SITE-SPECIFIC ASSESSMENT WORK PLAN

UPRR MOSIER DEPOT PROPERTY
DEQ TASK ORDER 73-18-5
ECSI NO. 6231

Prepared for
OREGON DEPARTMENT OF ENVIRONMENTAL QUALITY
October 24, 2018
Project No. 0785.02.02

MAUL FOSTER ALONGI

Prepared by
Maul Foster & Alongi, Inc.
2001 NW 19th Avenue, Suite 200, Portland, OR 97209

SITE-SPECIFIC ASSESSMENT WORK PLAN

UPRR MOSIER DEPOT PROPERTY

DEQ TASK ORDER 73-18-5

The material and data in this report were prepared under the supervision and direction of the undersigned.

MAUL FOSTER & ALONGI, INC.

10/24/18

Andrew Vidourek, RG
Project Geologist

Caitlin Bryan
Senior Environmental Scientist

CONTENTS

TABLES AND ILLUSTRATIONS

FOLLOWING REPORT:

TABLES

FIGURES

ACRONYMS AND ABBREVIATIONS

bgs	below ground surface
COPC	chemicals of potential concern
CSM	Conceptual Site Model
DEQ	Department of Environmental Quality (Oregon)
DU	decision unit
ESA	environmental site assessment
HASP	health and safety plan
HCID	hydrocarbon identification
HOT	heating oil tank
IDW	investigation derived waste
ISM	incremental sampling methodology
ITRC	Interstate Technology & Regulatory Council
LUST	leaking underground storage tank
MFA	Maul Foster & Alongi, Inc.
NWTPH	Northwest Total Petroleum Hydrocarbons
PCPPAH	polycyclic aromatic hydrocarbon
PCB	polychlorinated biphenyl
PCP	pentachlorophenol
PID	photoionization detector
Property	Union Pacific Railroad Mosier Depot Property, Mosier, Oregon
QA/QC	quality assurance and quality control
QAPP	Quality Assurance Project Plan
RBC	risk-based concentrations
REC	recognized environmental condition
RCRA	Resource Conservation and Recovery Act
RSD	relative standard deviation
TCLP	toxicity characteristics leaching procedure
UCL	upper confidence limit
UPRR	Union Pacific Railroad
USEPA	U.S. Environmental Protection Agency
UST	underground storage tank
VOC	volatile organic compound

1 INTRODUCTION

Maul Foster & Alongi, Inc. (MFA) prepared this Work Plan to present the scope of work for a site-specific assessment at the Union Pacific Railroad (UPRR) Mosier Depot Property in Mosier, Oregon (the Property; Figure 1). The Property was selected for a site-specific assessment by the Oregon Department of Environmental Quality (DEQ). This Work Plan was prepared for the DEQ under Task 3 of Task Order 73-18-5 and will be implemented under Task 4.

1.1 Purpose

The purpose of this project is to assess the recognized environmental condition (RECs) and data gaps identified in a Phase I Environmental Site Assessment (ESA) conducted for the Property.[1] A discussion of these RECs and data gaps are provided in Section 2.3. Chemical data from the assessment activities will be screened against DEQ risk-based concentrations[2] (RBCs) to assess whether the Property poses an unacceptable risk to human health for current and likely future receptors.

1.2 Scope of Work

To accomplish the above objectives, the scope of work that is described in this Work Plan consist of the following general tasks:

- Assess surface and subsurface soil conditions;
- Assess shallow groundwater conditions (where encountered as part of the subsurface soil investigation);
- Development of the Conceptual Site Model (CSM) including a beneficial water use and land use survey;
- Manage investigation derived waste (IDW); and
- Prepare a report discussing the above activities, the analytical results, and the potential risks posed by chemical contamination at the Property.

These activities are discussed in further detail in this Work Plan. A Health and Safety Plan (HASP) is presented in Appendix A.

[1] MFA. 2018. Phase I ESA, UPRR Mosier Depot Property, Mosier, Oregon. Prepared by Maul Foster & Alongi, Inc. for Oregon Department of Environmental Quality on behalf of the City of Mosier. April 9.

[2] DEQ. 2018. Table of generic risk-based concentrations. Oregon Department of Environmental Quality. May.

2 BACKGROUND

2.1 Property Location, History, and Description

The Property is located in section 1, township 2 north, range 11 east, of the Willamette Meridian in Mosier, Oregon (Figure 1). The Property is comprised of approximately 4.04-acres and is not associated with a tax lot.

The Property currently contains parking areas in addition to a public park (Figure 2). A tire/soil berm is also present on the Property with an active solid waste permit. The Property has been used as railroad sidings and was the location of a former passenger and freight depot. Residences, three to six houses and outbuildings formerly populated the eastern portion of the Property. The railroad dates back to the early 1880s. The depot appears to have been removed as early as 1947. The railroad sidings are still visible in aerial images from 1973. Current and past uses in the surrounding area are commercial followed by residential followed by rural residential, agricultural, and/or undeveloped land.

The City of Mosier will receive the Property as part of the "Mosier Community Settlement Agreement," agreed to by the parties of 'Team Mosier' and UPRR. As part of due diligence efforts by the City of Mosier, a Phase I ESA was completed by MFA in April 2018.[3] A discussion of the RECs and data gaps identified in this Phase I ESA are provided in Section 2.3.

2.2 Geology and Hydrogeology

In general, the Property and surrounding area are typical of areas along the mid-Columbia Gorge; steep basalt terraces and alluvial/erosional fans interspersed with lower gradient vistas. Rock outcroppings, potholed basalt, and depositional areas also help create a varied landscape. The Columbia River, located approximately 500-900 feet north from the Property, is the dominant hydrologic feature of the area. East Lake and Mosier Creek are also in close proximity. Mosier Creek is adjacent to the Mosier Depot Parcel. According to the Environmental Data Resources, Inc., the US Department of Agriculture Soil Conservations Service identifies the Property with a soil type of Wamic, a well-drained loam. Well logs attached to a prior Phase I ESA[4] for the Property depict a variety of conditions from solid basalt to more shallow boulders and clay dominated layers. If water was observed at shallow depths it does not appear to be prevalent as most of the significant water bearing zones were 70 feet below ground surface (bgs) or more. As the Property is near the Columbia River the depth to groundwater may be shallower than noted in well logs (from other portions of Mosier).

[3] MFA. 2018. Phase I ESA, UPRR Mosier Depot Property, Mosier, Oregon. Prepared by Maul Foster & Alongi, Inc. for Oregon Department of Environmental Quality on behalf of the City of Mosier. April 9.

[4] White Shield. 2011. Phase I ESA, Union Pacific Railroad Property and Mosier Triangle Parcel, Mosier, Oregon. Prepared by White Shield, Inc. for PARC Resources. December 15.

2.3 Previous Environmental Activities

Environmental activities performed at the Property have included two Phase I ESAs, discussed below.

December 2011 Phase I ESA. [4] This Phase I ESA covered much of the Property (in addition to the near-by "Triangle Parcel"). This ESA did not use the ASTM International definitions for RECs and historical RECs. The following items were identified:

- This assessment identified the former presence of railroad tracks, the depot, and fueling at the depot as historical RECs.
- The tire/soil berm was identified as a REC.
- An "adjacent REC" was identified for the Mosier Gas Site and the Rapid Welding and Fabrication Site.

April 2018 Phase I ESA.[5] The following RECs were identified:

- Railroad ties are typically treated with creosote, pentachlorophenol (PCP), chromated copper arsenate, and associated constituents. These constituents have the potential to leach to soil and water.
- Some railways are (or were) sprayed with oil solutions containing petroleum products, polyaromatic hydrocarbons (PAH), and polychlorinated biphenyls (PCB). Herbicides are also typically used along rail lines.
- Cinder, slag, and other readily available aggregate or industrial by-products are sometimes used to build the base for rail lines. These materials can be a source of metals and other constituents of concern.
- Open top hopper cars allow for deposition of material along the tracks. Coal and other commodities have the potential to have spilled adjacent to or on the Property, resulting in the potential for impacts to soil.
- The former depot and siding area may have been used for the storage of petroleum products (i.e. diesel, bunker C). MFA notes that diesel trains became prevalent in the 1930s and it appears as though the Mosier Depot was removed in the late 1940s. Train cars appear on the Property in aerial images as late as 1973.

A significant data gap was identified regarding the potential use of underground storage tanks (USTs) for oil heating of the former residences on the Property.

Additionally, the Property contains fill material from an unidentified source. Fill was most apparent at the upper parking area on the eastern portion of the Property.

---

[5] MFA. 2018. Phase I ESA, UPRR Mosier Depot Property, Mosier, Oregon. Prepared by Maul Foster & Alongi, Inc. for Oregon Department of Environmental Quality on behalf of the City of Mosier. April 9.

3 SITE SPECIFIC ASSESSMENT ACTIVITIES

The planned activities include collecting soil samples from the surface and subsurface (via push probe drilling) to identify potential contaminant impacts. The subsurface layer of particular interest is the material under the current road grade/gravel that would have been the surface material when the depot was active. A geophysical survey will be conducted to look for subsurface anomalies that may be indicative of USTs on the portions of the Property that formerly contained structures (i.e. residences, depot). This section presents the scope of work that will be performed to accomplish these activities.

3.1 Preparatory Activities

Site Health and Safety Plan. A site-specific HASP has been prepared for the proposed activities (Appendix A). The HASP was prepared in general accordance with the Occupational Safety and Health Act and the Oregon Administrative Rules. A copy of the HASP will be available for use by MFA staff during the field activities. A HASP for contractor activities, will be developed by the selected contractors prior to performing on-site activities.

Underground Utility Location. A public utility notification request will be submitted through the Oregon Utility Notification Center, which will in turn notify the various utilities in the area to mark any underground installations. In addition, the geophysical surveyor will conduct a private utility locate prior to subsurface investigation activities.

Property Access and Work Notification. It is our understanding the DEQ will obtain a site access agreement with the property owner (UPRR) MFA will notify the DEQ and City of Mosier of the proposed work schedule. When not in use, machinery, equipment and materials will be kept at least 50 feet from the centerline of the nearest active UPRR track. No crossings of tracks will occur except at existing open public crossings.

3.2 Assessment Activities

Both surface and subsurface soils will be assessed for COPCs including PCP, chlorinated copper arsenate, PAHs, PCBs, herbicides, metals, petroleum hydrocarbons, and volatile organic compounds (VOCs).

A representative of MFA will oversee the utility locates, drilling, and geophysical survey activities, to document the activities, and to collect soil samples for chemical analysis.

MFA anticipates a two-day field effort for the assessment activities, to include the geophysical survey, utility locates, and surface soils assessment conducted on day one, with drilling activities and subsurface soils and groundwater assessment conducted on day two.

3.2.1 Surface Soils Assessment

The Property will be divided into the following three decision units (DUs) to assess surface soils (Figure 2).

- DU01 includes the western portion of the Property which is currently a graveled parking area. This is the portion of the Property where historical railyard operations likely occurred.

- DU02 includes the central portion of the Property where a park is currently located and will likely remain after the property transfer.

- DU03 includes the eastern portion of the Property which includes the former residential area and a portion of the Property that is approximately 10 to 20 feet in elevation above the gravel parking area. Fill material was observed in this DU during the site visit for the 2018 Phase I ESA.

An ISM approach will be used to collect representative samples from each DU. ISM characterizes the average concentration of constituents in a predefined area termed the DU. Samples (called increments) are collected from multiple locations in a DU under evaluation. The increments are combined into one ISM sample and analyzed to obtain a representative average contaminant concentration for the decision unit.

Increments will be collected using stainless-steel sampling equipment (e.g., hand tools such as shovels, spoons, etc.) from a target depth ranging from approximately the ground surface to 10 centimeters (cm).

The approximate location of the increments within each DU are shown on Figure 2. The actual sample locations could vary based on site conditions. Note, an ISM triplicate sample will be collected from one of the DUs for quality assurance. The triplicate will be collected by stepping approximately 5 feet north and east of the increment locations shown on Figure 2.

3.2.2 Subsurface Soils Assessment

Up to seven borings (B01 through B07) will be advanced using push probe technology by a licensed driller in the State of Oregon. Note that borings B05 through B07 are optional based on the results of the geophysical survey. See Figure 2 for the boring locations. The following is the rationale for each boring location:

- B01 and B02 – Located downgradient from the fruit growers building and within the historical operations area.

- B03 – Located near the former depot.

- B04 – Located in the park.

- B05 – Located near the former depot.
- B06 – Located in fill material and near a depression in the soil.
- B07 – Located downgradient from potential HOTs associated with the former residences.

The borings will be advanced up to ten feet bgs or until refusal (likely presence of cobbles). Continuous soil cores will be retrieved for observation and screening.

Soil cores will be field screened for the presence of volatiles by measuring soil vapor headspace with a photoionization detector (PID). Visual or olfactory observations will also be noted. Soil samples will be collected from each boring if field readings and observations indicate the presence of contamination. If there are no field indications of contamination, a soil sample will be collected from each boring from a target depth ranging from approximately 2- to 3-feet bgs. Additional soil samples from each boring, if collected, will be placed on hold with the laboratory pending the results of the initial (shallower) soil sample results.

3.2.3 Groundwater Assessment

Due to the likely presence of cobbles, groundwater may not be encountered during subsurface soil sampling. However, a sample will be collected from each boring where shallow groundwater is present and in sufficient quantity for sample collection. Groundwater samples will be collected using temporary well materials provided by the driller and a peristaltic pump.

Location Control. The boring locations will be estimated with a high-accuracy global positioning system device.

3.2.4 Geophysical Survey and Underground Utilities Survey

MFA will subcontract with a geophysical firm to conduct ta geophysical survey near the former depot and residential areas to identify potential anomalies such as USTs and piping that could be present. The geophysical survey will be conducted concurrent with the surface soils assessment activities (i.e., the same day).

The geophysical firm will use a Geometrics G858 cesium vapor magnetometer (or similar) to assess the area. If field readings indicate the presence of a possible UST, then a follow up scan with ground-penetrating radar will be used to create a contour map of the anomalies in the subsurface. The geophysical survey will be conducted the day prior to drilling activities to determine if the additional and optional borings B05 through B07 will be included with the drilling scope of work.

At the conclusion of the geophysical survey near the former depot and residential areas, the geophysical firm will locate potential underground utilities at each of the proposed boring locations prior to the drilling activities (i.e., B01 through B04, and additional borings B05 through B07 if warranted).

3.3 Waste Handling and Disposal

Wastes generated during drilling activities will consist of soil IDW and decontamination/purge water. The driller will be responsible for providing Department of Transportation approved 55-gallon drums for IDW storage on site. Pending chemical analysis and waste profiling, IDW will be disposed of at a permitted facility. Disposable sampling equipment and personal protective equipment will be disposed of as solid waste.

3.4 Land and Water Use Surveys

To evaluate the potential risks posed by the Property to human health, the current and reasonably likely future land and water uses within the locality of the facility need to be identified (the "locality of the facility" is defined below). As such, land and water use surveys will be performed.

Locality of the Facility. The locality of the facility is any point where a human or an ecological receptor contacts or is reasonably likely to come into contact with chemical constituents from the facility (i.e., the site). The locality of the facility considers the likelihood of the chemical constituents migrating over time. As such, it will probably include the Property and properties downgradient of the Property. Chemical data from the Property explorations will be used to approximate the locality of the facility.

Land Use. A land use survey will be performed for the locality of the facility in general accordance with the DEQ guidance for consideration of land use.[6] For land use within the locality of the facility, we will identify the current land uses and current zoning information.

Water Use. A water use survey will be performed for the locality of the facility in general accordance with the DEQ guidance for beneficial water use.[7] As no surface water features are present within the vicinity of the Property, except for Mosier Creek to the east, the survey will primarily focus on potential groundwater use. The water use survey will include searching for water well records or water rights on the Oregon Water Resources Department database; identifying groundwater regulated areas by contacting Oregon Health Division, U.S. Geological Survey, or local water master/water utility; and by conducting a water well survey (door-to-door and/or postcard) within the locality of the facility.

4 SAMPLING AND ANALYSIS PLAN

This section presents the field and sampling procedures and the analytical testing program MFA will use to complete the field and analytical work for this project. These activities will be performed in

[6] DEQ. 1998. Consideration of Land Use in Environmental Remedial Actions. Oregon Department of Environmental Quality. July 1. Updated October 2017.

[7] DEQ. 1998. Guidance for Conducting Beneficial Water Use Determinations at Environmental Cleanup Sites. Oregon Department of Environmental Quality. July 1. Updated November 2017.

general accordance with the DEQ's Brownfields Program Quality Assurance Project Plan (QAPP).[8] Quality assurance and quality control (QA/QC) procedures are discussed in Section 4.3.

4.1 Sampling Methods and Sample Handling

Soil samples will be collected during the field activities in accordance with the following procedures. Trip blanks, equipment blanks, and field duplicates will also be collected for analysis (see Section 4.3).

4.1.1 Surface Soils Sampling

Surface soils will be assessed using ISM sampling procedures. The following protocol was prepared based on the Interstate Technology & Regulatory Council (ITRC) guidance.[9] The ISM samples will be collected from each DU using the following protocols:

- Each ISM sample will consist of 30 soil increments collected from each DU. Field personnel will look for indications of chemical impacts (e.g., staining representative of petroleum hydrocarbons) in soils remaining in place.

- The target mass of each increment will be approximately 33 grams to achieve the overall target sample mass of 1 kilogram. Sample increments will be retrieved using a 1/2-inch-diameter, stainless-steel sampling tube or other stainless-steel sampling equipment (e.g., shovels, spoons, etc.) as needed. For the purposes of this plan, the sampling equipment will be referred to as the sampling tube.

- The sampling tube will be manually advanced to a depth of approximately 10 cm. Power tools equipped with stainless steel implements may be utilized to loosen the soil, as necessary (e.g., in the compacted gravel parking lot area). If increment recovery is poor at certain locations, the increment will be discarded and resampled near the original location to the extent practicable. If the intended recovery amount cannot be obtained, it will be noted in the field observations.

- Soil from each increment will be placed in a laboratory-provided, 1-liter glass jar, using a clean gloved-hand or decontaminated stainless-steel tool (e.g. spoon, trowel, knife, etc.).

- Sieving will be conducted by the laboratory as part of the sample-drying process, but care will be taken in the field to avoid particles larger than 2 millimeters where practicable.

- One ISM triplicate sample will be collected from one of the DUs. This sample will be evaluated for quality control, as outlined below.

[8] DEQ. 2016. Quality Assurance Project Plan, Brownfields Programs. Oregon Department of Environmental Quality. November 30.

[9] ITRC. 2012. Technical and regulatory guidance: incremental sampling methodology. The Interstate Technology & Regulatory Council Incremental Sampling Methodology Team. February.

4.1.2 Subsurface Soils Sampling

Soil samples will be collected from borings using a 2-inch macro-core sampler. If there are no field indications of contamination, a soil sample will be collected from each boring from a target depth ranging from approximately 2- to 3-feet bgs. Additional soil samples from each boring, if collected, will be placed on hold with the laboratory pending the results of the initial (shallower) soil sample results.

4.1.3 Groundwater Sampling

Groundwater samples will be collected using temporary well materials provided by the driller to include 3/4-inch polyvinyl-chloride casing with a 5-foot-machine-slotted screen. A peristaltic pump will be used the withdraw groundwater from approximately 1-foot below the water interface. Dedicated disposable sampling equipment will be used at each boring location (i.e., polyethylene tubing).

4.1.4 Field Screening

Soil cores during sample collection will be field screened for VOCs using a PID and for heavier hydrocarbons (such as oil) using a sheen test (a visual inspection for assessing if an oily sheen is present). The field screening procedures are as follows.

- **PID Measurements.** Soil samples will be placed in a Ziploc® bag (filled less than half full) and allowed to warm to ambient temperatures. PID measurements will be made within 30 minutes of collection by inserting the 10.2 eV PID probe into the bag. Measurements will be recorded in the field notes. The PID will be calibrated prior to field use using a manufacturer-supplied standard gas.
- **Sheen Tests.** A small portion of the soil sample will be placed in a Ziploc® bag or wide-mouth, glass jar partially filled with water. The presence of petroleum hydrocarbons is indicated if a sheen is produced on the water surface. Observations will be recorded in the field notes.

4.1.5 Sample Handling and Storage

Clean sample containers will be provided by the analytical laboratory ready for sample collection including preservative, if required. A label will be affixed to each sample container and marked with identifying information. Sample containers will be stored in a cooled ice chest until transported to refrigerated storage or to the analytical laboratory. Chain of custody will be maintained and documented at all times. After receipt of samples at the laboratory, ISM samples will be dried and processed following the standard operating procedure (SOP) provided by the DEQ contract laboratory (Appendix B).

4.1.6 Decontamination

Decontamination of non-disposable field equipment (e.g., sampling tube, spoons, etc.) will be performed to prevent cross-contamination between sampling locations. Decontamination will consist of washing in a detergent solution, and double rinsing with distilled water.

4.2 Analyses for Chemicals of Concern

Soil samples will be submitted to an analytical laboratory for chemical analysis. COPCs at this Property include herbicides, metals, petroleum hydrocarbons, PAHs, and PCBs, and VOCs. Samples will be analyzed on a standard turnaround time (usually 10 business days). See Table 4-1 for a summary of the analytical methods and sample container requirements. See Table 4-2 for a summary of the analytical methods, anticipated sample number, and detection limit goals.

4.2.1 Surface Soil Samples

The ISM samples will be submitted to the laboratory with an established standard operating procedure. The processing will include air drying at room temperature, disaggregation, sieving (using a No. 10 sieve with a 2-millimeter sieve size), and compositing into a two-dimensional slab cake. The final mass following air drying, and sieving will be recorded by the laboratory. No sample grinding or milling is planned.

Surface soil ISM samples will be analyzed for Resource Recovery and Conservation Act (RCRA) 8 metals to include arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver by U.S. Environmental Protection Agency (USEPA) Method 6020, chlorinated herbicides by USEPA Method 8151A, PAHs by USEPA Method 8270D SIM, and for diesel and oil by NWTPH-Dx (silica gel). Pending initial analytical results, follow-up analysis for PCBs by USEPA Method 8082A may be requested.

If field observations suggest the presence of volatile compounds discrete samples will be collected for NWTPH-Gx and VOCs.

The requested method reporting limits and method detection limits will be consistent with the DEQ RBCs (where practicable). Sample results will be screened to DEQ RBCs for soil direct contact, ingestion, and inhalation in an occupational worker exposure scenario.

4.2.2 Subsurface Soil Samples

Subsurface soil samples will be analyzed for RCRA 8 metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver) by USEPA Method 6020, chlorinated herbicides by USEPA Method 8151A, PAHs by USEPA Method 8270D SIM, diesel and oil by NWTPH-Dx (silica gel), and VOCs by USEPA Method 8260B. Pending initial analytical results, follow-up analysis for PCBs by USEPA Method 8082A may be requested.

The requested method reporting limits and method detection limits will be consistent with the DEQ RBCs (where practicable). Sample results will be screened to DEQ RBCs for soil direct contact, ingestion, and inhalation in an occupational worker exposure scenario.

4.2.3 Groundwater Samples

Groundwater samples will be analyzed for gasoline by NWTPH-Gx, VOCs by USEPA Method 8260B, diesel and oil by NWTPH-Dx (silica gel), and RCRA 8 metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver) by USEPA 6020. Pending initial analytical results, follow-up analysis for PAHs by USEPA Method 8270D SIM and PCBs by USEPA Method 8082A may be requested.

The requested method reporting limits and method detection limits will be consistent with the DEQ RBCs (where practicable). Sample results will be screened against applicable DEQ RBCs for groundwater in excavation, construction and excavation worker scenario.

4.3 Quality Assurance and Quality Control

Soil samples will be collected and analyzed in general accordance with DEQ's Brownfields Program QAPP, dated November 2016. The QAPP presents quality objectives and procedures for sampling and analysis for Brownfield site investigations.

Laboratory QA/QC will include a method blank and a batch laboratory control sample and laboratory control sample duplicate. One laboratory process replicate will be collected from the two-dimensional slab cakes from the ISM samples prepared by the laboratory (along with the percent moisture analysis).

The ISM triplicate sample will be evaluated for quality control. The relative standard deviation (RSD) of the analytical results for triplicate samples will be calculated to measure data precision. The RSD is calculated using the following equation:

$$RSD\% = \frac{100\% \text{ X Standard Deviation}}{\text{Average}}$$

Lower RSD values are desirable, as the lower the RSD, the greater the confidence that the average approximates a normal distribution and that the average contaminant concentrations are adequately representative of the sampling areas.[10] It is assumed that data normally distributed have an RSD of 30 percent or less.[11] Acceptability of the calculated RSD percent will be evaluated in the context of such considerations as analytical results at or near the method reporting limit, which may exhibit a greater level of variability and, therefore, an elevated RSD.[12]

[10] HDOH. 2009. Interim final technical guidance manual for the implementation of the Hawai'i state contingency plan. Office of Hazard Evaluation and Emergency Response. Hawai'i Department of Health. November 12.

[11] ADEC. 2009. Draft guidance on multi increment soil sampling. Division of Spill Prevention and Response, Contaminated Sites Program. Alaska Department of Environmental Conservation. March.

[12] Ibid.

The 90 percent Upper Confidence Limit (UCL) for the ISM results will be calculated and compared to DEQ's RBCs. ISM results represent the mean soil concentrations; therefore, it is more appropriate to use the 90 percent UCL value to evaluate risk.

4.3.1 QA/QC Objectives

The general QA objectives for this project are to develop and implement procedures for obtaining and evaluating data of a specified quality that can be used to assess the nature and extent of contamination from current or past uses of hazardous substances and the risk posed to human health by contamination at the Property. To collect such information, analytical data must have an appropriate degree of accuracy and reproducibility; samples collected must be representative of actual field conditions; and samples must be collected and analyzed using unbroken chain of custody procedures.

4.3.2 Field QA/QC

The field QC samples will be used to assess the accuracy and precision of the field sample collection and handling activities. Blanks may be collected and held for analysis until it is determined contamination may be a concern. During fieldwork, disposable or decontaminated sampling equipment will be used to minimize or eliminate cross-contamination. Samples will be labeled with sample-specific identifying information. Chain of custody will be maintained at all times. Table 4-3 summarizes the following quality assurance samples to be collected.

Field Duplicate Samples. One duplicate sample will be collected per 20 samples per sample matrix. For nonaqueous matrices, sample heterogeneity may affect the measured precision for the duplicate sample.

Equipment Rinsate Blanks. Analyses of equipment rinsate blanks will be used to assess the efficiency of field equipment decontamination procedures in preventing cross-contamination of samples. Equipment rinsate blanks will be collected by pouring laboratory supplied and certified distilled or deionized water over or through decontaminated (clean) non-disposable sampling equipment used in the collection of investigative samples and subsequently collected in prepared sampling containers. Additives or preservatives will be included in the equipment rinsate blanks as required for analysis. The rinsate blank will be shipped with the associated field samples. For each sample matrix, a rinsate blank will be collected and analyzed at a minimum frequency of one equipment rinsate blank per 20 samples. Rinsate blanks will not be required if disposable or dedicated equipment is used for sampling. The rinsate blanks will be analyzed for the same parameters as the investigative samples.

Trip Blanks. Trip blanks are collected for VOC sample analysis to assess the contamination of samples during transport to the project Property, sample collection, and transport to the laboratory. Trip blanks are prepared in the laboratory, using analyte-free water. Trip blanks should be inspected for air bubbles by both the laboratory (before shipping) and the field team. Any vials containing visible air bubbles should be discarded. One trip blank is included and will be analyzed for each sample cooler shipped to that laboratory that contains samples collected for analysis of VOCs.

4.3.3 Laboratory QA/QC

The laboratory will also perform quality control analyses (e.g., matrix spikes and method blanks) per the requirements of the analytical method. Detection limits will be consistent with industry standards and, when practicable, below or comparable to promulgated regulatory standards, unless raised due to high analyte concentrations in the sample or matrix effects.

5 REPORTING

After receipt of analytical results, a Site-Specific Assessment Report will be prepared that presents general information about the Property and nearby vicinity, the Property activities, the chemical results, a CSM, and a preliminary risk screening of the chemical results to assess whether the Property poses an unacceptable risk to human health. The risk screening will be performed by comparing detected concentrations of chemical constituents to RBCs for exposure pathways identified by the CSM.

The report will be prepared in general accordance with the following outline:

1. Executive Summary
2. Introduction
    a. Purpose
    b. Scope of Work
3. Background
    a. Site Location and Description
    b. Geology and Hydrogeology
    c. Previous Environmental Activities
4. Current and Reasonably Likely Future Uses of Land and Beneficial Uses of Water
5. Site Activities
    a. Utility Locates
    b. Surface and Subsurface Explorations
    c. Geophysical Survey
6. Chemical Analyses and Results
    a. Analyses Performed
    b. Chemical Results
7. Conceptual Site Model

a. Sources

b. Exposure Pathways

c. Receptors

d. Contaminants of Concern and Risk-Based Concentrations

8. Conclusions

9. Appendices

a. Photographs

b. Field Methods, Sampling Procedures, and Boring Logs

c. IDW Disposal Documentation

d. Analytical Laboratory Testing Program and Documentation, including a QA review

The report will initially be prepared as a draft for review by the DEQ. Upon receipt of DEQ's comments, the report will be issued in final form.

LIMITATIONS

The services undertaken in completing this report were performed consistent with generally accepted professional consulting principles and practices. No other warranty, express or implied, is made. These services were performed consistent with our agreement with our client. This report is solely for the use and information of our client unless otherwise noted. Any reliance on this report by a third party is at such party's sole risk.

Opinions and recommendations contained in this report apply to conditions existing when services were performed and are intended only for the client, purposes, locations, time frames, and project parameters indicated. We are not responsible for the impacts of any changes in environmental standards, practices, or regulations subsequent to performance of services. We do not warrant the accuracy of information supplied by others, or the use of segregated portions of this report.

TABLES

Table 4-1
Analytical Methods and Sample Container Requirements
DEQ - UPRR Mosier Depot Property
Site-Specific Assessment Work Plan
Mosier, Oregon

Sample Matrix	Method	Parameter or Parameter Group	Container	Preservation	Storage Temperature	Hold Time
Surface Soil (ISM)	USEPA 6020	RCRA 8 Metals	1 liter glass	none	4°C	180 days
	USEPA 8151A	Chlorinated Herbicides				14 days
	USEPA 8270D-SIM	PAHs				14 days
	NWTPH-Dx (silica gel)	Diesel and Oil				14 days
	USEPA 8082A[a]	PCBs				1 year
Discrete Soil [b]	NWTPH-Gx	Gasoline	USEPA 5035 kit (1 MeOH VOA, 2 oz jar)	none	4°C	14 days
	USEPA 8260B	VOCs		none	4°C	14 days
Subsurface Soil	USEPA 6020	RCRA 8 Metals	4 oz jar	none	4°C	180 days
	USEPA 8151A	Chlorinated Herbicides	4 oz jar	none	4°C	14 days
	USEPA 8270D-SIM	PAHs	4 oz jar	none	4°C	14 days
	NWTPH-Dx (silica gel)	Diesel and Oil	4 oz jar	none	4°C	14 days
	USEPA 8082A[a]	PCBs	4 oz jar	none	4°C	1 year
	USEPA 8260B	VOCs	USEPA 5035 kit (1 MeOH VOA, 2 oz jar)	none	4°C	14 days
Groundwater	NWTPH-Gx	Gasoline	2 x 40 mL VOAs	HCl	4°C	14 days
	NWTPH-Dx (silica gel)	Diesel and Oil	2 x 100 mL amber glass	HCl	4°C	14 days
	USEPA 8260B	VOCs	3 x 40 HCl VOAs	HCl	4°C	14 days
	USEPA 8270D-SIM[c]	PAHs	2 x 40 mL VOAs	none	4°C	7 days
	USEPA 8082A[a]	PCBs	2 x 100 mL amber glass	none	4°C	1 year
	USEPA 6020[c]	RCRA 8 Metals	250 mL poly	HNO_3	4°C	180 days

Table 4-1
Analytical Methods and Sample Container Requirements
DEQ - UPRR Mosier Depot Property
Site-Specific Assessment Work Plan
Mosier, Oregon

NOTES:

USEPA method number listed. For standard method, *SM* precedes method number citation and *ASTM* precedes associated method number citation.

°C = degrees Celsius.

ASTM = American Society for Testing and Materials.

HCl = hydrochloric acid.

HNO_3 = nitric acid.

ISM = incremental sampling methodology.

MeOH = methanol.

mL = milliliter.

NWTPH = Northwest Total Petroleum Hydrocarbons.

oz = ounces.

PAH = polycyclic aromatic hydrocarbon.

PCB = polychlorinated hydrocarbon.

poly = polyetheylene.

RCRA = Resource Conservation and Recovery Act.

USEPA = U.S. Environmental Protection Agency.

VOA = volatile organic analysis.

VOC = volatile organic compound.

[a]Follow-up analysis for PCBs by USEPA 8082A may be requested pending initial analytical results.

[b]Discrete samples will be collected for NWTPH-Gx and USEPA 8260B if field observation suggest presence of VOCs.

[c]Follow-up analysis for PAHs by USEPA 8270D-SIM may be requested pending initial analytical results.

[d]Additional analysis for RCRA 8 metals by USEPA 6020 may be requested if a confirmed or suspected release from an underground storage or heating oil tank is encountered.

Table 4-2
Analytical Methods, Anticipated Sample Number, and Detection Limits
DEQ - UPRR Mosier Depot Property
Site-Specific Assessment Work Plan
Mosier, Oregon

		Soil				Groundwater			
Method	Parameter	Number of Samples	MDL	MRL	Units	Number of Samples	MDL	MRL	Units
RCRA 8 Metals									
USEPA 6020	Arsenic	18	0.65	2	mg/kg	*	6.5	10	ug/L
USEPA 6020	Barium	18	0.07	0.5	mg/kg	*	1.7	5	ug/L
USEPA 6020	Cadmium	18	0.14	1	mg/kg	*	0.7	2	ug/L
USEPA 6020	Chromium	18	0.53	2	mg/kg	*	1.4	10	ug/L
USEPA 6020	Lead	18	0.19	0.5	mg/kg	*	1.9	5	ug/L
USEPA 6020	Mercury	18	0.0028	0.02	mg/kg	*	0.049	0.2	ug/L
USEPA 6020	Selenium	18	0.28	1	mg/kg	*	7.4	10	ug/L
USEPA 6020	Silver	18	0.59	5	mg/kg	*	2.8	5	ug/L
Chlorinated Herbicides									
USEPA 8151A	2,4-D	18	0.00702	0.07	mg/kg	--	--	--	--
USEPA 8151A	Dalapon	18	0.0113	0.07	mg/kg	--	--	--	--
USEPA 8151A	2,4-DB	18	0.0297	0.07	mg/kg	--	--	--	--
USEPA 8151A	Dicamba	18	0.0157	0.07	mg/kg	--	--	--	--
USEPA 8151A	Dichloroprop	18	0.0245	0.07	mg/kg	--	--	--	--
USEPA 8151A	Dinoseb	18	0.00697	0.07	mg/kg	--	--	--	--
USEPA 8151A	MCPA	18	0.443	6.5	mg/kg	--	--	--	--
USEPA 8151A	MCPP	18	0.367	6.5	mg/kg	--	--	--	--
USEPA 8151A	2,4,5-T	18	0.00852	0.07	mg/kg	--	--	--	--
USEPA 8151A	2,4,5-TP (Silvex)	18	0.0107	0.07	mg/kg	--	--	--	--

Table 4-2
Analytical Methods, Anticipated Sample Number, and Detection Limits
DEQ - UPRR Mosier Depot Property
Site-Specific Assessment Work Plan
Mosier, Oregon

		Soil				Groundwater			
Method	Parameter	Number of Samples	MDL	MRL	Units	Number of Samples	MDL	MRL	Units
Polycyclic Aromatic Hydrocarbons									
USEPA 8270D-SIM	1-Methylnaphthalene	18	0.002	0.02	mg/kg	*	0.00821	0.25	ug/L
USEPA 8270D-SIM	2-Methylnaphthalene	18	0.002	0.02	mg/kg	*	0.00902	0.25	ug/L
USEPA 8270D-SIM	2-Chloronaphthalene	18	0.002	0.02	mg/kg	*	0.00647	0.25	ug/L
USEPA 8270D-SIM	Anthracene	18	0.0006	0.006	mg/kg	*	0.014	0.05	ug/L
USEPA 8270D-SIM	Acenaphthene	18	0.0006	0.006	mg/kg	*	0.01	0.05	ug/L
USEPA 8270D-SIM	Acenaphthylene	18	0.0006	0.006	mg/kg	*	0.012	0.05	ug/L
USEPA 8270D-SIM	Benz(a)anthracene	18	0.0006	0.006	mg/kg	*	0.0041	0.05	ug/L
USEPA 8270D-SIM	Benzo(a)pyrene	18	0.0006	0.006	mg/kg	*	0.0116	0.05	ug/L
USEPA 8270D-SIM	Benzo(b)fluoranthene	18	0.0006	0.006	mg/kg	*	0.00212	0.05	ug/L
USEPA 8270D-SIM	Benzo(g,h,i)perylene	18	0.0006	0.006	mg/kg	*	0.00227	0.05	ug/L
USEPA 8270D-SIM	Benzo(k)fluoranthene	18	0.0006	0.006	mg/kg	*	0.0136	0.05	ug/L
USEPA 8270D-SIM	Chrysene	18	0.0006	0.006	mg/kg	*	0.0108	0.05	ug/L
USEPA 8270D-SIM	Dibenz(a,h)anthrancene	18	0.0006	0.006	mg/kg	*	0.00396	0.05	ug/L
USEPA 8270D-SIM	Fluoranthene	18	0.0006	0.006	mg/kg	*	0.0157	0.05	ug/L
USEPA 8270D-SIM	Fluorene	18	0.0006	0.006	mg/kg	*	0.0085	0.05	ug/L
USEPA 8270D-SIM	Indeno(1,2,3-cd)pyrene	18	0.0006	0.006	mg/kg	*	0.0148	0.05	ug/L
USEPA 8270D-SIM	Naphthalene	18	0.002	0.02	mg/kg	*	0.0198	0.25	ug/L
USEPA 8270D-SIM	Phenanthrene	18	0.0006	0.006	mg/kg	*	0.0082	0.05	ug/L
USEPA 8270D-SIM	Pyrene	18	0.0006	0.006	mg/kg	*	0.0117	0.05	ug/L
Total Petroleum Hydrocarbons									
NWTPH-Dx (silica gel)	Diesel	18	1.33	4	mg/kg	*	33	100	ug/L
NWTPH-Dx (silica gel)	Oil	18	3.33	10	mg/kg	*	82.5	250	ug/L
NWTPH-Gx	Gasoline	**	0.0339	0.1	mg/kg	*	31.6	100	ug/L

Table 4-2
Analytical Methods, Anticipated Sample Number, and Detection Limits
DEQ - UPRR Mosier Depot Property
Site-Specific Assessment Work Plan
Mosier, Oregon

		Soil				Groundwater			
Method	Parameter	Number of Samples	MDL	MRL	Units	Number of Samples	MDL	MRL	Units
PCBs									
USEPA 8082A	Aroclor 1016	***	0.0035	0.017	mg/kg	*	0.01981	0.5	ug/L
USEPA 8082A	Aroclor 1221	***	0.00537	0.017	mg/kg	*	0.02443	0.5	ug/L
USEPA 8082A	Aroclor 1232	***	0.00417	0.017	mg/kg	*	0.02133	0.5	ug/L
USEPA 8082A	Aroclor 1242	***	0.00318	0.017	mg/kg	*	0.02424	0.5	ug/L
USEPA 8082A	Aroclor 1248	***	0.00315	0.017	mg/kg	*	0.01354	0.5	ug/L
USEPA 8082A	Aroclor 1254	***	0.00472	0.017	mg/kg	*	0.01813	0.5	ug/L
USEPA 8082A	Aroclor 1260	***	0.00494	0.017	mg/kg	*	0.0146	0.5	ug/L
Volatile Organic Compounds									
USEPA 8260C	1,1,1,2-Tetrachloroethane	**	0.000264	0.001	mg/kg	*	0.385	1	ug/L
USEPA 8260C	1,1,1-Trichloroethane	**	0.000286	0.001	mg/kg	*	0.319	1	ug/L
USEPA 8260C	1,1,2,2-Tetrachloroethane	**	0.000365	0.001	mg/kg	*	0.13	1	ug/L
USEPA 8260C	1,1,2-Trichloroethane	**	0.000277	0.001	mg/kg	*	0.383	1	ug/L
USEPA 8260C	1,1,2-Trichlorotrifluoroethane	**	0.000365	0.001	mg/kg	*	0.303	1	ug/L
USEPA 8260C	1,1-Dichloroethane	**	0.000199	0.001	mg/kg	*	0.259	1	ug/L
USEPA 8260C	1,1-Dichloroethene	**	0.000303	0.001	mg/kg	*	0.398	1	ug/L
USEPA 8260C	1,1-Dichloropropene	**	0.000317	0.001	mg/kg	*	0.352	1	ug/L
USEPA 8260C	1,2,3-Trichlorobenzene	**	0.000306	0.001	mg/kg	*	0.23	1	ug/L
USEPA 8260C	1,2,3-Trichloropropane	**	0.000741	0.0025	mg/kg	*	0.807	2.5	ug/L
USEPA 8260C	1,2,3-Trimethylbenzene	**	0.000287	0.001	mg/kg	*	0.321	1	ug/L
USEPA 8260C	1,2,4-Trichlorobenzene	**	0.000388	0.001	mg/kg	*	0.355	1	ug/L
USEPA 8260C	1,2,4-Trimethylbenzene	**	0.000211	0.001	mg/kg	*	0.373	1	ug/L
USEPA 8260C	1,2-Dibromo-3-chloropropane	**	0.00105	0.005	mg/kg	*	1.33	5	ug/L
USEPA 8260C	1,2-Dibromoethane	**	0.000343	0.001	mg/kg	*	0.381	1	ug/L

Table 4-2
Analytical Methods, Anticipated Sample Number, and Detection Limits
DEQ - UPRR Mosier Depot Property
Site-Specific Assessment Work Plan
Mosier, Oregon

		Soil				Groundwater			
Method	Parameter	Number of Samples	MDL	MRL	Units	Number of Samples	MDL	MRL	Units
USEPA 8260C	1,2-Dichlorobenzene	**	0.000305	0.001	mg/kg	*	0.349	1	ug/L
USEPA 8260C	1,2-Dichloroethane	**	0.000265	0.001	mg/kg	*	0.361	1	ug/L
USEPA 8260C	1,2-Dichloropropane	**	0.000358	0.001	mg/kg	*	0.306	1	ug/L
USEPA 8260C	1,3,5-Trimethylbenzene	**	0.000266	0.001	mg/kg	*	0.387	1	ug/L
USEPA 8260C	1,3-Dichlorobenzene	**	0.000239	0.001	mg/kg	*	0.22	1	ug/L
USEPA 8260C	1,3-Dichloropropane	**	0.000207	0.001	mg/kg	*	0.366	1	ug/L
USEPA 8260C	1,4-Dichlorobenzene	**	0.000226	0.001	mg/kg	*	0.274	1	ug/L
USEPA 8260C	2,2-Dichloropropane	**	0.000279	0.001	mg/kg	*	0.321	1	ug/L
USEPA 8260C	2-Butanone	**	0.00468	0.01	mg/kg	*	3.93	10	ug/L
USEPA 8260C	2-Chlorotoluene	**	0.000301	0.001	mg/kg	*	0.375	1	ug/L
USEPA 8260C	4-Chlorotoluene	**	0.00024	0.001	mg/kg	*	0.351	1	ug/L
USEPA 8260C	4-Methyl-2-pentanone	**	0.00188	0.01	mg/kg	*	2.14	10	ug/L
USEPA 8260C	Acetone	**	0.0137	0.025	mg/kg	*	10	50	ug/L
USEPA 8260C	Acrylonitrile	**	0.0019	0.0125	mg/kg	*	1.87	10	ug/L
USEPA 8260C	Benzene	**	0.00027	0.001	mg/kg	*	0.331	1	ug/L
USEPA 8260C	Bromobenzene	**	0.000284	0.001	mg/kg	*	0.352	1	ug/L
USEPA 8260C	Bromodichloromethane	**	0.000254	0.001	mg/kg	*	0.38	1	ug/L
USEPA 8260C	Bromoform	**	0.000424	0.001	mg/kg	*	0.469	1	ug/L
USEPA 8260C	Bromomethane	**	0.00134	0.005	mg/kg	*	0.866	5	ug/L
USEPA 8260C	Carbon disulfide	**	0.00406	0.0125	mg/kg	*	0.275	1	ug/L
USEPA 8260C	Carbon tetrachloride	**	0.000328	0.001	mg/kg	*	0.379	1	ug/L
USEPA 8260C	Chlorobenzene	**	0.000212	0.001	mg/kg	*	0.348	1	ug/L
USEPA 8260C	Chlorodibromomethane	**	0.000373	0.001	mg/kg	*	0.327	1	ug/L
USEPA 8260C	Chloroethane	**	0.000946	0.005	mg/kg	*	0.453	5	ug/L

Table 4-2
Analytical Methods, Anticipated Sample Number, and Detection Limits
DEQ - UPRR Mosier Depot Property
Site-Specific Assessment Work Plan
Mosier, Oregon

		Soil				Groundwater			
Method	Parameter	Number of Samples	MDL	MRL	Units	Number of Samples	MDL	MRL	Units
USEPA 8260C	Chloroform	**	0.000229	0.005	mg/kg	*	0.324	5	ug/L
USEPA 8260C	Chloromethane	**	0.000375	0.0025	mg/kg	*	0.276	2.5	ug/L
USEPA 8260C	cis-1,2-Dichloroethene	**	0.000235	0.001	mg/kg	*	0.26	1	ug/L
USEPA 8260C	cis-1,3-Dichloropropene	**	0.000262	0.001	mg/kg	*	0.418	1	ug/L
USEPA 8260C	Dibromomethane	**	0.000382	0.001	mg/kg	*	0.346	1	ug/L
USEPA 8260C	Dichlorodifluoromethane	**	0.000713	0.005	mg/kg	*	0.551	5	ug/L
USEPA 8260C	Di-isopropyl ether	**	0.000248	0.001	mg/kg	*	0.32	1	ug/L
USEPA 8260C	Ethylbenzene	**	0.000297	0.001	mg/kg	*	0.384	1	ug/L
USEPA 8260C	Hexachloro-1,3-butadiene	**	0.000342	0.001	mg/kg	*	0.256	1	ug/L
USEPA 8260C	Isopropylbenzene	**	0.000243	0.001	mg/kg	*	0.326	1	ug/L
USEPA 8260C	Methyl tert-butyl ether	**	0.000212	0.001	mg/kg	*	0.367	1	ug/L
USEPA 8260C	Methylene chloride	**	0.001	0.005	mg/kg	*	1	5	ug/L
USEPA 8260C	Naphthalene	**	0.001	0.005	mg/kg	*	1	5	ug/L
USEPA 8260C	n-Butylbenzene	**	0.000258	0.001	mg/kg	*	0.361	1	ug/L
USEPA 8260C	n-Propylbenzene	**	0.000206	0.001	mg/kg	*	0.349	1	ug/L
USEPA 8260C	p-Isopropyltoluene	**	0.000204	0.001	mg/kg	*	0.35	1	ug/L
USEPA 8260C	sec-Butylbenzene	**	0.000201	0.001	mg/kg	*	0.365	1	ug/L
USEPA 8260C	Styrene	**	0.000234	0.001	mg/kg	*	0.307	1	ug/L
USEPA 8260C	tert-Butylbenzene	**	0.000206	0.001	mg/kg	*	0.399	1	ug/L
USEPA 8260C	Tetrachloroethene	**	0.000276	0.001	mg/kg	*	0.372	1	ug/L
USEPA 8260C	Toluene	**	0.000434	0.005	mg/kg	*	0.412	1	ug/L
USEPA 8260C	trans-1,2-Dichloroethene	**	0.000264	0.001	mg/kg	*	0.396	1	ug/L
USEPA 8260C	trans-1,3-Dichloropropene	**	0.000267	0.001	mg/kg	*	0.419	1	ug/L
USEPA 8260C	Trichloroethene	**	0.000279	0.001	mg/kg	*	0.398	1	ug/L

Table 4-2
Analytical Methods, Anticipated Sample Number, and Detection Limits
DEQ - UPRR Mosier Depot Property
Site-Specific Assessment Work Plan
Mosier, Oregon

		Soil				Groundwater			
Method	Parameter	Number of Samples	MDL	MRL	Units	Number of Samples	MDL	MRL	Units
USEPA 8260C	Trichlorofluoromethane	**	0.000382	0.005	mg/kg	*	1.2	5	ug/L
USEPA 8260C	Vinyl chloride	**	0.000291	0.001	mg/kg	*	0.259	1	ug/L
USEPA 8260C	Xylenes, Total	**	0.000698	0.003	mg/kg	*	1.06	3	ug/L

Notes:

*The number of groundwater samples analyzed will depend on the presence of groundwater in each boring.

**The number of discrete surface soil samples analyzed will depend on whether field observations suggest the presence of VOCs.

***Samples will only be analyzed pending initial analytical results.

MCPA = 2-methyl-4-chlorophenoxyacetic acid.

MCPP = methylchlorophenoxypropionic acid.

MDL = method detection limit.

mg/kg = milligrams per kilogram.

MRL = method reporting limit.

NWTPH = Northwest Total Petroleum Hydrocarbons.

RCRA = Resource Conservation and Recovery Act.

SIM = selected ion monitoring.

ug/L = micrograms per liter.

USEPA = U.S. Environmental Protection Agency.

VOC = volatile organic compound.

Table 4-3
Quality Assurance Samples
DEQ - UPRR Mosier Depot Property
Site-Specific Assessment Work Plan
Mosier, Oregon

Sample Matrix	Field QA Sample Type	Frequency of Collection	Analyses Requested
Surface Soil (ISM)	Field Triplicate Sample	1/investigation (from one selected decision unit)	RCRA 8 Metals (USEPA 6020) Chlorinated Herbicides (USEPA 8151A) PAHs (USEPA 8270D-SIM) Diesel and Oil (NWTPH-Dx silica gel)[a]
Subsurface Soil	Field Duplicate Sample	1/20 samples	RCRA 8 Metals (USEPA 6020) Chlorinated Herbicides (USEPA 8151A) PAHs (USEPA 8270D-SIM) Diesel and Oil (NWTPH-Dx silica gel)[a] VOCs (USEPA 8260B)
Groundwater	Field Duplicate Sample	1/20 samples	Gasoline (NWTPH-Gx) VOCs (USEPA 8260B) Diesel and Oil (NWTPH-Dx silica gel)[b]
Soil	Equipment Rinsate Blanks	1/20 samples[c]	RCRA 8 Metals (USEPA 6020) Chlorinated Herbicides (USEPA 8151A) PAHs (USEPA 8270D-SIM) Diesel and Oil (NWTPH-Dx silica gel)[a]
Groundwater	Equipment Rinsate Blanks	1/20 samples[c]	Gasoline (NWTPH-Gx) VOCs (USEPA 8260B) Diesel and Oil (NWTPH-Dx silica gel)[b]
Subsurface Soil Groundwater	Trip Blank	1/sample cooler containing field samples analyzed for VOCs	USEPA 8260B

Table 4-3
Quality Assurance Samples
DEQ - UPRR Mosier Depot Property
Site-Specific Assessment Work Plan
Mosier, Oregon

Notes:

DEQ = Oregon Department of Environmental Quality.

ISM = incremental sampling methodology, performed as described in the standard operating procedure provided by the DEQ contract laboratory (Appendix B).

NWTPH = Northwest Total Petroleum Hydrocarbons.

PAHs = polycyclic aromatic hydrocarbons.

PCBs = polychlorinated biphenyls.

QA = quality assurance.

RCRA = Resource Conservation and Recovery Act.

SIM = selected ion monitoring.

USEPA = U.S. Environmental Protection Agency.

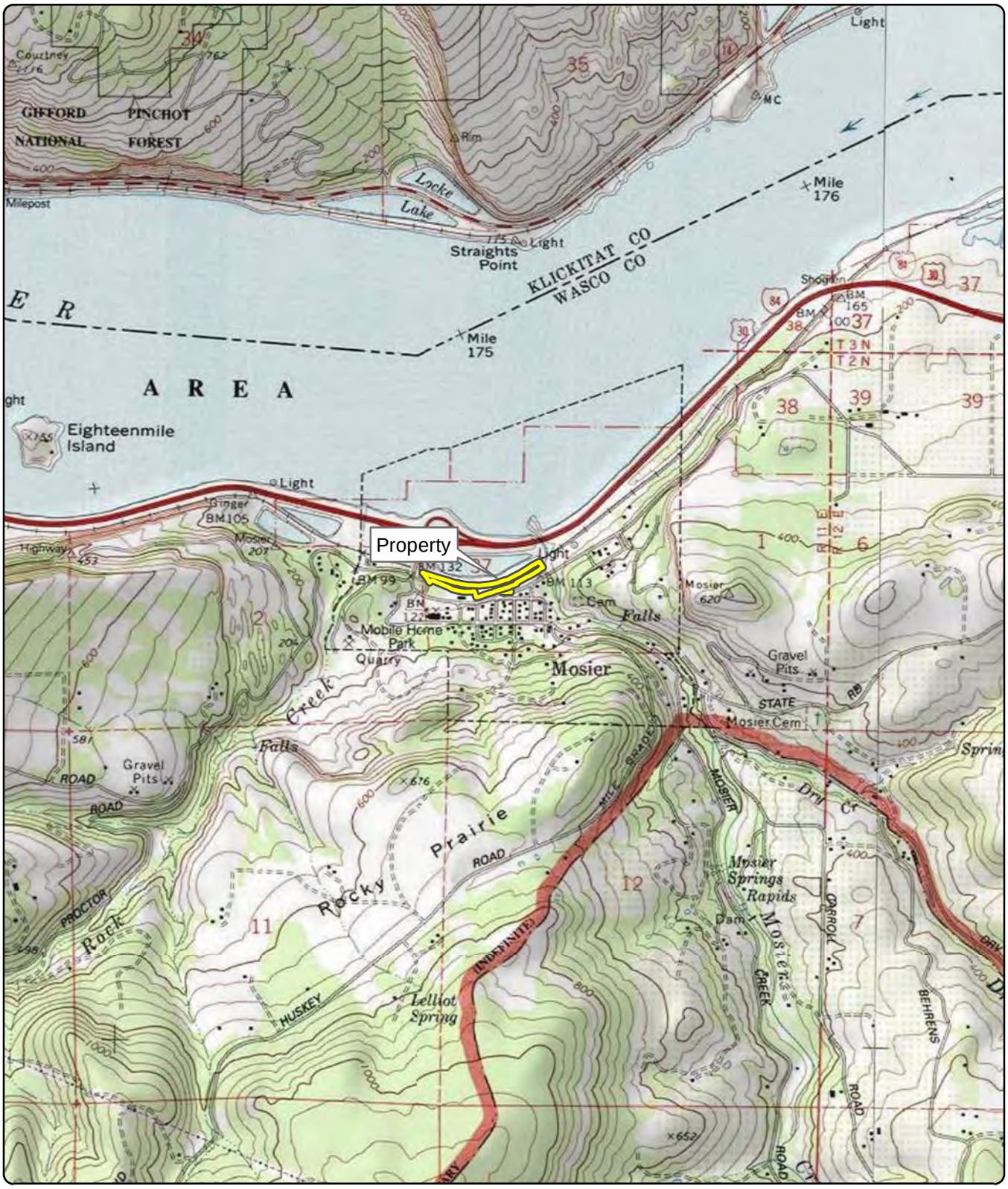
VOC = volatile organic compounds.

[a]Follow-up analysis for PCBs by USEPA 8082A may be requested pending initial analytical results.

[b]Follow-up analyses for PAHs by USEPA 8270D-SIM and PCBs by USEPA 8082A may be requested pending initial analytical results.

[c]Equipment rinsate blanks will not be required if disposable or dedicated equipment is used for sampling.

FIGURES



Source: US Geological Survey (1994) 7.5-minute topographic quadrangle: White Salmon section 1, township 2 north, range 11 east.

Legend

Property Boundary

Figure 1
Property Location

City of Mosier
UPRR Mosier Depot Property
DEQ Task Order 73-18-5
Mosier, Oregon

0 1,000 2,000
Feet

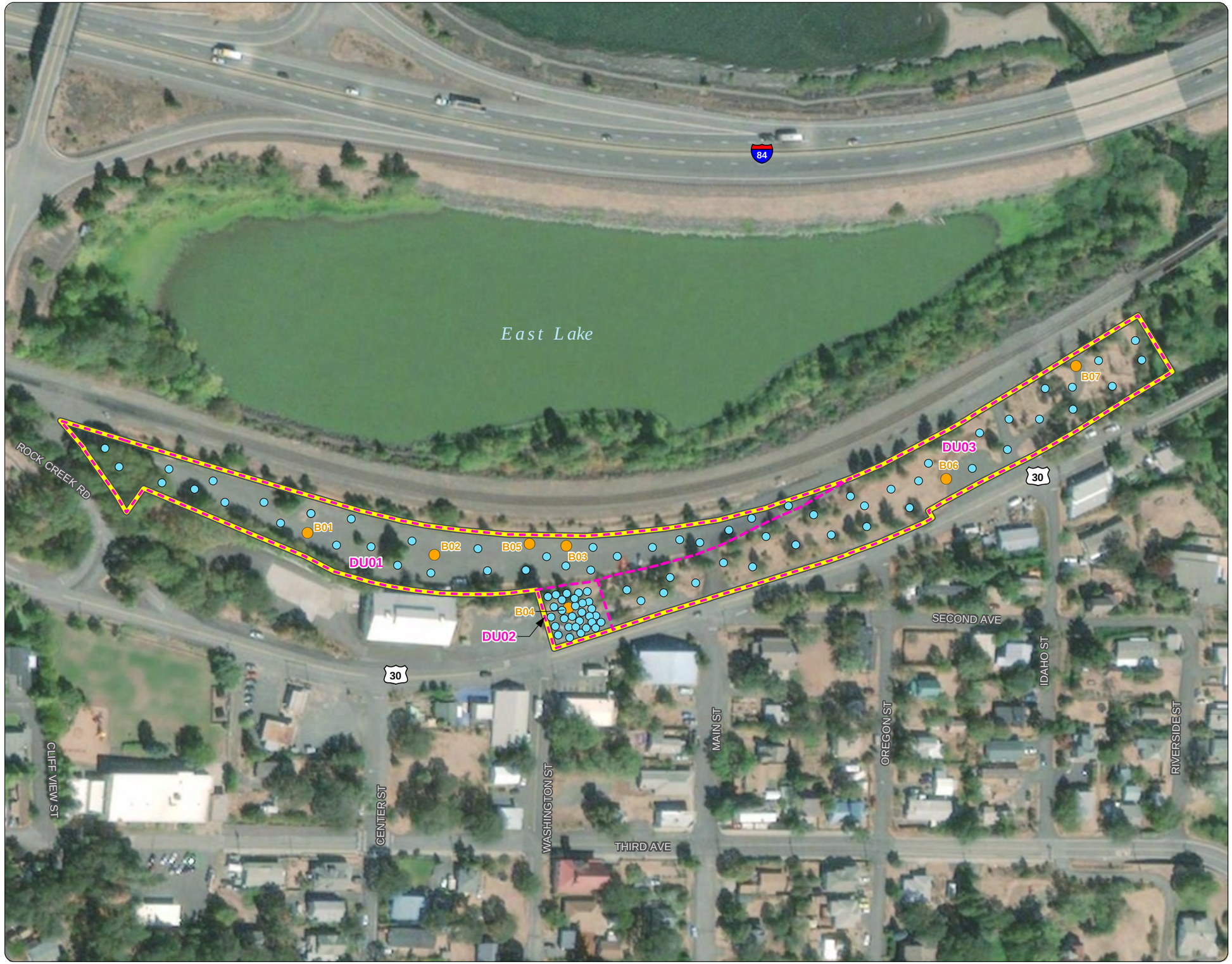
MAUL FOSTER ALONGI
p. 971 544 2139 | www.maulfoster.com

This product is for informational purposes and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to ascertain the usability of the information.

Path: X:\0785.02 Mosier\Projects\Fig1_Property_Location.mxd
Print Date: 8/16/2018
Approved By: avidourek
Produced By: rroberts
Project: 0785.02.02

Figure 2
Property Overview and Investigation Locations

City of Mosier
UPRR Mosier Depot Property
DEQ Task Order 73-18-5
Mosier, Oregon



Legend

- ISM Surface Soil Increment Location
- Proposed Subsurface Soil Boring Location
- Decision Unit
- Property Boundary

Notes:
All locations are approximate.
B = boring.
DU = decision unit.
ISM = incremental sampling methodology.

0 70 140
Feet

Source: Aerial photograph obtained from Esri ArcGIS Online. Parcel and Road data obtained from Wasco County.

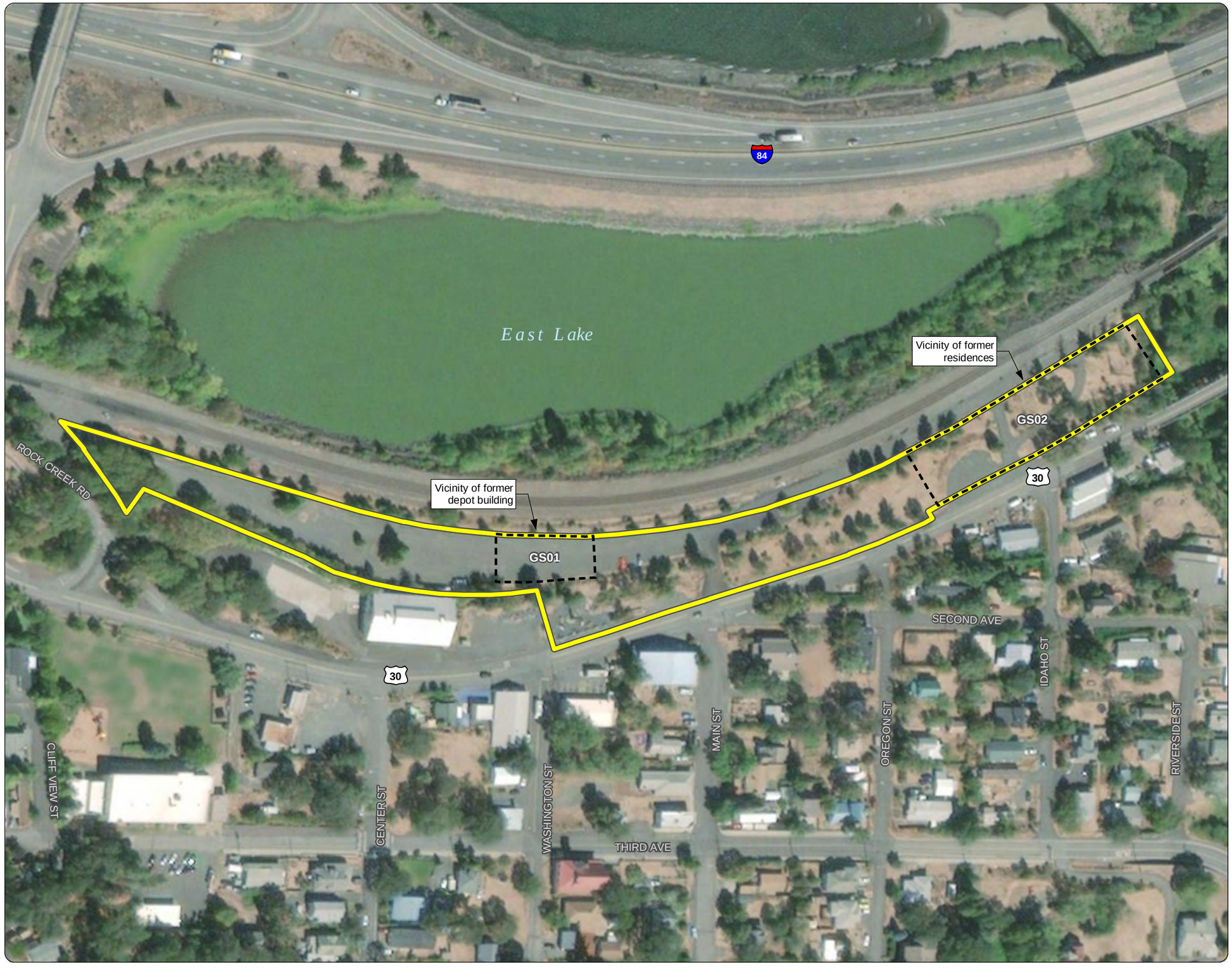
MAUL FOSTER ALONGI
p. 971 544 2139 | www.maulfoster.com

This product is for informational purposes and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to ascertain the usability of the information.

Path: X:\0785.02 Mosier\Projects\Fig2_Property_Overview_and_Investigation_Locations.mxd
Print Date: 8/16/2018
Approved By: avdourek
Produced By: roberts
Project: 0785.02.02

Figure 3
Geophysical Survey Locations

City of Mosier
UPRR Mosier Depot Property
DEQ Task Order 73-18-5
Mosier, Oregon



Legend

- Geophysical Survey Boundary
- Property Boundary

Notes:
All locations are approximate.
GS = geophysical survey.

0 70 140
Feet

Source: Aerial photograph obtained from Esri ArcGIS Online. Parcel and Road data obtained from Wasco County.

MAUL FOSTER ALONGI
p. 971 544 2139 | www.maulfoster.com

This product is for informational purposes and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to ascertain the usability of the information.

Path: X:\0785.02 Mosier\Projects\Fig3_Geophysical_Survey_Location.mxd
Print Date: 8/16/2018
Approved By: avidourek
Produced By: rroberts
Project: 0785.02.02

APPENDIX A

HEALTH AND SAFETY PLAN

HEALTH AND SAFETY PLAN

UPRR MOSIER DEPOT PROPERTY SITE SPECIFIC ASSESSMENT
DEQ TASK ORDER 73-18-5

Prepared for

OREGON DEPARTMENT OF ENVIRONMENTAL QUALITY

August 6, 2018

Project No. 0785.02.02

MAUL FOSTER ALONGI

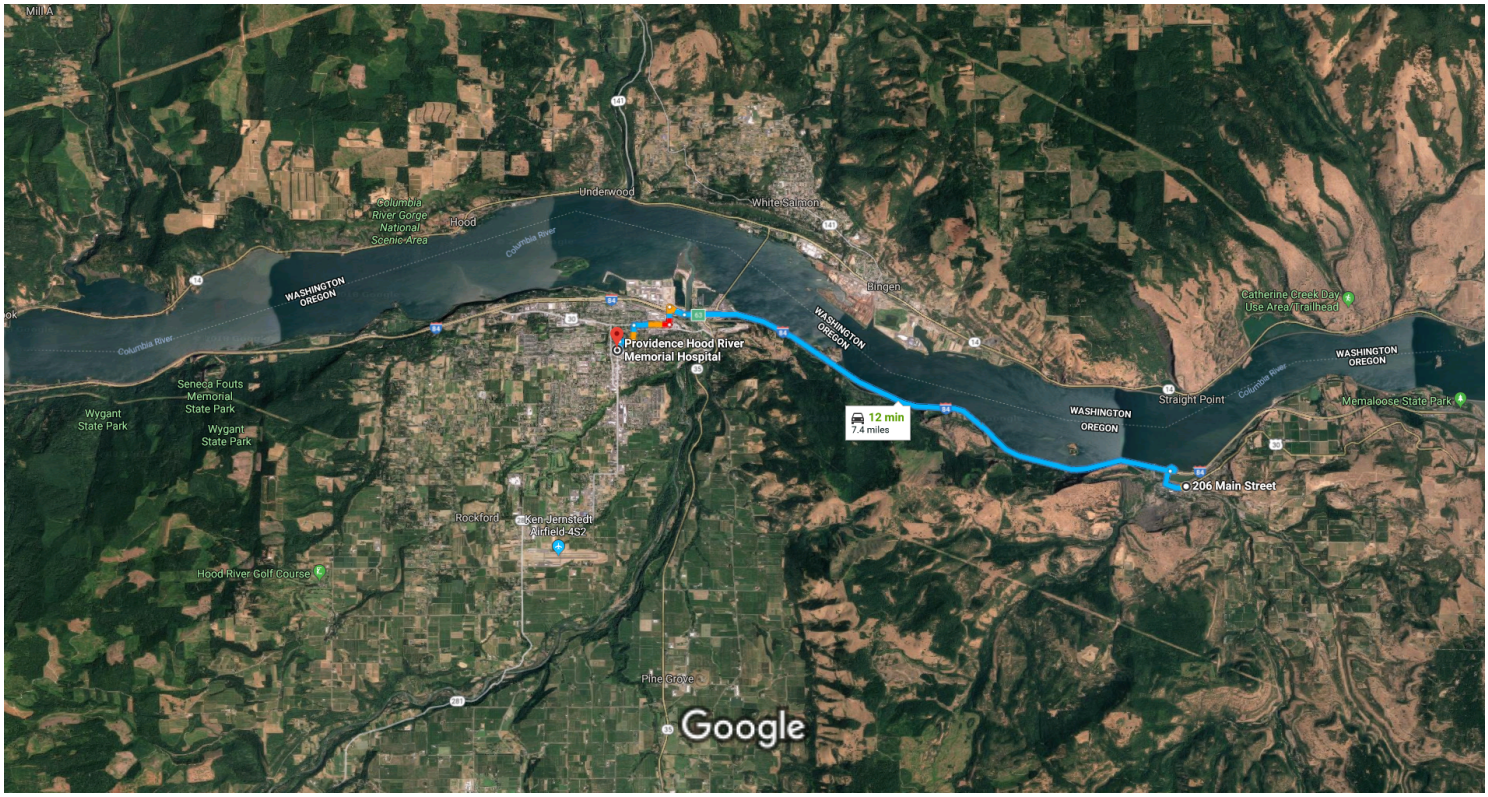
Prepared by
Maul Foster & Alongi, Inc.
2001 NW 19th Avenue, Suite 200, Portland OR 97209

Google Maps

206 Main St, Mosier, OR 97040 to Providence Hood River Memorial Hospital

Drive 7.4 miles, 12 min

Directions to Hospital



Imagery ©2018 Google, Map data ©2018 Google 5000 ft

206 Main St

Mosier, OR 97040

1. Head west on US-30 W/1st Ave toward Washington St
   Continue to follow US-30 W

1 min (0.5 mi)

Follow I-84 to N 2nd St in Hood River. Take exit 63 from I-84

6 min (5.9 mi)

2. Merge onto I-84

5.7 mi

3. Take exit 63 toward Hood River/City Center

0.2 mi

Take Oak St to 12th St

4 min (1.0 mi)

4. Turn left onto N 2nd St

0.2 mi

5. Turn right onto Oak St

0.4 mi

6. Turn left onto 9th St

0.2 mi

7. Turn right onto Eugene St

0.1 mi

8. Turn left onto 12th St

Destination will be on the right

495 ft

Providence Hood River Memorial Hospital

810 12th St, Hood River, OR 97031

These directions are for planning purposes only. You may find that construction projects, traffic, weather, or other events may cause conditions to differ from the map results, and you should plan your route accordingly. You must obey all signs or notices regarding your route.

HEALTH AND SAFETY PLAN

UPRR MOSIER DEPOT PROPERTY SITE SPECIFIC ASSESSMENT

DEQ TASK ORDER 73-18-5

The material and data in this plan were prepared under the supervision and direction of the undersigned.

MAUL FOSTER & ALONGI, INC.

_____

Andrew Vidourek, RG
Project Geologist

_____

Caitlin Bryan
Senior Environmental Scientist

CONTENTS

CONTENTS (CONTINUED)

1 NEAREST HOSPITAL/EMERGENCY MEDICAL CENTER

1.1 Nearest Hospital

Providence Hood River Memorial Hospital
810 12th Street, Hood River, Oregon 97031
Phone: 541-386-3911
Distance: 7.4 miles
Travel Time: 12 minutes

1.2 Route to Hospital from Site

See map on first page of this document.

1.2.1 Driving Directions to Hospital from Site

1. Head west on US-30 W/1st Avenue towards Washington Street (0.5 mile).
2. Merge onto I-84 West (5.7 miles).
3. Take exit 63 toward Hood River/City Center (0.2 mile).
4. Turn left onto North 2nd Street (0.2 mile).
5. Turn right onto Oak Street (0.4 mile).
6. Turn left onto 9th Street (0.2 mile).
7. Turn right onto Eugene Street (0.1 mile).
8. Turn left onto 12th Street (495 feet). Destination will be on the right.

1.3 Emergency Phone Numbers

Ambulance, Police, Fire	**Dial 911**
Caitlin Bryan Project Manager	Phone: 360 694 2691 Cell: 503 680 9821
Michael Pickering Project Director	Phone: 971 713 3585 Cell: 971 227 2566
Andy Vidourek Health and Safety Coordinator	Phone: 360 433 0248 Cell: 541 760 9692

2 PLAN SUMMARY

This health and safety plan (HASP) was developed to describe the procedures and practices necessary for protecting the health and safety of Maul Foster & Alongi, Inc. (MFA) employees conducting activities at the Union Pacific Railroad (UPRR) Mosier Depot Property in Mosier, Oregon (the Site). Other employers, including contractors and subcontractors, are expected to develop and implement their own HASPs to manage the health and safety of their personnel.

MFA personnel conducting activities at the Site are responsible for understanding and adhering to this HASP. Before fieldwork begins, a site safety officer (SSO) who is familiar with health and safety procedures and with the Site will be designated by the on-site personnel. Safety deficiencies should be immediately communicated to the SSO and, if necessary, to MFA's health and safety coordinator (HSC).

All contractors and subcontractors have the primary responsibility for the safety of their own personnel on the Site. All personnel on the Site have "stop work" authority if they observe conditions that they believe create an imminent danger.

If MFA employees work on the Site for more than a year, this HASP will be reviewed at least annually. The plan will be updated as necessary to ensure that it reflects the known hazards, conditions, and requirements associated with the Site.

MFA personnel who will be working on the Site are required to read and understand this HASP. MFA personnel entering the work area must sign the Personnel Acknowledgment Sheet (Section 16), certifying that they have read and that they understand this HASP and agree to abide by it.

3 KEY PROJECT PERSONNEL

Name	Responsibility
Michael Pickering	Project Director
Caitlin Bryan	Project Manager
Andrew Vidourek	Task Manager
Allen Clements	Field Personnel
Cody Schweitzer	Field Personnel
Andrew Vidourek	Health and Safety Coordinator

4 SITE DESCRIPTION AND BACKGROUND

4.1 Type of Site

The Site is located in Mosier, Oregon. The Property currently contains parking areas, driveways, and a public park. The Property is adjacent to active UPRR railroad track. When not in use, machinery, equipment and materials will be kept at least 50 feet from the centerline of the nearest active UPRR track. No crossings of tracks will occur except at existing open public crossings.

4.2 Building/Structures

None on the Site. A fruit growers building is located directly south and adjacent to the central portion of the Site.

4.3 Topography

In general, the Property is relatively level.

4.4 General Geologic/Hydrologic Setting

Bedrock is present near the surface. Groundwater is not anticipated to be encountered during the investigation.

4.5 Site Status and General Site History

A tire/soil berm is also present on the Site and is identified with an active solid waste permit. The Site has been used as railroad sidings and was the location of the former passenger and freight depot. Residences, three to six houses and outbuildings formerly populated the eastern portion of the Site.

An active railroad runs east and west, and is located north of the Site.

5 HAZARD EVALUATION

5.1 Site Tasks and Operations

MFA has completed job hazard analyses (JHAs) for specific tasks anticipated to be completed on the Site, depending on the scope of work. These tasks are provided in Attachment A. The following list generally summarizes planned tasks and operations:

- General work near heavy equipment (i.e., drill rig);
- Collecting soil samples; and
- Working in and near the public right-of-way, i.e., near vehicle traffic.

The control measures that field personnel must use to eliminate or minimize these hazards, such as air monitoring, personal protective equipment (PPE), and decontamination procedures, are detailed in the JHAs and in subsequent sections of this plan.

5.2 Chemical Hazard Evaluation

Chemicals of potential concern (COPCs) on the Site are summarized in Attachment B. Action levels and associated controls are specified in Attachment C.

5.3 Physical Hazards

The specific physical hazards and associated controls for work on the Site are described in Attachment A, JHAs.

6 HEALTH AND SAFETY TRAINING

MFA personnel working on site and who could be exposed to COPCs will have completed training consistent with the HAZWOPER requirements in 29 Code of Federal Regulations (CFR) 1910.120(e). The training will include:

- Identity of site safety and health personnel
- Safety and health hazards identified on the Site
- Proper use of required PPE
- Safe work practices required on the Site, e.g., fall protection, confined space entry procedures, hot work permits, general safety rules
- Safe use of engineering controls and equipment on the Site
- Medical surveillance requirements, including the recognition of signs and symptoms that might indicate overexposure to hazards
- The site emergency response plan/spill containment plan

The HSC will oversee training for site personnel. Training records, including an outline, sign-offs, and competency records, will be maintained by the HSC.

7 SAFETY EQUIPMENT

7.1 Personal Protective Equipment

PPE must be worn by individuals on the Site to protect against physical hazards. PPE required on the Site is modified Level D, which consists of:

- Type 1 hard hat
- High-visibility vest
- Work boots
- Safety glasses with side shields
- Nitrile gloves or equivalent when handling known or potentially impacted media
- Work gloves (if handling materials that might have sharp edges, protrusions, or splinters)

Additional PPE may be necessary for specific tasks with additional hazards. The SSO will be responsible for designating additional PPE for specific tasks. Depending on the activity, additional PPE may include:

- Hearing protection (during high-noise tasks)
- Chemical-resistant clothing, e.g., Tyvek® coveralls
- Chemical-resistant boots
- Chemical-resistant goggles
- Chemical-resistant gloves
- Faceshield
- Respiratory protection

Additional PPE may be required if workers discover unexpected contamination. Characteristics of unexpected contamination could include unusual odors, discolored media, a visible sheen, etc. The SSO and, if necessary, the HSC will be contacted as soon as possible after the discovery of unexpected contamination, and the SSO and/or the HSC will determine the need for additional controls and/or training.

PPE used at the Site must meet the requirements of recognized consensus standards (e.g., American National Standards Institute, National Institute for Occupational Safety and Health [NIOSH]), and respiratory protection shall comply with the requirements set forth in 29 CFR 1910.134.

Project personnel are not permitted to reduce the level of specified PPE without approval from the SSO or the HSC.

7.2 Safety Equipment

The SSO will be responsible for ensuring that the following safety equipment is available on site and is properly inspected and maintained:

- Soap and water for decontamination
- Caution tape, traffic cones, and/or barriers
- First-aid kit
- Fire extinguisher
- Fluids for hydration, e.g., drinking water or sports drink

7.3 Air Monitoring Equipment

The following air monitoring equipment will be available to identify site conditions that may require additional controls. See Attachment C for specified action levels and follow-up actions.

- Photoionization detection (PID) instrument

7.4 Communications Equipment

MFA personnel should have a mobile phone or a radio available in case of emergency.

8 DECONTAMINATION PROCEDURES

8.1 Partial Decontamination Procedure

MFA employees will implement the following partial decontamination procedures when exiting the exclusion zone but remaining on the Site.

- Wash and rinse boots and outer gloves in containers in the contamination-reduction zone.
- Inspect Tyvek suit for stains, rips, or tears. If suit is contaminated, full decontamination will be performed as described in Section 8.2 if the suit is to be used again. If the suit is damaged, it should not be reused.
- Remove outer gloves. Inspect and discard in a container labeled for disposable items if ripped or damaged.
- Remove respirator, if worn, and clean with premoistened alcohol wipes. Discard used cartridges at the frequency dictated by the SSO.
- Wash hands and face with soap and water.

8.2 Full Decontamination Procedures

MFA employees will follow the full decontamination procedures listed below when exiting the exclusion zone and leaving the Site, e.g., at the end of the work shift.

- Wash and rinse boots and outer gloves in containers in the contamination-reduction zone.
- Remove outer gloves and Tyvek suit and deposit in a container labeled for disposable items.
- Remove respirator and discard used cartridges at the frequency dictated by the SSO.
- Wash and rinse respirator in a "respirators only" decontamination container.
- Remove work boots and put on street shoes. Place work boots in a plastic bag or container for later reuse.
- Remove inner gloves and deposit in a container labeled for disposable items.
- Wash hands and face with soap and water.
- Shower as soon after the work shift as practicable.

9 MEDICAL SURVEILLANCE

MFA will ensure that its employees who meet the following criteria are enrolled in a medical surveillance program consistent with 29 CFR 1910.120(f):

- The employees are, or may be, exposed to hazardous substances or health hazards at or above established permissible exposure limits for 30 or more days per year.
- The employees are required to wear a respirator for 30 or more days per year.

MFA employees who exhibit signs or symptoms consistent with overexposure to site contaminants will be offered medical surveillance consistent with Oregon Administrative Rule 1910.120(f)(iii).

MFA will ensure that its employees who are authorized to wear respirators are medically evaluated consistent with the respiratory protection standard (29 CFR 1910.134). The HSC or administrative designee (e.g., human resources manager) will maintain medical evaluation records.

10 AIR MONITORING

Based on site conditions, air monitoring is not anticipated; however, air monitoring equipment will be available in case workers encounter conditions that indicate the presence of unexpected

contamination, such as unusual odors, discolored media, or a visible sheen. If such conditions are discovered, workers will exit the area and contact the SSO and, as needed, the HSC. If necessary, MFA will use the air monitoring equipment to evaluate the conditions and determine if additional controls and/or training are required. Action levels and follow-up actions are provided in Attachment C.

Air monitoring, if conducted, must be performed by individuals familiar with the calibration, use, and care of the required instruments. Measurements shall be documented, and the records should include the following information:

- The name of the person conducting the measurements
- The identity of workers, if any, who have exposure indicated by measurement result
- Information about the instrument, e.g., type, make, model, serial number
- The location of the measurement
- The measurement date and start/stop time
- Conditions represented by the measurement, including applicable activities, work practices, weather conditions, site conditions, and controls in place
- Measurement results
- Other relevant observations or notes

10.1 Air Monitoring Action Levels

If air monitoring is conducted, the results will be compared to the action levels provided in Attachment C. The air monitoring action levels are established to comply with OSHA Permissible Exposure Levels, American Conference of Governmental Industrial Hygienists threshold limit values, and NIOSH recommendations for the chemicals that may be encountered on the Site. The action levels are also adjusted for the relative response of common PID instruments to motor-fuel vapors.

10.2 Instrument Calibrations

Instruments shall be calibrated consistent with manufacturers' recommendations. Calibrations shall be coordinated by the SSO. Calibration and monitoring records shall be maintained by the SSO and/or the project manager.

11 SITE CONTROL MEASURES

Access to the Site will be controlled as part of the site preparation. Control measures may include fencing, gates, and signs limiting access to everyone except authorized personnel. Work zones and contaminant reduction zones will be designated by the SSO.

MFA requires the "buddy system" if personnel conduct operations that may involve exposure to site hazards. The buddy system may involve working with non-MFA personnel.

12 EMERGENCY RESPONSE / SPILL CONTAINMENT / CONFINED SPACE

MFA employees on site will follow the emergency response, spill response, and confined space procedures described in the MFA Health and Safety Manual. Incidents will be documented on the incident report form included with Attachment D.

13 PRE-ENTRY BRIEFING

MFA employees on site will conduct pre-entry briefings, e.g., tailgate meetings, before starting work on the Site and/or as the scope of work changes throughout the project to ensure that employees are familiar with the HASP and that the plan is being followed. Attendance and discussion topics will be documented on sign-in sheets, which will be maintained by the SSO. A tailgate safety meeting checklist is included as Attachment E.

14 PERIODIC EVALUATION

The project manager or designee will evaluate the effectiveness of this HASP. As part of the evaluation, the project manager or designee will track ongoing health and safety feedback from field personnel working on the project. This feedback will be reviewed and incorporated into either immediate or annual updates of the HASP. HASPs will be reviewed and updated at least annually. Updating the plan as necessary ensures that it reflects the known hazards, conditions, and requirements associated with the Site. MFA will maintain periodic evaluation records and will track all HASP revisions.

15 SAFE WORK PRACTICES

The following safe work practices are provided to supplement the other information included with this HASP.

1. Eating, drinking, chewing gum or tobacco, smoking, or any practice that increases the probability of hand-to-mouth transfer and ingestion of materials is prohibited in areas with potentially contaminated materials.
2. Field personnel will, whenever practicable, remain upwind of drilling rigs, open excavations, and other site-disturbing activities.
3. Subsurface work shall not be performed at any location until the area has been confirmed by a utility-locator firm to be free of underground utilities or other obstructions.

16 ACKNOWLEDGMENT

MFA cannot guarantee the health or safety of any person entering the Site. Because of the potentially hazardous nature of visits to active sites, it is not possible to discover, evaluate, and provide protection against all possible hazards that may be encountered. Strict adherence to the health and safety guidelines set forth herein will reduce, but not eliminate, the potential for injury and illness at the Site. The health and safety guidelines in this plan were prepared specifically for the Site and should not be used on any other site without prior evaluation by trained health and safety personnel.

MFA personnel who will work at the Site are to read, understand, and agree to comply with the specific practices and guidelines described in this HASP regarding field safety and health hazards.

This HASP has been developed for the exclusive use of MFA personnel. MFA may make this plan available for review by contracted or subcontracted personnel for information only. This plan does not cover the activities performed by employees of any other employer on the Site. All contracted or subcontracted personnel are responsible for implementing their own health and safety program, including generating and using their own plan.

I have read and I understand this HASP and all attachments, and agree to comply with the requirements described herein:

Name	Title	Date

ATTACHMENT A

JOB HAZARD ANALYSES

SOIL SAMPLING

Site-Specific Job Hazard Analysis (JHA)	
MFA Project Number: 0785.02.02	
Task/Operation Surface and subsurface soil sampling.	**Location Where Task/Operation Performed** *UPRR Mosier Depot Property Site Specific Assessment, Mosier, OR*
Date Prepared: 7/30/2018	**Employee Preparing this JHA:** *Andrew Vidourek*
Date Reviewed: 7/31/2018	**Employee Reviewing and Certifying this JHA:** *Caitlin Bryan*

Chemical Hazards

Chemicals of potential concern in soil include the following:

- Gasoline, diesel and oil-range total petroleum hydrocarbons (TPH);
- Polycyclic aromatic hydrocarbons (PAHs);
- Polyaromatic hydrocarbons (PCB);
- Pentachlorophenol (PCP);
- Creosote;
- Herbicides;
- Metals such as arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver.

The personal protective equipment (PPE) described below should be used during soil sampling to minimize direct contact with soil potentially containing the above chemicals of potential concern. If additional chemical hazards are identified, this JHA should be updated to reflect the updated list of known hazards.

Biological Hazards

Stinging insects are a biological hazard on the Site, especially during the summer months. Employees should be aware of their surroundings and should avoid areas with wasps, yellow jackets, bees, and ants. Insect nests should never be disturbed. If necessary, long pants and a long-sleeved shirt should be worn on the Site. Employees who are allergic to stings should not work in areas where there is a high risk of being stung.

Physical Hazards

Name of Physical Hazard	Source	Comments
Heat / Cold / Sunburn	Weather	Dress in layers to accommodate for hotter and colder weather. Wear rain gear when applicable. Wear had and/or shaded safety glasses. Apply sunscreen and avoid direct sun contact whenever possible.
Impact – eyes	Debris and splashes	Wear eye protection at all times when conducting soil sampling.
Physical Stress	Heavy lifting of equipment and bailing water	Use proper lifting techniques (use your legs/knees and not your back) and take breaks and rest as needed.

Site-Specific Job Hazard Analysis (JHA)		
MFA Project Number: 0785.02.02		
Accidents with equipment/tools	Sample collection equipment/tools	Verify you have the appropriate equipment/tools for your tasks. Use equipment/tools as intended by the manufacturer. Stow tools in vehicle properly, use appropriate cases and bags. Secure equipment in vehicle with netting or straps, do not leave loose. Wear nitrile gloves when sampling and work gloves as needed.

Control Measures Used

Engineering Controls: No engineering controls specified.

Work Practices: Employees should not eat or drink in the immediate area where sampling is conducted. Employees should wash their hands and face before eating or drinking. When used, nitrile gloves should be disposed of in a container intended for disposable items.

Employees should wear sunscreen on exposed skin and should be aware of weather conditions. Adequate water should be available at the site. If an employee feels symptoms of dehydration, overheating or heat stroke, sampling should be stopped, the employee should move to a shaded area, and water should be consumed. Depending on the seriousness of the symptoms, medical assistance (e.g. calling 911) may be required.

During cold conditions, employees should wear adequate clothing to reduce the potential for hypothermia. Dress in layers to accommodate for changing cold to hot weather conditions.

Employees should avoid working with their breathing zone directly above the opening of the well casing or open excavation whenever possible. When possible, work upwind of the well casing and open excavation. Check well vaults and security lids for insects and use caution when opening.

Avoid direct contact with soil (and groundwater if encountered).

If work is conducted in or near traffic areas, wear high visibility safety vests (or other high visibility garment). Use cones, flagging, fences, signage, or other devices to mark out the work area (exclusion zone).

Use proper lifting techniques when lifting heavy objects.

Employees should always carry a cellular phone while working in remote areas.

PPE: Hard hat, work boots, high-visibility vest, safety glasses, disposable nitrile gloves.

WORKING AROUND HEAVY EQUIPMENT (DRILL RIGS)

Site-Specific Job Hazard Analysis (JHA)	
MFA Project Number: 0785.02.02	
Task/Operation Working around heavy equipment (i.e., drill rigs).	**Location Where Task/Operation Performed** *UPRR Mosier Depot Property Site Speciftc Assessment, Mosier, OR*
Date Prepared: 7/30/2018	**Employee Preparing this JHA:** *Andrew Vidourek*
Date Reviewed: 7/31/2018	**Employee Reviewing and Certifying this JHA:** *Caitlin Bryan*

Chemical Hazards

Chemicals of potential concern during drilling activities include the following:

- Gasoline, diesel and oil-range total petroleum hydrocarbons (TPH);
- Polycyclic aromatic hydrocarbons (PAHs);
- Polyaromatic hydrocarbons (PCB);
- Pentachlorophenol (PCP);
- Creosote;
- Herbicides;
- Metals such as arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver.

The personal protective equipment (PPE) described below should be used during drilling activities to minimize direct contact with soil potentially containing the above chemicals of potential concern. If additional chemical hazards are identified, this JHA should be updated to reflect the updated list of known hazards.

Biological Hazards

Stinging insects are a biological hazard on the Site, especially during the summer months. Employees should be aware of their surroundings and should avoid areas with wasps, yellow jackets, bees, and ants. Insect nests should never be disturbed. If necessary, long pants and a long-sleeved shirt should be worn on the Site. Employees who are allergic to stings should not work in areas where there is a high risk of being stung.

Physical Hazards

Name of Physical Hazard	Source	Comments
Impact - body	Heavy equipment operating on site	Any work that must be conducted in the impact area must be coordinated with the equipment operator using pre-established methods of communication, such as direct eye contact, hand signals, and/or verbal communication. When equipment is in operation, whenever possible stay at least drilling boom height away from the machine that is in operation. Wear high visibility safety vest or other high visibility clothing at all times.
Impact – eyes	Debris and splashes, equipment and hand tools.	Wear eye protection at all times in and around the work zone.

Site-Specific Job Hazard Analysis (JHA)		
MFA Project Number: 0785.02.02		
Impact - head	Heavy equipment	Any work that must be conducted in the impact area must be coordinated with the equipment operator using pre-established methods of communication, such as direct eye contact, hand signals, and/or verbal communication. Wear a hard had at all times when an overhead hazard exists, or equipment is in operation.
Impact - feet	Sharp objects that could be stepped on, or foot impact.	Wear steel toe shoes/boots. Stay a safe distance away from vehicles, operating equipment, or other hazards whenever possible.
Noise	Heavy equipment	Wear hearing protection during periods of high noise or operating equipment.
Control Measures Used		
Engineering Controls: None.		
Work Practices: Personnel will stay upwind and out of the impact area of the heavy equipment if feasible. Cones, barrier tape, fences, signage or other equivalent methods will be used to establish the impact area, if feasible. Any work that must be conducted in the impact area must be coordinated with the equipment operator using pre-established methods of communication, such as direct eye contact, hand signals, and/or verbal communication. MFA personnel will conduct a daily tailgate safety meeting with subcontractors conducting work. In addition to the above, any safety concerns and mitigation measures identified by the subcontractor related to the work they will be conducting that day, should be adhered to by MFA personnel.		
PPE: Hard hat, work boots, high-visibility vest, safety glasses, hearing protection, i.e., ear plugs or ear muffs.		

WORKING NEAR TRAFFIC

Site-Specific Job Hazard Analysis		
MFA Project Number: 0785.02.02		
Task/Operation Working near traffic.		**Location Where Task/Operation Performed** *UPRR Mosier Depot Property Site Specific Assessment, Mosier, OR*
Date Prepared: 7/30/2018	**Employee Preparing this JHA:** *Andrew Vidourek*	
Date Reviewed: 7/31/2018	**Employee Reviewing and Certifying this JHA:** *Caitlin Bryan*	

Chemical Hazards

There are no known chemical hazards associated with vehicle traffic at the Site.

Biological Hazards

There are no known biological hazards associated with vehicle traffic at the site.

Physical Hazards

Name of Physical Hazard	Source	Comments
Bodily injury	Vehicles moving on or around site. This includes the potential for movement of railroad equipment.	Wear a reflective safety vest for enhanced visibility. Use cones and/or barriers to designate traffic patterns. Maintain fence, caution tape, or gates, to prevent traffic from entering the work zones. Maintain eye contact with the operator of vehicles moving around the site to ensure the driver is aware you are there. When not in use, machinery, equipment and materials will be kept at least 50 feet from the centerline of the nearest active UPRR track. No crossings of tracks will occur except at existing open public crossings.
Eye injury	Debris (e.g., soil) contacting eyes due to vehicle movement.	Wear eye protection at all times.
Head injury	Vehicles moving on or around site.	Wear a hard hat.
Foot injury	Vehicles moving on or around site.	Wear steel-toe work boots.
Hearing loss	Noise generated by vehicles moving on or around site.	Wear hearing protection such as ear plugs or ear muffs.

Control Measures Used

Engineering Controls: Fence and gates will be maintained to prevent traffic from entering the work zone. In the event there is no fence, use cones and caution tape, or other barrier, to delineate traffic patterns.

Site-Specific Job Hazard Analysis
MFA Project Number: 0785.02.02
Work Practices: Personnel will stay upwind and out of heavy traffic areas, if feasible. Cones, signage, barrier tape, fences or gates, or other equivalent methods will be used to establish traffic control patterns, if feasible. Personnel should monitor traffic hazards before entering locations with potential vehicle movement.
PPE: Hard hat, work boots, high-visibility vest, safety glasses, hearing protection, i.e., ear plugs or ear muffs.

ATTACHMENT B

CHEMICALS OF POTENTIAL CONCERN

Table 1
Chemical Hazards

	Soil Range (mg/kg)		Groundwater Range (ppb)		OSHA PEL (TWA)	ACGIH TLV (TWA)	NIOSH IDLH	LEL (%)	IP (eV)	Other Hazard
	Low	High	Low	High						
TPH										
Gasoline-Range Organics (TPH-G)					NA	300 ppm	NA	1.4	NA	C, E, F, P
Diesel-Range Organics (TPH-D)					NA	100 mg/m^3	NA	NA	NA	E, F, P
Residual-Range Organics (TPH-O)					NA	NA	NA	NA	NA	E, F, P
PAHs										
Anthracene					0.2 mg/m^3	0.2 mg/m^3	80 mg/m^3	0.6	NA	F, P
Acenaphthene					NE	NE	NE	0.6	NA	F, P
Acenaphthylene					NE	NE	NE	NA	NA	F, P
Benzo(a)anthracene					NE	NE	NE	NA	NA	C, P
Benzo(a)pyrene					0.2 mg/m^3	0.2 mg/m^3	80 mg/m^3	NA	NA	C, P
Benzo(b)fluoranthene					NE	NE	NE	NA	NA	C, P
Benzo(g,h,i)perylene					NE	NE	NE	NA	NA	P
Benzo(k)fluoranthene					NE	NE	NE	NA	NA	C, P
Chrysene					0.2 mg/m^3	0.2 mg/m^3	80 mg/m^3	NA	7.59	C, P
Dibenz(a,h)anthracene					NE	NE	NE	NA	NA	C, P
Fluoranthene					NE	NE	NE	NA	NA	SC, P
Fluorene					NE	NE	NE	NA	NA	
Indeno(1,2,3-cd)pyrene					NE	NE	NE	NA	NA	SC
Naphthalene					10 ppm	10 ppm	250 ppm	0.9	8.12	SC, E, F, P
Phenanthrene					0.2 mg/m^3	0.2 mg/m^3	80 mg/m^3	NA	NA	
Pyrene					0.2 mg/m^3	0.2 mg/m^3	80 mg/m^3	NA	NA	P
1-Methylnaphthalene					NE	0.5 ppm	NE	NA	NA	SC, E, F, P
2-Methylnaphthalene					NE	0.5 ppm	NE	NA	NA	SC, E, F, P
Remaining PAH constituents					NA	NA	NA	NA	NA	NA
Metals										
Arsenic					0.01 mg/m^3	0.01 mg/m^3	5 mg/m^3	NA	NA	C, P
Barium					0.5 mg/m^3	0.5 mg/m^3	NE	NA	NA	R, P
Cadmium					0.0050 mg/m^3	0.002 mg/m^3	9 mg/m^3	NA	NA	C
Chromium					1 mg/m^3	0.5 mg/m^3	250 mg/m^3	NA	NA	R, P
Chromium (VI)					0.001 mg/m^3	0.05 mg/m^3	15 mg/m^3	NA	NA	R, C
Copper					1 mg/m^3	0.2 mg/m^3	100 mg/m^3	NA	NA	
Lead					0.05 mg/m^3	0.05 mg/m^3	100 mg/m^3	NA	NA	C, P
Mercury					0.1 mg/m^3 (Ce)	0.01 mg/m^3	2 mg/m^3	NA	NA	R, P
Selenium					0.2 mg/m^3	0.2 mg/m^3	1 mg/m^3	NA	NA	R, P
Silver					0.01 mg/m^3	0.1 mg/m^3	10 mg/m^3	NA	NA	R, P
Additional										
Benzene					1 ppm	5 ppm	500 ppm	1.2	9.24	F, C, P, R
Creosote										
Ethylbenzene					100 ppm	125 ppm	800 ppm	0.8	8.76	F, P
Herbicides										
Pentachlorophenol					0.5 mg/m^3	1.5 mg/m^3	2.5 mg/m^3	NA	NA	C, P
Polychlorinated biphenyls					0.5 mg/m^3	1 mg/m^3	5 mg/m^3	NA	NA	C
Toluene					100 ppm	150 ppm	500 ppm	1.1	8.82	E, F, P, R
Xylenes					100 ppm	150 ppm	900 ppm	0.9	8.44–8.56	F, P

Table 1
Chemical Hazards

NOTES:

IDLH values taken from http://www.cdc.gov/niosh/idlh/intridl4.html.

ACGIH = American Conference of Governmental Industrial Hygienists.®

C = carcinogen.

cc = cubic centimeter.

Ce = ceiling concentration.

E = explosive.

F = flammable.

IDLH = immediately dangerous to life and health.

IP (eV) = ionization potential.

LEL = lower explosive limit.

mg/kg = milligrams per kilogram.

mg/m^3 = milligrams per cubic meter.

NA = not available.

NE = not established.

NIOSH = National Institute for Occupational Safety and Health.

OSHA = Occupational Safety and Health Administration.

P = poison.

PAH = polycyclic aromatic hydrocarbon.

PEL = permissible exposure level.

ppm = parts per million.

R = reactive.

SC = suspected carcinogen.

TLV = threshold limit value.

TPH = total petroleum hydrocarbons.

TWA = time-weighted average.

ATTACHMENT C

AIR MONITORING ACTION LEVELS

Air Monitoring Procedures and Toxicity Action Levels

Instrument	Action Level	Initial Action	Follow Up Action
FID or PID[a]	Detection of **1 part per million (ppm)** (above ambient) or greater in breathing zone **sustained for two minutes.**	Dräger tube test for **benzene**. If **1 ppm benzene** detected with Dräger tube, upgrade to level C.	Ventilate area, always work upwind.
FID or PID[a]	Detection of 10 ppm (above ambient) in breathing zone **and determined not to be benzene.**	Upgrade to Level C and continue to monitor breathing zone with Dräger tube. **If 50 ppm, leave exclusion zone**. Return only if levels decrease to below 50 ppm.	Ventilate area, always work upwind.

[a]Some PIDs do not work in high (e.g., greater than 90%) humidity or rainy weather. Under these atmospheric conditions, only PIDs certified for use in high humidity should be used.

[b]See Section 10.2 for complete explosion hazard action levels.

ATTACHMENT D

INCIDENT REPORT FORM

MAUL FOSTER & ALONGI, INC.
HEALTH & SAFETY INCIDENT REPORT

THIS REPORT MUST BE COMPLETED IN FULL AND SUBMITTED WITHIN 24 HOURS TO THE MFA HEALTH AND SAFETY COORDINATOR

Project Name: _____

Project Number: _____

Date of Incident: _____

Time of Incident: _____

Location: _____

Type of Incident (Check all applicable items)

- ☐ Illness
- ☐ Injury
- ☐ Property Damage
- ☐ Health & Safety Infraction
- ☐ Fire, Explosion, Flash
- ☐ Unexpected Exposure
- ☐ Vehicular Accident
- ☐ Electric Shock
- ☐ Near Miss
- ☐ Other (describe): _____

DESCRIPTION OF INCIDENT

(Describe what happened and the possible cause of the incident. Identify individual(s) involved, witnesses, and their affiliations. Describe emergency or corrective action taken. Attach additional sheets, drawings, or photographs as needed.)

_____

_____

_____

_____

_____

_____

_____

_____

INCIDENT REPORTER

_____	_____	_____
PRINT NAME	SIGNATURE	DATE

Site Safety Officer must deliver this report to the Health & Safety Coordinator within 24 hours. Reviewed by:

_____	_____	_____
PRINT NAME MFA Health & Safety Coordinator	SIGNATURE MFA Health & Safety Coordinator	DATE

ATTACHMENT E

TAILGATE SAFETY MEETING CHECKLIST

Tailgate Safety Meeting Checklist

MAUL FOSTER ALONGI

Client Name:	
Project No.:	
Communicated By:	
Date:	

Yes	NA	Information Reviewed
☐	☐	Emergency Procedures and Site Evacuation Routes
☐	☐	Route to Hospital
☐	☐	HASP Review and Location
☐	☐	Key Project Personnel
☐	☐	Emergency Phone Numbers
☐	☐	Stop-Work Authority
☐	☐	General Site Description/History and Chemical Hazards
☐	☐	For Active Sites - Site Activities and Vehicular/Equipment Traffic
☐	☐	Site-Specific Physical Hazards
☐	☐	Required Personal Protective Equipment
☐	☐	Available Safety Equipment and Location
☐	☐	Daily Scope of Work (Reference JHAs as applicable)
☐	☐	Decontamination Procedures
☐	☐	Identify Work Zones, Exclusion Zones, and Decontamination Zones
☐	☐	Hazardous Atmospheres
☐	☐	Air Monitoring Equipment and Procedures
☐	☐	Identify Potential Site-Specific Slip, Trip, and Fall Hazards
☐	☐	Dust and Vapor Control
☐	☐	Confined Space(s)
☐	☐	Open Pits and Excavation
☐	☐	Extreme Temperatures
☐	☐	Incident Reporting
☐	☐	Other: _____

Suggestions to Improve HS Practices

Attendees		
Name	Signature	Company
1)		
2)		
3)		
4)		
5)		
6)		
7)		
8)		

APPENDIX B

LABORATORY SOP

Standard Operating Procedure

H:\QAQC\SOPS\SEMI-VOLS\330377_MIS_041717.DOC

TITLE: MULTI-INCREMENT SAMPLING

Reviewed by: Robb Gleaves, Blake Judge, Steve Miller

Department Manager *QA Department*

This document bears a watermark in the lower right hand corner of each page. This watermark is an insignia of the document's approval. The signed original is on file in the ESC Quality Assurance Department.

1.0 SCOPE AND APPLICATION

Appendix A of EPA Method 8330B (SW-846) specifically addresses field sampling. The appendix provides guidance for explosive residue sample collection, handling, and laboratory processing techniques. Method 8330B recommends the use of multi-increment (MI) sampling, which involves the extraction of a representative portion of material from within a single decision unit which will adequately address potential compositional and distributional heterogeneity. In MI sampling, several increments from the same decision unit are combined to form one sample that is submitted for laboratory analysis. The procedures for MI sampling are specifically designed to minimize sampling error and provide a more scientifically-representative mean concentration of the contaminant(s) present in the decision unit.

2.0 METHOD SUMMARY AND DEFINITIONS

2.1 Sieve: A device made of wire mesh held in a frame through which finer particles of a mixture of various sizes may be passed to separate them from coarser ones or through which soft materials may be forced for reduction to fine particles.

2.1.2 Shatterbox: A device for mechanically pulverizing a sample or material,

2.1.3 Ball Mill: A device using ceramic pellets and rotation in a closed container to pulverize the contents.

2.2 See the current Quality Assurance Manual for other definitions associated with terms found in this document.

3.0 HEALTH AND SAFETY

3.1 The toxicity or carcinogenicity of each reagent used in the laboratory has not been fully established. Each chemical should be regarded as a potential health hazard and exposure to these compounds should be as low as reasonably achievable. A reference file of safety data sheets (SDSs) is made available on ESC's intranet to all personnel. Use hazardous reagents in a fume hood whenever possible and if eye or skin contact occurs, flush with large volumes of water. Always wear safety glasses or a shield for eye protection, protective clothing and observe proper mixing protocols.

3.2 Wear safety glasses, gloves, and a laboratory coat to protect against physical contact with samples that contain potentially hazardous chemicals.

Approved ESC Copy
(printed from Adobe)
Approved ESC Copy
(printed from Adobe)

Unless bar coded, any printed copies of this document are considered uncontrolled and for reference only. It is the responsibility of the staff members to ensure that they are using the correct revision of this document by checking the document revision level with that held on the ESC web site.

Standard Operating Procedure

TITLE: MULTI-INCREMENT SAMPLING

4.0 SAMPLE PRESERVATION, CONTAINERS, HANDLING, AND STORAGE

4.1 All samples must be collected using a sampling plan that addresses the considerations of the method.

4.2 ESC will typically receive samples in 4-8oz containers for processing.

5.0 INTERFERENCES

5.1 Care must be taken to not cross-contaminate samples during the drying, sieving, and grinding procedures. Grinding blanks are required to verify procedure is free from cross contamination.

5.2 The drying process may result in quantitative losses of some analytes. Project Managers may consider eliminating the drying process prior to analysis or removing poor performers from the target analyte list if drying is required.

6.0 EQUIPMENT AND SUPPLIES

6.1 Sieve: 10mesh

6.2 Grinder: Shatterbox or equivalent capable of reducing particle size to <75um

6.3 Drying rack

7.0 REAGENTS AND STANDARDS

All reagents and standards must be recorded in the appropriate preparation log and assigned a unique number. See SOP #030230, *Standards Logger – Tree Operation*. Additional information regarding reagent preparation can be found in the Standards Logger (Tree) digital archive system. All standard solutions should be replaced at least every 6 months or sooner if a problem is detected unless otherwise noted.

8.0 PROCEDURE

8.1. All sample contents within the container are emptied in to a pan/weigh boat and dried to a constant weight. Dates/Times are recorded as well as the ambient temperature on a daily basis. Blank matrix must be dried with samples.

8.2 Dried sample material is passed through a 10mesh (2mm) sieve (may be assisted using gloved hands). Do not intentionally include vegetation unless project specifications include this requirement. Depending on sample matrix, sieving may be performed initially to facilitate the drying process.

8.3 For all methods or when client-specific data quality objectives (DQOs) require grinding sieved/dried sample is introduced into the shatterbox or equivalent. The entire sample must be ground. If multiple portions are ground separately, the aliquots must be combined prior to subsampling for extraction. Samples are ground in 3 minute intervals. All Batch QC must be processed through this step.

8.4 Blank matrix must be ground initially, after every 10 samples, and at the end of a batch. These blanks may be combined or analyzed separately during extraction and analysis.

Approved ESC Copy
(printed from Adobe)
Approved ESC Copy
(printed from Adobe)

Unless bar coded, any printed copies of this document are considered uncontrolled and for reference only. It is the responsibility of the staff members to ensure that they are using the correct revision of this document by checking the document revision level with that held on the ESC web site.

Standard Operating Procedure

TITLE: MULTI-INCREMENT SAMPLING

8.5 Each sample/QC is spread into a pan in order to perform sufficient subsampling of the final sample aliquot. The sample volume extracted for analysis should represent the entire ground sample.

DOD Note: With each batch, a sample triplicate must be processed to verify the subsampling process.

8.6 Add surrogate to each sample/QC and spike MS/D after the initial extraction weight is acquired.

8.7 See the specific method extraction SOP for further processing information.

9.0 DATA ANALYSIS AND CALCULATIONS

See the current Quality Assurance Manual for equations associated with common calculations.

10.0 QUALITY CONTROL AND METHOD PERFORMANCE

10.1 All analysts must meet the qualifications specified in SOP #030205, *Technical Training and Personnel Qualifications* before approval to perform this method. Analysts must complete an initial demonstration of proficiency before being approved to perform this method. Continuing proficiency must be demonstrated using proficiency testing and laboratory control sample analysis. Method performance is assessed per analyst. Updated method performance records are filed and stored in a central location within the department.

10.2 Use the PrepData program to record batch order and standards/reagents used during process. See SOP #030201, *Data Handling and Reporting*.

11.0 DATA VALIDATION AND CORRECTIVE ACTION

11.1 All data must undergo a second analyst review.

11.1.1 Blanks must be clean of interferences.

11.1.2 All quality control samples should be checked to verify acceptance criteria are met.

11.1.3 Data must be checked for the presence or absence of appropriate qualifiers. Comments should be noted when data is qualified.

11.1.4 All calculations must be checked.

11.1.5 The reviewer must verify that all reported results are derived from analytical results that are within the range of the initial calibration curve. Date/Time of drying process must be documented.

11.1.6 See SOP #030201, *Data Handling and Reporting*.

11.2 Combined process blanks that exhibit contamination above method detection limits should result in reprocessing of the entire batch, raising the reporting limit (RL), and/or qualification of the reported results accordingly. Separate analyses of each process

Approved ESC Copy
(printed from Adobe)
Approved ESC Copy
(printed from Adobe)

Unless bar coded, any printed copies of this document are considered uncontrolled and for reference only. It is the responsibility of the staff members to ensure that they are using the correct revision of this document by checking the document revision level with that held on the ESC web site.

Standard Operating Procedure

TITLE: MULTI-INCREMENT SAMPLING

blank can be evaluated for samples analyzed between the last clean blank and the contaminated blank based on the sequence processed.

11.3 See the SOP associated with the particular determinative method for more information.

12.0 POLLUTION PREVENTION AND WASTE MANAGEMENT

12.1 The EPA requires that laboratory waste management practice to be conducted consistent with all applicable federal and state laws and regulations. Excess reagents, samples and method process wastes must be characterized and disposed of in an acceptable manner. See *ESC Waste Management Plan.*

12.2 See SOP #030302, *Environmental Sustainability & Pollution Prevention*.

13.0 METHOD MODIFICATIONS/CLARIFICATIONS

ESC is set up currently to process from 4oz/8oz jars that have been prepared in the field from bulk containers. ESC cannot currently process bulk samples for this method.

14.0 REFERENCES

14.1 *Nitroaromatics, Nitramines, and Nitrate Esters by High Performance Liquid Chromatography (HPLC)*, SW-846 Method 8330B, Revision 2, October 2006, Appendix A

14.2 *Quality Systems Manual (QSM) for Environmental Laboratories*, Department of Defense (DoD), Version 5.0, July 2013

Approved ESC Copy
(printed from Adobe)
Approved ESC Copy
(printed from Adobe)

Unless bar coded, any printed copies of this document are considered uncontrolled and for reference only. It is the responsibility of the staff members to ensure that they are using the correct revision of this document by checking the document revision level with that held on the ESC web site.

Standard Operating Procedure

TITLE: MULTI-INCREMENT SAMPLING

Attachment I: Revision History

Current Version:

Version	Date	Description of Revisions
2	4/17/2017	Technical and quality review and update. Header and signature block re-formatting. Revised Sections 2.1.2, 3.1, 8.1, 8.3, 9.0, 13.0, 14.1, and 14.2.

Superseded Versions:

This document supersedes the following:

Version	Date	Description of Revisions
1	4/1/2016	SOP Origination.

Approved ESC Copy
(printed from Adobe)
Approved ESC Copy
(printed from Adobe)

Unless bar coded, any printed copies of this document are considered uncontrolled and for reference only. It is the responsibility of the staff members to ensure that they are using the correct revision of this document by checking the document revision level with that held on the ESC web site.