to the terminal building were completed in August 1988.

On November 3, 1989 a groundbreaking ceremony was held for the Astronaut Ellison S. Onizuka Space Center at Keahole Airport. The Space Center was completed in December 1990. A new Civil Air Patrol hangar was dedicated on March 13, 1992. A new pre-fabricated steel cargo building was completed in June 1992, doubling cargo capacity by providing 16,000 square feet of space and 12,000 square feet of uncovered equipment storage space. The runway was extended to 11,000 feet and was dedicated on February 4, 1993. In April 1993, the name of the airport was changed from Keahole Airport to Keahole-Kona International Airport. Keahole-Kona International Airport was renamed Kona International Airport at Keahole on June 16, 1997 by the Hawaii State Legislature.

A general aviation fuel storage system was installed in October 2003. In December 2009, a new South Terminal baggage carousel was completed and a washrack was installed (State of Hawaii, 2019).

The Airport Modernization Program at Kona includes terminal modernization, which will relocate the Onizuka Space Center and consolidate the check-point to a central location which will connect the north and south terminals (Hawaii Airports Modernization Project, 2008).

3.1.14 Waimea-Kohala Airport (MUE)

The Waimea-Kohala Airport is located on the northern side of the Big Island of Hawaii, approximately 1.3 miles south of the town of Waimea (Figure 15). The airport is bordered on all sides by vacant land (Figure 15). There are no bodies of surface water within 1 mile of the airport.

On May 12, 1928, the Governor set aside 550.46 acres of land in Mana, Waimea, Kona, for a Territorial airport by Executive Order 331. The airport was to be under the control and management of the TAC. The predecessor of Waimea Kohala Airport was a U.S. Marine Airfield known as Bordelon Field, which was just across the highway. It was the Kamuela Airport from 1946 to 1957. Kamuela was the site of one of the largest training camps of the Fleet Marine Force, Pacific Fleet. Incidental to the training program an airstrip was constructed for small planes. By action of the land owner the airport was closed.

When Bordelon Field/Kamuela Airport was deemed unsuitable for development as a modern airport because of its terrain, a new site was sought. Construction began in February 1952 on the new Kamuela Airport including a runway, water main and fencing. The runway was designed to be 5,200 feet long to accommodate the new Convairs. Construction of the terminal began in April 1953. The new Kamuela Airport runway was completed in April 1953. The paved runway was 5,100 feet long and 100 feet wide. The airport was dedicated on August 30, 1953. The one-story, wood frame passenger and freight terminal building was completed on October 7, 1953.

A 1969 legislative resolution requested that the airport be designated as Waimea-Kohala Airport to prevent confusion with Waimea, Kauai (State of Hawaii, 2019).

The Airport Modernization Program at Waimea-Kohala includes repair and upgrade of the Automated Weather Observing System and renovation of the airport's 30-year-old lighting system (Hawaii Airports Modernization Project, 2008).

3.1.15 Upolu Airport (UPP)

The Upolu Airport is located on the northern coast of the Big Island of Hawaii, approximately 3 miles northwest of the town of Hawi (Figure 16). The airport is bordered to the north by the Pacific Ocean, and to the east, south, and west by vacant land (Figure 16). The nearest major body of surface water is the Pacific Ocean, located adjacent to the north side of the airport (Figure 16).

On June 25, 1927, Executive Order No. 287 set aside 37.9 acres within the ahupuaa of Kealahewa for an airplane landing field for the U.S. Air Service to be under the control and management of the War Department and known as Suiter Field. On June 26, 1929, Governor's Executive Order No. 363 added 57.2 acres to Upolu Airport Landing Field to be under the control and management of the War Department. In January 1930, the War Department granted the Territory concurrent use of the Army landing field for official and commercial aviation use for a term of five years. Seven months later, about 97 percent of the land set aside for the military reservation was restored to the Territory. On September 25, 1930 the TAC received Executive Order No. 432 setting aside land to be known as Upolu Airport under the control and management of the TAC.

In 1935 the Upolu field was being maintained by Federal Emergency Relief Administration labor. This field was grass on a sandy soil and partially graded. The Army maintained a barracks and radio station at the field on Federal property. The Upolu Point Airport consisted of one large runway in the shape of an hour glass 3,500 feet long. By 1939, the field was completed to the minimum requirements of the CAA and opened for traffic. The field consisted of one runway 2,800 feet by 300 feet wide and was paved 2,500 feet long by 100 feet wide.

During World War II, the Navy occupied Upolu Airport establishing a weather and communication station there. The facility was used as an auxiliary field to the Naval Air Station, Hilo, for field-carrier-landing practice and other training of carrier pilots. The runway was extended to 4,000 feet and housing provided by the Navy for military personnel operating the airport.

The Territory granted the U.S. government occupancy and use of the airport from July 1944 to May 1947 for the exclusive use of naval and other military purposes. The U.S. government occupied the reservation itself until November 1952 at which time all remaining lands were restored to the Territory. Buildings formerly occupied by the Navy were rehabilitated for use as a terminal and for other purposes.

The Upolu Airfield always represented a problem in maintenance as the subsurface drainage was inadequate, causing the run-off from the slopes above to be trapped in the clay foundation. This condition continually caused settling and breaking up of the runway surface. Repair and

resurfacing of the runway at Upolu Airfield started in December 1950. A new joint passenger terminal was completed at Upolu Airport in June 1951. The runway was strengthened and other airfield improvements were completed in May 1975 (State of Hawaii, 2019).

As part of the Airport Modernization Program, airfield runway repairs have been completed at Upolu following the 2006 earthquake (Hawaii Airports Modernization Project, 2008).

SECTION 4 HOW TO USE THIS DOCUMENT

An EHE assesses hazards to human health and the environment from contaminant concentrations in soil and groundwater that exceed HDOH environmental action levels [EALs]. An EHMP details how contaminants are to be managed when encountered during subsurface work. Several areas within the Airports are known to be contaminated by various chemical constituents that are presently managed in place, under the guidance of a site-specific (or project-specific) EHMP. These site-specific EHMPs are available for review. There are also areas within the Airports where investigations were previously conducted and contaminants were identified, and areas where ongoing investigations are currently being conducted for subsurface contamination that was recently encountered, but an EHMP has not been established. HDOT-A will conduct a pre-construction environmental screening for construction projects to identify known or suspected contaminated sites in the work area and if there is an existing site-specific EHMP. Additionally, there may be areas with undiscovered subsurface media contamination. The intent of this document is to provide guidance when subsurface excavations or activities encounter contaminated soil and groundwater at locations within the Airports for which site-specific EHMPs have not been established. The EHE consists of Section 5 while the EHMP consists of Sections 6 through 15 of this document.

This document is meant for use in the field where construction activities may encounter contaminated media during subsurface work for smaller construction projects. This could include previously identified contamination, unknown contamination, or contamination not identified during a previous investigation. Following procedures specified in this document may preclude the need to stop work upon encountering contamination. However, if significant contamination is found, the HDOH may require site characterization before proceeding, especially if a building is to be constructed. The first person to notice contamination is typically the backhoe or heavy equipment operator. An environmental consultant or a supervisor knowledgeable in dealing with contaminated soil and groundwater should be onsite during subsurface construction activities. The machine operator relays the discovery of the contamination to the designated onsite environmental consultant or supervisor, who then phones in this information, communicates with others involved in the chain of command, and ensures that the EHE/EHMP is followed in dealing with the contaminated soil and groundwater. It should be noted that in some cases the contamination may not be identifiable through visual and/or olfactory observations (e.g., metals or PCBs) and contaminant-specific field screening techniques may need to be implemented.

Based on the nature and type of construction at the Airports, this EHE is broad enough to address the potential hazards. The EHMP provides a range of options for dealing with contaminated soil, groundwater, and soil vapor. The *Guidelines for Tenants, Utilities Companies, and Construction Contractors* (Appendix A) provides graphic and photographic examples of how to deal with contaminated soil, groundwater, and soil vapor and includes a Project Implementation Form. This form is a checklist based on HDOH experience with a wide range of events that can occur during construction.

If deviations are requested from this EHE/EHMP, use of the forms in Appendix B is required to document proper handling of contamination, provide record keeping for the project, and fulfill reporting requirements for HDOH. Any deviations from this EHE/EHMP will require approval by HDOH and AIR-EE prior to implementation, and a site-specific EHMP may be necessary. The forms should detail deviations from standard practices in the text, and explain how those deviations will be protective of human health and the environment. The Appendix B forms should be submitted to HDOH for review and approval if deviations are requested, or if HDOH needs to be notified of a release.

Prior to starting subsurface construction within the Airports:

1. Read the EHE of this document to become familiar with the potential hazards associated with contaminated soil and groundwater.

2. Develop a site-specific Health and Safety Plan [HASP] (Section 8 and Appendix B.2).

During subsurface construction work, if contaminated media or inactive pipelines or underground storage tanks [USTs] are encountered, take the following necessary steps as applicable to ensure proper handling of contaminated media:

- Report any contaminated soil, groundwater, or soil vapor to the Hazard Evaluation and Emergency Response [HEER] Office (Section 7 and Appendix B.1) as required by law (HDOH, 2009). Depending on the magnitude and extent of contamination, the State On-Scene Coordinator [SOSC] may require additional steps be taken in addition to compliance with this EHMP.
- Follow the Construction Activities Release Response Plan (Section 9 and Appendix B.3).
- If inactive pipelines or USTs are encountered, follow the Inactive Pipeline and UST Management Plan (Section 10 and Appendix B.4).
- If contaminated soil is encountered, follow the Soil Management Plan (Section 11 and Appendix B.5).
- If contaminated groundwater is encountered, follow the Groundwater Management Plan (Section 12 and Appendix B.6).
- If free product is encountered, follow the Free Product Management Plan (Section 13 and Appendix B.7).
- If noxious soil vapor is encountered, follow the Vapor Management Plan (Section 14 and Appendix B.8).
- If contaminated soil and/or groundwater is in, or could be, in contact with stormwater, follow the Stormwater Management Plan (Section 15 and Appendix B.9).

Site-specific plans can be prepared using the sample plans provided in Appendix B. Fill out the individual plans in Appendix B by following approved practices in the EHMP sections of this document (Sections 7 through 15). Documentation of any deviations from this EHE/EHMP

should be included in a Close-out Report, in accordance with the requirements of the DOT-A Specification Section 01562 for Management of Contaminated Materials. The Close-out Report should summarize all of the environmental activities that were conducted during construction. A copy of the Close-out Report should also be submitted to the HEER Office to fulfill reporting requirements.

If contractors performing construction activities within the Airports do not follow this document, they must follow previously established procedures that include halting excavation when contamination is discovered, reporting the release to HEER Emergency Preparedness and Response Section, and/or waiting for an inspection by a State On-Scene Coordinator [SOSC] prior to re-commencing excavation or construction activities. Failure to report a release could lead to fines of up to $10,000 per day. Failure to properly handle contaminated soil and groundwater could lead to fines from other agencies such as the Solid and Hazardous Waste Branch [SHWB], the Clean Water Branch, and the U.S. Coast Guard.

Disclaimer: The procedures, information, guidelines, and sample hazard management plans referred to herein are not intended to be a comprehensive description of all rules, regulations, laws, and other requirements applicable to a construction project. They are only intended to provide general information and should not be used in place of appropriately qualified personnel. Each construction contractor is responsible for complying with all applicable rules, regulations, laws, and other requirements, and for preparing its own hazard management plans for its own site-specific project.

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SECTION 5 ENVIRONMENTAL HAZARD EVALUATION

The EHE summarizes contaminants of potential concern [COPCs] associated with known releases or potential releases of hazardous substances at the Airports. Potential exposure points, potential exposure pathways, and potential receptors at the Airports are also defined in this section.

5.1 CONTAMINANTS OF POTENTIAL CONCERN

Due to former and current operations at the Airports, COPCs may be encountered in soil, groundwater, and soil vapor during construction activities. Potential sources of COPCs include airport operations and maintenance facilities, service stations and rental car companies (USTs), ASTs/fuel tank farms, fuel pipelines, and former military operations. Based on past releases and environmental investigations conducted at the Airports, the following are the common COPCs that may be encountered in soil, groundwater, and soil vapor:

- Petroleum substances
  - Total petroleum hydrocarbons [TPH] as gasoline [TPH-g], as diesel [TPH-d], and as oil [TPH-o]
  - Benzene, toluene, ethylbenzene, and xylenes [BTEX]
  - Polycyclic aromatic hydrocarbons [PAHs]
- Chlorinated solvents
  - Volatile organic compounds [VOCs]
- Polychlorinated biphenyls [PCBs] (as Aroclor mixtures)
- Pesticides
  - Organochlorine pesticides including technical chlordane
- Heavy metals
  - Arsenic
  - Barium
  - Cadmium
  - Total Chromium
  - Lead
  - Mercury
  - Selenium
  - Silver

In addition, free product (e.g., gasoline, diesel fuel, fuel oils, lubricating oils, benzene, toluene, xylenes) may be encountered in areas of previous petroleum releases.

5.2 ENVIRONMENTAL ACTION LEVELS

Decisions for management of contaminated soil and groundwater will be based on regulatory guidance and published action levels. HDOH has developed health-conservative Tier 1 EALs to quickly screen soil and groundwater data for potential environmental hazards. These Tier 1 EALs are for unrestricted land use and represent the concentration of a contaminant in the respective medium below which the threat to human health or the environment is considered to be insignificant under any site condition. The Tier 1 EALs are not to be considered required, regulatory cleanup standards. Tier 1 EALs for unrestricted use assume that there are no restrictions on current or future use of the property, including potential use as residential housing, schools, day care, and health care. As a result, exceeding the Tier 1 EAL for unrestricted use for a specific chemical does not necessarily indicate that the contamination poses a significant threat to human health or the environment, but only that additional evaluation may be warranted. Thus, contaminant concentrations could be significantly higher than the Tier 1 EALs for unrestricted use and still be protective of human health and the environment for a specific site scenario. Any COPC that is detected in soil or groundwater at a concentration exceeding the Tier 1 EAL for unrestricted use is thereafter considered a COC.

Alternative action levels for commercial/industrial land use have been developed by HDOH for sites that will be restricted to commercial/industrial use only. Since the Airports are used for commercial and industrial activities, alternative action levels for commercial/industrial land use are most appropriate for onsite management of contaminated soil.

The Tier 1 EALs for unrestricted use will be used as an initial screening for all COPCs that may be encountered in soil and groundwater during construction activities. All soil or groundwater with COPCs present at concentrations below the Tier 1 EALs for unrestricted use will be eliminated from further concern. Site soil with COPCs present at concentrations exceeding the Tier 1 EALs for unrestricted use will be further evaluated using the alternative action levels for commercial/industrial land use. For offsite reuse of soil, site-specific Tier 1 EALs may apply depending on the receiving site location and site use. Further guidance for offsite reuse of soil is provided in the HDOH document *Guidance for Soil Stockpile Characterization and Evaluation of Imported and Exported Fill Material* (HDOH, 2017b). Offsite disposal of soil is subject to the respective landfill's requirements. Tables 5-1 and 5-2 describe the applicability of the EALs to soil management and groundwater management, respectively. A qualified environmental professional should be consulted to ensure collection of representative samples and quality data, and to evaluate the use of alternative action levels.

Separate EALs are provided by HDOH to address the following environmental hazards for soil and groundwater:

5.2.1 Soil

- Direct exposure threats to human health
- Intrusion of subsurface vapors into buildings (vapor intrusion)
- Leaching and subsequent threats to groundwater resources
- Gross contamination and general resource degradation concerns

- Threats to ecological receptors

5.2.2 Groundwater

- Threats to drinking water resources
- Threats to aquatic organisms
- Intrusion of subsurface vapors into buildings
- Gross contamination and general resource degradation concerns

The HDOH has developed EAL lookup tables that are organized to reflect four default types of contaminated sites in Hawaii, based on groundwater utility and proximity to a surface water body. If shallow groundwater beneath a site is not considered a current or potential source of drinking water and is located seaward (makai) of the Underground Injection control [UIC] line (aquifers makai from the UIC line are not a drinking water source in accordance with HAR §11-23-05), the soil and groundwater analytical results will be compared to EALs where no drinking water source is threatened. Additionally, if a site is within 150 meters of a surface water body, groundwater concentrations will be compared to EALs that account for aquatic toxicity considerations. Due to the various locations and land area of the Airports, some work sites may be above a drinking water aquifer or within 150 meters of a surface water body, or near a discharge point that drains to the Pacific Ocean. Therefore, threats to drinking water and aquatic habitats shall be evaluated on a case-by-case basis.

The most current HDOH EAL tables are located on the HDOH HEER website at http://eha-web.doh.hawaii.gov/eha-cma/Leaders/HEER/environmental-hazard-evaluation-and-environmental-action-levels. The U.S. Environmental Protection Agency [EPA] and HDOH have created additional action levels for substances and potential exposure scenarios that might need to be considered if unanticipated contamination is discovered, or if additional pathways for exposure (other than the EAL defaults) or potential effects to the environment are identified. Additional action levels might also need to be considered where proprietary chemical formulations with no published toxicological data are released.

5.3 SOURCES, RECEPTORS, AND PATHWAYS FOR CONTAMINANTS OF POTENTIAL CONCERN

For COPCs to have an effect on human health or the environment, all of the following components must be present:

- A source of COPCs above harmful concentrations (Section 5.3.1)
- A mechanism of chemical release and transport (Section 5.3.2)
- An environmental transport medium (Section 5.3.2)
- An exposure point (Section 5.3.2)
- An exposure route (Section 5.3.3)
- A receptor or exposed population (Section 5.3.4)

5.3.1 Sources of Contaminants of Potential Concern

The source of contamination within the Airports is existing contamination from historical (or possibly current) releases. This contamination may be a delineated plume in soil or groundwater, dissolved-phase contamination, vapors, or free product. Contaminated surface and subsurface soil, groundwater, and soil vapor are the most common current sources of COCs within the Airports. If not properly managed, pumped groundwater and excavated soils could come into contact with potential human and/or ecological receptors. If soil is moved offsite before historical research or sampling is conducted, potential receptors may include human and/or ecological receptors in offsite locations.

5.3.2 Potential Pathways of Exposure

Information about past activities and historical releases at the Airports was obtained from HDOT-A, HDOH, and other sources, and will be included in the searchable environmental database. Prior reports suggest that soil contamination could potentially be encountered during construction at multiple locations within the Airports. Careful planning of construction activities is necessary to prevent release or spreading of COCs in soil or groundwater and potential effects on site workers, the public, and the environment. This planning is particularly important because, although some contaminants may be identifiable by sight, smell, or field screening instruments, others such as pesticides or metals in soil may not be readily identified in the field. The exposure pathway evaluation presents potentially complete exposure pathways for human and ecological receptors, both onsite and offsite. Figure 17 summarizes the conceptual site model [CSM] exposure pathway evaluation and depicts the possible exposure pathways available for transport of COPCs and their relative likelihood of reaching human and ecological receptors during construction activities at the Airports. The following anticipated construction activities may lead to potential receptor exposure to contaminated soil, groundwater, and air:

- Tree relocation
- Geotechnical work
- Trenching for utility relocation/installation
- Potholing
- Clearing/grubbing
- Grading
- Footings/foundation work
- Landscaping

Given these anticipated activities, the following potential pathways of migration and exposure are identified:

- **Direct Contact Onsite.** Workers, visitors, and trespassers could have direct contact with contaminated soil during excavation activities and removal and installation of utilities. Utility maintenance workers could come into contact with buried contaminated soil or groundwater. Landscape workers could disturb or come into contact with contaminated soil remaining after

construction or when brought to the surface by utility workers. Workers preparing landscaped areas for planting, and installing plants both during the initial construction and throughout the life of the facilities could come in direct contact with soils containing COCs. Workers installing and maintaining irrigation systems could come in direct contact with soils containing COCs.

- **Runoff.** Contaminated soil could be washed from newly exposed ground surfaces or stockpiled soil during rain events and enter storm sewers and waterways as particulate matter, thereby impacting aquatic organisms.
- **Infiltration.** Stormwater could infiltrate stockpiled soils, leach from the stockpiles and flow to surface water and onto adjacent surfaces and properties. Stormwater infiltrating uncontained stockpiled soil could leach COCs and transport them into underlying soils and groundwater. Irrigation of planted areas could increase the transport of COCs from soil into underlying groundwater.
- **Volatilization.** Volatile COCs could become airborne and be inhaled by workers, visitors, and trespassers, or accumulate in sealed structures constructed above areas with contaminated soil or groundwater where free product or volatile COCs are present. Volatile COCs in drill cuttings could become airborne and be inhaled by workers, visitors, and trespassers.
- **Dust Emission.** Dry contaminated soil could become airborne and inhaled as particulate matter by workers, visitors, and trespassers. Soil preparation before landscaping or soil stockpiling could generate dust containing COCs.
- **Offsite Transport.** Excess contaminated soils generated during excavation could be transported to a new location, thereby creating new environmental exposure risks at the storage and disposal locations. Workers and visitors in the area could be exposed to COCs while coming into contact with surface soils.

In addition to the above pathways, construction activities may inadvertently spread contamination if contaminated groundwater is discharged to storm drains or surface water, or is reinfiltrated in a clean area, or if contaminated soil is reused inappropriately. Moreover, if excavated soils are contaminated, construction actions could change the environmental conditions of not only the excavated area, but also areas where the soils are stockpiled or ultimately placed. Utility maintenance workers could disturb shallow or deep contaminated soil or groundwater remaining after construction, and bring these materials to the surface for further movement via other pathways to workers, visitors, trespassers, or aquatic organisms.

5.3.3 Potential Exposure Routes

An exposure route is the way in which a receptor comes into contact with a COC such that it may become absorbed into the body. The potential routes through which humans or other organisms could be exposed to hazardous substances include ingestion, inhalation, and dermal contact. These are described briefly below. (Although not discussed here, injection is also a possible exposure route, especially during construction, and occurs as a result of injuries such as impalement, punctures, cuts, etc.)

5.3.3.1 Ingestion

Ingestion is the oral intake of a solid or liquid material. The ingestion of contaminated soil or groundwater is a human health risk and a direct exposure hazard. Incidental ingestion of contaminated soil or groundwater could occur during construction activities where contaminated soil and groundwater are exposed. Ingestion of COCs is most likely to occur when workers fail to clean their hands before eating and smoking.

5.3.3.2 Inhalation

Inhalation is the action of inhaling or breathing in air, other gases, vapors, fumes, smoke, dust, or mists into the lungs. Inhalation of contaminated soil (as dust) is a human health risk and a direct exposure hazard. Some chemicals in contaminated soil and groundwater could volatilize when the soil and or groundwater is exposed. During excavation and construction activities, contaminated subsurface soils may be disturbed, thus increasing the potential release of dust and volatile compounds into the work area, and the risk that COCs could be inhaled. Some chemicals, for example hydrogen sulfide, can be immediately dangerous to life or health when inhaled.

5.3.3.3 Dermal Contact

Dermal contact is the direct exposure of skin to contaminated soil, groundwater, or vapor. Upon contact, some substances have the potential to absorb directly into the body through the skin. During drilling, excavation and other construction activities, contaminated soils and groundwater are likely to be encountered, thus increasing the potential for dermal contact.

5.3.4 Potential Receptors

The potentially exposed receptors include the following individuals and organisms in the immediate vicinity and downstream of the work areas:

- Construction workers
- Landscapers
- Airport occupants and visitors
- Authorized visitors to construction areas
- Trespassers to construction areas
- General public
- Terrestrial organisms including avifauna
- Freshwater organisms (in drainage canals)
- Saltwater organisms (if near the ocean or other saltwater habitat)

Table 5-1
Applicability of EALs to Soil Management
Programmatic EHE/EHMP
HDOT Airports

Management Action	Applicable EALs for Soil Reuse or Disposal Options
Reuse within Immediate Work Area (including areas with known contamination)	If the work area is a known contaminated site, it may be possible to place contaminated soil back into the excavation if contaminants are: ❖ < Tier 1 EALs for commercial/industrial use and soil is NOT in contact with shallow groundwater or being placed beneath the footprint of any building structure ❖ < hazardous waste criteria ❖ < Tier 1 EALs for TPH gross contamination. TPH concentrations up to 5,000 mg/kg can often be placed as backfill in portions of an excavation that are not in contact with shallow groundwater ❖ If reuse is allowed, the contaminated soil must be located at least 150 meters away from surface water and drainage features AND must be capped with an impervious layer, such as concrete or asphalt *See EALs Tables F-1, F-2, F-3, and I-2.*
Offsite Reuse (Outside the Immediate Work Area)	All soil removed for offsite reuse must be tested first. Offsite reuse is allowed if soil contaminants are: ❖ < Tier 1 EALs for unrestricted use within approximately 150 meters (500 feet) from surface water and over a drinking water source. However, the potential for reuse offsite will depend on the reuse location, as well as the sampling frequency. ❖ A written agreement is in place with the receiving facility Further guidance on the use of non-regulated soil as fill is provided in "*Guidance for Soil Stockpile Characterization and Evaluation of Imported and Exported Fill Material*" (HDOH, October 2017b). Soil shall only be reused with the prior approval of AIR-EE. It should be noted that there may be instances where HDOH HEER Office or HDOH SHWB must approve reuse of soil. *See EALs Table A-2.*

Management Action	Applicable EALs for Soil Reuse or Disposal Options
Disposal	Soil should be disposed of at a permitted landfill if any of the following apply: ❖ is not suitable for backfill or reuse due to issues other than contamination ❖ contains contaminants at concentrations > Tier 1 EALs for commercial or industrial use ❖ contains free product ❖ is grossly contaminated (contains TPH concentrations greater than 5,000 mg/kg) ❖ is determined to be a hazardous waste *See EALs Tables F-2 and I-2.*

Notes:
Whenever soil is reused in a sensitive area (even within the Work Area), HDOH recommends it is sampled to confirm that concentrations of contaminants do not exceed Tier 1 EALs for unrestricted use. HDOH Tier 1 EALs are based on unrestricted land use, potentially impacted groundwater being a current or potential drinking water resource, and a distance of <150 meters to the nearest surface water body (HDOH, 2017a).

Table 5-2
Applicability of EALs to Groundwater Management
Programmatic EHE/EHMP
HDOT Airports

Management Action	Applicable EALs for Groundwater Reinfiltration or Disposal Options
Reinfiltration or Reinjection within Immediate Work Area (including areas with known contamination)	Under many circumstances, contaminated groundwater can be reinfiltrated or reinjected within the Work Area (within 200 feet of the point of generation) as long as it will not result in contamination of previously unaffected areas. However, reinfiltration/reinjection methods must be evaluated to determine if a UIC permit is necessary (an excavation may meet the definition of an injection well if it is deeper than it is wide). Groundwater shall only be reinfiltrated in the ground with the prior approval of the AIR-EE and HDOH HEER Office. The reinfiltration location must be at least 150 meters away from surface water, drainage features, and drainage structures. The reinfiltration of groundwater into the aquifer within the Work Area where it was removed can be done pursuant to HDOH regulations (TGM, Appendix 9-D). Water to be reinfiltrated/reinjected should meet the following criteria: ❖ Water is not considered a hazardous waste pursuant to federal or state law ❖ Water does not contain any free product or other gross contaminants ❖ Water can be reinfiltrated in an HDOH-approved reinfiltration hole, trench, or pit ❖ Advanced clearance from the HDOH SDWB if any portion of a reinfiltration trench is deeper than 10 feet. If construction of UIC wells is needed, SDWB permit requirements must be met for well construction, placement, use, and closure. Water that is considered hazardous waste, regardless of its source, must be either managed offsite at an appropriately permitted facility or stored securely within the Work Area until remediation is completed.

Management Action	Applicable EALs for Groundwater Reinfiltration or Disposal Options
Discharge to Sanitary Sewers / Disposal at Permitted Facility	Water that cannot be reinfiltrated, reinjected, or discharged will require disposal. Options currently include: ❖ Discharge to the respective County sanitary sewer system (requires appropriate permits). If discharge water was generated within contaminated areas, additional coordination with HDOH HEER is required and Aquatic Habitat Criteria (Chronic Toxicity) will apply to discharge within these areas, in addition to any criteria applicable to NPDES or pretreatment permit. Water discharged to a sanitary sewer may be required to meet Water Quality Standards. ❖ Transport for treatment and disposal at an HDOH-permitted facility. *See EALs Table D-4b.*

Notes:
HDOH Tier 1 EALs are based on unrestricted land use, potentially impacted groundwater being a current or potential drinking water resource, and a distance of <150 meters to the nearest surface water body (HDOH, 2017a).

NPDES = National Pollutant Discharge Elimination System
SDWB = Safe Drinking Water Branch
UIC = Underground Injection Control

SECTION 6 ENVIRONMENTAL HAZARD MANAGEMENT PLAN

This EHMP consists of Sections 7 through 15.

This EHMP has been developed to eliminate or mitigate potential exposure of construction workers, other onsite workers, and the aquatic ecosystem to known and suspected COCs during activities associated with future construction work. The EHMP consists of nine individual plans, each addressing a specific potential source of COCs (see Section 5.1) and methods of handling contaminated media. The individual plans include the following:

- Release Reporting Plan (Section 7)
- HASP (Section 8)
- Construction Activities Release Response Plan (Section 9)
- Inactive Pipeline and UST Management Plan (Section 10)
- Soil Management Plan (Section 11)
- Groundwater Management Plan (Section 12)
- Free Product Management Plan (Section 13)
- Vapor Management Plan (Section 14)
- Stormwater Management Plan (Section 15)

The plans include engineering and institutional controls, as well as requirements for personal protective equipment [PPE] and a monitoring program. Prior to initiation of construction work, onsite workers must be informed and educated about potential hazards posed by COCs and methods used to prevent exposure. The contractor shall obtain all permits necessary to complete the project as required by all applicable Federal, State, and local laws, regulations, and ordinances.

In addition to the plans included in this EHMP, HDOT-A has implemented the following specific plans for construction activities within the Airports:

- *Construction Activities Best Management Practices [BMP] Field Manual* (HDOT-A, 2018a), and
- *Storm Water Management Program Plan, Section C: Construction Site Runoff Control Program* (HDOT-A, 2018b).

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SECTION 7 RELEASE REPORTING PLAN

Encountering suspected or confirmed contaminated soil or groundwater during subsurface construction activities is considered a release and must be reported to the HDOH HEER Office according to the notification procedure below. Releases that occur during construction activities or releases due to unforeseen events should also be reported by following the same procedure (HDOH, 2009). A release reporting flow chart is presented in Figure 18.

The contractor must immediately notify the HDOT-A Project Engineer, AIR-EE (808-838-8656), and Airport Duty Manager (CODE 22) (808-836-6434). The contractor shall also immediately notify the Hawaii State Emergency Response Commission [HSERC]/HEER (808-586-4249 or 808-247-2191 after work hours) and the Local Emergency Planning Committee [LEPC] (Honolulu County 808-723-8960 or 911 after hours; Hawaii County 808-936-8181/808-443-4150; Kauai County 808-634-0310 or 808-241-1711 after hours; Maui County 808-870-7404/808-270-7911) after discovery of contaminated soil and/or groundwater.

A reportable release of hazardous substances or contaminated soil or groundwater may be indicated by any of the following:

- A petroleum sheen on the groundwater in an excavation.
- Any free product that appears on groundwater.
- Visual or olfactory evidence of contamination (e.g., unusual discoloration, buried containers, fumes, unknown liquids).

Report all spills to the Airport Duty Manager (Code 22) and AIR-EE. Small spills of petroleum, oil and lubricants (less than 25 gallons) which are capable of being cleaned up within 72 hours and do not threaten ground or surface waters shall be cleaned up immediately.

Report spills of a certain size (volume of greater than 25 gallons of petroleum, oil and lubricants not contained within 72 hours) per HAR §11-451 to HDOH HEER and the National Response Center (800-424-8802) immediately. Comply with the HDOH HEER requirements. A written report shall be provided to the HDOH HEER within 30 calendar days of a Reportable Quantity spill cleanup. Provide copies of the written report to the HDOT-A Project Engineer and AIR-EE.

If free product is encountered, report the release in accordance with HAR §11-451. It is not necessary to stop work if you follow this document. However, if significant contamination is found, the HDOH may require site characterization before proceeding, especially if a building is to be constructed. Federal regulations require that any significant Petroleum, Oil and Lubricant spill into a body of water or onto an adjoining shoreline be reported to the National Response Center within 24 hours. Notify HDOH CWB (808-586-4309) and AIR-EE (808-838-8656) if the spill reached storm drains.

Report significant spills to the U.S. Coast Guard, HDOH HEER Office, and City and County agencies, such as the Fire Department who can assist in cleanup.

7.1 IMMEDIATE VERBAL NOTIFICATION

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

Immediate verbal notification shall be provided by the contractor to the HSERC/HEER and LEPC either via telephone or in person. HEER/HSERC will not accept initial notification via fax or e-mail. In addition, unless it is specifically stated that a verbal notification is being given to a SOSC on scene during an incident, the mere presence of an SOSC does not constitute a notification. When in doubt, the contractor should call and speak to an SOSC. There is no penalty for reporting a release unnecessarily, but there are large penalties for not reporting a release.

Provide information to the extent known at the time of the notification so long as there is no delay in responding to the emergency. It is expected that notification occur within 20 minutes of discovery of the release (Do not delay due to incomplete notification information related to the release). Provide the following information:

- Name and telephone number of the caller
- Name and telephone number of a contact person (if different from the caller) who can provide timely information as the incident is occurring
- Name (trade and chemical) of the hazardous substance that has been released
- Approximate quantity of the hazardous substance that has been released
- Location of the incident
- Date and time of spill, release, or threatened release
- Description of what happened (source and cause of the release)
- Immediate danger or threat posed by the release
- Name, address, and telephone number of the responsible party or potentially responsible party [PRP]
- Measures taken or proposed to be taken in response to the release as of the time of notification
- Any known injuries or advice regarding medical attention necessary for exposed individuals
- Names and phone numbers of other federal, state, or local government agencies that have been notified of the release
- Any other information that may help emergency personnel respond to the incident.

Once the information has been conveyed, the caller will be provided with a HEER Incident Case Number, which shall be referenced in any future correspondence including the written notification submittal.

Federal requirements under the Comprehensive Environmental Response, Compensation, and Liability Act [CERCLA] and the Oil Pollution Act, including releases of Reportable Quantities [RQ] of CERCLA hazardous substances and releases of oil that cause a sheen on water, must also be reported to the National Response Center at 1-800-424-8802 (EPA, 2018).

7.2 WRITTEN FOLLOW-UP NOTIFICATION CONTENTS

Written notification, including all information provided in the verbal notification described above and any other pertinent information not previously provided, shall also be made by the contractor to the HSERC/HEER. This written notification shall be sent by the contractor to HSERC/HEER no later than thirty (30) days after initial discovery of a release. The written notification can be sent by certified mail, fax, hand-delivery, or another means that provides proof of delivery. Photos should be included to document the incident. A copy of the *Hawaii Hazardous Substance Written Follow-up Notification Form* is provided in Appendix B.1. The contractor shall keep a copy of the completed Form B.1 and provide a copy to the HDOT-A Project Engineer and AIR-EE.

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SECTION 8 HEALTH AND SAFETY PLAN

Contractors working at the Airports are required to provide a HASP for workers performing construction and/or maintenance activities that will encounter or potentially encounter the COCs and hazards described in Section 5.0 (EHE). The HASP should generally include the following:

- Requirements that workers be trained in dealing with petroleum hydrocarbons and chemical substances and hazards, including, but not limited to, use of appropriate PPE.
- General site control and safety requirements such as site access controls, information on emergency medical facilities, and good worker practices.
- Description of present and potential hazards, including COC action levels and Occupational Safety and Health Administration [OSHA] permissible exposure limits [PELs], where appropriate.
- Emergency contact information (24-Hour emergency contact information for a minimum of two individuals shall be posted at work site).

A HASP is not a substitute for OSHA/Hawaii Occupational Safety and Health [HIOSH] requirements. Employers of construction workers/utility workers must comply with all applicable OSHA/HIOSH requirements. See Health and Safety Plan (Appendix B.2) for additional guidance.

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SECTION 9 CONSTRUCTION ACTIVITIES RELEASE RESPONSE PLAN

Parties should operate under a site-specific release response plan, applicable to the boundary of the immediate work area and specific to the planned activities. This plan provides guidance in the event of an unplanned or accidental release associated with construction activities. The sample *Construction Activities Release Response Plan* provided in Appendix B.3 can be used as a starting point.

Onsite workers need to minimize the probability of releases from excavations during construction. They should familiarize themselves with site conditions and the potential presence of free product or other contaminants in the subsurface. It should be noted that some contaminants, such as heavy metals, PCBs, and pesticides may not be detected through visual observations or by smell. A HASP and soil and groundwater management plans should be prepared (Sections 11 and 12). Site-specific BMPs should be implemented according to the *Construction Activities BMP Field Manual* (HDOT-A, 2018a).

If uncontrolled releases of free product, soil or groundwater impacted with free product, or contaminated groundwater could occur, human health concerns would include possible contact with the free product or other contaminants, exposure to fire hazards, and disruptions to site activities, including possibly local traffic. Environmental impacts of concern would be discharges of contaminated groundwater, free product, or sheen to harbor waters either directly or via a storm drain or other type of surface water conveyance.

A response plan to deal with uncontrolled releases should be available to the construction workers and other parties. It should include descriptions of the types of releases, a list of names and contact information regarding the release response team and the parties that must be notified, a list of available response equipment, descriptions of response procedures, and an outline of release reporting requirements.

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SECTION 10 INACTIVE PIPELINE AND UST MANAGEMENT PLAN

This section provides guidance on how to prepare for and manage underground inactive pipelines or USTs not previously located, or otherwise exposed during excavation or other subsurface activities.

10.1 PREPARATORY WORK

Prior to performing any subsurface work, parties should review historical documents and plans for information on inactive pipelines or USTs identified to date. However, accuracy and completeness of this information are not guaranteed because historical pipeline information has not been well documented. In some instances, previously unknown inactive pipelines or USTs may be discovered during excavation or other subsurface activities. For documented USTs, refer to HAR 11-280.1.

Notify the HEER Office if any inactive pipelines or USTs are encountered.

10.2 GENERAL

Parties should manage soil from the excavation or other subsurface activities in accordance with the Soil Management Plan (Section 11). To the extent possible, leave inactive pipelines in the ground if they extend beyond the required excavation. If a UST is discovered, it must be removed as per HEER Office or SHWB (UST Section) requirements. Prior to removal of the UST, the contractor must receive approval from the HDOH to do so.

10.3 PIPELINE TAPPING, DRAINING, AND REMOVAL

If a pipeline or UST is discovered, attempt to identify the nature of the pipeline or UST and confirm that it is not active. Parties undertaking their own pipeline or UST removal should prepare and use a site-specific plan that incorporates the procedures described in this section. Note that removal of a UST requires proper notification to the HDOH before the UST can be removed from the subsurface. The site-specific plan can be based on the sample Inactive Pipeline and UST Management Plan provided in Appendix B.4. All work associated with USTs will be in compliance with HAR 11-280.1 requirements.

Do not attempt to remove USTs or pipeline segments without first draining the UST or pipeline segment or determining that it is empty of liquids or flammable vapors. To the extent practicable, any drainable fluids must be drained before cutting the pipeline or UST. Petroleum fluids recovered must be representatively sampled and tested to determine how they can be recycled or disposed of in full accordance with Title 11, 58.1 and Chapters 260-279 of HAR and any other state and federal regulation governing this activity.

Only personnel knowledgeable and trained in pipeline and UST removal should cut, drain, and remove USTs and pipelines. Remove the required pipeline segments by cutting. If an explosion hazard is possible, cutting should be with a wet saw or some other non-sparking tool. If the pipelines are suspected to be asbestos-covered, a qualified contractor must direct this work and

recommend appropriate procedures and PPE, including procedures for removal. Ensure that the area below and adjacent to cutting locations is covered with plastic sheeting and absorbent material. In addition, place a catch basin directly beneath the cutting location. Because pipelines may be under pressure, a vacuum truck should be onsite during cutting to recover any released fluids. Pipeline fluids collected in the catch basin should be pumped out.

Cut-off ends of remaining pipeline segments must be appropriately sealed, or otherwise closed, to prevent any potential leakage. Suitable seals include cement plugs, blind flanges, or other methods not involving hot work or welding. Welding is not appropriate due to the potentially explosive nature of free product and its associated vapors.

10.4 REMOVED UST AND PIPE HANDLING

In many cases, sections of removed pipeline and USTs contain heavy, viscous petroleum products that appear to be immobile. However, once the pipes and product heat up on the surface, the product can liquefy and cause a release. If sections of waste pipe or USTs are stored at the work site prior to disposal, the area should be lined with polyethylene plastic sheeting (≥10 mil [thousandths of an inch] [or 0.010-inch] is recommended) and bermed to contain any free product that may mobilize due to atmospheric heating. All removed pipelines and USTs should be properly disposed of or recycled.

10.5 OTHER SUB-SURFACE UTILITIES

Other subsurface utilities such as cable, water, sewage, and electrical lines may also be discovered during excavations. The nature of the utilities and whether they are presently active should be determined prior to removal. The Hawaii One Call Center at 1-866-423-7287 (or 811) can help identify the nature and origin of active subsurface utilities and should be notified at least 5 working days prior to breaking ground.

10.6 RECORD KEEPING

Parties should record field observations that include the location of the UST and pipeline relative to fixed landmarks (including Global Positioning System coordinates); depth, diameter, and type of pipeline and any other distinguishing features; type of fuel/product; beginning and ending fluid levels; volumes of each type of fluid removed (e.g., water and fuel); flow rates; direction of flow; and any other information pertinent to the UST or pipeline contents. Provide records of field observations with detailed photographs to the HEER Office, and, if requested, to the landowners (HDOT-A or adjacent property owners). Any deviations from this EHE/EHMP will require approval by HDOH and AIR-EE prior to implementation, and a site-specific EHMP may be necessary. All deviations should be described and well documented in a Close-out Report to be provided to the HDOT-A Project Engineer and AIR-EE. A copy of the Close-out Report should also be submitted to HDOH.

SECTION 11 SOIL MANAGEMENT PLAN

The purpose of the soil management plan is to ensure proper handling and management of petroleum-contaminated soil [PCS], and soil impacted by other hazardous substances, that could be encountered during future construction at the Airports. The principal hazards posed by contaminated soil are direct exposure, gross contamination, leaching to groundwater, and/or vapor intrusion into existing or future buildings. Contaminated soil cannot be reused offsite (outside of the work area) prior to laboratory testing and confirmation that testing results meet the most restrictive EALs (for unrestricted use, based on the reuse location). Sampling and testing must be performed in accordance with HDOH guidance [HDOH, 2009].

Previous results of investigations within the Airports indicate that soil can be contaminated from the surface and into the saturated zone. Subsurface soil contamination is generally apparent through visual and olfactory observation. Typically, PCS is stained gray/black or discolored and has a petroleum hydrocarbon odor. It should be noted that in some cases the contamination may not be identifiable through visual and/or olfactory observations (e.g., soil contaminated with metals, PCBs, etc.) and contaminant-specific field screening techniques may need to be implemented. Buried debris or ash layers may also indicate potentially contaminated soil.

Contaminated soil or PCS should be assessed during subsurface construction activities. Contractors that will work within areas of known contamination should be so notified prior to mobilization so they can properly prepare for dealing with contaminated soil. If contaminated soil is uncovered at a previously unknown source or site on the project, the contractor shall immediately notify the HDOT-A Project Engineer, Airport Manager, AIR-EE, and the HDOH HEER Office of its discovery.

Contaminated soils must be tested, handled and disposed in accordance to all Federal, State and Local Rules, Regulations and Laws. Offsite disposal shall be at a facility permitted by the State to accept contaminated soil for disposal. A Hazardous Waste Characterization must be performed on the soil prior to disposal. Contact the HDOH SHWB at 808-586-4226 for further information, and see the HDOH *Construction and Demolition (C&D) Waste Disposal General Guidance* (HDOH 2011). Potential characteristics that could cause contaminated soil to be classified as Hazardous Waste include: (1) ignitability and (2) failure of contaminants in the soil—especially lead, cadmium, and arsenic—to pass the Toxicity Characteristic Leaching Procedure [TCLP]. Soil classified as hazardous waste must be disposed of at a permitted hazardous waste facility on the mainland. No permitted hazardous waste landfills are present in Hawaii.

Refer to the HEER Office document *Guidance for Soil Stockpile Characterization and Evaluation of Imported and Exported Fill Material* for guidance on sampling and testing of soils for reuse or disposal (HDOH, 2017b). Table 5-1 describes the applicability of the HDOH EALs to soil management (reuse or disposal options).

11.1 SOIL MANAGEMENT

If contaminated subsurface soil is encountered during excavation, appropriate response actions must be taken and the actions conform to HDOH and EPA regulatory guidelines. The response actions include ensuring that workers have the appropriate level of PPE, that the excavated contaminated soil (PCS or other) is segregated from clean soil, and that the contaminated soil is managed properly following excavation. PCS is defined as soil that exhibits petroleum staining, and/or a petroleum hydrocarbon odor, with or without mobile free product. Other contaminants, such as solvents, may be identifiable through visual or olfactory observations. A qualified environmental consultant must reference field observations and measurements to assess the excavated soil. Based on professional experience and judgment, the consultant will determine whether or not the excavated soil is contaminated.

PCS falls into two categories: (1) moderately contaminated soil with slight petroleum odors and exhibiting staining, and (2) heavily contaminated soil with a very strong petroleum odor, very dark staining, and potentially mobile free product. From an analytical standpoint, heavily contaminated soil is defined as soil with total TPH concentration exceeding 5,000 milligrams per kilogram [mg/kg] (subsurface gross contamination; see HDOH, 2011a). Gasoline and diesel free product in soil could be mobile at concentrations as low as 5,000 mg/kg. Although somewhat arbitrary, this serves as a useful tool for distinguishing heavily contaminated soil from less contaminated soil. Tests to determine if soil exceeds 5,000 mg/kg TPH include laboratory analysis and field tests such as the glove test and the paper towel test. The glove test consists of squeezing a handful of soil in a gloved hand. If oil droplets remain on the glove, assume the soil exceeds the 5,000 mg/kg threshold and do not reuse the soil onsite (at the work site). The paper towel test consists of squeezing a handful of soil in a paper towel. If droplets of oil appear on the paper towel, assume the soil exceeds the 5,000 mg/kg threshold and do not reuse the soil at the work site. The soil used in the field tests should be representative of the soil in the stockpile. If the soil contains free product, it should be handled as per Section 13 Free Product Management Plan. Anticipated tasks associated with managing excavated soil are summarized as follows:

- Follow all BMPs listed in the *Construction Activities BMP Field Manual* (refer to C.31 Contaminated Soil Management) (HDOT-A, 2018a).
- Notify the HDOH CWB (808-586-4309) at least 90 days prior to disturbing contaminated soil from known areas of contamination. Notify the HDOH HEER Office at least 7 days prior to construction activities that could disturb PCS or other contaminated soil.
- If PCS is observed during excavation activities, provide field oversight to direct the excavated soil to the appropriate stockpile, and to specify appropriate use of excavated soils as onsite backfill versus offsite disposal; and provide health and safety guidance for workers related to potential exposure to COCs.
- Soil must be stockpiled near the project area and covered prior to reuse.
- Create soil stockpiles by laying down 20-mil plastic (polyethylene) sheeting within a designated onsite soil stockpiling area. PCS should be segregated and stockpiled

separately. Contaminated soil stockpile sizes must be limited to 100 cy per pile. Underlay edges of the plastic sheeting with bermed soil. Ensure that the height of the bermed soil will be sufficient to prevent stormwater runoff from breaching it. Place excavated soil inside the bermed area on top of the plastic sheeting. Cover both the clean soil and PCS stockpile(s) at the end of each day with plastic sheeting to mitigate potential dust concerns and to prevent contact with rainwater and stormwater runoff. Secure the plastic covering with sufficient ballast (e.g., sandbags, boulders, concrete blocks) so that it will not be dislodged by strong winds.

- All contaminated soil shall be properly stockpiled on plastic sheeting or impermeable liner, covered with plastic sheeting, and sediment control devices placed along the entire toe of the stockpile. Stockpiles shall be located away from drainage features, surface waters, and stormwater drainage paths. See Appendix A for additional details.
- Oil-impacted stockpiled soils can also be placed in containers (such as 20-yard steel rolloff bins, super sacks, tri-wall boxes, or drums). These containers shall be watertight and with cover or lid. The container shall be watertight to prevent any product from leaking from the container. The container shall have a proper cover or lid to prevent rain water from entering the container and contacting the soil. Drain any liquid-phase oil or free product associated with the soil prior to stockpiling. Adsorb and remove and properly dispose of any oil/free product observed in the excavation to the extent practicable.
- If soil is classified as moderately contaminated (i.e., reported TPH <5,000 mg/kg), the soil can be used as backfill at the work site, as long as the work site is located at least 150 meters away from surface water and the soil is placed more than one foot above the tidally influenced high water level and up to one foot below final grade. Remove floating free product to the extent practicable prior to backfilling any excavation. Contaminated soils cannot be reused beneath the footprint of a building structure. Also, when reused, the area must be capped with an impervious layer, such as concrete or asphalt. Contaminated soil may not be reused outside of the work area.
- If soil is classified as heavily contaminated (i.e., reported TPH>5000 mg/kg), it must be profiled and disposed of at an appropriate, permitted landfill, in accordance with their Solid Waste Management requirements.
- In determining whether excavated soil can be used for backfill within the work area, consider also its structural suitability, although this is not a requirement under HDOH guidance. The PCS may not be structurally suitable if it cannot support foundation loading of a structure intended to be placed over backfilled and compacted soil, or if it does not meet the technical specifications for backfilling of utility trenches, or if it does not meet other design or constructability requirements. Soil not structurally suitable for reuse at the work site should be profiled and taken offsite for appropriate disposal in a landfill.
- If contaminated soil is to be used in roadways, the soil must also meet roadway design criteria of the respective County and HDOT.

- Place contaminated soil used as backfill at the work site a minimum of one foot below ground surface [bgs] and a minimum of one foot above the tidally influenced high water table (to prevent leaching), cover it with clean soil, and cap with asphalt or cement. Detailed records of any re-deposited contaminated soils, including a figure showing the location(s) where soil is reused, and any other clean-up activities are to be maintained and submitted to the HDOH HEER Office.
- If there is no place to stockpile contaminated soil, profile it and haul it to a landfill for disposal. Stockpiling more than 1 cy of contaminated soil at an offsite location requires a Solid Waste Management Permit from the SHWB (see HDOH, 2017b).
- Appropriately decontaminate equipment used in contaminated areas before using it in non-contaminated areas. All liquid and solid waste resulting from onsite decontamination must be collected and appropriately disposed of at permitted facility.

11.2 SOIL TESTING

Three types of chemical testing detailed below may be conducted to manage PCS (or soil impacted by other hazardous substances) and must occur before stockpiled soil is placed back in the excavation (i.e., reused at the work site), reused offsite, or disposed of in a permitted landfill (i.e., disposal, see also HDOH 2017b).

Reuse Testing. This testing involves field tests or laboratory tests for PCS-related COCs, and for other potentially relevant COCs (Section 5.1). Results of this testing are referenced to guide soil reuse, as described above. Note that this testing can occur either on stockpiled, excavated soils, or on in-situ soils during pre-excavation field investigations. The appropriate sampling frequency for soil reuse, either onsite within the work area or offsite, is dependent upon the targeted COCs and the final disposition of the soil (e.g., reuse site location, type of facility, land use, etc.). Recommendations for soil testing requirements and sampling frequency are provided in the HDOH's *Guidance for Soil Stockpile Characterization and Evaluation of Imported and Exported Fill Material* (HDOH, 2017b).

Landfill Profile Testing. This testing involves determining suitability of the soil for use as daily cover or for disposal as a waste at a landfill. Soils not to be reused, as described above, can generally be disposed of in a suitable landfill. Disposal of these soils would be subject to Landfill Profile Testing. Information regarding chemical analysis and disposal options (i.e., as cover or as waste) should be obtained from the relevant landfill. Soils that meet the landfill's standards for interim/daily cover or longer term, intermediate cover should be used as such. The former typically requires that the soil meet HDOH EALs for commercial/industrial land use, while the latter typically requires that the soil meet EALs for unrestricted reuse. Costs for disposal of these soils are typically lower than for disposal of more contaminated soil that cannot be used for cover. Soils not suitable for use as cover or other uses at the landfill must be disposed of as special waste or PCS. Soil testing to pre-profile the soil for offsite disposal can also occur as part of the pre-excavation field investigations.

Stockpile Testing. Recommendations for sampling soil stockpiles are provided in the HDOH's *Guidance for Soil Stockpile Characterization and Evaluation of Imported and Exported Fill Material* (HDOH, 2017b). Based on the targeted COCs, the HDOH guidance includes default stockpile decision unit [DU] volumes for common reuse scenarios (see Table 5 in the HDOH guidance). Stockpiles should be tested using multi-increment [MI] sampling approaches. Appropriate DU volumes for larger stockpiles of soil should be discussed with the HEER Office on a case-by-case basis. If the cost of sampling and segregating clean soil from contaminated soil is higher than the cost of disposal of all soil as contaminated soil, the benefit of testing small volumes of contaminated soil for potential reuse may be precluded. The qualified environmental professional should direct soil sample collection and testing methods in accordance with the most current TGM guidelines. Parties undertaking excavation are responsible for employing a qualified environmental professional and complying with the latest TGM guidelines as well as HAR §11-58.1 and 11-260.1 (HDOH, 2018).

11.3 ENGINEERING AND ADMINISTRATIVE CONTROLS

Dust and vapor control methods may be necessary during construction-related work in which PCS or soil with other contaminants is encountered. These controls include use of plastic sheeting on soil stockpiles, vapor control using vapor suppressants, dust suppression using applied water, and controlling dust emissions by not excavating/moving soil during high winds. It is anticipated that Level D PPE will be appropriate for workers during future construction. Should site conditions warrant, the PPE will be upgraded to Level C. Ultimately, the contractor is responsible for monitoring site conditions and supplying site workers with appropriate training and PPE, in accordance with 29 *Code of Federal Regulations* [CFR] 1910 and 29 CFR 1926 (OSHA, 2018).

11.4 PERIODIC INSPECTIONS AND PREVENTIVE MAINTENANCE

A key component of the plan is routine inspections. Accordingly, all locations where exposure of onsite workers to contaminated soil is possible (e.g., open excavations, soil stockpiles) will be inspected at a frequency appropriate for access and activities carried out on the site (e.g., daily for sites used or accessed on a daily basis). The site should also be inspected prior to and following adverse weather conditions that could disrupt control measures (e.g., heavy winds or rains). In addition, daily inspections of the security fence, locked gates, and dust screen will occur during construction and excavation activities. Replacement and repair of damaged or inadequate chain link fences, dust screens, stormwater control measures, stockpile covers, berms, etc., must be performed immediately after discovery. PPE must be inspected for damage and defects before personnel don the PPE.

11.5 SOIL CONTINGENCY PLAN

The Soil Contingency Plan provides guidelines for actions to be taken when engineering controls, administrative controls, or PPE fail, and risk of exposure to contaminated soil is imminent.

11.5.1 Open Excavations

During construction activities, subsurface contaminated soil could be exposed in excavations for utility corridors or other subsurface structures. If soil more contaminated than anticipated is encountered and could pose a direct exposure hazard to onsite workers, the following actions may be taken:

- If site conditions warrant, PPE will be upgraded from Level D to Level C. Respiratory protection and vapor monitoring are described in the Vapor Management Plan (Section 14) and the site-specific HASP.
- If warranted, the contaminated soil will be excavated and properly stockpiled prior to continuance of work. The stockpiling procedures are described in the Soil Management Plan (Section 11).
- If airborne dust generated from contaminated soil becomes significant, additional dust control measures must be implemented. This may require more frequent use of or an increased volume of applied water. Also, the dust screen cloth on the site boundary fence will be inspected for damage and repaired as necessary.

11.5.2 Soil Stockpiles

During construction activities, the plastic sheeting used to berm and cover soil stockpiles and the sediment control devices surrounding the stockpile may become sun damaged or could be damaged by strong winds or punctured by debris or other sharp objects. Such damage could allow onsite workers to come into contact with contaminated soil. To prevent that from occurring, the following actions may be taken:

- Damaged sections of plastic sheeting will be replaced immediately.
- Damaged sections of the berm will be repaired immediately.
- Damaged sediment control devices will be replaced immediately.

11.6 RECORD KEEPING AND REPORTING

Detailed records will be maintained of workspace monitoring, contaminated soil excavation, soil stockpiling and testing, soil testing, soil reuse and disposal, inspections, and maintenance and response activities. Significant issues must be promptly communicated to site workers. Any deviations from this EHE/EHMP will require approval by HDOH and AIR-EE prior to implementation, and a site-specific EHMP may be necessary. All deviations should be described and well documented in a Close-out Report to be provided to the HDOT-A Project Engineer and AIR-EE. A copy of the Close-out Report should also be submitted to HDOH.

SECTION 12 GROUNDWATER MANAGEMENT PLAN

The purpose of the groundwater management plan is to ensure the proper handling and management of contaminated groundwater that could be encountered during construction at the Airports. Principal hazards posed by contaminated groundwater are gross contamination and aquatic ecotoxicity.

Depending on the airport location and elevation, groundwater may be encountered at depths as shallow as five feet bgs. Results of previous environmental investigations indicate that groundwater at the Airports can be impacted by COCs. Groundwater contamination may be apparent through visual evidence or olfactory detection. Contaminated groundwater may have a measurable thickness of free product, emit petroleum hydrocarbon odor, or exhibit an oily sheen. Other contaminants, such as solvents, can be detected through olfactory observations. It should be noted that in some cases the contamination may not be identifiable through visual and/or olfactory observations (e.g., groundwater contaminated with PCBs, metals, etc.).

Contaminated groundwater has been encountered at the Airports during a number of previous site investigations. Although it is unlikely that residual groundwater contamination is at a level warranting extensive response actions or disposal, there may be specific locations where additional precautions are necessary. Additional site characterization may be required depending on conditions encountered in the field. Table 5-2 describes the applicability of the HDOH EALs to groundwater management.

12.1 GROUNDWATER MANAGEMENT

If contaminated groundwater is encountered during excavation activities, appropriate response actions must be taken that conform to HDOH and EPA regulatory requirements and guidelines. These response actions include ensuring that workers have the appropriate level of PPE and that free product, sheen, and groundwater are managed properly if dewatering is conducted. Anticipated tasks associated with managing groundwater are summarized as follows:

- Follow all BMPs listed in the *Construction Activities BMP Field Manual* (refer to C.17 Dewatering Operations) (HDOT-A, 2018a).
- If groundwater is encountered during construction excavation activities, provide field oversight to identify contaminated groundwater, direct appropriate dewatering if this is conducted, manage disposal of groundwater if this is necessary, and provide health and safety guidance related to potential exposure of workers to COCs.
- If free product is encountered during construction excavation activities, manage free product as described in Section 13.
- If contaminated water is uncovered at a previously unknown source or site on the project, the contractor shall immediately notify the HDOT-A Project Engineer, Airport Manager, AIR-EE, and the HDOH HEER Office of its discovery.

- If dewatering is necessary, water must be pumped into tanks, ponds, or infiltration pits at the work site, and will not be allowed to discharge offsite. Reinfiltration of groundwater should be within 200 feet of the point of generation. Note: free product may not be moved from one excavation to another and engineering measures should 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, etc.).
- If offsite discharge is necessary, a Notice of Intent [NOI] for NPDES coverage will be submitted to HDOH. The NOI will include a dewatering plan. Prior to discharge into a storm sewer or aquatic habitat, the water will be tested and, if necessary, treated to address both free product and dissolved-phase contamination and toxicity. Water with contaminant concentrations exceeding EALs for chronic aquatic toxicity will not be discharged offsite.
- If generation of groundwater requiring disposal is necessary, the groundwater will be stored at the work site in appropriate containers (e.g., tanks or 55-gallon drums), sampled, analyzed for the appropriate COCs to determine disposal options, and disposed of properly. For additional details, see the Guidelines in Appendix A.

12.2 VAPOR CONTROL

Vapor control methods (e.g., vapor suppressants) may be necessary during construction-related work in which contaminated groundwater is encountered. It is anticipated that Level D PPE will generally be appropriate for workers. Should site conditions warrant, PPE will be upgraded to Level C. Respiratory protection and vapor monitoring are described in the Vapor Management Plan (Section 14).

12.3 PERIODIC INSPECTIONS AND PREVENTIVE MAINTENANCE

A key component of the plan is routine inspections. Accordingly, all locations where exposure of onsite workers to contaminated groundwater is possible (e.g., open excavations, dewatering pits) will be inspected daily.

If groundwater requiring disposal is generated, the storage containers will be inspected regularly for rust and other signs of deterioration while they remain onsite, pending disposal. If onsite dewatering is conducted, the infiltration pit(s) will be inspected daily to ensure that no accidental discharge occurs.

12.4 GROUNDWATER CONTINGENCY PLAN

The Groundwater Contingency Plan provides guidelines for actions to be taken when engineering controls, administrative controls, or PPE fail, and risk of exposure to contaminated groundwater is imminent.

12.4.1 Open Excavations

During construction activities, contaminated groundwater could be exposed in excavations for utility corridors or other subsurface structures. If contaminated groundwater is encountered that could pose a direct exposure hazard to onsite workers, the following actions may be taken:

- If site conditions warrant, PPE will be upgraded from Level D to Level C. Respiratory protection and vapor monitoring are described in the Vapor Management Plan (Section 14) and site-specific HASP.
- If appropriate, the excavation may be backfilled using appropriate materials (e.g., gravel, select borrow) to a level above the high tide groundwater level prior to continuance of work.
- If it becomes necessary to remove contaminated groundwater from the excavation, the groundwater must be stored at the work site in appropriate containers (e.g., tanks or 55-gallon drums), sampled, analyzed for the appropriate COCs to determine disposal options, and disposed of properly.
- Contaminated groundwater must be tested, handled and disposed in accordance to all Federal, State and Local Rules, Regulations and Laws. Offsite disposal shall be at a HDOH-permitted facility.
- If free product is present in the excavation, it must be removed prior to backfilling. Backfilling of the excavation should not occur without concurrence from HDOH.

12.4.2 Dewatering Pits

If dewatering is conducted, and contaminated dewatering water is encountered that could pose a direct exposure hazard to onsite workers, the following actions may be taken:

- If site conditions warrant, PPE will be upgraded from Level D to Level C. Respiratory protection and vapor monitoring are described in the Vapor Management Plan (Section 14).
- If appropriate, dewatering must be discontinued until such time that contaminants at the source of the dewater (i.e., an open excavation) can be mitigated.
- If it becomes necessary to discharge contaminated groundwater from a dewatering pit, such discharge must comply fully with the conditions of any required NPDES permit, or disposed of in accordance with HAR §11-58.1 and 11-260.1 (HDOH, 2018).

12.5 Record Keeping and Reporting

Detailed records will be maintained of workspace monitoring, dewatering (if performed), groundwater disposal (if conducted), and response activities. Significant issues must be communicated to site workers on a regular basis. Any deviations from this EHE/EHMP will require approval by HDOH and AIR-EE prior to implementation, and a site-specific EHMP may be necessary. All deviations should be described and well documented in a Close-out Report to

be provided to the HDOT-A Project Engineer and AIR-EE. A copy of the Close-out Report should also be submitted to HDOH.

SECTION 13 FREE PRODUCT MANAGEMENT PLAN

The purpose of the Free Product Management Plan is to ensure proper handling and management of free product (fuel or oil) encountered during subsurface construction activities. The principal hazards posed by free product are direct exposure and gross contamination. Additional related hazards include flammable/explosive vapors.

Free product is generally confined to the general area of the capillary fringe of the shallow water table. Free product in the area may occur as (1) free-flowing, black, viscous product; (2) a thin layer of black, viscous product; (3) a discontinuous layer of product; or (4) a petroleum hydrocarbon sheen. In general, free product is readily apparent visually and via olfactory detection.

Distribution of free product within the Airports has not been completely defined, and free product could be encountered during any subsurface activities. Free product recovery will be required where possible and practicable.

13.1 FREE PRODUCT MANAGEMENT

If excavation occurs to the depth of the capillary fringe of the water table, as shallow as five feet bgs depending on the location and elevation of the airport, free product may be encountered. However, anticipated problems associated with free product can be mitigated by performing the tasks described in this plan.

If free product is encountered during excavation, appropriate response actions will be taken that conform to HDOH and EPA regulatory requirements and guidelines. These response actions include ensuring that workers have the appropriate level of PPE, and that free product is managed properly. The anticipated tasks associated with managing free product are summarized as follows:

- If free product is encountered during construction excavation activities, field oversight should be provided to identify free product; to recover the product to the extent practicable using absorbent pads/booms, oil-water separators, and/or vacuum trucks to skim free product off the water table; and to provide health and safety guidance related to potential exposure to the product to workers. Following completion of product recovery, the absorbents, PPE, and plastic sheeting may be allowed to dry prior to mandatory proper disposal.
- If 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. Note: free product may not be moved from one excavation to another and engineering measures should 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, etc.).

- If free product produces vapors that could adversely affect air quality during construction activities in the area, follow the Vapor Management Plan (Section 14).

13.2 ENGINEERING AND ADMINISTRATIVE CONTROLS

Generation of explosive vapors from free product is a possibility. If generated, such vapors increase risk of fire and/or explosion. Accordingly, if free product is encountered, the lower explosive limit [LEL] of the workspace atmosphere will be monitored using a combustible gas indicator. Typically, less than 10 percent of the LEL is a safe level to conduct activities, unless toxic gases are present at levels of concern.

Vapor control methods (e.g., vapor suppressants) may be necessary during construction-related work in which free product is encountered. It is anticipated that Level D PPE will be appropriate for workers. If site conditions warrant, the PPE will be upgraded to Level C. Respiratory protection and vapor monitoring are described in the Vapor Management Plan (Section 14).

13.3 PERIODIC INSPECTIONS AND PREVENTIVE MAINTENANCE

A key component of the plan is routine inspections. Accordingly, all locations where exposure of onsite workers to free product is possible (e.g., open excavations, dewatering pits, hoses, pumps, tanks, or spills from any of these sources) will be inspected daily or more frequently as appropriate. In addition, daily inspections of the security fence and locked gates will occur during construction activities where free product is encountered. PPE must be inspected for damage and defects before personnel don the PPE. If respiratory protection is required, a daily positive pressure respirator fit test will be conducted at the start of each day, and filter cartridges for air-purifying respirators will be replaced regularly as described in the site-specific HASP.

Excavations (including infiltration pits if onsite dewatering is conducted) will be inspected daily for presence of free product on the water. If free product is present, removal of it will be attempted using absorbent pads, skimming with a vacuum truck, or applying other means such as processing through an oil-water separator.

13.4 FREE PRODUCT CONTINGENCY PLAN

The Free Product Contingency Plan provides guidelines for actions to be taken when engineering controls, administrative controls, or PPE fail, and risk of exposure to free product is imminent.

13.4.1 Open Excavations

During construction activities, free product could be encountered on groundwater in excavations used for utility corridors or other subsurface structures. If free product is encountered that could pose a direct exposure hazard to onsite workers, the following actions may be taken:

- If free product is uncovered at a project site, the contractor shall immediately notify the HDOT-A Project Engineer, Airport Manager, AIR-EE, and the HDOH HEER Office of its discovery.
- If site conditions warrant, PPE will be upgraded from Level D to Level C. Respiratory protection and vapor monitoring are described in the Vapor Management Plan (Section 14).
- If the volume of free product encountered is too great for absorbent pads to handle effectively, a vacuum truck will be used to pump product out of the excavation, and the product will be disposed of offsite properly.
- If appropriate, following removal of free product and prior to continuance of work, the excavation will be backfilled using appropriate materials (e.g., gravel, select borrow) to a level above the high tide level of groundwater.

13.4.2 Dewatering Pits

If dewatering is conducted and free product is encountered that could pose a direct exposure hazard to onsite workers, the following actions may be taken:

- If site conditions warrant, PPE will be upgraded from Level D to Level C. Respiratory protection and vapor monitoring are described in the Vapor Management Plan (Section 14).
- If the volume of free product encountered is too great for absorbent pads to handle effectively, a vacuum truck will be used to pump product out of the dewatering pit, and the product will be disposed of offsite properly.
- If appropriate, dewatering will be discontinued until such time that the free product can be recovered.
- Under no circumstances will water contaminated with free product be discharged from a dewatering pit.

13.5 Record Keeping and Reporting

Detailed records will be maintained of workspace monitoring (including LEL measurements), product recovery, and response activities. Significant issues will be communicated to site workers on a regular basis. Any deviations from this EHE/EHMP will require approval by HDOH and AIR-EE prior to implementation, and a site-specific EHMP may be necessary. All deviations should be described and well documented in a Close-out Report to be provided to the HDOT-A Project Engineer and AIR-EE. A copy of the Close-out Report should also be submitted to HDOH.

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SECTION 14 VAPOR MANAGEMENT PLAN

The purpose of the Vapor Management Plan is to identify VOC vapors and toxic gases that could adversely affect air quality during construction activities within the area covered by this document. The principal hazards posed by VOC vapors at levels below LELs are direct exposure and gross contamination. The areas within which these hazards potentially pose the greatest concern are where contaminated soil, contaminated groundwater, and free product have been previously encountered.

Results of past assessments at the Airports indicate that soil vapor in some areas has been impacted by one or more COCs. The principal sources of contaminated soil vapor at the Airports are PCS, contaminated groundwater, and free product. Methane, hydrogen sulfide, and carbon monoxide are also associated with free product.

This EHE/EHMP describes the necessary controls for minimizing exposure of onsite workers to hazardous vapors. It also describes measures for minimizing exposure of offsite human populations (i.e., the general public) to hazardous vapors created as a result of construction activities. Included are procedures for identifying and mitigating potential physical hazards posed by generation of explosive vapors. Importantly, this EHE/EHMP describes general procedures for monitoring hazardous vapors and gases during field activities. Rather than as a standalone document to address vapor issues, it should be considered a companion document to the site-specific HASP, which should describe in detail procedures and equipment for monitoring hazardous vapor and gas concentrations, as well as PPE and engineering controls.

14.1 VAPOR MANAGEMENT

If VOC vapors are encountered during excavation, appropriate response actions will be taken that comply with HDOH and EPA regulatory requirements and guidelines. The response actions include ensuring that onsite workers have the appropriate level of PPE, and that the general public is not affected adversely. Anticipated tasks associated with managing VOC vapor exposure are summarized as follows:

- If VOC vapors below LELs are encountered during excavation activities, field oversight must be provided to identify VOC vapors and provide health and safety guidance related to potential exposure of workers to COCs.
- Air monitoring will be conducted during excavation associated with future construction activities. Air monitoring will also occur when workers are required to enter excavations regardless of whether PCS or free product is present. The monitoring will include both workspace (onsite) and perimeter measurements of VOC vapors.
- If warranted by air monitoring results, onsite workers will be notified to upgrade PPE to include respiratory protection.
- Air monitoring required for confined space entry (if required) will be conducted by the contractor responsible for construction. Confined space entry and associated air monitoring requirements will be described in the site-specific HASP for construction.

14.2 VAPOR CONTINGENCY PLAN – EXPOSURE MONITORING

To assess potential exposure of onsite workers to hazardous VOC vapors and toxic gases and determine the level of PPE that might be required, a baseline exposure assessment will be required. To conduct the assessment, VOC and toxic gas concentrations must be measured during excavation of a trench. Measurements of concentrations of these COCs within the workspace atmosphere and at the perimeter (offsite) are required.

Based on results of the exposure assessment, exposure limits must be established for workers performing remedial excavation. The exposure limits are based on OSHA PELs. The exposure monitoring plan is summarized as follows:

- Level D PPE will be appropriate for onsite workers under normal working conditions.
- Both workspace (onsite) and perimeter (offsite) air monitoring will be conducted.
- Air monitoring will proceed using a conventional photoionization detector [PID] to determine total VOC concentration.
- If total VOC concentration in the workspace atmosphere exceeds an 8-hour, time-weighted average [TWA] of 20 parts per million [ppm] or a 15-minute, short-term exposure limit [STEL] of 100 ppm, PPE requirements will be upgraded to Level C, and it may be necessary to implement a modified work schedule. These levels are based on a maximum benzene concentration in gasoline of 5 percent by volume.
- Monitoring of LEL and toxic gases using a multi-gas meter to determine if a hazardous atmosphere exists.

14.3 ENGINEERING AND ADMINISTRATIVE CONTROLS

Vapor control methods may be necessary during construction-related work in which VOC vapors are encountered. These controls include use of plastic sheeting on soil stockpiles, vapor suppressants, and supplied ventilation.

It is anticipated that Level D PPE will be appropriate for workers during future construction. If site conditions warrant, as described above, PPE will be upgraded to Level C.

In addition to respiratory protection practices, engineering controls and safe work practices will be employed. Engineering controls include barriers that prevent workers from unnecessarily entering work zones and use of recycled air conditioning in mobile equipment cabs. Safe work practices include monitoring wind direction and having workers stand upwind of VOC vapor sources whenever possible, or instituting a modified work schedule.

A natural control is that vapors originating from a site within the Airports normally will be diluted by the prevailing northeasterly trade winds. If left undisturbed, surface soil (0 to 2 feet bgs) not impacted by VOCs provides a natural barrier, covering VOC-contaminated subsurface soil and groundwater, and thereby reducing potential for vapor emissions.

Because anaerobic degradation of petroleum products will continue in the area for many years, methane gas, hydrogen sulfide, and carbon monoxide have the potential to be a problem for indoor workers at the Airports, particularly in underground vaults. In addition, THP-g, TPH-d, and BTEX remain potential soil vapor COCs in the area. Underground vaults should be tested for LEL, methane, and toxic gases prior to entry. If soil vapor intrusion issues have been identified, any new vaults should be properly sealed to prevent soil vapor intrusion that could cause an explosion hazard during work in the vaults.

14.4 Periodic Inspections and Preventive Maintenance

A key component of the plan is routine inspections and air monitoring. Accordingly, daily or more frequent (if appropriate) air monitoring will occur at all locations where exposure of onsite workers to hazardous vapors is possible (e.g., open excavations, soil stockpiles). PPE will be inspected for damage and defects before personnel don the PPE. If respiratory protection is required, a daily positive pressure respirator fit test will be performed at the start of each day, and filter cartridges for air-purifying respirators will be replaced regularly.

All instruments used for air monitoring require calibration at the start of each work shift, at a minimum. The PID will be calibrated using a 100 ppm isobutylene standard. Measurements of the standard, or bump tests, must be performed as needed to confirm that the calibration is maintained. Recalibration may be necessary if the instrument performance is compromised by humidity or other factors. Records of the recalibrations will be maintained. The organic vapor monitor for LEL should be calibrated with a methane standard and zero calibration according to manufacturer's specifications.

14.5 Record Keeping and Reporting

Detailed records of workspace monitoring and changes to PPE requirements must be maintained. Daily monitoring results and sampling locations will be documented in field logs. Significant issues will be communicated to site workers on a regular basis. Any deviations from this EHE/EHMP will require approval by HDOH and AIR-EE prior to implementation, and a site-specific EHMP may be necessary. All deviations should be described and well documented in a Close-out Report to be provided to the HDOT-A Project Engineer and AIR-EE. A copy of the Close-out Report should also be submitted to HDOH.

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SECTION 15 STORMWATER MANAGEMENT PLAN

The purpose of the stormwater management plan is to provide procedures to prevent stormwater runoff from coming into contact with contaminated soil or groundwater, and to provide contingencies in the event that such contact does occur. The principal hazards posed by stormwater runoff are direct exposure, gross contamination, and aquatic ecotoxicity. If contaminated stormwater is allowed to leave the construction site, downgradient human populations (the general public) and ecological receptors (marine flora and fauna) could be exposed to COCs. Areas within which these hazards potentially pose the greatest concern are where contaminated soil, contaminated groundwater, and free product have been encountered and exposed at the surface.

This plan describes the necessary measures for controlling stormwater within the area covered by this document during construction activities. Preventing stormwater from coming into contact with contaminated media is the principal concern during future construction activities. Construction activities could expose stormwater runoff to contaminated media as follows:

- Subsurface excavation could expose stormwater to contaminated subsurface soil and/or groundwater.
- Stormwater could be exposed to excavated contaminated soil stored temporarily in stockpiles.
- If dewatering is conducted that utilizes an onsite infiltration pit, stormwater could be exposed to contaminated groundwater.

In addition to this plan, HDOT-A has implemented the following specific plans that provide guidance for stormwater management:

- *Storm Water Management Program Plan, Section C: Construction Site Runoff Control Program* (HDOT-A, 2018b)
- *Construction Activities BMP Field Manual* (HDOT-A, 2018a).

15.1 STORMWATER MANAGEMENT

If contaminated soil or groundwater is encountered during excavation, appropriate response actions will be taken that conform to HDOH and EPA regulatory requirements and guidelines. The response actions include ensuring that these media are not exposed to stormwater. Anticipated tasks associated with managing stormwater are summarized as follows:

- Field oversight will be provided during excavation activities associated with construction. The purpose of the oversight is to identify contaminated media that could be exposed to stormwater runoff, and to provide guidance related to controlling stormwater at the site. In addition, weather will be monitored throughout each work day for signs of approaching storms and/or heavy rains.

- Inspections of engineering stormwater controls will occur each day to ensure that contaminated media will not be exposed to stormwater runoff, and that contaminated stormwater will not leave the construction site.
- All construction activities, including clearing, grading, and excavation, that result in disturbance of 1 or more acres of total land area will comply with the conditions of an HDOH-approved NPDES NOI permit for stormwater discharge associated with construction activity. Conditions of the permit include preparation of a Storm Water Pollution Prevention Plan [SWPPP]. In addition, for projects involving disturbance of greater than 1 acre of land, the Designer or Authorized Representative shall submit the HDOT-A Design Review Checklist. For projects less than 1 acre, a completed Notification Form will be signed by the appropriate party. HDOT-A construction projects that include a utility connection to the Municipal Separate Storm Sewer System [MS4], hydrotesting, dewatering, or Tenant Improvement Projects that include stormwater discharges from a utility connection or sheet flow, must obtain a HDOT-A discharge permit.

15.2 ENGINEERING AND ADMINISTRATIVE CONTROLS OPEN EXCAVATIONS

In the absence of engineering and administrative controls, contaminated soil and/or groundwater exposed in open excavations could come into contact with stormwater, thus potentially contaminating the stormwater with COCs. To prevent this, the following activities will occur:

- Where possible, excavations will be backfilled as soon as practicable to limit the time they are open and potentially exposed to stormwater runoff and direct precipitation.
- Where possible, the edges of excavations will be bermed, thus preventing stormwater runoff from entering.
- Open excavations will be inspected each day to minimize potential for direct precipitation to cause the excavation to overflow.

Soil Stockpiles. In the absence of engineering and administrative controls, excavated contaminated soil stored in stockpiles could come into contact with stormwater, thus potentially contaminating the stormwater with COCs. To prevent this, the following activities are required:

- All contaminated soil shall be properly stockpiled on plastic sheeting or impermeable liner, covered with plastic sheeting, and sediment control devices placed along the entire toe of the stockpile. Stockpiles shall be located away from drainage features, surface waters, and stormwater drainage paths.
- At the end of each day, or in the event of a rain event, the soil stockpiles will be covered with plastic sheeting, thus preventing contact with direct precipitation.
- The soil stockpiles will be inspected each day to ensure that the plastic sheeting is intact.

- Soil stockpiles will be limited to a manageable size to prevent breach of BMPs, so that BMPs are kept effective.

Dewatering Infiltration Pits. In the absence of engineering and administrative controls, the water in infiltration pits used for onsite dewatering could come into contact with stormwater. To prevent this, the following activities are required:

- Where possible, infiltration pits will be backfilled as soon as practicable to limit the time they are open and potentially exposed to stormwater runoff and direct precipitation.
- Where possible, the edges of infiltration pits will be bermed, thus preventing entry of stormwater.
- Infiltration pits will be inspected each day or more frequently as appropriate to minimize potential for direct precipitation to cause the pit to overflow.

Erosion and sediment control measures will be in place and functional before construction activities commence. These measures will be maintained throughout the construction period. If stormwater discharge from the site is anticipated, the following preventive measures must be implemented:

- Stormwater flowing towards active construction areas will be diverted using appropriate control measures, as practicable.
- Erosion control measures will be designed to handle the size of the disturbed or drainage area in order to detain runoff and trap sediment.
- Height of the work area perimeter can be increased using sandbags.
- Additional silt fencing will be added to affected site boundaries, if warranted.
- Berms surrounding soil stockpiles will be increased as necessary.
- Moveable booms will be available to contain spills.
- Absorbent pads will be employed if free product is observed in stormwater runoff.

15.3 INSPECTION AND PREVENTIVE MAINTENANCE

A key component of the plan is routine inspections. Accordingly, all locations of possible contact of stormwater with contaminated media (e.g., open excavations, soil stockpiles, dewatering pits) will be inspected daily by the contractor. During rain events, inspections will occur to minimize possibilities of stormwater runoff, contact of direct precipitation with soil stockpiles, and entry of stormwater runoff into open excavations or infiltration pits (if present). If stormwater run-on occurs, accumulated water on the site will be inspected for visual and olfactory evidence of contamination (e.g., petroleum hydrocarbon sheen, discoloration, free product, petroleum hydrocarbon odors).

Storage containers, vehicles, and heavy equipment that could come into contact with stormwater will be stored within one area and will be inspected regularly to ensure proper

functioning. Signs of deterioration or leaks that could lead to an unanticipated release of petroleum-based products or hazardous substances must be reported immediately, and corrective measures taken. If a release occurs, follow the release reporting procedures in Section 7.

An initial inspection is conducted by AIR-EE at the start of construction for all projects with earth disturbing activities. General site inspections will occur periodically and will be documented. For all projects that have NPDES Construction discharge permits, 3rd party inspections will be completed monthly. Engineering controls will be inspected and repaired as necessary. During prolonged rainfall, daily inspections may be necessary. Accumulated sediment at the silt fence will be removed once accumulation reaches one-third the height of the fence. If damaged, the silt fence will be repaired or replaced within 24 hours. During rain events, stormwater runoff will be inspected to assess whether it has been impacted by COCs or by contaminants associated with construction activities.

Deficiencies noted during 3rd party inspections are written up into an inspection report, which is provided to AIR-EE. AIR-EE has established timelines for the corrective actions to be completed, depending on if deficiencies are minor, major, or critical. Corrective action deadlines are tracked by the inspector and copies of all corrective actions closure reports are provided to AIR-EE. If deficiencies are not completed within the timeline then AIR-EE issues Warnings, usually starting with an email Warning for first time offenders, then a Written Warning signed by the Director of Transportation. Enforcement starts with a Warning and then escalates through two additional enforcement letters. Notice of Apparent Violations are the 3rd level of enforcement if deficiencies are not corrected within deadlines, or can be issued if there is a repeat of a violation, and Notice of Apparent Violations are also copied to the Director of Health. For Airports projects, AIR-EE can issue a stop work notice and require additional training, etc. as enforcement, if necessary.

15.4 STORMWATER CONTINGENCY

Open Excavations. During construction activities, stormwater could come into contact with contaminated soil or groundwater exposed in excavations for utility corridors or other subsurface structures. If a rain event is more severe than anticipated and could result in entry of stormwater to an excavation or overflow of water from an excavation, the following actions must be taken:

- Height of the berm along the edges of the excavation may be increased to prevent stormwater runoff from entering the excavation.
- If feasible, stormwater runoff may be diverted away from the excavation.
- The excavation may be covered with plastic sheeting to prevent entry of direct precipitation or stormwater runoff.

Soil Stockpiles. During construction activities, stormwater could come into contact with contaminated soil stored in stockpiles. If a rain event is more severe than anticipated and could result in stormwater runoff coming into contact with stockpiled soil or in damage to the plastic covering the stockpile, the following actions must be taken:

- Berms surrounding soil stockpiles that are damaged by a rain event will be repaired. Additional plastic sheeting may be necessary.
- Height of the berm surrounding the stockpile may be increased.
- If feasible, stormwater runoff may be diverted away from soil stockpiles.
- Plastic sheeting covering soil stockpiles that is damaged by a rain event will be repaired or replaced. Additional plastic sheeting may be necessary.

Dewatering Pits. During construction activities where dewatering is necessary, stormwater could come into contact with contaminated groundwater exposed in dewatering pits. If a rain event is more severe than anticipated (i.e., capable of overcoming engineering controls) and could result in stormwater runoff entering a dewatering pit causing it to overflow, the following actions must be taken:

- Height of the berm along the edges of the dewatering pit may be increased to prevent stormwater runoff from entering the excavation.
- If feasible, stormwater runoff may be diverted away from the dewatering pit.

Stormwater Run-on. During construction activities, stormwater run-on could enter the work area and come into contact with contaminated soil or groundwater. If a rain event is more severe than anticipated and could result in stormwater run-on entering the work area, the following action may be taken:

- Height of the work area perimeter may be increased using sandbags.
- If feasible, stormwater runoff may be diverted away from the work area.

Offsite Discharge of Contaminated Stormwater. If, during construction activities, stormwater comes into contact with contaminated soil or groundwater and that stormwater is not contained, contaminated stormwater could discharge offsite beyond the work area. If a rain event is more severe than anticipated and could result in discharge of contaminated stormwater offsite, the following actions must be taken:

- Height of the work area perimeter can be increased using sandbags.
- If feasible, stormwater runoff may be diverted away from the site boundary.
- Additional silt fencing may be added at affected site boundaries.
- Moveable, petroleum-absorbent booms may be deployed along the affected site boundary.
- Absorbent pads may be used if free product is observed on stormwater runoff.
- Moveable, petroleum-absorbent booms may be deployed in front of offsite storm drain entrances in the immediate vicinity of the site.

- If stormwater is discharged offsite, the HDOT-A Project Engineer, AIR-EE (808-838-8656), Airport Duty Manager (CODE 22) (808-836-6434), and HDOH Clean Water Branch (808-586-4309) should be notified.

15.5 RECORD KEEPING AND REPORTING

Detailed records of rain events, inspections of engineering controls, response activities, and corrective actions will be maintained. Significant issues will be communicated to site workers and the onsite project representative on a regular basis. Reporting requirements of the NPDES stormwater discharge permit (if applicable) must be strictly followed. Any deviations from this EHE/EHMP will require approval by HDOH and AIR-EE prior to implementation, and a site-specific EHMP may be necessary. All deviations should be described and well documented in a Close-out Report to be provided to the HDOT-A Project Engineer and AIR-EE. A copy of the Close-out Report should also be submitted to HDOH.

SECTION 16 REFERENCES

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Figures

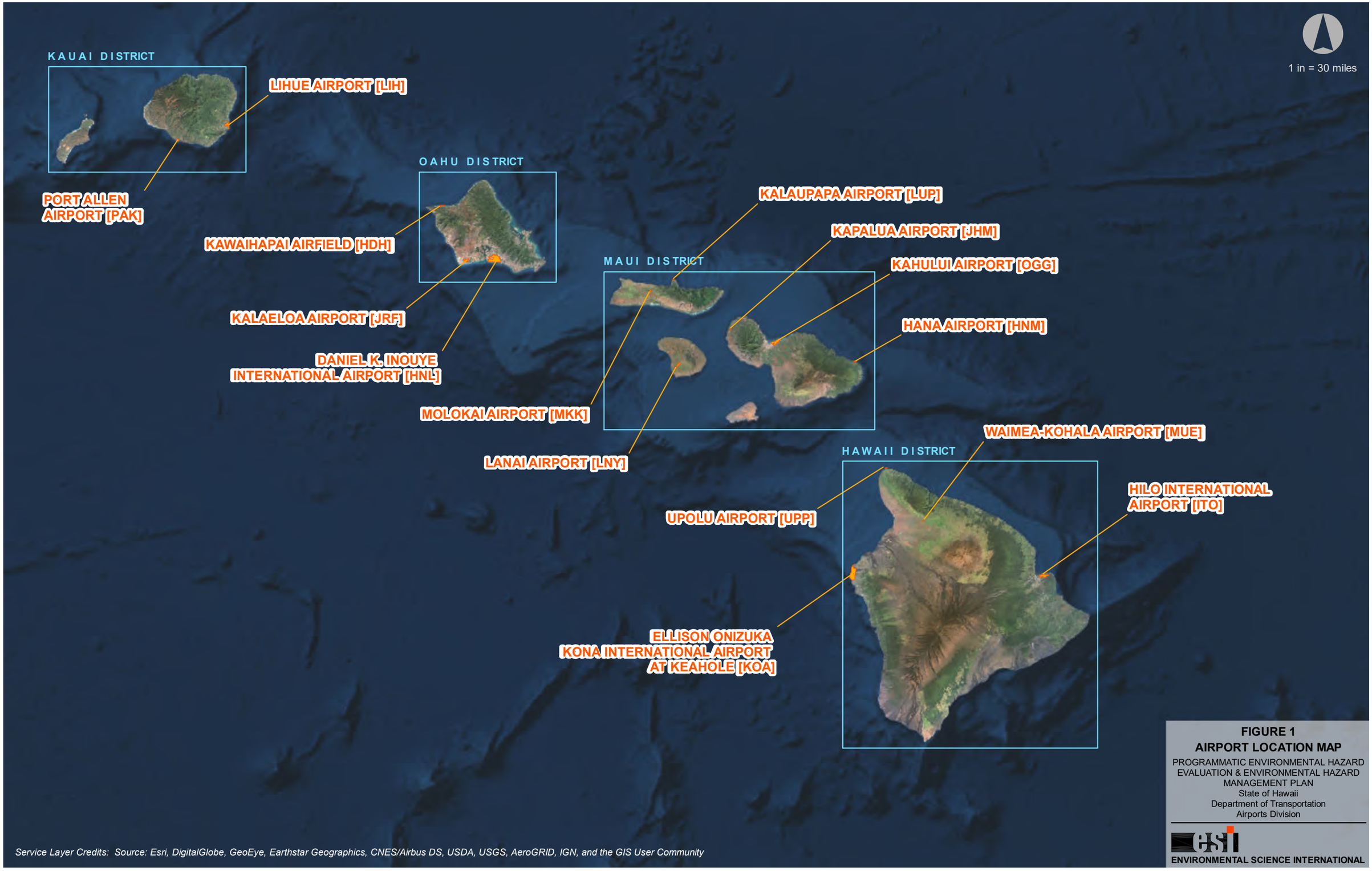
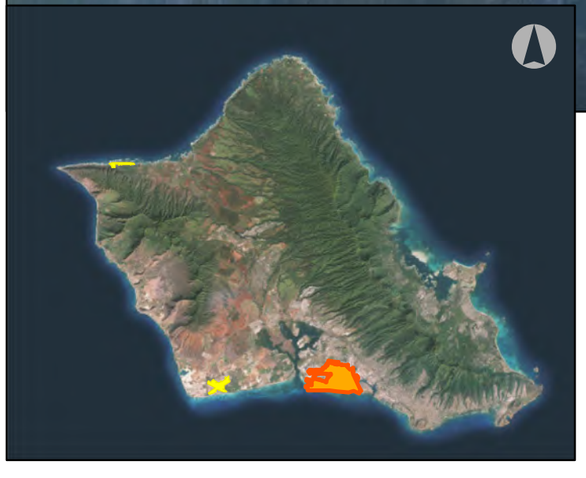


FIGURE 1

AIRPORT LOCATION MAP

PROGRAMMATIC ENVIRONMENTAL HAZARD EVALUATION & ENVIRONMENTAL HAZARD MANAGEMENT PLAN
State of Hawaii
Department of Transportation
Airports Division

ENVIRONMENTAL SCIENCE INTERNATIONAL



OAHU DISTRICT

0 0.25 0.5 1 MILES

FIGURE 2
DANIEL K. INOUYE INTERNATIONAL AIRPORT [HNL]
PROGRAMMATIC ENVIRONMENTAL HAZARD EVALUATION & ENVIRONMENTAL HAZARD MANAGEMENT PLAN
State of Hawaii
Department of Transportation
Airports Division

ENVIRONMENTAL SCIENCE INTERNATIONAL

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0 0.1 0.2 0.4
MILES

OAHU DISTRICT

FIGURE 3
KAWAIHAPAI AIRFIELD [HDH]
PROGRAMMATIC ENVIRONMENTAL HAZARD EVALUATION & ENVIRONMENTAL HAZARD MANAGEMENT PLAN
State of Hawaii
Department of Transportation
Airports Division

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0 0.125 0.25 0.5
MILES

OAHU DISTRICT

FIGURE 4
KALAELOA AIRPORT [JRF]
PROGRAMMATIC ENVIRONMENTAL HAZARD EVALUATION & ENVIRONMENTAL HAZARD MANAGEMENT PLAN
State of Hawaii
Department of Transportation
Airports Division

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0 0.2 0.4 0.8
MILES

MAUI DISTRICT

FIGURE 5
KAHULUI AIRPORT [OGG]
PROGRAMMATIC ENVIRONMENTAL HAZARD EVALUATION & ENVIRONMENTAL HAZARD MANAGEMENT PLAN
State of Hawaii
Department of Transportation
Airports Division

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0 0.05 0.1 0.2
MILES

MAUI DISTRICT

FIGURE 6
KAPALUA AIRPORT [JHM]
PROGRAMMATIC ENVIRONMENTAL HAZARD EVALUATION & ENVIRONMENTAL HAZARD MANAGEMENT PLAN
State of Hawaii
Department of Transportation
Airports Division

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0 0.1 0.2 0.4
MILES

MAUI DISTRICT

FIGURE 7
LANAI AIRPORT [LNY]
PROGRAMMATIC ENVIRONMENTAL HAZARD EVALUATION & ENVIRONMENTAL HAZARD MANAGEMENT PLAN
State of Hawaii
Department of Transportation
Airports Division

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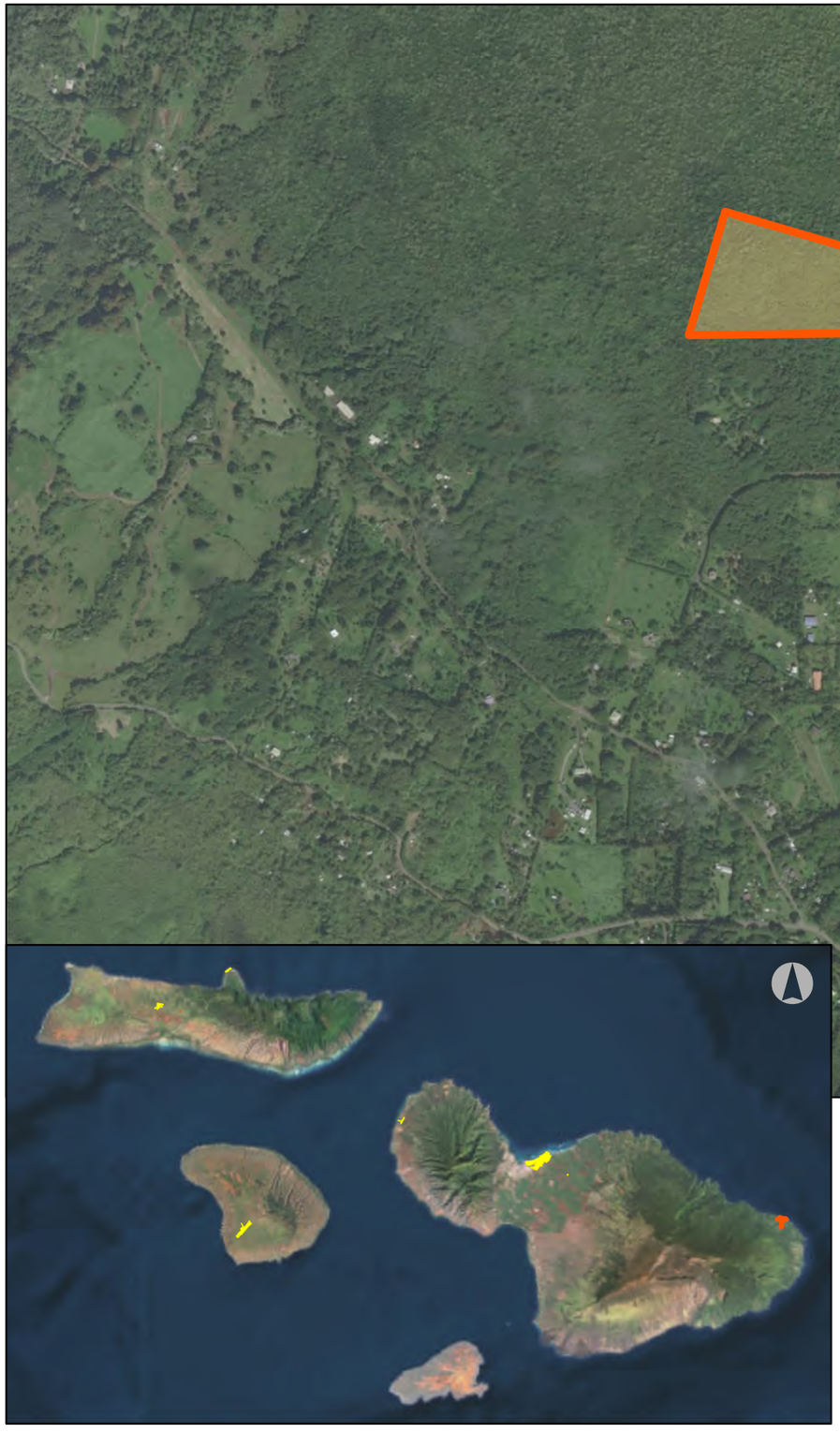
0 0.0625 0.125 0.25
MILES

MAUI DISTRICT

FIGURE 8
MOLOKAI AIRPORT [MKK]
PROGRAMMATIC ENVIRONMENTAL HAZARD EVALUATION & ENVIRONMENTAL HAZARD MANAGEMENT PLAN
State of Hawaii
Department of Transportation
Airports Division

ENVIRONMENTAL SCIENCE INTERNATIONAL



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0 0.1 0.2 0.4
MILES

MAUI DISTRICT

FIGURE 9
HANA AIRPORT [HNM]
PROGRAMMATIC ENVIRONMENTAL HAZARD EVALUATION & ENVIRONMENTAL HAZARD MANAGEMENT PLAN
State of Hawaii
Department of Transportation
Airports Division

ENVIRONMENTAL SCIENCE INTERNATIONAL

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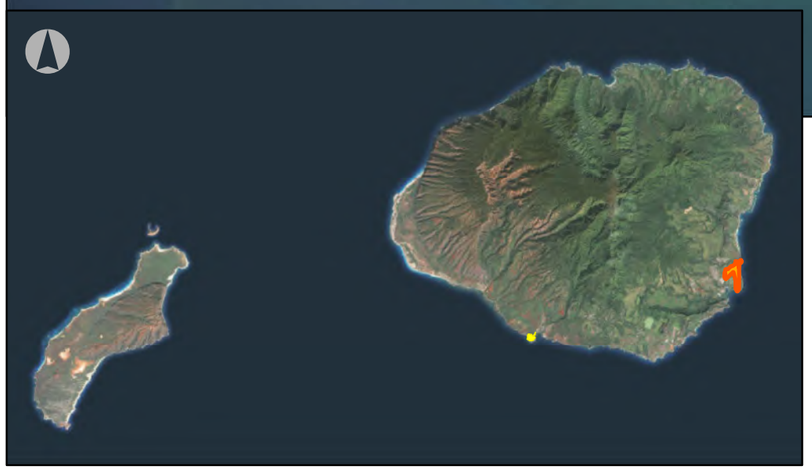
0 0.1 0.2
MILES

MAUI DISTRICT

FIGURE 10
KALAUPAPA AIRPORT [LUP]
PROGRAMMATIC ENVIRONMENTAL HAZARD EVALUATION & ENVIRONMENTAL HAZARD MANAGEMENT PLAN
State of Hawaii
Department of Transportation
Airports Division

ENVIRONMENTAL SCIENCE INTERNATIONAL



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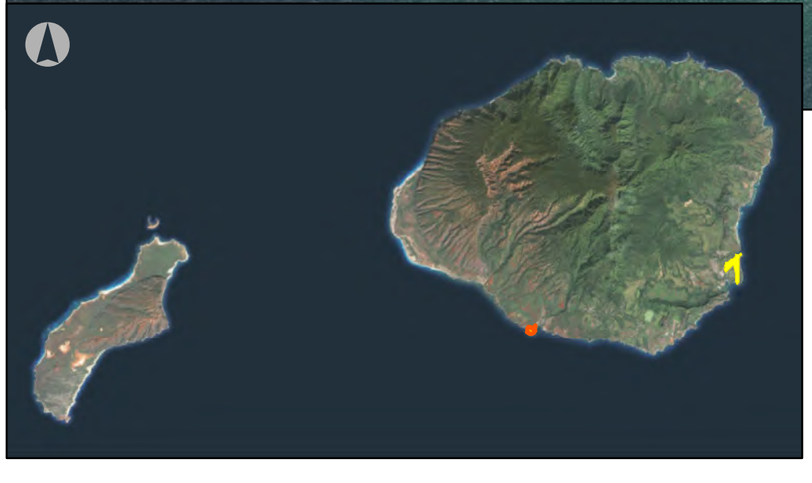
0 0.125 0.25 0.5
MILES

KAUAI DISTRICT

FIGURE 11
LIHUE AIRPORT [LIH]

PROGRAMMATIC ENVIRONMENTAL HAZARD EVALUATION & ENVIRONMENTAL HAZARD MANAGEMENT PLAN
State of Hawaii
Department of Transportation
Airports Division

ENVIRONMENTAL SCIENCE INTERNATIONAL



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0 0.0625 0.125 0.25
MILES

KAUAI DISTRICT

FIGURE 12
PORT ALLEN AIRPORT [PAK]
PROGRAMMATIC ENVIRONMENTAL HAZARD EVALUATION & ENVIRONMENTAL HAZARD MANAGEMENT PLAN
State of Hawaii
Department of Transportation
Airports Division

ENVIRONMENTAL SCIENCE INTERNATIONAL

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0 0.125 0.25 0.5
MILES

HAWAII DISTRICT

FIGURE 13
HILO INTERNATIONAL AIRPORT [ITO]

PROGRAMMATIC ENVIRONMENTAL HAZARD EVALUATION & ENVIRONMENTAL HAZARD MANAGEMENT PLAN
State of Hawaii
Department of Transportation
Airports Division

ENVIRONMENTAL SCIENCE INTERNATIONAL

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0 0.25 0.5 1
MILES

HAWAII DISTRICT

FIGURE 14
ELLISON ONIZUKA KONA INTERNATIONAL AIRPORT [KOA]

PROGRAMMATIC ENVIRONMENTAL HAZARD EVALUATION & ENVIRONMENTAL HAZARD MANAGEMENT PLAN
State of Hawaii
Department of Transportation
Airports Division

ENVIRONMENTAL SCIENCE INTERNATIONAL

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0 0.05 0.1 0.2
MILES

FIGURE 15
WAIMEA-KOHALA AIRPORT [MUE]
PROGRAMMATIC ENVIRONMENTAL HAZARD EVALUATION & ENVIRONMENTAL HAZARD MANAGEMENT PLAN
State of Hawaii
Department of Transportation
Airports Division

ENVIRONMENTAL SCIENCE INTERNATIONAL

HAWAII DISTRICT

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0 0.05 0.1 0.2
MILES

HAWAII DISTRICT

FIGURE 16
UPOLU AIRPORT [UPP]
PROGRAMMATIC ENVIRONMENTAL HAZARD EVALUATION & ENVIRONMENTAL HAZARD MANAGEMENT PLAN
State of Hawaii
Department of Transportation
Airports Division

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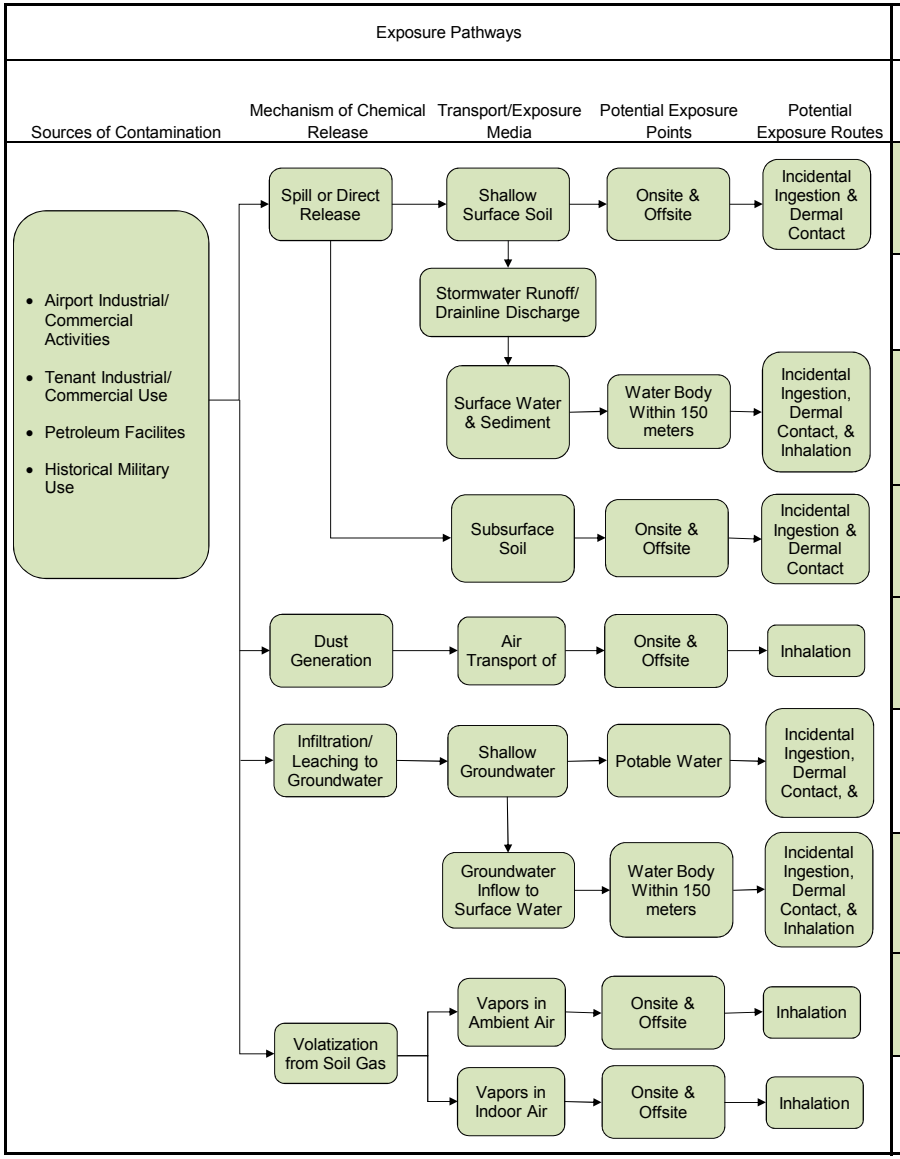
Figure 17
Conceptual Site Model for Potential Human and Ecological Receptors
Programmatic EHE/EHMP
State of Hawaii
Department of Transportation
Airports Division



Potential Receptors					
Airport Construction Worker	Landscaper	Airport Occupant/ Visitor/ Trespasser	Offsite General Public	Terrestrial Organisms	Aquatic Organisms
Potentially Complete	Potentially Complete	Potentially Complete	Potentially Complete	Potentially Complete	
Potentially Complete	Potentially Complete		Potentially Complete		Potentially Complete
Potentially Complete			Potentially Complete		
Potentially Complete	Potentially Complete	Potentially Complete	Potentially Complete	Potentially Complete	
			Potentially Complete		
Potentially Complete			Potentially Complete		Potentially Complete
Potentially Complete	Potentially Complete	Potentially Complete	Potentially Complete	Potentially Complete	
		Potentially Complete	Potentially Complete (offsite migration)		

Note:
Potentially Complete Source Interaction Pathway

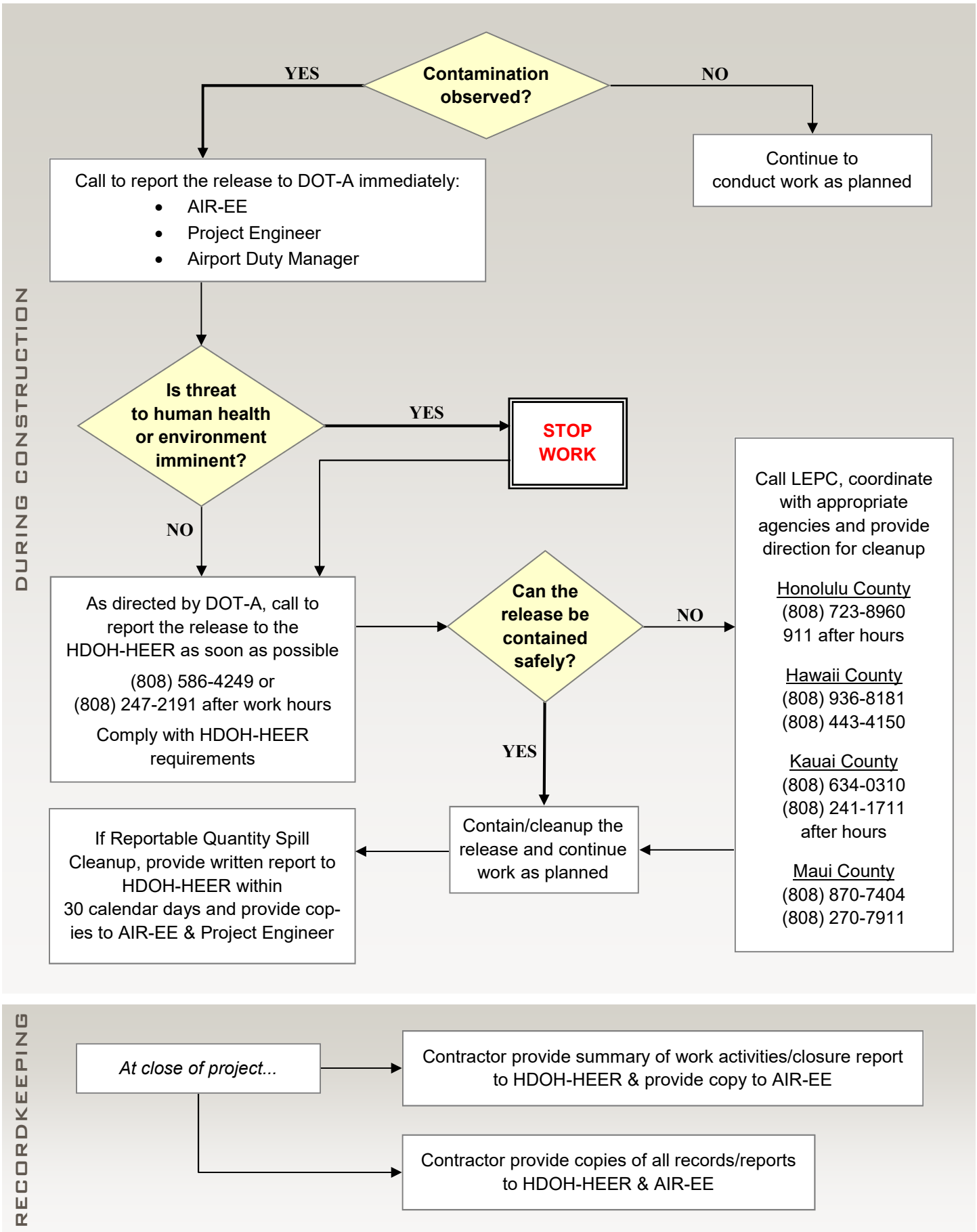


Figure 18. Release Reporting Flow Chart When Unknown Contamination is Encountered

Appendix A

Guidelines for Tenants, Utility Companies, and Construction Contractors

Programmatic Environmental Hazard Evaluation and Environmental Hazard Management Plan

State of Hawaii
Department of Transportation

AIRPORTS DIVISION

GUIDELINES FOR TENANTS, UTILITY COMPANIES, AND

CONSTRUCTION CONTRACTORS

Prepared by

Environmental Science International, Inc.

October 2019

These guidelines are for tenants, utility companies, and construction contractors involved in construction projects within any of the 15 airports owned by the State of Hawaii and operated by the State of Hawaii Department of Transportation's Airports Division (HDOT-A), hereinafter referred to as "the Airports". The area covered by these guidelines includes each of the Airports as shown in Figure 1 on page A-3. These guidelines describe controls that provide protection from liquid-phase oil or free product, contaminated soil and water, and soil vapors. They will guide you through three steps on how to:

1. Determine if your project is within the area covered by the guidelines (see page A-3).
2. Determine if you should consider these guidelines.
3. If you follow these guidelines, use them as an aid in determining the controls you need to conduct your specific project safely and protect the environment.

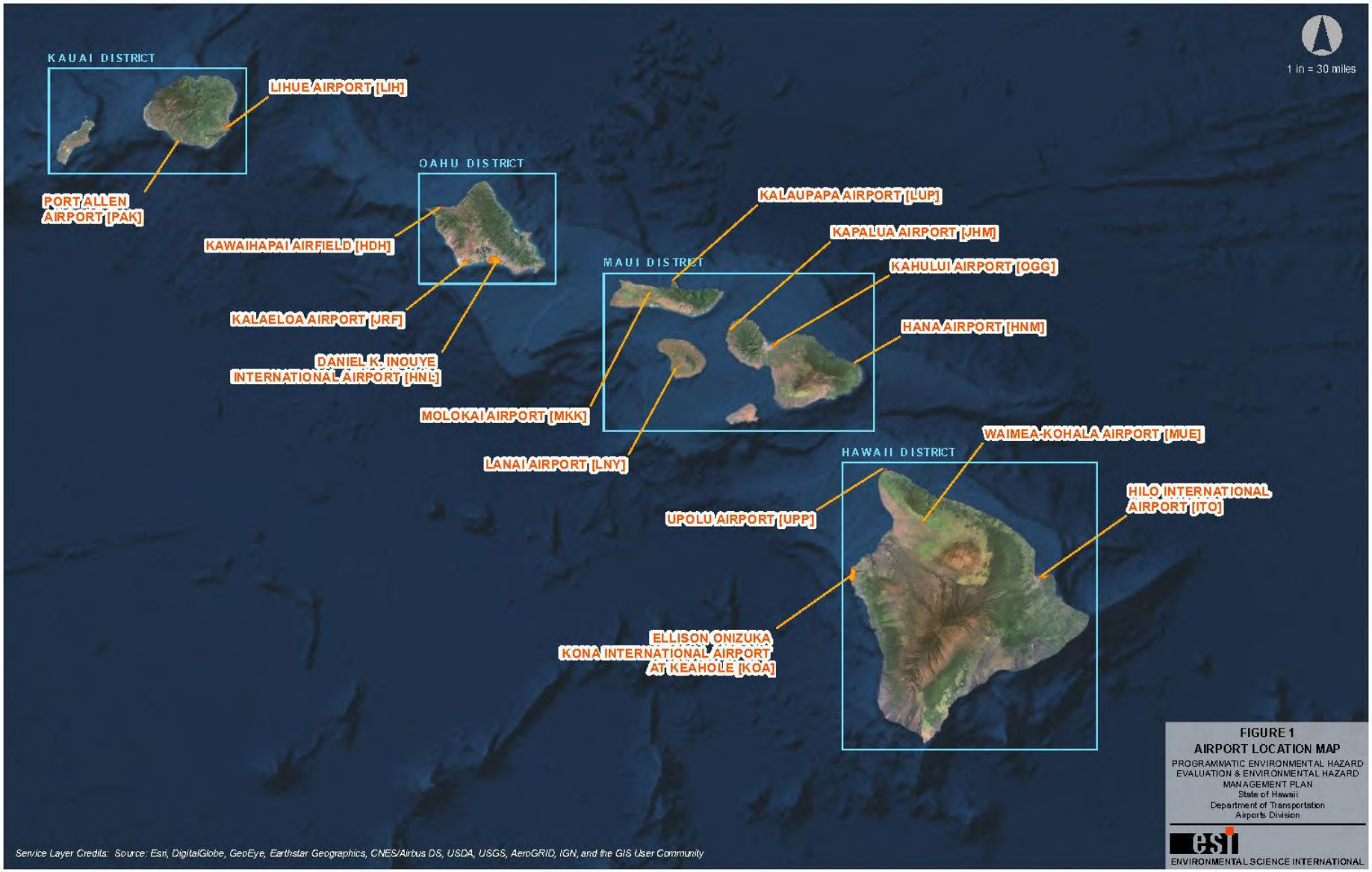
Potentially hazardous contaminants of concern (COC) may be present in soil, groundwater, and soil vapor at various locations within the Airports. Potential sources of COCs include past military and airport operations/facilities, and fuel storage tanks and pipelines. Although these guidelines pertain primarily to petroleum contamination, there may be other types of contamination (e.g., metals, polychlorinated biphenyls [PCBs], chlorinated solvents, etc.) that could be encountered at the Airports. Specific procedures for management of COCs unrelated to petroleum should be discussed with HDOT Airports Engineering Environmental Section. Several areas within the Airports are known to be contaminated by various chemical constituents that are presently managed in place, under the guidance of a site-specific (or project-specific) Environmental Hazard Management Plan (EHMP) (these site-specific EHMPs are available for review).

Remediation has been undertaken at many locations within the Airports. Because remedial activities did not remove all contaminated soil and groundwater, appropriate precautions must be taken so that workers involved in excavating within the area are not exposed to risks related to remaining contamination on site. Installation of vapor barriers or other mitigation measures may also be needed to prevent methane, a flammable gas, or other harmful soil vapors from entering buildings, vaults, or other structures.

These guidelines explain how parties performing construction work within the Airports shown on the map on page A-3 can protect those who may be exposed to oil or contaminated soil and water, and soil vapors.

Disclaimer:

The procedures, information, guidelines, and sample hazard management plans referred to herein are not intended to be a comprehensive description of all of the rules, regulations, laws, and other requirements applicable to a construction project. They are only intended to provide general information, and should not be used in place of appropriately qualified personnel. Each tenant and construction contractor is responsible for complying with all applicable rules, regulations, laws, and other requirements, and for preparing his/her/its own hazard management plans for his/her/its own site-specific project.


KAUAI DISTRICT
LIHUE AIRPORT [LIH]
PORT ALLEN AIRPORT [PAK]
OAHU DISTRICT
KAWAIHAPAI AIRFIELD [HDH]
KALAELOA AIRPORT [JRF]
DANIEL K. INOUYE INTERNATIONAL AIRPORT [HNL]
MAUI DISTRICT
KALAUPAPA AIRPORT [LUP]
KAPALUA AIRPORT [JHM]
KAHULUI AIRPORT [OGG]
HANA AIRPORT [HNM]
MOLOKAI AIRPORT [MKK]
LANAI AIRPORT [LNY]
HAWAII DISTRICT
WAIMEA-KOHALA AIRPORT [MUE]
UPOLU AIRPORT [UPP]
HILO INTERNATIONAL AIRPORT [ITO]
ELLISON ONIZUKA KONA INTERNATIONAL AIRPORT AT KEAHOLE [KOA]
1 in = 30 miles
Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
FIGURE 1
AIRPORT LOCATION MAP
PROGRAMMATIC ENVIRONMENTAL HAZARD EVALUATION & ENVIRONMENTAL HAZARD MANAGEMENT PLAN
State of Hawaii
Department of Transportation
Airports Division
esi
ENVIRONMENTAL SCIENCE INTERNATIONAL

Determine if you should consider these guidelines for work within the Airports:

- If you are landscaping, excavating, or replacing or repairing belowground utilities, consider these guidelines when implementing proper procedures to protect construction workers, tenants, visitors, or customers from hazards related to historical releases. Check with the Hazard Evaluation and Emergency Response (HEER) Office for information and support.
- If you are replacing floor slabs, replacing or substantially modifying foundations, or constructing new buildings, contact the HEER Office to determine whether a site-specific assessment is required.

Some potential hazards that can occur during excavation and how they can be prevented are described below. However, not all hazards are presented and specific procedures for management of contaminated media are described in detail in the EHMP document.

During excavations, workers may be exposed to contaminants remaining in the soil or on groundwater. **Site-Specific Health and Safety Plans (HASP)** (which require appropriate protective clothing, equipment, and training) may be needed.

Example of excavation using a backhoe.

Backhoe Excavation

Oil might seep from the side of an excavation and cause an oil sheen. It may be necessary to manage the oily water.

Oily soil may be inadvertently spread around the work area. Also, clean and oily soil could be mixed, increasing the volume of soil that must be disposed of.

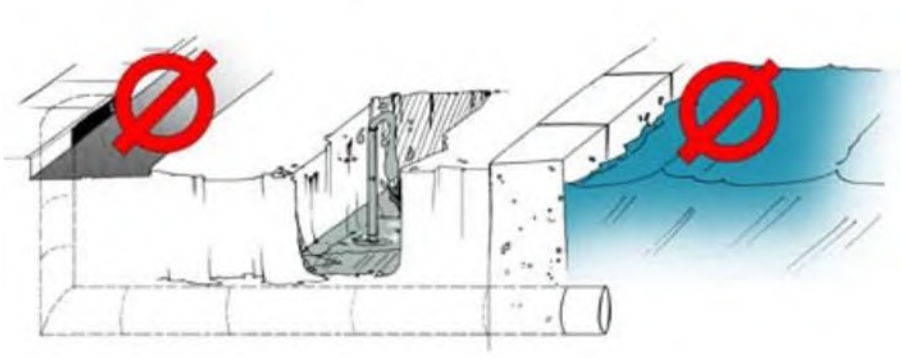
Site-Specific Environmental Hazard Management Plans (EHMP) with a Soil Management Plan approved by the HEER Office may be needed to prevent spreading oily soil (Appendix B.5). Separate clean soil from petroleum-contaminated soil. Always cover the contaminated soil stockpile with plastic sheeting. Contaminated soil shall also be placed on a plastic or impermeable sheet, and sediment control devices shall be place along the entire toe of the stockpile.

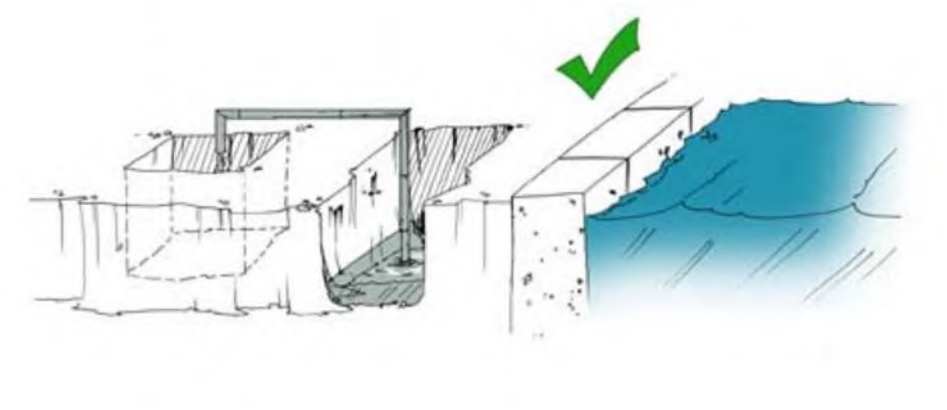
Oil might seep from the side of an excavation and cause oil sheen. It may be necessary to manage the oily water.

Oil or oily water extracted from excavations could be released and reach surface waters, including the ocean. Releasing any oil to surface waters, storm drains, or the harbor or the ocean is illegal.

Do not discharge extracted groundwater unless it meets the requirements of, or is approved by the HEER Office and other applicable government agencies. Prepare and follow a **Groundwater Management Plan** (Appendix B.6) and obtain necessary permits or approvals from the HEER Office and other applicable government agencies to appropriately manage any oil and oily water that is encountered.

In some instances, oily water must be removed from excavations.
Do not discharge to the ocean or storm drains.

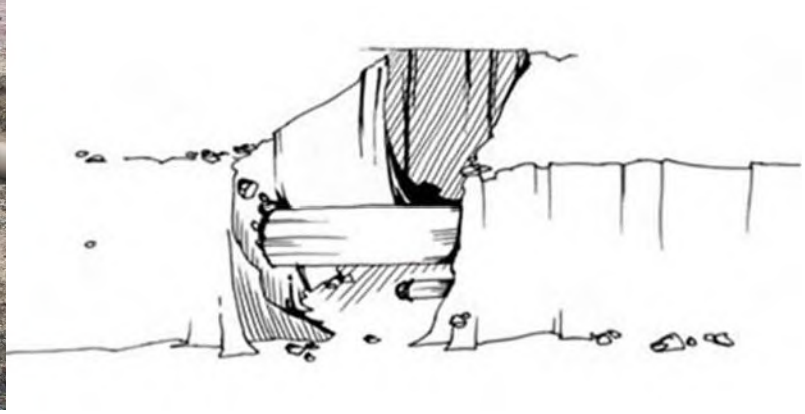




Upon acquisition of applicable government approval, contaminated water can be discharged (reinfiltrated) into a newly excavated pit/trench within the impacted area.

Upon acquisition of applicable government approval, oily water can be hauled for off-site disposal.

Abandoned petroleum product pipelines or underground storage tanks (UST) may be discovered in excavations. If these are discovered, contact the HEER Office, and UST Section if it is a UST. If you need to remove a segment of an abandoned pipeline, develop an **Inactive Pipeline Management Plan** (Appendix B.4), and tap, drain, cut, and cap the pipeline in accordance with the plan. Obtain HEER Office approval if you undertake removal.



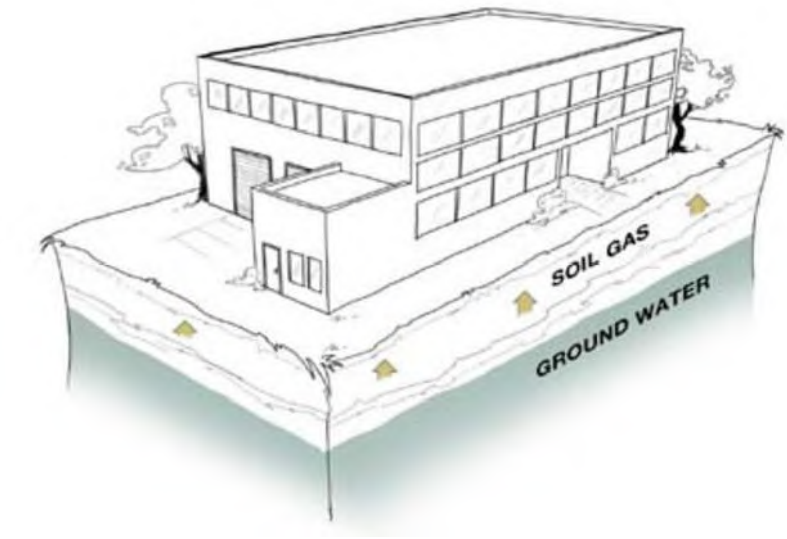
Exposed abandoned pipelines

Workers tapping and draining abandoned pipelines

Methane or other soil vapors can intrude into buildings. Vapor intrusion can occur when the floors are modified or major structural changes are made to buildings, resulting in need for vapor barriers. New buildings may also need vapor barriers to meet current HEER Office requirements.

If you are modifying floors, constructing a new building, or making major structural changes to existing buildings, you may need to conduct a soil gas investigation and if appropriate, install control measures such as floor vapor barriers. This will require site-specific oversight by HEER.

When modifying floors, be alert for evidence of existing vapor barriers or vapor mitigation systems. Do not compromise systems without prior consultation with HEER.



Soil Vapor Figure

Large-scale excavations may emit vapors and odors.

An **Air Monitoring Plan** may be required for excavations. Develop a **Vapor Management Plan** (Appendix B.8). Contact the HEER Office for site-specific oversight to determine requirements and obtain any needed approvals.

Example of large-scale excavation

Emergency responses to releases of oily soil or water.

Accidental releases of oil, oily soil, or oily water can occur during construction. Sudden releases can also occur if a water line or other utility fails. Develop a **Construction Activities Release Response Plan** (Appendix B.3) that describes how to deal with an accidental release of oil, oily soil, or oily water during construction.

Emergency responses to releases of oily soil or water.

HOW TO PROCEED

Planned Projects:

Determine whether your project falls under these guidelines. If you have any questions, contact the HEER Office (see Contacts below and on page A-17.) If your project does fall under these guidelines, complete the following steps:

1. Notify the HEER Office at least 90 days prior to breaking ground. HEER can provide information and support.
2. Determine whether you need the support of an environmental consultant.
3. You are encouraged to complete the attached "Project Implementation Form" because it provides a useful checklist of the items you should consider. Filling out the form will help HEER determine how to support you. If necessary, have HDOT Airports Engineering Environmental Section (AIR-EE) assist you in completing the form.
4. Consult with the HEER Office as needed.
5. Determine what steps you should take to protect your workers and the environment during construction, and have a qualified environmental professional complete the needed hazard management plan forms. Specific types of plans are listed on pages A-4 through A-9. Sample plans that can be considered by your environmental professional are included in Appendix B of the EHMP document.
6. Proceed with your project.
7. As appropriate, keep the HEER Office informed.

Unplanned Release Responses:

If any releases associated with your project occur, you should act in accordance with your Construction Activities Release Response Plan. If you discover a release of oil, oily soil, or oily water within the area where you are working, do the following:

1. Review release reporting requirements (described in the HEER Technical Guidance Manual [TGM]), and Section 7.0 of the EHMP document and if the release is determined to be reportable, notify the HEER Office immediately.
2. Also immediately notify the HDOT Airports Project Engineer, AIR-EE, and Airport Duty Manager (CODE 22).

HEER Office Contact:

Primary Point of Contact:
Lauren Cruz
Remedial Project Manager

Email: lauren.cruz@doh.hawaii.gov
Main phone: (808) 586-4249
After hours phone: (808) 247-2191

The HEER web-site for Spill Reporting and Emergency Response is:
http://hawaii.gov/health/environmental/hazard/spill.html

DISCLAIMER:

The procedures described herein are not intended to be a comprehensive description of all requirements (e.g., federal, state, and local) with which tenants and others must comply while undertaking a construction project.

Filling out this form prior to construction will help HEER determine what support to provide. Additionally, if contamination is identified at your project site, complete this form and keep it onsite throughout the project. Submit copies of the completed form to HEER Office, HDOT Airports Project Engineer, and AIR-EE.

PROJECT IMPLEMENTATION FORM:

Project: _____

Project Owner: _____

Location: _____

Project Description: _____

_____

Completed By (Name): _____

Title/Company: _____

Phone Number: _____ e-mail: _____

Expected Date of Construction: _____ Date Form Completed: _____

Are you considering land use other than Commercial or Industrial?

YES: _____ NO: _____.

If Yes, explain: _____

_____

Do you need the support of an environmental company? YES: _____ NO: _____

If yes, who do you intend to use? _____

_____

Has HDOT Airports identified contamination at your project site? YES: _____ NO: _____

If yes, describe contamination type and media, location, depth, other pertinent information (attach map if available):

_____

_____

Other Comments: _____

_____

Questions continued on next page

QUESTIONS	ANSWERS[1]		Useful remarks by HEER and/or Tenant/Contractor
Have you reviewed the site background information available in the public record maintained by the HEER Office:	**YES**	**NO**	**Describe reports and information sources that may be useful:**
• **Site Characterization Reports?**	☐	☐	
• **Environmental Hazard Management Plan?**	☐	☐	
• **Monitoring Reports?**	☐	☐	
• **Appropriate As-built Reports describing past cleanup and construction reports?**	☐	☐	
Have you determined if your project may result in exposure to oily soil, oily water, or potentially harmful soil gases:	**YES**	**NO**	**Further describe the hazards that may be encountered during construction:**
• **During construction?**	☐	☐	
• **At the completion of construction (of a new building for example)?**	☐	☐	
Do you understand potential hazards to:	**YES**	**NO**	**Refer to Environmental Hazard Management Plan, as necessary, for more details.**
• **Construction workers?**	☐	☐	
• **Building occupants?**	☐	☐	
• **Visitors or customers?**	☐	☐	
• **Ocean water, storm drains, etc.?**	☐	☐	
• **Do you understand the requirements and your responsibilities to prevent hazards from occurring?**	☐	☐	

QUESTIONS	ANSWERS	Useful remarks by HEER and/or Tenant/Contractor
Are you preparing appropriate plans or documents[2] as detailed in Appendix B[3]:	**YES** **NO**	**What HEER support do you need in preparing the Plans?**
• **Site-specific Health and Safety Plan?**	☐ ☐	
• **Free Product Management Plan**	☐ ☐	
• **Construction Activities Release Response Plan?**	☐ ☐	
• **Inactive Pipeline and UST Management Plan?**	☐ ☐	
• **Air Monitoring Plan?**	☐ ☐	
• **Soil Management Plan?**	☐ ☐	
• **Groundwater Management Plan?**	☐ ☐	
• **Stormwater Management Plan?**	☐ ☐	
Are you undertaking additional environmental investigations for the project planning or implementation purposes:	**YES** **NO**	**What HEER support do you need in undertaking investigations?**
• **Soil and groundwater?**	☐ ☐	
• **Soil gas?**	☐ ☐	
Based on soil gas investigation results, are you preparing designs for soil gas controls for buildings?	☐ ☐ **YES** **NO**	**What HEER support do you need in preparing designs?**
Are you complying with:	**YES** **NO**	**Remarks:**
• **HDOT Airport Division's environmental requirements?** (These may be included in lease agreements or other legal documents)	☐ ☐	
Are the construction workers that may encounter contaminated soil or groundwater 40 hour HAZWOPER trained?	**YES** **NO** ☐ ☐	

[1] Either NO or NOT NEEDED.
[2] Routine air monitoring is included in the Health and Safety Plan. This plan is intended for large-scale excavations (i.e., down to five feet or deeper and over an area exceeding one half acre, or as required by the HEER Office).
[3]See sample plans in Appendix B.

What is HEER's role?

For Planned Projects, HEER may be able to:

- Provide technical support for dealing with contaminated soil, groundwater, oil, etc.
- Provide guidance documents associated with managing contaminated media for consideration when implementing the Environmental Hazard Management Plan (EHMP).
- Monitor effectiveness of the EHMP in properly dealing with environmental issues during subsurface construction. This may require HEER to access monitoring points on your parcel.

If an accidental release of oil occurs, and oily soil and oil-contaminated water must be addressed, HEER may be able to:

- Participate as a member of the emergency response team.
- Assist in providing the appropriate method(s) for proper management of contaminated soil, groundwater, oil, etc.

What type of HEER technical and logistical support can I expect?

- HEER's Project Manager is available to provide general guidance on how to comply with the EHMP, and to assist with the logistics of addressing contaminated soil, groundwater, oil, etc.
- HEER can provide fact sheets, websites, and other resources to help with characterization, remediation, and management of contaminated media.

What are the responsibilities of the Landowner (Department of Transportation, Airports Division)?

The landowner is responsible for the following:

- Complying with applicable federal, state, and local laws and regulations.
- Determining whether the EHMP pertains to a project that a tenant, utility company, or construction contractor is conducting.
- Determining whether historical activities at the site may have resulted in release of possible non-petroleum and/or petroleum COCs.
- Verifying that the site has been adequately characterized by identification of the nature and extent of contamination.
- Sharing pertinent environmental information with tenants or contractors working on HDOT Airports property (including, but not limited to, locations of known or suspected contamination, existing land use controls, and/or site-specific EHMPs).
- Identifying any site conditions requiring appropriate protection of human health and the environment that must be added to the plan template of this EHMP.
- Complying with requirements of the EHMP.
- Developing/complying with a Management Plan consistent with these guidelines.

- Communicating requirements of the EHMP and these guidelines to whoever is undertaking construction work (e.g., excavation, building construction, etc.).
- Notifying HEER about construction project plans within the Airport, contacting HEER for support to help address requirements of the EHMP, and cooperating with HEER by providing timely information and site access.
- Ensuring appropriate hazard management plans are prepared and implemented, and providing appropriate documentation to the HEER Office.
- Keeping the HEER Office informed regarding construction work.

What is the Tenant's responsibility?

Any tenant undertaking excavation, building reconstruction, or new construction is responsible for the following:

- Coordinating with the landowner.
- Complying with applicable federal, state, and local laws and regulations.
- Notifying the HEER Office 90 days prior to breaking ground or when outage request is submitted.
- Ensuring adherence to the EHMP and consideration of these guidelines.
- Notifying the HEER Office when groundwater or soil contamination is observed or of any accidental release of oil, oily soil, or oily water (the tenant must also notify the HDOT Airports Project Engineer, Airport Manager (Code 22) and AIR-EE).

What are the responsibilities of the Utility Companies and Construction Contractor?

The Utility Companies and Construction Contractors undertaking excavation, building reconstruction, or new construction work are responsible for the following:

- Operating under the appropriate Health and Safety Plans (HASP) (as appropriate to the size and nature of each project).
- Implementing air monitoring in accordance with the EHMP.
- Managing soil and groundwater in accordance with the EHMP and consideration of these guidelines.
- Identifying tasks/actions not already covered in the plan templates included in the EHMP (the Contractor should request that the landowner make appropriate changes to the plan(s) prior to commencement of site work).
- Notifying the HEER Office when groundwater or soil contamination is observed or of any accidental release of oil, oily soil, or oily water (the Contractor must also notify the HDOT Airports Project Engineer, Airport Manager (Code 22) and AIR-EE).

Contacts:

HDOT Airports:

HDOT Airports Environmental Section
Main phone: (808) 838-8002

Primary Point of Contact:
Stacy A. Paquette
Environmental Health Specialist
Phone: (808) 838-8656
Email: stacy.a.paquette@hawaii.gov

HDOT Airports Engineering Branch
Main phone: (808) 838-8835

Airport Duty Manager (Code 22)
Phone: (808) 836-6434

HEER Office:

Primary Point of Contact:
Lauren Cruz
Remedial Project Manager
Email: lauren.cruz@doh.hawaii.gov

Main phone: (808) 586-4249
After hours phone: (808) 247-2191

The HEER web-site for Spill Reporting and Emergency Response is:

http://hawaii.gov/health/environmental/hazard/spill.html

Environmental Statutes and Guidelines:

The following environmental statutes, regulations, and guidance documents, or any recent updates to these, may apply:

- The Hawaii Environmental Response Law (*Hawaii Revised Statutes* [HRS] Chapter 128D) and the State Contingency Plan (*Hawaii Administrative Rules* [HAR] 11 451 1 through 11 451 24). These outline legal requirements for protecting human health and the environment from releases or threatened releases of hazardous substances, including oil.
- The Hazard Evaluation and Emergency Response Office Technical Guidance Manual (TGM) for Implementation of the State Contingency Plan (Interim Final, June 21, 2009). This provides many helpful guidelines and procedures to comply with the Hawaii Environmental Response Law and the State Contingency Plan.

- Hawaii Water Quality Standards (HAR Title 11, Chapter 54). This specifies standards for water quality discharge.
- Hawaii Ambient Air Quality Standards (HAR Title 11, Chapter 59). This specifies air quality standards. Specific standards may apply during soil excavation, remediation, and construction, or during other activities.
- Hawaii Occupational Safety and Health Standards (HAR Title 12, Chapter 99). This specifies health and safety requirements during remedial work and construction.
- Hawaii Solid Waste Management Control Standards (HAR Title 11, Chapter 58.1). This specifies standards for solid waste management and disposal.
- Hawaii Hazardous Waste Management Standards (HAR Title 11, Chapters 260-280). This specifies standards for hazardous waste management and disposal.
- Guidance for Soil Stockpile Characterization and Evaluation of Imported and Exported Fill Material (HEER Office, dated October 2017). Provides guidance on the import and export of fill material at contaminated sites that are overseen by the HEER Office.

In addition to the TGM, current technical guidance issued by the HEER Office indicating how it can enforce requirements of the EHMP includes the following:

- Evaluation of Environmental Hazards at Sites with Contaminated Soil and Groundwater (Fall 2017).
- Long-Term Management of Petroleum Contaminated Soil and Groundwater (June 2007).
- EAL Surfer (Fall 2017).

Contact the HEER Office if you are interested in the latest version of these documents.

Appendix B

Forms for Proper Handling of Contamination

Appendix B

Forms for Proper Handling of Contamination

B.1 Hawaii Hazardous Substance Written Follow-Up Notification Form

B.2 Health and Safety Plan

B.3 Construction Activities Release Response Plan

B.4 Inactive Pipeline and UST Management Plan

B.5 Soil Management Plan

B.6 Groundwater Management Plan

B.7 Free Product Management Plan

B.8 Vapor Management Plan

B.9 Stormwater Management Plan

The purpose of these forms is to ensure consistency between planned actions and the associated management plans of the Programmatic EHE/EHMP. Add notation to indicate all deviations from the management plans.

B.1

Hawaii Hazardous Substance Written Follow-Up Notification Form

PLEASE PROVIDE THE FOLLOWING INFORMATION

Incident Case No.: _____

Contact Information

Caller's Information:

Name: _____

Address: _____

City: _____ State: _____ Zip code: _____

Telephone Number: _____

Owner's Information:

Name: State of Hawaii, Department of Transportation, Airports Division

Address: 300 Rodgers Boulevard

City: Honolulu State: HI Zip code: 96819

Telephone Number: 808-838-8656

Operator's Information:

Name: _____

Address: _____

City: _____ State: _____ Zip code: _____

Telephone Number: _____

Name of contact person at the facility or vessel where the release has occurred: _____

_____

Telephone Number: _____

Hazardous Substance Released

Name (trade and chemical) of the hazardous substance which has been released: _____

_____

Chemical Abstracts Service (CAS) Number (if applicable):

_____

Approximate quantity of the hazardous substance released: _____

Incident Information

Location of the release: _____

_____

Brief description of the release: _____

_____

Media into which the release occurred or is likely to occur (indicate all those that apply):

☐ Air ☐ Soil ☐ Groundwater ☐ Concrete ☐ Asphalt ☐ Stream ☐ Ocean ☐ Other

Cause of the release: _____

_____

Date of the release: _____

Time of the release: _____

Duration of the release: _____

Time when person in charge of construction learned of release:

_____

_____

Source of the release: _____

_____

Response Information

Response measures taken thus far: _____

_____

Any appropriate information regarding ability of the owner or operator of the facility or vessel where the release has occurred to pay for or perform any proposed or required response actions:

Names of other federal, state, or local government agencies that have been notified of the release:

Health Information

Known or anticipated acute health risks:

Known or anticipated chronic health risks:

Advice regarding medical attention necessary for exposed individuals:

Potential impacts on public health or welfare:

Potential impacts on the environment:

"I certify under penalty of law that I have personally examined and am familiar with the information submitted and believe the submitted information is true accurate and complete."

Signature: **Date:**

Printed Name:

Title:

Company:

B.2

Health and Safety Plan

Prepared By: **Organization:** _____ **Name:** _____ **Signature:** _____ **DOT, Airports Division (Landowner)** **Signature:** _____	**Health and Safety Plan** **Environmental Hazard Management Plan [Insert Airport Name]** **Version:** **Reference:** **Date:**

Project Name: _____

Project Location: _____

Parties may use this sample as a basis for preparing their own site-specific plans.

Revise this Sample Plan by:

1. Completing Table 2 with names and telephone numbers.
2. Attaching a Figure 1 map below at conclusion of Appendix B.2 to show locations of the work site and nearest medical facilities and hospitals. Alternatively, ensuring that on-site workers know locations of closest medical facilities.
3. Reviewing the Occupational Safety and Health Administration (OSHA) regulations to ensure that hazard levels described in Table 1 are still current.
4. Including additional details for exposure risk to specific contaminants based on known contamination in the specific work area.
5. Including any additional specific instructions.

Implement this Plan by:

1. Warning on-site workers that they may encounter hazardous materials, contaminated water, or contaminated soil in belowground excavations.
2. Making the on-site workers aware of need for proper safety procedures, and familiarizing them with the contents of this plan.
3. Ensuring that workers within contaminated areas have appropriate training.
4. Making sure a copy of this completed plan is present at the construction site.

Note: If you are dealing with hazardous chemicals other than oil, oily water, and oil-impacted soil, you may need additional hazardous Chemical Response Plans and Procedures not covered in this plan.

Delete this box after completing this plan.

1. INTRODUCTION

Hazardous materials, contaminated water, or contaminated soil may be encountered during excavation projects. This Health and Safety Plan (HASP) provides information regarding potential hazards that may be encountered (Table 1 below), specifies protective measures and necessary monitoring (Table 1 below), and lists emergency contact information (Table 2 below).

2. WORKER AWARENESS

On-site workers who may be exposed to hazardous materials, contaminated water, or contaminated soil should have the appropriate and current level of Hazardous Waste Operations and Emergency Response (HAZWOPER) Standard (29 *Code of Federal Regulations* [CFR] 191 0.120) training.

A daily on-site tailgate safety meeting should occur. These meetings should include a discussion of the day's work and an analysis of hazards that may be encountered.

If site or work conditions change, this HASP may have to be amended accordingly. Apprise on-site workers of any change

3. SITE CONTROL AND GENERAL HEALTH AND SAFETY REQUIREMENTS

Minimize exposure of workers and others to potential hazards by restricting workplace access.

Do not smoke, eat, or drink during and after entering the work zone. Conduct these activities upwind and outside of the work zone after first washing hands.

Avoid skin contact with oil and other hazardous materials, contaminated water, or contaminated soil, and avoid inhalation of dust particles.

4. WORKSPACE AIR MONITORING AND ACTION THRESHOLDS

Monitor workspace air conditions during work activities to verify that safe conditions are maintained by comparing measurements to the action levels in Table 1.

If action levels are exceeded, take the actions listed in Table 1 or others, if necessary.

Use the field monitoring devices listed in Table 1, or equivalent, to monitor workspace air conditions.

Acute exposure to elevated concentrations of these constituents listed in Table 1 may cause the following symptoms, among others:

- Abnormal eye and nose irritation
- Headache
- Giddiness
- Nausea
- Abnormal fatigue.

Table 1: Action Levels

Contaminant	Medium/Hazard	Monitoring Instrument (See HEER 2009 for more information)	Monitoring Instructions	Action Levels and Applicable Actions (See OSHA for more information)
Methane	Air/Flammability	Combustible gas indicator	Take readings in excavations while work is ongoing to determine if flammable vapors are present.	<10% Lower Explosive Limit (LEL): No explosive hazard. Proceed with caution. > l0% LEL: Potential explosion hazard. Exit area immediately. Contact Health and Safety Manager (Table 2) for further direction.
TPH as gasoline TPH as diesel TPH residual Benzene Toluene Xylenes Naphthalene	Air/Inhalation	Photoionization Detector (PID) with l0.6 electron volt (eV) Lamp	Monitor breathing zone while work is ongoing. Compare action thresholds to time-averaged breathing zone measurements.	<0.5 parts per million by volume (ppmv): Proceed with caution. 0.5 to 10 ppmv: Level D, use benzene-specific detector (see below).
		Draeger Benzene-specific detector tube (if necessary; see above)	Deploy benzene-specific detector tube for benzene if PID levels exceed 0.5 ppmv.	<0.5 ppmv: Level D personal protective equipment (PPE) >0.5 ppmv: Exit area and consult Health and Safety Manager (Table 2) for further direction.
	Soil(dust)/Inhalation	None (visual) – inspect workspace air for fugitive dust caused by work activities or high winds.		Evacuate area if visible fugitive dust is observed and cannot be readily mitigated. Contact Health and Safety Manager (Table 2) for further direction.

If workers experience any of the above symptoms while conducting work involving exposure to hazardous materials, contaminated water, or contaminated soil, they should stop work, leave the work area, and consult the Health and Safety Manager (Table 2).

5. PROTECTIVE CLOTHING

A minimum of Occupational Safety and Health Administration (OSHA) Level D Personal Protective Equipment (PPE) should be used for activities involving disturbance, movement, sampling, or management of hazardous materials, contaminated water, or contaminated soil. Level D PPE consists of the following:

- Safety glasses
- Hard hat
- Surgical (rubber or nitrile) gloves
- Coveralls or full-length pants
- Boots with chemical-resistant steel toe and shank.

Additional PPE may be required in response to project-specific hazards or unusual conditions, such as possible close contact of workers with oil seeping from soils or floating on groundwater.

6. EMERGENCY CONTACTS

Table 2: Emergency Contacts

Organization	Purpose	Phone
Contractor-designated Health and Safety Manager *Name*:	Hazardous work conditions	(_____)_____- _____
For emergencies: Fire, Ambulance, or Police		**911**

7. REFERENCES

State of Hawaii Department of Health (HEER). 2009. Technical Guidance Manual for the Implementation of the Hawai'i State Contingency Plan, Interim Final. November 12.

Occupational Safety and Health Administration (OSHA), 29 *Code of Federal Regulations* (CFR) Sections 1910 and 1915.12 (b)(3).

Figure 1

Site and Hospital Map

(Insert appropriate map)

B.3

Construction Activities Release Response Plan

Prepared By: **Organization:** _____ **Name:** _____ **Signature:** _____ **DOT, Airports Division (Landowner)** **Signature:** _____	**Construction Activities Release Response Plan** **Environmental Hazard Management Plan [Insert Airport Name]** **Version:** **Reference:** **Date:**

Project Name: _____

Project Location: _____

Parties may use this sample as a basis for preparing their own site-specific plan.

Revise this Sample Plan by:

1. Completing Tables 1 through 3.
2. Checking to make sure the Section 7.1 notification requirements are current.
3. Including any additional specific instructions.

Implement this Plan by:

1. Warning on-site workers that they may encounter free product, contaminated water, or contaminated soil in belowground excavations.
2. Making the on-site workers aware of proper response procedures and familiarizing them with the contents of this plan.
3. Making sure a copy of the completed plan is present at the construction site.
4. Ensuring that on-site workers are familiar with surface drainage patterns, presence and flow directions of storm drains that could direct releases to ocean waters, locations of storm drain outlets to the ocean that may need to be protected with oil booms or other measures, potential locations for emergency storage tanks, etc. Obtain further information on these conditions from the Hazard Evaluation and Emergency Response (HEER) Office, if necessary.

Additional details for completing this form are in Sections 7 and 9 of the Environmental Hazard Management Plan (EHMP).

Note: If you are dealing with hazardous chemicals not included in the EHMP, you may need additional hazardous Chemical Response Plans and Procedures not covered in this plan.

Delete this box after completing this plan.

1. INTRODUCTION

This Construction Activities Release Response Plan (Plan) describes how to proceed in the event of an unplanned or accidental release of free product, contaminated water, or contaminated soil.

On-site workers must minimize the possibility of spills and releases of free product, contaminated water, or contaminated soil during excavation by:

- Familiarizing themselves with the site conditions.
- Implementing appropriate Health and Safety, Soil and Groundwater Management Plans.
- Being prepared at all times to encounter and free product, contaminated water, and contaminated soils.

Uncontrolled releases or spills of free product, contaminated water, or contaminated soil can occur. Such releases can pose a hazard to human health and/or the environment, and require an emergency response and/or regulatory agency notification. Human health concerns include human contact with free product, contaminated water, or contaminated soil; explosive or fire hazards; and disruptions to the normal operations in the area around the construction site, particularly disruptions to traffic flow. A major environmental impact of concern is discharge of oil or oily water to the ocean water either directly or via storm drains.

The responses described here apply to incidents that may occur during construction activities and that can be controlled by on-site workers undertaking the construction work. **However, if parties undertaking the work are not able to deal with the release, the Incident Action Plan (IAP) for the Hazard Management Areas should be immediately activated.** The IAP can be implemented by notifying the State HEER Office Emergency Response Team (see first entry in Table 3).

2. TYPICAL RELEASES

The State Project Manager (SPM), the Airport Duty Manager (Code 22), and DOT-A's Environmental Section (AIR-EE) shall be immediately notified of all spills and releases.

The releases described below can occur during repair or replacement of deep utilities (water, sewer, electric, and fuel and communications lines) and buried utilities that require excavation and removal of free product, contaminated water, or contaminated soil.

Small incidental releases that do not spread and do not interfere with construction activities should be cleaned up as part of normal activities of the construction team.

For the following types of more significant releases, respond immediately as outlined in this plan:

- Surface spillage of free product, contaminated water, or contaminated soil from excavations that actually spills, or threatens to spill, beyond the boundaries of the construction site.
- Breakages or other malfunctions of pipelines, storage facilities, groundwater treatment systems, or re-infiltration galleries/trenches used for belowground construction dewatering that continue to release oil or contaminated water.

- Contaminated soils temporarily stockpiled on the ground surface that are eroded or washed away by rain, and which continue to spread under the action of rain or other causes such as water from a water supply pipeline break.
- Spillage outside of the construction site during handling and disposal of free product, contaminated water, or contaminated soil removed from excavations.
- Release of oil from abandoned or active oil pipelines encountered and damaged during construction activities that threatens to spill out of the excavation or actually does so.

3. RELEASE RESPONSE TEAM

In the event of a release, the following team will determine the necessary response, make proper notifications, and conduct the response.

Table 1: Contractor Release Response Team

Name	Phone
Internal Contacts:	
Contractor-designated Release Response Coordinator Name:	(____)_____- _____
Contractor-designated Health and Safety Manager Name:	(____)_____- _____
On-site Construction Superintendent Name:	(____)_____- _____
Landowner Contact Name:	(____)_____- _____

4. RESPONSE PROCEDURES

4.1 General

The first priority of response action is protection of human health. The second priority is to ensure no impact on surface water or the environment. **Immediate action is required**. Do not delay prudent response action.

In the event of a release:

- Notify the response coordinator (Table 1).

- Take immediate action to contain the release (do not wait if Release Response Coordinator is unavailable).
- In dangerous circumstances, give notice to evacuate the work area and notify persons in Table 1. If no persons listed in Table 1 are available, obtain assistance as necessary by contacting appropriate persons listed in Table 3.

Other general responses include:

- Use appropriate personal protective equipment (PPE).
- Eliminate or contain the source of the release.
- Put up signs or caution tape to let other workers know of a release and need to stay away.
- Place barriers or absorbents around the release to prevent spread of contamination.
- Secure impacted soil stockpiles by covering, repairing, or constructing containment berms around the stockpile, etc.
- Remove released material and clean all surfaces.
- Dispose of the released material as appropriate (see **Soil and Groundwater Management Plan**).
- Monitor air quality at the location of the release to assess the vapor hazards as defined in the Health and Safety Plan (HASP). Take appropriate action if hazardous conditions exist as required by the HASP. Use appropriate personal protective equipment (PPE).

If the release occurs indoors, do the following:

- Close off vents and air ducts leading from the release area to other parts of the building.
- Use appropriate PPE.
- Eliminate or contain the source of the release.
- Put up signs or caution tape to let other workers know of a release and need to stay away.
- Place barriers or absorbents around the release to prevent spread of contamination.
- Secure impacted soil stockpiles by covering, repairing, or constructing containment berms around the stockpile, etc.
- Remove released material and clean all surfaces.
- Dispose of the released material as appropriate (see **Soil and Groundwater Management Plan**).

If electrical equipment is operating in the vicinity of the release and hydrocarbon vapors are detected near the explosivity limits (see **Health and Safety Plan**), turn off the equipment, preferably at the main breaker, to avoid sparking.

All vehicles within 100 feet of the release must come to an immediate halt.

If necessary, protect nearby storm drains by use of adsorbent, booms, or drain covers; and protect potentially affected ocean water and storm drain outlets to the ocean by placing floating oil booms on the water.

5. RESPONSE EQUIPMENT AND MATERIALS

To deal with either the incidental or more significant releases, equipment and materials listed in Table 2 are available either at the construction site or in storage nearby.

Table 2: Response Equipment and Materials

Equipment and Materials	Purpose	Source of Equipment and Materials
Spill kits	Cleanup of small releases to land	
Trucks and loading equipment	Excavation and transport of oil- impacted soil	
Steel roll-off bins	Temporary storage of oil-impacted soil pending waste profiling or on-site relocation	
Pumps, piping, storage tanks (storage bin must be watertight with a lid or covered)	Transfer of impacted water and oil to on-site tanks or approved disposal trenches	
Plastic sheeting	Cover and security of soil stockpiles	
Hay bales, silt fences, wattles	Erosion control and containment materials	
Oil absorbent pads	Absorption and containment of oil or fluids released to land or within excavations	
Sand bags or equivalent	Construction of a small dike along areas of the release to prevent releases from spreading or entering storm	
Floating oil booms	Absorption and containment of oils released to ocean waters	
Sediment and oil filters	Connection to the end of an excavation dewatering hose to filter out sediment and oil	

6. NOTIFICATION INFORMATION

If the release meets the Section 7.1 notification requirements:

- Notify the person in the first entry in Table 3.
- If utilities are involved, notify the affected utility in Table 3.
- Notify the landowner in Table 3.

The State DOT-A Project Manager, the Airport Duty Manager (Code 22), and DOT-A's Environmental Section (AIR-EE) shall be immediately notified of all releases.

Table 3: Other Potential Contacts

Organization	Purpose	Phone
State Agency Contacts:		
Hawaii State Emergency Response Commission/the HEER Office	Any required release reporting	(808) 586-4249 (808) 247-2191 (after hours)
Fire, Ambulance, or Police	Required in the event of fire danger or injury	**911**
Underground Utility Contacts:		
Gas Utility Name:	Notification of any gas utility damage or break	(_____)_____- _____
Electric Utility Name:	Notification of any electric utility damage or break	(_____)_____- _____
Water Utility Name:	Notification of any water utility damage or break	(_____)_____- _____
Landowner Contact:		
Landowner Name:	Notification of any significant release	(_____)_____- _____
Federal Contact:		
U.S. Coast Guard Name:	Notification of any sheen on ocean waters	(_____)_____- _____

7. RELEASE COMMUNICATIONS AND AGENCY REPORTING REQUIREMENTS

7.1 Circumstances under which agency notification is required

Pursuant to Title II, Chapter 451, *Hawaii Administrative Rules* [HAR] § 11-451-7, releases meeting ***any of the following criteria must be reported*** to the first agency contact appearing in Table 3 within 24 hours of first occurrence or observance:

- Any release causing surface water to exhibit sheen.
- Any release of petroleum or hazardous substances to navigable waters (e.g. the ocean and local canals and streams).
- Any release of oil to the environment greater than 25 gallons.
- Any release of oil less than 25 gallons that is not cleaned up within 72 hours.
- In addition, any sheens or oil or oily water releases to storm drains that have open connections to the ocean, even if contained within project boundaries and not yet impacting the ocean water.
- Sheen and oil observed in the ocean or in a storm drain should be reported to the U.S. Coast Guard and HEER Office in Table 3.
- Releases to other waters of the United States require reporting to the U.S. Coast Guard.

Report the following information to agencies when notifying of a reportable release:

- Name of the person making the notification
- Location of the release
- Time and date of discovery
- Characteristics of the oil observed (color, viscosity, etc.)
- How the release occurred
- Removal actions taken and volume removed
- Whether the release poses an immediate threat to human health or the environment
- Other agencies that have been notified of the spill
- Known injuries resulting from the spill.

Provide details of actions to be taken (consistent with Section 9 of the EHMP) to deal with Construction Activities Release Response:

B.4

Inactive Pipeline and UST Management Plan

Prepared By: **Organization:** _____ **Name:** _____ **Signature:** _____ **DOT, Airports Division (Landowner)** **Signature:** _____	**Inactive Pipeline and UST Management Plan** **Environmental Hazard Management Plan [Insert Airport Name]** **Version:** **Reference:** **Date:**

Project Name: _____

Project Location: _____

Parties may use this sample as a basis for preparing their own site-specific plan.

Revise this Sample Plan by:

1. Reviewing the requirements of this sample plan to ensure that construction workers can comply with its requirements, and modifying the plan, if necessary.

Implement this Plan by:

1. Making sure on-site workers are aware of a plan for dealing with inactive pipelines or USTs.
2. Making sure a copy of the completed plan is present at the construction site.
3. Accessing additional guidance for completing this form in Section 10 of the Environmental Hazard Management Plan (EHMP).
4. Keeping a copy for your records and sending a copy to the Hazard Evaluation and Emergency Response (HEER) Office, and the UST Section if it is a UST. The UST Section has specific requirements for closing a regulated UST and these requirements will have to be followed.

Delete this box after completing this plan.

1. INTRODUCTION

Inactive pipelines may be encountered during excavation (activities) at the Airports. This Plan provides procedures and guidelines for dealing with these inactive pipelines if they are encountered.

2. PREPARATORY WORK

Prior to starting any belowground construction work, undertake the following:

- Contact Hawaii One Call at (866) 423-7287 to notify them of proposed excavation activities. Underground facilities owners must be notified to mark any of their underground utilities near the proposed excavation.
- Conduct an underground utility survey using geophysical surveying equipment (e.g., toning/metal detection, ground penetrating radar) before excavation begins.

In addition to the above, identify the location of any inactive pipelines that may not be included in the above-referenced information. To do this, review the most recent available reports including the Environmental Hazard Management Plan (EHMP) to determine if pipelines could be present within the work area. Contact the Hazard Evaluation and Emergency Response (HEER) Office at (808) 586-4249 for assistance in obtaining the most current pipeline information.

3. NOTIFICATION REQUIREMENTS

If unanticipated inactive pipelines are discovered during construction activities, notify as follows:

- Contact the HEER Office via telephone within 24 hours after encountering the unanticipated petroleum pipelines.

If unanticipated USTs are discovered during construction activities, DOT-A's Environmental Section (AIR-EE) shall be notified.

4. PIPELINE TAPPING AND DRAINING

Inactive piping may contain residual petroleum product and may be under pressure. This could present a possible safety and spill hazard if the line is cut prior to implementation of appropriate measures. If, through the notification process described in Section 3, the nature and use of the piping cannot be determined, tapping may be required to determine if fluids are present or if the piping is pressurized, and to provide a means to drain residual product.

If you are performing the work, follow the procedures in Sections 5.0 through 8.0 below.

5. PIPELINE CUTTING AND CAPPING

Follow these general procedures for cutting and capping the pipelines:

1. Prior to cutting, tap the pipeline using non-sparking tools, and drain the contents of the pipeline to the extent practicable and possible.
2. Cover the area below and adjacent to the cutting location with plastic sheeting and absorbent material, and place a catch basin beneath the location of the cut. Use these devices to collect residual fluid that may drain from the pipeline during and after cutting.
3. Use precautionary measures to prevent explosive hazards. For example, cut the

pipeline using non-sparking tools and remove the pipeline segment.

4. Cap the cut-off ends of remaining pipeline segments to prevent any potential future leakage. Suitable capping methods include concrete plugs, blind flanges, cement plugs with rebar, or other methods that do not involve hot welding. Hot work, including welding, is not considered appropriate due to potential explosiveness of free product and associated vapors.

Consider the need for the presence of a vacuum truck on standby during pipeline cutting and capping.

6. PRODUCT SAMPLING

Sample the residual product that has been drained and collected during this process, and have it analyzed by a laboratory to enable proper profiling and off-site disposal.

7. INVESTIGATION-DERIVED WASTE DISPOSAL

Dispose of petroleum and other wastes in accordance with applicable laws and regulations.

8. HEALTH AND SAFETY

Comply with the following health and safety measures whether or not these are included in the **Health and Safety Plan (HASP)**.

- Personnel conducting post-discovery work on abandoned petroleum pipelines should have current 40/24-hour Hazardous Waste Operations and Emergency Response (HAZWOPER) training and air-purifying respirator fit test certifications. At least one on-site worker potentially exposed to chemical or physical hazards should have basic first aid and cardiopulmonary resuscitation (CPR) training.
- Select air-purifying respirators based on the type of contaminant encountered (i.e., petroleum).
- Conduct air monitoring to monitor potential hazardous vapors and worker exposure. If petroleum is encountered, air monitoring typically includes use of a photoionization detector (PID) to monitor organic vapors for potential inhalation hazards, and a methane and oxygen/combustible gas indicator to monitor for potential explosive hazards.

9. DOCUMENTATION ACTIVITIES

Provide HEER with the following information:

- A description of where the pipeline was encountered (Global Positioning System [GPS] coordinates or location relative to prominent landmarks), number and lineal footage of pipelines encountered, size of pipelines, depth of pipelines, condition of pipelines, and actions taken following pipeline discovery such as cutting or petroleum removal.
- A location map that shows where the pipeline was encountered. The map must include a north arrow and a scale.
- Photographs of the exposed portion of the pipeline in the excavation.
- Analytical laboratory reports for product recovered from the pipeline.

Provide details of pipeline removal activities (consistent with Section 10 of the EHMP):

B.5

Soil Management Plan

Prepared By: **Organization:** _____ **Name:** _____ **Signature:** _____ **DOT, Airports Division (Landowner)** **Signature:** _____	**Soil Management Plan** **Environmental Hazard Management Plan [Insert Airport Name]** **Version:** **Reference:** **Date:**

Project Name: _____

Project Location: _____

Parties may use this sample as a basis for preparing their own site-specific Soil Management Plan.

Revise this Sample Plan by:

1. Reviewing the requirements of this sample plan to ensure that the construction worker can comply with its requirements, and modifying the plan, if necessary.

Implement this Plan by:

1. Making sure on-site workers are aware of this plan and that they follow this plan.
2. Making sure a copy of the completed plan is present at the construction site.
3. Accessing additional guidance for completing this form in Section 11 of the Environmental Hazard Management Plan (EHMP).
4. Keeping a copy for your records and sending a copy to the Hazard Evaluation and Emergency Response (HEER) Office.

Delete this box after completing this plan.

1. INTRODUCTION

These procedures are intended to protect construction workers, the environment, and tenants in buildings from contact with contaminated soil where such soils are known to exist, or where people may be exposed. These procedures also comply with requirements for excavating, stockpiling, reusing, and disposing of contaminated soils.

2. SOIL EXCAVATION AND STOCKPILING

If the amount of excavated soil is less than 1 cubic yard (cy) (equivalent to about three 55-gallon drums), it can be replaced in the excavation upon completion of the work without further evaluation.

If you encounter contaminated soil, do the following:

- If the amount of excavated soil is less than one cy (equivalent to about three 55-gallon drums), it can be replaced in the excavation upon completion of the work without further evaluation.
- For excavation volumes exceeding 1 cy, segregate unimpacted soil from the contaminated soil, and stockpile these separately.
- Have a qualified environmental professional direct any necessary collection of soil samples, direct testing of the samples in the field or at an off-site laboratory, and direct segregation of contaminated soils from non-impacted soils.
- Place contaminated stockpiled soils in containers (such as 20-yard steel roll-off bins [bins shall be watertight with a lid or covered], super sacks, tri-wall boxes, or drums) or within lined containment areas (i.e., underlain by plastic sheeting). Each individual lined containment area shall not exceed 100 cy of contaminated soil. The lined containment area shall be bermed and properly protected to prevent stormwater runoff from entering the containment area and/or contacting the contaminated soil. Drain any liquid-phase oil or free product associated with the soil prior to stockpiling. Adsorb and remove and properly dispose of any oil/free product observed in the excavation to the extent practicable.
- Cover stockpiles of impacted soils and containerized soil with plastic sheeting or tarps to minimize dust, stormwater, and odor concerns.
- Stockpile soil near the project area prior to reuse.

3. REUSE OF EXCAVATED SOILS

This plan provides general guidelines. For more details, consult Section 11 of the EHMP. Unimpacted soils can be used as backfill.

Excavated contaminated soil can be used as backfill only under the following conditions:

- The contaminated soil is placed within areas more than 150 meters from surface water, at a depth more than 1 foot above the tidally influenced high water level, and up to 1 foot below surface grade.
- The soil cannot be reused beneath the footprint of a building structure.
- The reused soil must be capped with an impervious layer, such as concrete and asphalt.
- The contaminated soil does not contain any free oil, oil sheens, oil stains, or total petroleum hydrocarbon (TPH) concentrations exceeding 5,000 parts per million (ppm).

- TPH concentration is determined either by an off-site laboratory or through use of a field test such as the paper towel or glove test described in Section 11 of the EHMP.
- In the backfilling procedure, the more highly impacted soil should be placed at the bottom of the excavation above the tidally influenced high water table, and the cleanest soil at the top.
- Contaminated soil may not be reused outside of the work area.

Sampling and analysis may be necessary to determine whether soils are suitable and when they can be used as backfill. The HEER Office will determine if sampling is required. The appropriate sampling frequency for soil reuse is dependent upon the targeted contaminants of concern and the final disposition of the soil (e.g., reuse site location, type of facility, land use, etc.).

For further description of soil stockpile characterization, review the current HEER Office guidelines at www.hawaiidoh.org/tgm.aspx.

4. OFF-SITE DISPOSAL

If you intend to transport the excavated soil to an off-site disposal facility, confirm with the disposal facility the number of soil samples needed for laboratory testing, as well as the standards for disposal.

5. EQUIPMENT DECONTAMINATION

Equipment used in contaminated areas must be decontaminated before use in non-contaminated areas. All liquid and solid waste resulting from on-site decontamination must be collected and appropriately disposed of.

6. NOTIFICATIONS, APPROVALS, AND DOCUMENTATION

The HEER Office should be notified if contaminated soils are excavated, segregated, and either backfilled or disposed of off-site. In some instances, the HEER Office may require that you obtain its approval for how you intend to excavate, manage, and backfill or dispose of soil. Excavated contaminated soils can only be used as backfill if they meet the requirements described above in Section 3.

Sampling and analysis may be necessary to determine whether soils are suitable and when they can be used as backfill. The HEER Office will determine if sampling is required.

Detailed records of any re-deposited contaminated soils, including a figure showing the location(s) where soil is reused, and any other clean-up activities are to be maintained and submitted to the HEER Office.

Provide details of how contaminated soil will be handled (consistent with Section 11 of the EHMP):

B.6

Groundwater Management Plan

Prepared By: **Organization:** _____ **Name:** _____ **Signature:** _____ **DOT, Airports Division (Landowner)** **Signature:** _____	**Groundwater Management Plan** **Environmental Hazard Management Plan [Insert Airport Name]** **Version:** **Reference:** **Date:**

Project Name: _____

Project Location: _____

Revise this Sample Plan by:

1. If you intend to place excavated groundwater back into an excavation or trench, contacting the Hazard Evaluation and Emergency Response (HEER) Office at (808) 586-4249 to obtain an appropriate disposal location.
2. If you intend to discharge extracted water to local surfaces (including storm drains), contacting the HEER Office to obtain all applicable permits and approvals ahead of time because authorizations could take weeks or months.
3. If you intend to discharge extracted water to a local sanitary sewer, contacting the respective County for approval to dispose of that water into a sanitary sewer. Water discharged to a sanitary sewer or storm drain may be required to meet Water Quality Standards. These standards are specified in the Environmental Hazard Management Plan (EHMP), and are available from the HEER Office.
4. Reviewing the requirements of this sample plan to ensure that construction workers can handle groundwater possibly impacted by petroleum hydrocarbons (or other contaminants) which may be encountered during soil excavation.
5. Consulting the HEER office for answers to any questions.
6. Preparing your own site-specific plan.
7. Accessing additional guidance for completing this form in Section 12 of the EHMP.
8. Keeping a copy of the completed form for your records and sending a copy to the HEER Office.

Implement this Plan by:

1. Ensuring that on-site workers are aware of this plan and that they follow it.

Note: If you are dealing with hazardous chemicals other than oil, oily water, and oil-impacted soil, you may need additional hazardous Chemical Response Plans and Procedures not covered in this plan.

Delete this box after completing this plan.

1. INTRODUCTION

These procedures are for handling groundwater encountered during excavation activities. Soil and groundwater may be impacted by petroleum hydrocarbons, dissolved metals, or other contaminants, and may be encountered during soil excavation. Purposes of these procedures are to: (1) protect construction workers from contact with petroleum hydrocarbons or other contaminants and inhalation of associated vapors, and (2) protect the quality of the surface waters.

2. GROUNDWATER MANAGEMENT PROCEDURES

The following requirements apply to contaminated water encountered in an excavation:

- If petroleum free product is present in the extracted groundwater, separate it from groundwater and dispose of it at an appropriate off-site facility prior to transfer of the groundwater into a nearby trench or excavation.
- At least once daily, remove oil observed floating on the groundwater during excavation activities using a vacuum truck, absorbent pads, or other methods approved by the HEER Office. Excavations should not be backfilled until the floating oil is removed to the extent practicable, which is when further use of vacuum trucks, absorbent pads, or other approved methods does not result in further floating oil removal.
- If you intend to dispose of the groundwater off-site, collect and analyze water samples as required by the disposal facility and furnish copies of the groundwater test results to DOT-A's Environmental Section (AIR-EE). The groundwater shall not be disposed off-site without the approval of AIR-EE.
- **CAUTION:** Avoid releases of affected groundwater to surface water bodies or areas beyond the work area.
- If you are disposing of treated or untreated groundwater in accordance with a method approved by the HEER Office or by the City or County, provide the necessary notifications and record the information.
- Groundwater can be re-infiltrated into the ground. However, re-infiltration must be within 200 feet of the original location and/or source of the groundwater.

Provide information consistent with Section 12 of the EHMP on handling contaminated groundwater:

B.7

Free Product Management Plan

Prepared By: **Organization:** _____ **Name:** _____ **Signature:** _____ **DOT, Airports Division (Landowner)** **Signature:** _____	**Free Product Management Plan** **Environmental Hazard Management Plan [Insert Airport Name]** **Version:** **Reference:** **Date:**

Project Name: _____

Project Location: _____

Parties may use this sample as a basis for preparing their own site-specific Free Product Management Plan.

Revise this Sample Plan by:

1. Reviewing the requirements of this sample plan to ensure that the construction worker can comply with its requirements, and modifying the plan, if necessary.

Implement this Plan by:

1. Making sure on-site workers are aware of this plan and that they follow this plan.
2. Making sure a copy of the completed plan is present at the construction site.
3. Accessing additional guidance for completing this form in Section13 of the Environmental Hazard Management Plan (EHMP).
4. Keeping a copy for your records and sending a copy to the Hazard Evaluation and Emergency Response (HEER) Office.

Delete this box after completing this plan.

1. INTRODUCTION

These procedures are for handling free product encountered during excavation activities. Soil and groundwater may be impacted by petroleum hydrocarbons and may be encountered during soil excavation. Normally, free product is found floating on groundwater; however, it can also occur in oil-saturated soils. Purposes of these procedures are to: (1) protect construction workers from contact with petroleum hydrocarbons and inhalation of associated vapors, (2) protect the quality of surface water, and (3) provide guidance in the handling and disposal of free product.

2. FREE PRODUCT MANAGEMENT PROCEDURES

The following requirements apply to free product in soil or floating on groundwater encountered in an excavation:

- If free product is present in the extracted groundwater, it must be separated from groundwater and disposed of at an appropriate off-site facility prior to transfer of the groundwater into a nearby trench or excavation.
- At least once daily, remove oil observed floating on the groundwater during excavation activities using a vacuum truck, absorbent pads, or other methods approved by the HEER Office. Excavations should not be backfilled until the floating oil is removed to the extent practicable, which is when further use of vacuum trucks or absorbent pads, or other approved methods do not result in further floating oil removal.
- If free product is encountered in excavated soil, it must be separated from clean or moderately contaminated fill, profiled, and disposed of at an approved recycling/disposal site.
- Soil contaminated with free product cannot be used for backfill.
- **CAUTION**: Avoid releases of free product to the ocean or areas beyond the work area.

Provide details of how free product will be managed (consistent with Section 13 of the EHMP) when encountered floating on groundwater or in soils:

B.8

Vapor Management Plan

Prepared By: **Organization:** _____ **Name:** _____ **Signature:** _____ **DOT, Airports Division (Landowner)** **Signature:** _____	**Vapor Management Plan** **Environmental Hazard Management Plan [Insert Airport Name]** **Version:** **Reference:** **Date:**

Project Name: _____

Project Location: _____

Parties may use this sample as a basis for preparing their own site-specific Vapor Management Plan.

Revise this Sample Plan by:

1. Reviewing the requirements of this sample plan to ensure that the construction worker can comply with its requirements, and modifying the plan, if necessary.

Implement this Plan by:

1. Making sure on-site workers are aware of this plan and the site-specific Health and Safety Plan (HASP), and that they follow both documents.
2. Making sure a copy of the completed plan is present at the construction site.
3. Accessing additional guidance for completing this form in Section 14 of the Environmental Hazard Management Plan (EHMP).
4. Keeping a copy of the completed form for your records and sending a copy to the Hazard Evaluation and Emergency Response (HEER) Office.

Delete this box after completing this plan.

1. INTRODUCTION

These procedures are for handling petroleum vapors encountered during excavation activities. Soil and groundwater may be impacted by petroleum hydrocarbons and may be encountered during soil excavation. This type of contamination may produce vapor that must be properly handled during and after construction activities. Purposes of these procedures are to: (1) protect construction workers from contact with petroleum hydrocarbons and inhalation of associated vapors, (2) protect the quality of the surface water, and (3) provide guidance in the handling of vapors.

In addition to petroleum vapors, methane, hydrogen sulfide, and carbon monoxide are also associated with free product.

2. VAPOR MANAGEMENT PROCEDURES

If volatile organic compound (VOC) vapors or toxic gases are encountered during excavation, appropriate response actions will be taken, and the actions will conform to Hawaii Department of Health (HDOH) and U.S. Environmental Protection Agency (EPA) regulatory requirements and guidelines. The response actions include ensuring that on-site workers have the appropriate level of personal protective equipment (PPE) and the general public is not affected adversely. Anticipated tasks associated with managing VOC vapor exposure are summarized as follows:

- If VOC vapors are encountered during excavation activities, field oversight must be provided to identify VOC vapors and provide health and safety guidance related to the potential exposure of workers to COCs.
- Air monitoring will be conducted during excavation associated with future construction activities. Air monitoring will also be conducted when workers are required to enter excavations where petroleum-contaminated soil (PCS) or free product is present. The monitoring will include both workspace (on-site) and perimeter measurements of VOC vapors.
- If warranted by the air monitoring results, on-site workers will be notified of the need to upgrade PPE to include respiratory protection.
- Air monitoring required for confined space entry (if required) will be conducted by the contractor responsible for construction. Confined space entry and associated air monitoring requirements will be described in the site-specific HASP for construction.

3. EXPOSURE MANAGEMENT PROCEDURES

- Level D PPE will be appropriate for on-site workers under normal working conditions.
- Both workspace (on-site) and perimeter (off-site) air monitoring will occur.
- Air monitoring will be conducted using a conventional photoionization detector (PID) to measure total VOC vapor concentrations. If high levels of benzene are anticipated an an Ultra-Rae PID, which is benzene-specific, will also be used.
- If VOC vapor concentrations in the workspace atmosphere exceed an 8-hour time-weighted average (TWA) of 20 parts per million (ppm) or a 15-minute short-term exposure limit (STEL) of 100 ppm, PPE requirements will be upgraded to Level C, and it may be necessary to implement a modified work schedule. These levels are based on a maximum benzene concentration in gasoline of 5 percent by volume.
- On-site workers will be notified immediately if benzene is detected in the workspace atmosphere at a concentration exceeding 0.5 ppm, and wearing respirators with organic

vapor cartridges will be recommended (i.e., recommended upgrade of respiratory protection to Level C).

- If benzene concentrations in the workspace atmosphere exceed the 8-hour TWA PEL (1 ppm) or the Occupational Safety and Health Administration (OSHA) 15-minute STEL (5 ppm), PPE requirements will be upgraded to Level C and it may be necessary to implement a modified work schedule.
- If benzene concentrations in the workspace atmosphere exceed the TWA PEL (1 ppm), short-term exposure monitoring will be conducted. To determine short-term exposure, a minimum of five samples will be collected within a 15-minute period.
- If daily average benzene concentrations in the workspace atmosphere exceed the OSHA STEL (5 ppm) or benzene concentrations exceed the OSHA acceptable ceiling concentration (25 ppm), PPE will be upgraded to Level C, with either full-face respirators or powered air-purifying respirators and protective goggles.
- If benzene concentrations in the workspace atmosphere exceed the OSHA 8-hour TWA for a 40-hour work week (10 ppm) or benzene concentrations exceed the OSHA acceptable maximum peak for an 8-hour shift (50 ppm), work will be stopped immediately, the on-site representative will be notified, and workers will be requested to leave the work zone.
- If benzene concentrations along the site perimeter (off site) exceed the 15-minute STEL (5 ppm) or the TWA PEL (1 ppm), the exclusion zone will be extended beyond the site boundary.
- If benzene concentrations along the site perimeter (off site) exceed the OSHA acceptable ceiling concentration (25 ppm), work will be stopped immediately and the project on-site representative will be notified.
- If toxic gases are a potential concern, air monitoring of the lower explosive limit (LEL) will be conducted using a multi-gas meter to determine if a hazardous atmosphere exists.

Provide details of how vapor will be managed (consistent with Section 14 of the EHMP) when encountered in groundwater or in soils:

B.9

Stormwater Management Plan

Prepared By: **Organization:** _____ **Name:** _____ **Signature:** _____ **DOT, Airports Division (Landowner)** **Signature:** _____	**Stormwater Management Plan** **Environmental Hazard Management Plan [Insert Airport Name]** **Version:** **Reference:** **Date:**

Project Name: _____

Project Location: _____

Parties may use this sample as a basis for preparing their own site-specific Stormwater Management Plan.

Revise this Sample Plan by:

1. Reviewing the requirements of this sample plan to ensure that the construction worker can comply with its requirements, and modifying the plan, if necessary.

Implement this Plan by:

1. Making sure on-site workers are aware of this plan and that they follow it.
2. Making sure a copy of the completed plan is present at the construction site.
3. Accessing additional guidance for completing this form in Section 15 of the Environmental Hazard Management Plan (EHMP).
4. Keeping a copy of the completed form for your records and sending a copy to the Hazard Evaluation and Emergency Response (HEER) Office.

Delete this box after completing this plan.

1. INTRODUCTION

If contaminated soil or groundwater is encountered during excavation, appropriate response actions will be taken, and the actions will conform to Hawaii Department of Health (HDOH) and U.S. Environmental Protection Agency (EPA) regulatory requirements and guidelines. The response actions include ensuring that these media are not exposed to stormwater. Anticipated tasks associated with managing stormwater are summarized below.

2. STORMWATER MANAGEMENT PROCEDURES

- Field oversight will be provided during excavation activities conducted as part of construction. Purposes of the oversight are to identify contaminated media that could be exposed to stormwater runoff and to provide guidance related to controlling stormwater on the property. In addition, the weather will be monitored throughout each work day for signs of approaching storms and/or heavy rains.
- Inspections of engineering stormwater controls will occur each day to minimize potential for exposure of contaminated media to stormwater runoff and minimize potential for contaminated stormwater to leave the construction site.
- All construction will be performed in accordance with the conditions of an HDOH-approved National Pollutant Discharge Elimination System (NPDES) permit for stormwater discharge associated with construction activity. Conditions of the permit include preparation of a Construction Site Best Management Practices Plan.

3. OPEN EXCAVATIONS

In the absence of engineering and administrative controls, contaminated soil and/or groundwater exposed in open excavations could come into contact with stormwater, thus potentially contaminating the stormwater with contaminants of concern (COC). To prevent this, the following activities will occur:

- Where possible, excavations will be backfilled as soon as practicable to limit the time they are open and potentially exposed to stormwater runoff and direct precipitation.
- Where possible, the edges of excavations will be bermed, thus minimizing potential for entry of stormwater runoff.
- Open excavations will be inspected each day to minimize potential for direct precipitation to cause the excavation to overflow.

4. SOIL STOCKPILES

In the absence of engineering and administrative controls, excavated contaminated soil stored in stockpiles could come into contact with stormwater, thus potentially contaminating the stormwater with COCs. To prevent this, the following activities are required:

- Soil stockpiles will be placed on plastic sheeting, and the sheeting will be bermed at the edges, thus minimizing potential for contact with stormwater runoff.

- At the end of each day, or in the event of a storm, the soil stockpiles will be covered with plastic sheeting, thus minimizing potential for contact with direct precipitation.
- The soil stockpiles will be inspected each day to ensure that the plastic sheeting is intact.

5. DEWATERING INFILTRATION PITS

In the absence of engineering and administrative controls, water in infiltration pits used for on-site dewatering could come into contact with stormwater. To prevent this, the following activities are required:

- Where possible, infiltration pits will be backfilled as soon as practicable to limit the time they are open and potentially exposed to stormwater runoff and direct precipitation.
- Where possible, the edges of infiltration pits will be bermed, thus minimizing potential for entry of stormwater runoff.
- Infiltration pits will be inspected each day to minimize potential for direct precipitation to cause the pit to overflow.

6. EROSION AND SEDIMENT CONTROL

Erosion and sediment control measures will be in place and functional before construction activities commence. These measures will be maintained throughout the construction period. If stormwater discharge from the site is anticipated, the following preventive measures must be implemented:

- Stormwater flowing toward active construction areas will be diverted using appropriate control measures, as practicable.
- Erosion control measures will be designed to handle the size of the disturbed or drainage area in order to detain runoff and trap sediment.
- Height of the site boundary can be increased using sandbags.
- Additional silt fencing will be added at affected site boundaries, if warranted.
- Berms surrounding soil stockpiles will be increased as necessary.
- Moveable booms will be available to contain spills.
- Absorbent pads will be employed if free product is observed in stormwater runoff.

Provide details of how stormwater will be managed (consistent with Section 15 of the EHMP) when a significant storm event occurs during construction: