Cleanup Work Plan

Lincoln School Cleanup Project
ECSI #6562
EPA Cooperative Agreement # 4B-02J52001

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

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Abbreviations

ABCA	Analysis of Brownfield Cleanup Alternatives
ACM	asbestos-containing materials
ACWM	asbestos-containing waste materials
AHERA	Asbestos Hazard Emergency Response Act
AST	aboveground storage tank
CFR	Code of Federal Regulations
COPC	chemical of potential concern
DEQ	Oregon Department of Environmental Quality
EPA	U.S. Environmental Protection Agency
ESA	environmental site assessment
FAA	flame atomic absorption spectrophotometry
FSDS	field sampling data sheet
HASP	Health and Safety Plan
HBM	hazardous building material
HUD	United States Department of Housing and Urban Development
IDW	investigation-derived waste
LBP	lead-based paint
MFA	Maul Foster & Alongi, Inc.
MRL	method reporting limits
NIOSH	National Institute for Occupational Safety & Health
OAR	Oregon Administrative Rule
OHA	Oregon Health Authority
OSHA	Occupational Safety and Health Administration
PAH	polycyclic aromatic hydrocarbons
PCM	phase contrast microscopy
QAPP	Brownfield Program Quality Assurance Project Plan
QA/QC	quality assurance and quality control
SOP	standard operating procedures
the Site	Lincoln School, 550 North Court Avenue, Burns, Harney County, Oregon
TPH	total petroleum hydrocarbons
TSCA	Toxics Substances and Control Act
TSI	thermal system insulation
VOC	volatile organic compounds

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1 Introduction

Maul Foster & Alongi, Inc. (MFA) prepared this Work Plan to present the scope of work for a cleanup project at the former Lincoln School located at 550 North Court Avenue in Burns, Harney County, Oregon (the Site) (Figure 1-1). This Work Plan was prepared for the Oregon Department of Environmental Quality (DEQ), and on behalf of Harney County, under Task 6 of Task Order 067-23-12 and will be implemented under a separate task order (#067-23-19). This Work Plan fulfills Task 2.3.5 of the Harney County Cleanup Grant Work Plan.

1.1 Purpose

The purpose of this project is to cleanup and abate the identified site hazards at the Lincoln School property to assist Harney County with reuse of the Site. Harney County proposes to redevelop the Site as a new Justice Center.

In 2020, Harney County received United States Environmental Protection Agency (EPA) Brownfields Assessment Grant BF-01J86601 to investigate the Site. Using this funding, a Phase I environmental site assessment (ESA) and hazardous building materials (HBM) assessment were performed. The Phase I ESA (Cardno 2022) identified a 10,000-gallon heating oil aboveground storage tank (AST) in the School situated within a secondary containment structure which appeared to be in good condition. However, significant petroleum staining is present on the floor beneath and surrounding the associated steam boiler. The HBM survey included inspection for asbestos-containing materials (ACM) and lead-based paints (LBP). These assessments identified environmental impacts and liabilities associated with hazardous substances, regulated materials, and petroleum products at the Site.

In 2023, Harney County received an EPA-funded Brownfields Cleanup Grant CA# 4B-02J52001 for the purpose of properly and safely removing hazardous building materials and decommissioning the heating oil AST at the former Lincoln School prior to redevelopment of the Site.

In August 2024, during an optional site visit, a bidder noticed that the previously identified heating oil AST was actually a steam boiler. The heating oil AST supplying the steam boiler was located behind a concrete block partition wall that bisects the boiler room building. The heating oil AST is accessed via a rooftop hatch but is otherwise closed off from the rest of the boiler room (confined space). Due to this discovery and the implications for work being completed under this TO, the DEQ requested that the draft Work Plan and AST subcontractor procurement documents be revised. Further, EPA requested a Supplemental Analysis of Brownfield Cleanup Alternatives (ABCA) Memorandum be prepared to document the change in decommissioning the heating oil AST by removal to in-place.

1.2 Scope of Work

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

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- Abate ACMs.
- Removal or encapsulation of LBPs.
- Confined space entry and in-place heating oil AST decommissioning.
- Removal of the steam boiler.
- Assessment of surface and subsurface conditions adjacent to the boiler room building.
- Repair and cleaning of the concrete slab flooring surrounding the steam boiler from petroleum releases/spills.
- Management of investigation-derived waste (IDW).
- Preparation of a report discussing the above activities, the analytical results, and the potential risks posed by chemical contamination at the Site.

The activities proposed for this scope of work are discussed in further detail in this Work Plan.

2 Background

The Site was developed as early as 1912 for use as a school. The three-story School is approximately 28,375 square-feet and has been unoccupied for the past several years. Harney County acquired the property in 2022 from the school district.

A Phase I ESA (Cardno 2022) identified a 10,000-gallon heating oil AST in the School which appeared to be in good condition, however significant petroleum staining is present on the floor beneath and surrounding a Cleaver Brooks steam boiler. A survey for ACM and LBP was performed (Cardno 2021) and identified several building materials containing regulated amounts of asbestos and surfaces coated with LBP. An ABCA (MFA 2024) was prepared which summarized the findings of assessment work completed and presented three environmental cleanup alternatives for each of the environmental concerns identified. The recommended cleanup alternative was for full abatement of ACMs, mixed removal and encapsulation of LBP, and removal and cleanup of the heating oil AST.

Harney County and DEQ entered into an Intergovernmental Agreement, where DEQ would act as the qualified environmental professional for the Site to provide technical assistance, regulatory oversight, and conduct the cleanup using DEQ contractors.

2.1 Data Gaps Investigation

On February 12, 2024, MFA performed additional asbestos sampling to address survey data gaps. Chris Clough, an Asbestos Hazard Emergency Response Act (AHERA)-certified inspector (see Appendix A) from MFA collected samples from materials within the Lincoln School Building that DEQ and MFA agreed had not been previously assessed. A total of 8 samples were collected, comprised of 14 sample layers. The samples were submitted to Pace Analytical, under a State of Oregon price agreement. The samples were then analyzed by Aerobiology Laboratory Associates, Inc., A Pace Analytical Laboratory. This laboratory participates in the NVLAP Laboratory Accreditation Program-accredited program. The samples were analyzed for:

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Asbestos in Bulk Building Materials by EPA Method 600/R-93/116.

The laboratory report is included as Appendix B and a sample table is provided in Appendix C.

The analytical results (samples 01-MISC-LJH-01 and 01-MISC-LJH-02) indicate that ACM is present in vinyl flooring (25% chrysotile asbestos) in the restrooms on the second floor of the Lincoln School Building. Approximately 450 square feet of vinyl flooring is present.

3 Cleanup Activities

3.1 Preparatory Activities

Site Health and Safety Plan. A site-specific Health and Safety Plan (HASP) has been prepared for the proposed activities, included in Appendix D. The HASP was prepared in general accordance with the Occupational Safety and Health Act and the Oregon Administrative Rules (OARs). 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.

Property Access and Work Notification. DEQ has coordinated Site access with Harney County. MFA will work with DEQ and Harney County on the work schedule.

Subcontractor Procurement. A number of subcontractors will be procured to complete the cleanup project, these subcontractors will include:

- Asbestos and lead abatement subcontractor.
- Third-party air clearance monitoring subcontractor.
- Heating oil AST decommissioning and steam boiler removal subcontractor.
- Private utility locating subcontractor.
- Drilling services subcontractor.
- IDW disposal subcontractor.

Underground Utility Location. A public utility notification request will be submitted through the Oregon Utility Notification Center, which will notify the various utilities in the area to mark any underground installations. In addition, a private utility locate will be conducted prior to subsurface activities. See Appendix E for MFA's standard operating procedure (SOP) 18 for coordinating and conducting underground utility locates.

3.2 Cleanup Activities

3.2.1 Hazardous Building Materials Abatement

MFA will procure a subcontractor to remove, encapsulate, or abate each of the HBMs from the former Lincoln School.

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3.2.1.1 Asbestos Abatement

Asbestos abatement will be performed in general accordance with all DEQ and EPA regulations pertaining to abatement activities. Asbestos is regulated by the AHERA, Toxics Substances and Control Act (TSCA), the Clean Air Act, and OAR 340-248. Asbestos abatement work must be performed in accordance with Occupational Safety and Health Administration (OSHA) asbestos regulations per 29 Code of Federal Regulations (CFR) 1926.1101 to ensure protection of asbestos abatement workers.

Abatement personnel must be licensed in the State of Oregon and will operate under a Certified Abatement Supervisor, who will be responsible for the abatement activities, DEQ abatement notifications, and other required paperwork.

Asbestos will be abated from within and on the Lincoln School Building. The following materials and quantities were identified by an August 2021, ACM and LBP survey for the Site (Cardno 2021).

- 3,800 square feet of various vinyl floor tile and black mastic.
- 50 linear feet of roof penetration mastic.
- 19,000 square feet of non-asbestos drywall with 2% asbestos-containing white joint compound[1].
- 100 square feet of boiler thermal system insulation (TSI) [significantly degraded in some areas, including the Boiler Room].
- 950 linear feet of variously sized TSI piping.
- 900 linear feet of exterior window caulk.
- 500 square feet of linoleum.

In addition to the 2021 survey, the following additional materials were identified in February 2024.

- 450 square feet of asbestos vinyl flooring.
- 100 square feet of presumed ACM insulation jacket on the exterior of the boiler.
- Up to 10 presumed ACM gaskets on the piping and hatches of the boiler.

All abatement must be performed within regulated areas. Access to these areas shall be limited to trained and licensed personnel who need to access the abatement locations. Regulated areas shall have signage and danger asbestos warning tape to warn individuals of the potential hazard in accordance with OAR 340-248-0010(38). All materials shall be adequately wetted to prevent fiber release during abatement activities and wastes must be packaged as required for asbestos-containing waste materials (ACWMs). ACWMs shall be contained within two or more layers of sealed 6-mil plastic bags or sheeting and must be properly labeled, per OAR 340-248-0280(2)(b). The waste must be securely packaged and stored within a regulated area until it can be removed offsite for disposal at a solid waste disposal facility permitted to accept ACWMs.

Class I abatement work is the removal and abatement of TSI and surfacing. The class I abatement work to be conducted for this project includes the boiler room TSI, TSI present in the remaining school building, insulation jackets, and gaskets. All class I and friable materials abatement shall be conducted in a negative pressure enclosure with an attached and functioning manometer to confirm

[1] Composite analysis of the wallboard system (i.e., drywall, seam tape, joint compound) by the laboratory reported <1% asbestos and, therefore, the wallboard systems are not a DEQ-regulated ACM.

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that a negative pressure of 0.02 inches of water is maintained during abatement activities, unless DEQ exempted by OAR 340-248-0270(8)(e)(F).

3.2.1.2 Lead Paint Encapsulation and Removal

LBP encapsulation and abatement will be performed in general accordance with all Oregon Health Authority (OHA) and EPA regulations pertaining to these abatement activities. Proposed reuse of the Site does not include pre-1978 housing nor use as a child-occupied facility and, as such, does not require abatement to be performed by OHA-licensed abatement firm. At minimum, workers should have lead-awareness training, be medically cleared to perform work in respirators, and have training and experience to ensure proper materials handling, worker protections, and prevention of release to the environment. TSCA regulations and environmental product declaration rules also establish clearance procedures for lead abatement projects.

LBP will be encapsulated or removed from within and on the Lincoln School Building. The following LBPs were identified by an August 2021, ACM and LBP survey for the Site (Cardno 2021).

- 1,000 square feet of light gray paint on the interior walls of room 201.
- 1,200 square feet of gray paint on the interior walls of the auditorium.

Based on the substrate that the LBP was adhered to, encapsulation was selected as the preferred abatement method for LBP on concrete or other hard surfaces and removal was selected for drywall or other “soft” surfaces. Lead will be removed or encapsulated, based on the substrate and clearance sampling will be conducted prior to determining the abatement to be successfully completed.

3.2.2 Heating Oil AST Decommissioning & Steam Boiler Removal

As part of this cleanup project, the approximately 10,000-gallon heating oil AST will be decommissioned in-place. MFA understands that the decommissioning of the heating oil AST will necessitate permit-required confined space work, the requirements of such work will be the responsibility of the selected subcontractor. A representative of MFA will be present to observe the work and document the activities but will not under any circumstances enter the confined space or perform any duties associated with the confined space entry. The following tasks will be performed by the AST decommissioning service provider:

- Obtain any necessary confined space entry permits.
- Remove residual tank contents from the heating oil AST. The current heating oil AST conditions have not been confirmed but are reportedly partially filled with heating-oil fuel (Harney County has estimated that approximately 3,000-gallons of residual fuel oil remain in the tank). If material is present within the heating oil AST, the AST decommissioning service provider will remove and containerize these materials before rinsing the AST. Liquids will be transported offsite for recycling and/or disposal along with rinse water used to clean equipment.
- Drain, disconnect, and remove system piping from the heating oil AST.
- Prepare and inert the heating oil AST for decommissioning. The atmosphere of the AST will be tested by the subcontractor, at various levels, using a combustible gas indicator.
- Cut open and triple rinse the inside of the heating oil AST.
- Cap all openings on the tank.

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- Sludge and scale (if present) will be removed from the heating oil AST, contained, and disposed of by the AST decommissioning subcontractor.

The AST subcontractor must recycle or dispose of the non-sludge liquids. The removed materials (e.g., supply lines and vent lines) will be handled, transported, and disposed of in accordance with all federal, state, and local requirements. Metals components must be recycled at the closest practicable facility or at facilities that limit additional trips or deviation from routes already traveled by the subcontractor. These efforts are being taken to increase the sustainability of the cleanup project.

Additionally, the AST decommissioning subcontractor will be responsible for performing additional activities to remediate the boiler room and address a sump and hole in the concrete floor that may have been conduits for subsurface contamination. The AST subcontractor will also perform the following:

- Removal of the steam boiler and associated equipment and components, after abatement of ACMs by the hazardous building materials subcontractor.
- The steam boiler will need to be disassembled to facilitate the removal from the boiler room. No modifications to the building are planned. The steam boiler pieces and associated components will be transported offsite for disposal or recycling.
- Sewer scoping a sump associated with the boiler system. A pipe is present in the sump that may connect with a nearby catch basin (located outside of the boiler room doors, at the bottom of the stairs). It is unknown if the sump and catch basin are connected and the discharge location of the catch basin. The sump and catch basin locations are shown on Figure 3-1. The AST subcontractor will scope between the two locations and if accessible, will attempt to locate the discharge location of the sump up to a distance of 100 feet, unless the discharge location has already been determined.
- The AST subcontractor shall grout the sump and an approximately 2 foot by 2 foot area of missing floor with an estimated depth of 4 inches. This area is in the boiler room, southwest of the steam boiler. These locations will be grouted to limit potential for releases of materials from the boiler room to the environment and prevent direct contact with potential contamination in subsurface soil.
- Surface staining within the boiler room will be addressed through cleaning and pressure washing activities. After the sump and hole in the boiler room floor have been grouted and allowed to solidify, the subcontractor will clean the floor with appropriate cleaning products, brushes, and or pressure washing equipment. The subcontractor will collect cleaning liquids generated during this activity for offsite disposal.

3.2.3 Surface and Subsurface Assessment

Push Probe Explorations. Up to nine borings for surface and subsurface sample collection will be advanced using push probe technology by a driller licensed in the State of Oregon. Five proposed locations are presented on Figure 3-1. The proposed borings were located to assess potential contamination from the AST and boiler system. Field relocation of borings may be needed to property address conditions noted during prior Site inspections including a sump, other floor cracks and voids, or based on utility conflicts.

Up to six of the nine borings will be advanced up to 25 feet below ground surface (bgs), until groundwater is encountered, or until refusal in accordance with SOP 7 (see SOPs in Appendix E).

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Continuous soil cores will be retrieved for observation and field screening. Lithologic logging will be conducted for each boring in accordance with SOP 2. The soil will be screened in the field using techniques described in the sampling and analysis plan (Section 4). Soil cores will be field screened for the presence of volatiles in accordance with SOP 3 using a photoionization detector and for petroleum hydrocarbons using a sheen test. Visual and olfactory observations will also be noted. Boring logs will be prepared at each boring and documented in future reporting. At minimum, soil samples will be collected from each completed boring. In the event that groundwater is encountered, a groundwater sample will also be collected. Samples will be collected from each boring as described in Section 4.1.4.

The remaining three borings will be completed for soil vapor sample collection. These boring locations will be field determined based on the results of the utility locates, observations during prior borings, and other Site conditions. In accordance with DEQ's soil vapor sampling guidance, borings will be advanced to at least 5 feet bgs for temporary soil vapor well installation (DEQ 2024) and vapor sampling.

3.2.4 Waste Handling and Disposal

Wastes generated during this project will potentially consist of: (1) IDW soil and water from borings; (2) AST contents; (3) AST rinse water; (4) residual AST sludges; (5) cleaning liquids from addressing boiler room floor staining; (6) hazardous building materials; and (7) disposable sampling equipment and personal protective equipment.

The AST subcontractor will be responsible for removing liquids in the tank, the triple rinse liquids, cleaning liquids generated by cleaning the staining from the boiler room floor; and supplying containers to contain these wastes. These containers must be Department of Transportation approved 55-gallon drums or portable tanks, at the discretion of the AST subcontractor.

The drilling services subcontractor will be responsible for providing Department of Transportation approved 55-gallon drums for soil and water storage associated with borings.

Abatement subcontractors will handle, package, transport, and dispose of hazardous building materials and any disposable equipment, supplies and personal protective equipment used during abatement, except for lead paint chips that have become separated from the building substrate. Paint chips containing lead and not well adhered to a building substrate must be containerized, sampled, and disposed of by a licensed waste hauler. Lead paint chips, depending on lead concentrations and leaching ability, may be considered a hazardous waste.

Wastes will be disposed of at appropriately permitted facilities and documented in the Cleanup Completion Report, discussed in Section 5.0. Chemical wastes (soil and water associated with the borings, tank contents, and rinse waters) will be disposed of an approved subtitle-D landfill. ACWMs will be disposed of at a landfill with permitted to accept asbestos wastes and tracked using the ASN-4 Asbestos Waste Shipment Report Form. Metal parts and components from the heating oil AST decommissioning and steam boiler removal must be recycled at an approved recycling facility. Disposable sampling equipment and non-abatement personal protective equipment will be disposed of as solid waste.

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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 general accordance with the DEQ's Brownfield Program Quality Assurance Project Plan (QAPP) (DEQ 2016). Quality assurance and quality control (QA/QC) procedures are discussed in Section 4.2.

4.1 Sampling Methods and Sampling Handling

Samples will be collected during the field activities in accordance with the following procedures and SOPs (Appendix E). Equipment blanks and field duplicates will also be collected for analysis (see Section 4.3.2).

4.1.1 Hazardous Building Material Sampling

Bulk Asbestos-Containing Materials. Additional bulk ACM samples may be collected during the abatement activities, if suspect materials are discovered during the course of work. These bulk samples may include thermal system insulation, surfacing materials, roofing materials, and miscellaneous building materials. Samples will be collected using hand tools and placed into labeled sample bags. These samples will be classified under distinct homogeneous areas and collected using methods consistent with AHERA and industry standard sampling protocols. Records of each sample will be recorded on field sampling data sheets (FSDSs) or equivalent.

Lead-Based Paint. MFA field staff may collect additional paint chip samples in the event it is required during the abatement activities. Painted or coated surfaces will be wetted and scraped to remove the sample from the substrate and paint chip samples will be placed in labeled sample bags. Records of each sample will be recorded on FSDSs.

4.1.2 Air Monitoring Samples

Air monitoring samples will be collected by MFA, the abatement subcontractor, and third-party air monitoring subcontractors, as required by regulations and best management practices. Air monitoring samples will be collected onto disposable Phase Contract Microscopy (PCM) cassettes for on-Site and/or laboratory analysis. Air monitoring will include area, perimeter, personnel, and clearance samples, each of which is described below.

- Area samples will be collected to establish fiber counts in a given area, either for pre- or post-abatement. These samples are collected using air sampling pumps at flow rates of between 5 and 20 liters per minute with a typical total volume of between 1,200 to 3,000 liters.
- Perimeter samples will be collected outside of regulated areas or along the perimeter of work zones to monitor for the potential for fiber release to public areas. These samples are collected using air sampling pumps at flow rates of between 5 and 20 liters per minute with a typical total volume of between 1,200 to 3,000 liters.
- Personnel samples will be collected on workers within the regulated area to monitor for fiber exposure and compliance with OSHA permissible exposure limits and threshold limit values. These are typically collected utilizing battery-powered low volume pumps. At least one sample is

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collected each 8-hour work day as required by 29 CFR 1926.1101 and state regulations. The collection of personnel samples is the responsibility of the Certified Abatement Supervisor that is on Site. They will determine which workers are expected to be exposed to the highest fiber concentrations and the number of air samples to be collected. The abatement subcontractors will provide the laboratory results of personal air monitoring samples to MFA to be included in reporting and project documentation.

- Final air clearance samples will be collected from regulated abatement areas after the completion of abatement activities but before the regulated area is reopened for non-abatement personnel. A visual inspection is completed by a third-party representative to inspect the complete removal of ACM and the proper cleaning and preparation of the area for unrestricted use. Once the inspection has been documented, the clearance sampling may begin.

  Clearance sampling will be conducted in accordance with DEQ and EPA regulations. If the regulated area is under negative pressure, clearance sampling will be aggressive in nature, utilizing a fan or equivalent as specified in OAR 340-248-0270(8)(k)(C). Samples will be collected onto PCM cassettes using a sampling pump with flow rates of between 1 and 10 liters per minute for a total volume of at least 1,200 liters. Clearance samples will be analyzed on-Site by a third-party analyst having National Institute for Occupational Safety & Health (NIOSH) 582 equivalent training. Clearance sample results will be shared with the Abatement Subcontractor to allow for removal of the regulated area and reported to MFA for inclusion in reporting and project documentation. OAR 340-248-0270 requires the reporting of clearance samples on ASN-5 Air Clearance Sample Results Forms.

4.1.3 Dust Wipe Samples

Dust wipe samples will be collected to assess completed lead abatement areas. Wipe samples are collected onto approved wipe media sourced through laboratories or other appropriate sources and shall confirm to the requirements of 40 CFR 745.63. Wipe samples will be collected in general accordance with United States Department of Housing and Urban Development (HUD) guidance for Wipe Sampling of Settled Dust for Lead Determination (HUD 2012). Appendix 13.1 of the HUD guidance is provided in Appendix F of this work plan.

After sample collection, the wipes are placed into clean containers and records of each sample will be recorded on FSDSs.

4.1.4 Surface and Subsurface Sampling

4.1.4.1 Field Screening

Soil cores during sample collection will be field screened for volatile organic compounds (VOCs) in accordance with SOP 3, using a photoionization detector and for heavier hydrocarbons (such as oil) using a sheen test (a visual inspection for assessing if an oily sheen is present). The sheen test will be conducted by placing a small portion of the soil sample 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.

4.1.4.2 Soil Sampling

Soil cores will be field screened as detailed in Section 4.1.4.1 Two soil samples will be collected from each boring, one in shallow soils below surface finishes (i.e., asphalt or concrete pavement) and a

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second at a deeper location within the core. If groundwater is encountered, the second sample would be collected from just above the soil water interface.

Additional samples may be collected from surface soils or from borings with evidence of impacts. The determination to collect and analyze additional samples will be made in consultation with the DEQ Technical Lead. All samples will be prepared, handled, and documented in accordance with SOP 4 (Appendix E).

4.1.4.3 Groundwater Sampling

If groundwater is encountered in the borings, groundwater sampling will be conducted in accordance with SOPs 7, 9, and 13 (see Appendix E). Groundwater samples from each boring will be collected using a peristaltic pump and dedicated polyethylene tubing.

4.1.4.4 Soil Vapor Sampling

Soil vapor samples will be collected in accordance with MFA SOP 16 (see Appendix E). The soil vapor samples will be collected from temporary soil vapor points. The target sample depth for sample collection is 4 to 5 feet bgs. Once the temporary soil vapor well is installed and ready to be sampled, the upper end of the tubing will be connected to the purging/sampling system. A flow controller will be attached to the sample setup to regulate the flow of vapor into the sample container. The line will be purged for at least one minute or a period of time sufficient to achieve a purge volume that equals at least three pore volumes, and then the sample will be collected. Helium will be contained in a small tent-like structure (shroud) that is set up around the sampling apparatus and sampling location and will serve as a leak-check compound. Then the sample will be collected using a laboratory-supplied stainless-steel canister (e.g., Summa® canister) or another appropriate container.

4.1.5 Sampling Handling and Storage

ACM and LBP samples will be placed in clean, dedicated, labeled bags. Other samples will be placed into clean sample containers which will be provided by the analytical laboratory ready for sample collection, including preservatives, 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 being transported to refrigerated storage or to the analytical laboratory. Chain-of-custody will be maintained and documented at all times.

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 be completed in accordance with SOP 1 (Appendix E).

4.2 Analyses for Chemicals of Concern

Samples will be submitted to an analytical laboratory for analysis. Chemicals of potential concern (COPCs) at this Site include diesel- and heavy oil-range total petroleum hydrocarbons (TPH); VOCs; polycyclic aromatic hydrocarbons (PAHs); lead (paint), and asbestos. Environmental samples will be analyzed on a standard turnaround time (usually 10 business days). HBM samples will be analyzed on expedited turnaround of 1 to 5 days based on project need. DEQ will be consulted when selecting

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expedited turnaround times to concur on the assessment of costs and impact to project schedule. See Table 4-1 for a summary of the analytical methods and sample container requirements for HBM, soil, water, and soil vapor samples. See Table 4-2 for a summary of the analytical methods and detection limit goals for soil, water, and soil vapor samples.

4.2.1 Bulk Asbestos-Containing Material Samples

Suspected ACM samples will be submitted for polarized light microscopy analysis by EPA Method 600/R-93-116.

The samples will be submitted to a National Voluntary Laboratory Accreditation Program accredited laboratory for analysis.

4.2.2 Paint Chip Samples

LBP samples will be analyzed for lead by EPA Method 7000B [i.e., flame atomic absorption spectrophotometry (FAA)].

The samples will be submitted to a National Lead Laboratory Accreditation Program accredited laboratory for analysis.

4.2.3 Air Monitoring Samples

PCM air samples will be analyzed on-Site by personnel or offsite laboratory with NIOSH 582 equivalent training. These samples are read utilizing a phase contrast microscope for a statistical fiber count and comparison with standard and background readings.

4.2.4 Dust Wipe Samples

Surface dust wipe samples will be analyzed for lead FAA to be compared with EPA screening limits for lead dust per square foot for the applicable testing location.

4.2.5 Soil Samples

Soil samples will be analyzed for diesel- and heavy-oil-range TPH by NWTPH-Dx (with silica gel cleanup), VOCs by EPA Method 8260, and PAHs by EPA 8270D-SIM

The requested method reporting limits (MRLs) and method detection limits will be consistent with the DEQ RBCs (where practicable).

4.2.6 Groundwater Samples

Groundwater samples collected during the project will be analyzed for diesel- and heavy-oil-range TPH by NWTPH-Dx (with silica gel cleanup), VOCs by EPA Method 8260, and PAH by EPA 8270D-SIM.

The requested MRLs and method detection limits will be consistent with the DEQ RBCs (where practicable).

4.2.7 Soil Vapor Samples

Soil vapor samples will be analyzed for VOCs by Modified EPA Method TO-15 using laboratory-supplied depressurized Summa canisters. For quality assurance, each sample will also be analyzed

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for helium consistent with ASTM International Method D1946 with a MRL of approximately 1 percent.

The MRLs assume a 6-liter sample size, with the canister dilution factor not incorporated. The dilution factor is determined by the canister size and residual vacuum. For example, a 1-liter sample with a vacuum of 5 inches of mercury would have an MRL approximately 2.4 times higher than the values provided in the attached table. If there are high concentrations of nontarget analytes in the samples (e.g., methylene chloride, acetone), the laboratory may dilute the sample to avoid overloading and damaging its instruments. The requested MRLs will be consistent with DEQ Vapor Intrusion Screening Levels, where practicable.

4.3 Quality Assurance and Quality Control

The QAPP presents quality objectives and procedures for sampling and analysis. Laboratory QA/QC will include a method blank and a batch laboratory control sample and laboratory control sample duplicate. Method and batch blanks will not be analyzed for HBM samples.

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 cleanup of identified hazardous substances. 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, a minimum of one duplicate will be collected (duplicate PCM, dust wipe, and soil vapor samples will not be collected). For nonaqueous matrices, sample heterogeneity may affect the measured precision for the duplicate sample.

Field Blanks. PCM analysis of air samples requires that blanks be assessed at regular intervals to assess the manufacturing, storage, handling, and field procedures of PCM cassettes. A minimum of one field blank per 8-hour work shift will be collected or upon opening each box of PCM sample cassettes. Field blanks are frequently collected when utilizing dust wipes to assess background contamination that may be present from manufacturing and storage of the wipe media. One blank will be collected for each box of wipes that are collected.

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 certified distilled or deionized water

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over or through decontaminated (clean) nondisposable sampling equipment used in the collection of samples and will be 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. The number of equipment rinsate blanks to be collected will be determined in the field based on equipment reuse. Rinsate blanks will not be required if disposable or dedicated equipment is used for sampling.

4.3.3 Laboratory QA/QC

The laboratory will also perform QC analyses (e.g., matrix spikes and method blanks) per the requirements of the analytical method and as indicated by laboratory SOPs. 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 completion of the onsite activities and receipt of analytical results, a Cleanup Completion Report will be prepared that presents general information about the Site and nearby vicinity, the Site activities, and the chemical results, and screening of the chemical results to assess the cleanup actions. The screening will be performed by comparing detected concentrations of chemical constituents to applicable screening levels.

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

1. Introduction
    a. Purpose
    b. Scope of Work
2. Background
    a. Site Location and Description
    b. Geology and Hydrogeology
    c. Previous Environmental Activities
3. Site Activities
4. Preparatory Activities
    a. Notifications
    b. Utility Locates
5. Cleanup Activities
    a. Abatement Activities
    b. Heating Oil AST Decommissioning and Steam Boiler Removal

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   c. Subsurface Explorations
   d. Waste Disposal
6. Chemical Analysis and Results
   a. Analytes Performed
   b. Chemical Results
7. Conclusions
8. Appendices
   a. Photographs
   b. Field Methods and Sampling Procedures
   c. Field documentation
   d. Boring Logs
   e. Analytical Laboratory Documentation and Data Validation

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.

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6 References

Cardno. 2021. Asbestos & Lead-Based Paint Survey Report, Lincoln School, 550 North Court Avenue, Burns, Harney County, Oregon. Prepared for Harney County, Oregon. Prepared by Cardno. September 9.

Cardno. 2022. Updated Phase I Environmental Site Assessment, Lincoln School, 550 North Court Avenue, Burns, Harney County, Oregon. Prepared for County of Harney, Oregon. Prepared by Cardno. August 30.

DEQ. 2016. Quality Assurance Project Plan, Brownfield Program. Oregon Department of Environmental Quality: Portland, OR. November.

DEQ. 2024. Draft Guidance for assessing and remediating vapor intrusion into buildings. Oregon Department of Environmental Quality: Portland, OR. March.

HUD. 2012. Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing. United States Department of Housing and Urban Development, Second Edition, July.

MFA. 2024. Analysis of Brownfield Cleanup Alternatives, Lincoln School, 550 North Court Avenue Burns, Oregon. Maul Foster & Alongi, Inc., May 21.

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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.

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Figures

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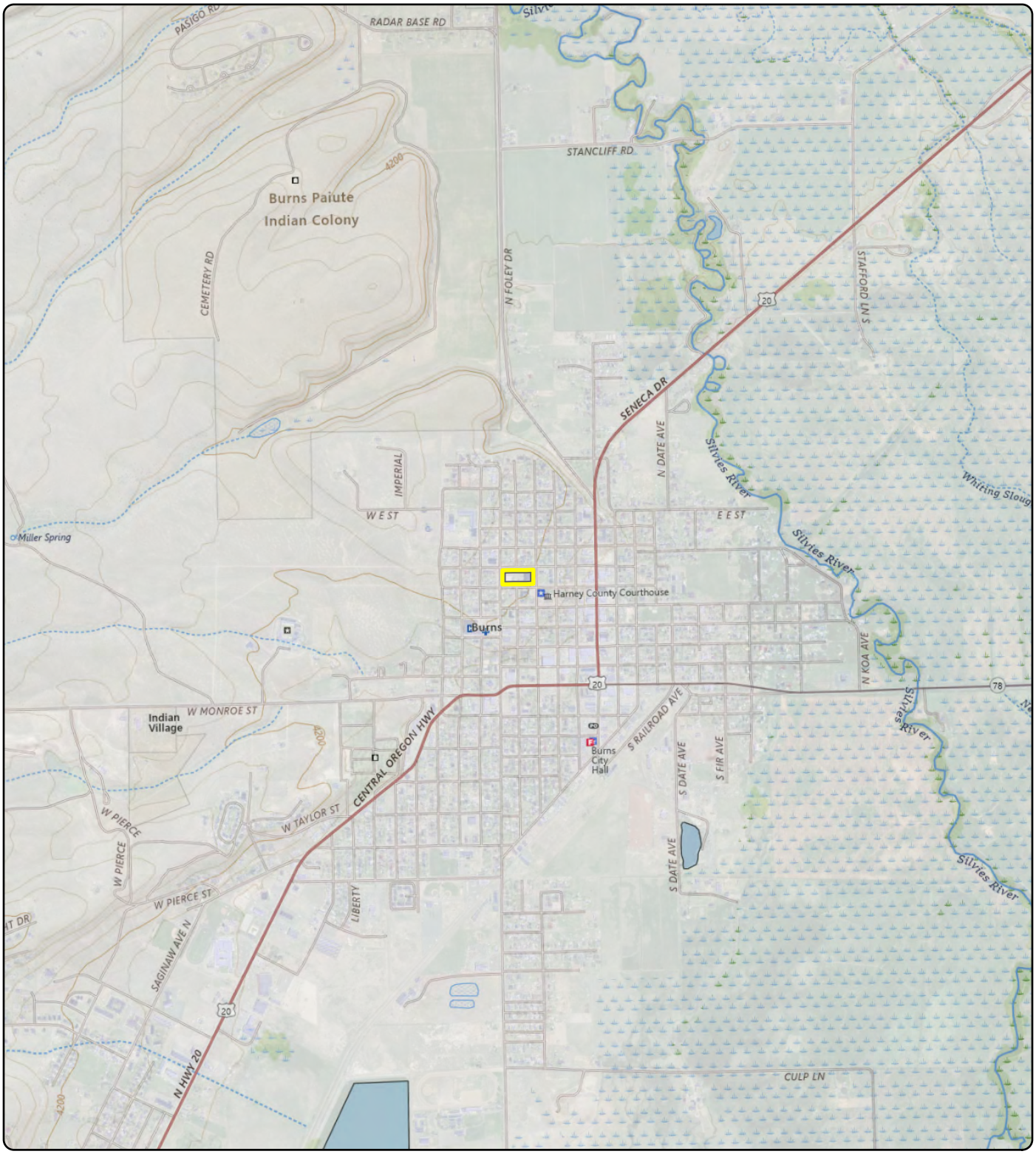

Notes
U.S. Geological Survey 7.5-minute topographic quadrangle (2020): Burns.
Township 23 south, range 31 east, section 7.

Data Source
Site boundary obtained from Harney County.

Legend

Site Boundary

Figure 1-1
Site Location

Lincoln School Cleanup Work Plan
550 North Court Avenue
Burns, Oregon

0 1,000 2,000
Feet

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Path: X:\O_MFA_Projects\M0785\28\001\Pro\M0785_28_001_004.aprx\Fig 1-1 Site Location
Print Date: 4/30/2024
Reviewed By: jhansen
Produced By: sturner
Project: M0785.28.001-004

Path: X:\Q_MFA_Projects\M0785\28\001\Pro\M0785_28_001_004.aprx\Fig 1-3 Locations of Environmental Impacts
Project: M0785.28.001.004 Produced By: sturner Reviewed By: jhansen Print Date: 5/2/2024

Figure 3-1
Site Overview and Proposed Boring Locations

Lincoln School Cleanup
Work Plan
550 North Court Avenue
Burns, Oregon

Legend

- HOT
- ACM and LBP Abatement Areas
- Site Boundary
- Tax Parcels
- Proposed Boring Locations

Note
ACM = asbestos-containing materials.
HOT = aboveground heating oil tank.
LBP = lead-based paint.

0 50
Feet

Data Sources
Aerial photograph obtained from Bing; tax lot data obtained from Harney County.

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Tables

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Table 4-1
Analytical Methods and Sample Container Requirements
DEQ—Lincoln School Cleanup
Burns, Oregon

Sample Matrix	Method	Parameter or Parameter Group	Container	Preservation	Storage Temperature	Hold Time
Soil	NWTPH-Dx (silica gel)	Diesel and oil	4 oz jar	None	4°C	14 days
	EPA 8260	VOCs	EPA 5035 kit[(a)]	MeOH	4°C	14 days
	EPA 8270D	PAHs	4 oz jar	None	4°C	14 days
Groundwater	NWTPH-Dx	Diesel and oil	2 x 100 mL amber glass	HCl	4°C	14 days
	EPA 8260	VOCs	3 x 40-mL VOAs	HCl	4°C	14 days
	EPA 8270D	PAHs	1 liter amber glass	None	4°C	7 days
Soil Gas	TO-15 Modified	VOCs	Summa Canister	None	Ambient	30 days
	ASTM D1946	Helium	Summa Canister	None	Ambient	30 days
Asbestos	PLM EPA 600/R-93/116	Asbestos fiber in materials	Bag	None	Ambient	None
	PCM NIOSH 7400	Fibers in air	PCM Cassette	None	Ambient	None
Lead	EPA Method 7000B (for FAA)	Lead in paint chips	Bag	None	Ambient	None
	EPA Method 7000B (for FAA)	Lead in dust wipe	Dust wipe container	None	Ambient	None

NOTES:

°C = degrees Celsius.

Dx = diesel- and oil-range TPH.

EPA = U.S. Environmental Protection Agency.

FAA = flame atomic absorption spectrophotometry.

mL = milliliter.

NWTPH = Northwest Total Petroleum Hydrocarbons.

oz = ounces.

PAH = polycyclic aromatic hydrocarbon.

PCM = phase contrast microscopy.

PLM = polarized light microscopy.

VOA = volatile organic analysis.

VOC = volatile organic compound.

Table 4-2
Analytical Method and Detection Limit Goals For Chemical Analytes
DEQ—Lincoln School Cleanup
Burns, Oregon

		Soil (mg/kg)		Groundwater (ug/L)		Soil Gas (ug/m^3)	
Method	Parameter	MDL	MRL	MDL	MRL	MDL	MRL
Total Petroleum Hydrocarbons							
NWTPH-Dx (silica gel)	Diesel	1.33	4	33	100	--	--
NWTPH-Dx (silica gel)	Oil	3.33	10	82.5	250	--	--
Volatile Organic Compounds							
EPA 8260C/TO-15	Acetone	0.0137	0.025	10	50	--	3
EPA 8260C/TO-15	Acrylonitrile	0.0019	0.0125	1.87	10	--	--
EPA 8260C/TO-15	Benzene	0.0004	0.001	0.331	1	--	0.64
EPA 8260C/TO-15	Bromobenzene	0.00105	0.0125	0.352	1	--	--
EPA 8260C/TO-15	Bromodichloromethane	0.000788	0.0025	0.38	1	--	1.3
EPA 8260C/TO-15	Bromoform	0.00598	0.025	0.469	1	--	6.2
EPA 8260C/TO-15	Bromomethane	0.0037	0.0125	0.866	5	--	0.78
EPA 8260C/TO-15	N-butylbenzene	0.00384	0.0125	0.361	1	--	--
EPA 8260C/TO-15	Sec-butylbenzene	0.00253	0.0125	0.365	1	--	--
EPA 8260C/TO-15	Tert-butylbenzene	0.00155	0.005	0.399	1	--	--
EPA 8260C/TO-15	Carbon disulfide	0.00406	0.0125	0.275	1	--	0.96
EPA 8260C/TO-15	Carbon tetrachloride	0.00108	0.005	0.379	1	--	1.3
EPA 8260C/TO-15	Chlorobenzene	0.000573	0.0025	0.348	1	--	0.92
EPA 8260C/TO-15	Chlorodibromomethane	0.00045	0.0025	0.327	1	--	1.7
EPA 8260C/TO-15	Chloroethane	0.00108	0.005	0.453	5	--	0.53
EPA 8260C/TO-15	Chloroform	0.000415	0.0025	0.324	5	--	0.97
EPA 8260C/TO-15	Chloromethane	0.00139	0.0125	0.276	2.5	--	0.41
EPA 8260C/TO-15	2-chlorotoluene	0.00092	0.0025	0.375	1	--	1.03
EPA 8260C/TO-15	4-chlorotoluene	0.00113	0.005	0.351	1	--	--
EPA 8260C/TO-15	1,2-dibromo-3-chloropropane	0.0051	0.025	1.33	5	--	--
EPA 8260C/TO-15	1,2-dibromoethane	0.000525	0.0025	0.381	1	--	1.5
EPA 8260C/TO-15	Dibromomethane	0.001	0.005	0.346	1	--	--
EPA 8260C/TO-15	1,2-dichlorobenzene	0.00145	0.005	0.349	1	--	1.2
EPA 8260C/TO-15	1,3-dichlorobenzene	0.0017	0.005	0.22	1	--	1.2
EPA 8260C/TO-15	1,4-dichlorobenzene	0.00197	0.005	0.274	1	--	1.2
EPA 8260C/TO-15	Dichlorodifluoromethane	0.000818	0.0025	0.551	5	--	0.99
EPA 8260C/TO-15	1,1-dichloroethane	0.000575	0.0025	0.259	1	--	0.81
EPA 8260C/TO-15	1,2-dichloroethane	0.000475	0.0025	0.361	1	--	0.81
EPA 8260C/TO-15	1,1-dichloroethene	0.0005	0.0025	0.398	1	--	0.79
EPA 8260C/TO-15	Cis-1,2-dichloroethene	0.00069	0.0025	0.26	1	--	0.79
EPA 8260C/TO-15	Trans-1,2-dichloroethene	0.00143	0.005	0.396	1	--	0.79
EPA 8260C/TO-15	1,2-dichloropropane	0.00127	0.005	0.306	1	--	0.92
EPA 8260C/TO-15	1,1-dichloropropene	0.0007	0.0025	0.352	1	--	--
EPA 8260C/TO-15	1,3-dichloropropane	0.00175	0.005	0.366	1	--	--
EPA 8260C/TO-15	Cis-1,3-dichloropropene	0.000678	0.0025	0.418	1	--	0.91
EPA 8260C/TO-15	Trans-1,3-dichloropropene	0.00153	0.005	0.419	1	--	0.91
EPA 8260C/TO-15	2,2-dichloropropane	0.000793	0.0025	0.321	1	--	--
EPA 8260C/TO-15	Di-isopropyl ether	0.00035	0.001	0.32	1	--	--
EPA 8260C/TO-15	Ethylbenzene	0.00053	0.0025	0.384	1	--	0.87

Table 4-2
Analytical Method and Detection Limit Goals For Chemical Analytes
DEQ—Lincoln School Cleanup
Burns, Oregon

		Soil (mg/kg)		Groundwater (ug/L)		Soil Gas (ug/m^3)	
Method	Parameter	MDL	MRL	MDL	MRL	MDL	MRL
Volatile Organic Compounds (Continued)							
EPA 8260C/TO-15	Hexachloro-1,3-butadiene	0.0127	0.025	0.256	1	--	6.7
EPA 8260C/TO-15	Isopropylbenzene	0.000863	0.0025	0.326	1	--	0.983
EPA 8260C/TO-15	P-isopropyltoluene	0.00233	0.005	0.35	1	--	--
EPA 8260C/TO-15	2-butanone (mek)	0.0125	0.025	3.93	10	--	3.7
EPA 8260C/TO-15	Methylene chloride	0.00664	0.025	1	5	--	2.2
EPA 8260C/TO-15	4-methyl-2-pentanone (mibk)	0.01	0.025	2.14	10	--	5.1
EPA 8260C/TO-15	Methyl tert-butyl ether	0.000295	0.001	0.367	1	--	1.1
EPA 8260C/TO-15	Naphthalene	0.00312	0.0125	1	5	--	3.3
EPA 8260C/TO-15	N-propylbenzene	0.00118	0.005	0.349	1	--	--
EPA 8260C/TO-15	Styrene	0.00273	0.0125	0.307	1	--	0.85
EPA 8260C/TO-15	1,1,1,2-tetrachloroethane	0.0005	0.0025	0.385	1	--	--
EPA 8260C/TO-15	1,1,2,2-tetrachloroethane	0.00039	0.0025	0.13	1	--	1.4
EPA 8260C/TO-15	1,1,2-trichlorotrifluoroethane	0.000675	0.0025	0.303	1	--	--
EPA 8260C/TO-15	Tetrachloroethene	0.0007	0.0025	0.372	1	--	1.4
EPA 8260C/TO-15	Toluene	0.00125	0.005	0.412	1	--	0.75
EPA 8260C/TO-15	1,2,3-trichlorobenzene	0.000625	0.0025	0.23	1	--	--
EPA 8260C/TO-15	1,2,4-trichlorobenzene	0.00482	0.0125	0.355	1	--	4.7
EPA 8260C/TO-15	1,1,1-trichloroethane	0.000275	0.0025	0.319	1	--	1.1
EPA 8260C/TO-15	1,1,2-trichloroethane	0.000883	0.0025	0.383	1	--	1.1
EPA 8260C/TO-15	Trichloroethene	0.0004	0.001	0.398	1	--	1.1
EPA 8260C/TO-15	Trichlorofluoromethane	0.0005	0.0025	1.2	5	--	--
EPA 8260C/TO-15	1,2,3-trichloropropane	0.0051	0.0125	0.807	2.5	--	--
EPA 8260C/TO-15	1,2,4-trimethylbenzene	0.00116	0.005	0.373	1	--	1.1
EPA 8260C/TO-15	1,2,3-trimethylbenzene	0.00115	0.005	0.321	1	--	1.1
EPA 8260C/TO-15	1,3,5-trimethylbenzene	0.00108	0.005	0.387	1	--	1.1
EPA 8260C/TO-15	Vinyl chloride	0.000683	0.0025	0.259	1	--	0.7
EPA 8260C/TO-15	Xylenes, total	0.00478	0.0065	1.06	3	--	1.7
Polycyclic Aromatic Hydrocarbons							
EPA 8270D-SIM	1-Methylnaphthalene	0.002	0.02	0.00821	0.25	--	--
EPA 8270D-SIM	2-Methylnaphthalene	0.002	0.02	0.00902	0.25	--	--
EPA 8270D-SIM	2-Chloronaphthalene	0.002	0.02	0.00647	0.25	--	--
EPA 8270D-SIM	Anthracene	0.0006	0.006	0.014	0.05	--	--
EPA 8270D-SIM	Acenaphthene	0.0006	0.006	0.01	0.05	--	--
EPA 8270D-SIM	Acenaphthylene	0.0006	0.006	0.012	0.05	--	--
EPA 8270D-SIM	Benz(a)anthracene	0.0006	0.006	0.0041	0.05	--	--
EPA 8270D-SIM	Benzo(a)pyrene	0.0006	0.006	0.0116	0.05	--	--
EPA 8270D-SIM	Benzo(b)fluoranthene	0.0006	0.006	0.00212	0.05	--	--
EPA 8270D-SIM	Benzo(g,h,i)perylene	0.0006	0.006	0.00227	0.05	--	--
EPA 8270D-SIM	Benzo(k)fluoranthene	0.0006	0.006	0.0136	0.05	--	--
EPA 8270D-SIM	Chrysene	0.0006	0.006	0.0108	0.05	--	--
EPA 8270D-SIM	Dibenz(a,h)anthrancene	0.0006	0.006	0.00396	0.05	--	--
EPA 8270D-SIM	Fluoranthene	0.0006	0.006	0.0157	0.05	--	--
EPA 8270D-SIM	Fluorene	0.0006	0.006	0.0085	0.05	--	--

Table 4-2
Analytical Method and Detection Limit Goals For Chemical Analytes
DEQ—Lincoln School Cleanup
Burns, Oregon

		Soil (mg/kg)		Groundwater (ug/L)		Soil Gas (ug/m^3)	
Method	Parameter	MDL	MRL	MDL	MRL	MDL	MRL
Polycyclic Aromatic Hydrocarbons (Continued)							
EPA 8270D-SIM	Indeno(1,2,3-cd)pyrene	0.0006	0.006	0.0148	0.05	--	--
EPA 8270D-SIM	Naphthalene	0.002	0.02	0.0198	0.25	--	--
EPA 8270D-SIM	Phenanthrene	0.0006	0.006	0.0082	0.05	--	--
EPA 8270D-SIM	Pyrene	0.0006	0.006	0.0117	0.05	--	--
Helium							
ASTM D1946	Helium	--	--	--	--	--	1%

NOTES:

-- = not applicable

ASTM = ASTM International.

Dx = diesel- and oil-range TPH.

EPA = U.S. Environmental Protection Agency.

Gx = gasoline-range TPH.

MDL = method detection limit.

mg/kg = milligrams per kilogram.

MRL = method reporting limit.

NWTPH = Northwest Total Petroleum Hydrocarbons.

SIM = selected ion monitoring.

TO = toxic organics.

ug/L = micrograms per liter.

ug/m^3 = micrograms per cubic meter.

Table 4-3
Quality Assurance Samples
DEQ—Lincoln School Cleanup
Burns, Oregon

Sample Matrix	Field QA Sample Type	Frequency of Collection
Soil	Field Duplicate Sample	1 per 20 samples
Groundwater	Field Duplicate Sample	1 per 20 samples
Asbestos	Field Duplicate Sample	1 per 20 samples
Lead Paint Chip	Field Duplicate Sample	1 per 20 samples
PCM Cassette	Field Blank	Minimum 1 per 8-hour workday
Dust Wipe	Field Blank	1 per box of wipes
Soil	Equipment Rinsate Blanks	1 per 20 samples[(a)]
Groundwater	Equipment Rinsate Blanks	1 per 20 samples[(a)]
Soil and Groundwater	Trip Blank	1 per sample cooler containing field samples analyzed for VOCs

NOTES:

DEQ = Oregon Department of Environmental Quality.

QA = quality assurance.

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

Appendix A

Inspector Certificate

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THIS IS TO CERTIFY THAT

CHRISTOPHER CLOUGH

HAS SUCCESSFULLY COMPLETED THE TRAINING COURSE

for

ASBESTOS INSPECTOR REFRESHER

In accordance with TSCA Title II, Part 763, Subpart E, Appendix C of 40 CFR

Course Date: 10/19/2023

Course Location: Online,

Certificate: IR-23-2128B

CCB #SRA0615 4-Hr Training

4-Hour AHERA Inspector Refresher Training; AHERA is the Asbestos Hazard Emergency Response Act enacting Title II of Toxic Substance Control Act (TSCA)

Expiration Date: 10/19/2024

Andy Fridley, Instructor

For verification of the authenticity of this certificate contact:
PBS Engineering and Environmental Inc.
4412 S Corbett Avenue
Portland, OR 97239
503.248.1939

Appendix B

Laboratory Report

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ANALYTICAL REPORT

March 29, 2024

Oregon Dept. of Env. Quality - ODEQ

Sample Delivery Group:	L1717837
Samples Received:	03/22/2024
Project Number:	M0785.28.001
Description:	Lincoln School Cleanup Project
Report To:	Kara Master

Entire Report Reviewed By:

Brian Ford
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.

Pace Analytical National
12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

TABLE OF CONTENTS

01-MISC-LJH-01 L1717837-01 Solid

Collected by: Chris Clough | Collected date/time: 02/12/24 14:34 | Received date/time: 03/22/24 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Subcontracted Analyses	WG2252161	1	03/28/24 00:00	03/28/24 00:00	-	Golden, CO 80401

01-MISC-LJH-02 L1717837-02 Solid

Collected by: Chris Clough | Collected date/time: 02/12/24 14:41 | Received date/time: 03/22/24 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Subcontracted Analyses	WG2252161	1	03/28/24 00:00	03/28/24 00:00	-	Golden, CO 80401

02-MISC-LJH-03 L1717837-03 Solid

Collected by: Chris Clough | Collected date/time: 02/12/24 14:48 | Received date/time: 03/22/24 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Subcontracted Analyses	WG2252161	1	03/28/24 00:00	03/28/24 00:00	-	Golden, CO 80401

03-MISC-LJH-04 L1717837-04 Solid

Collected by: Chris Clough | Collected date/time: 02/12/24 14:50 | Received date/time: 03/22/24 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Subcontracted Analyses	WG2252161	1	03/28/24 00:00	03/28/24 00:00	-	Golden, CO 80401

04-MISC-LJH-05 L1717837-05 Solid

Collected by: Chris Clough | Collected date/time: 02/12/24 14:53 | Received date/time: 03/22/24 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Subcontracted Analyses	WG2252161	1	03/28/24 00:00	03/28/24 00:00	-	Golden, CO 80401

05-MISC-LJH-06 L1717837-06 Solid

Collected by: Chris Clough | Collected date/time: 02/12/24 14:56 | Received date/time: 03/22/24 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Subcontracted Analyses	WG2252161	1	03/28/24 00:00	03/28/24 00:00	-	Golden, CO 80401

05-MISC-LJH-07 L1717837-07 Solid

Collected by: Chris Clough | Collected date/time: 02/12/24 14:59 | Received date/time: 03/22/24 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Subcontracted Analyses	WG2252161	1	03/28/24 00:00	03/28/24 00:00	-	Golden, CO 80401

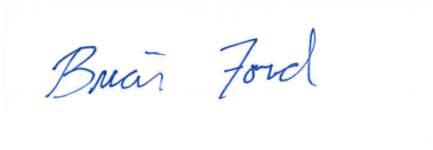
08-MISC-LJH-08 L1717837-08 Solid

Collected by: Chris Clough | Collected date/time: 02/12/24 15:02 | Received date/time: 03/22/24 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Subcontracted Analyses	WG2252161	1	03/28/24 00:00	03/28/24 00:00	-	Golden, CO 80401

CASE NARRATIVE

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.



Brian Ford
Project Manager

Project Narrative

L1717837 -01, -02, -03, -04, -05, -06, -07, -08 contains subout data that is included after the chain of custody.

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

SDG	Sample Delivery Group.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier Description

The remainder of this page intentionally left blank, there are no qualifiers applied to this SDG.

ACCREDITATIONS & LOCATIONS

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO000356
Kentucky [1 6]	KY90010	South Carolina	84004002
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas [5]	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.

1227

State of Oregon Chain of Custody

Agency, Authorized Purchaser or Agent: Oregon DEQ

Send Lab Report To: Kara Master
Address: 700 NE Multnomah St, Suite 600, Portland, OR 97232
Tel. #: 503-229-5585
E-mail: kara.e.master@deq.oregon.gov

Contract Laboratory Name: ESC (bda Pace National)
Lab Batch #:

Invoice To: ODEQ/Business Office
Address: 700 NE Multnomah St, Suite 600, Portland, OR 97232
Tel. #: 503-229-5696

Lab Selection Criteria:
- ☐ Proximity (if TAT < 48 hrs)
- ☐ Prior work on same project
- ☒ Cost (for anticipated analyses)
- ☐ Other labs disqualified or unable to perform requested services
- ☐ Emergency work

Turn Around Time:
- ☐ 10 days (std.)
- ☒ 5 days
- ☐ 72 hours
- ☐ 48 hours
- ☐ 24 hours
- ☐ Other

Project Name: Lincoln School Cleanup Project
Project Number: M0785.28.001
Sampler Name: Chris Clough

Sample Preservative: None

L1717837

Sample ID# (HA#-Category-Site-Sample#)	Collection Date/Time	Matrix	Number of Containers	PLM EPA 600/R-93/116 (<1%)	HOLD	Comments (HA, Material Description, Location)
01-MISC-LJH-01	2/12/2024 - 1434	Bulk	1	X		Homogeneous Area 01, Speckle coating on sheet vinyl flooring, 2nd floor boy's restroom. -01
01-MISC-LJH-02	2/12/2024 - 1441	Bulk	1	X		Homogeneous Area 01, Speckle coating on sheet vinyl flooring, 2nd floor girl's restroom. -02
02-MISC-LJH-03	2/12/2024 - 1448	Bulk	1	X		Homogeneous Area 02, Brown mastic (associated with white paneling), 2nd floor IT room. -03
03-MISC-LJH-04	2/12/2024 - 1450	Bulk	1	X		Homogeneous Area 03, 4" White cove base with mastic, 2nd floor IT room. -04
04-MISC-LJH-05	2/12/2024 - 1453	Bulk	1	X		Homogeneous Area 04, White sheet vinyl, 2nd floor IT room. -05
05-MISC-LJH-06	2/12/2024 - 1456	Bulk	1	X		Homogeneous Area 05, 4" Black cove base with mastic, 2nd floor hallway. -06
05-MISC-LJH-07	2/12/2024 - 1459	Bulk	1	X		Homogeneous Area 05, 4" Black cove base with mastic, 2nd to 3rd floor stairwell. -07
06-MISC-LJH-08	2/12/2024 - 1502	Bulk	1	X		Homogeneous Area 06, Black vapor barrier, 2nd to 3rd floor stairwell. -08

Notes: Please cc: Chris Clough (cclough@maulfoster.com) on sample results.

Relinquished By: Chris Clough	Agency/Agent: MFA	Received By: Troy Chumley	Agency/Agent: PACE
Signature:	Time & Date: 3/21/24 - 1030	Signature:	Time & Date: 03/22/24 0
Relinquished By:	Agency/Agent:	Received By:	Agency/Agent:
Signature:	Time & Date:	Signature:	Time & Date:

THIS PURCHASE IS SUBMITTED PURSUANT TO STATE OF OREGON SOLICITATION #102-1098-0 ...NTRACT TERMS AND CONDITIONS AND SPECIAL CONTRACT TERMS AND CONDITIONS (T'S &C'S) CONTAINED I ...D SHALL APPLY TO THIS PURCHASE AND SHALL TAKE PRECEDENCE OVER ALL OTHER CONFLICTING T'S AND

Sample Receipt Checklist total 8

COC Seal Present/Intact:	Y N	If Applicable	
COC Signed/Accurate:	Y N	VOA Zero Headspace:	Y N
Bottles arrive intact:	Y N	Pres. Correct/Check:	Y N
Correct bottles used:	Y N		
Sufficient volume sent:	Y N		
RA Screen <0.5 mR/hr:	Y N	2756 3844 8518	

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A Pace Analytical® Laboratory

780 Simms Street
Suite 104
Golden, CO, 80401
303.232.3746
www.aerobiology.net

Certificate of Analysis

Client Name	Pace Analytical Services, Inc		Date Collected: 2/12/2024
Street Address	12065 Lebanon Rd.	NVLAP TESTING	Date Received: 3/26/2024
City, State ZIP	Mt. Juliet, TN 37122	NVLAP Lab Code 200860-0	Date Analyzed: 3/28/2024
Attn:	James C Huckaba		Date Reported: 3/29/2024
Client Project Name:	L1717837 / WG2252161		Project ID: 24010218

Test Requested: **3002, Asbestos in Bulk Samples**
Method: EPA 600/R-93/116: Method for Asbestos in Bulk Building Materials, EPA -- 40 CFR Appendix E to Subpart E of Part 763, Interim Method for Asbestos in Bulk Insulation Samples

Sample Identification		Layer Percentage	Physical Description of Sample/Layer	Asbestos Detected	Asbestos Percentage	Non-Asbestos Fiber Percentage	Non-Fibrous Material Percentage	Matrix Material Composition	Homo-geneous (Y/N)
Client	Lab Sample Number								
01-MISC-LJH-01	**24010218-1**	**100**	**Off-White/Multicolored Sheet Vinyl with Tan Fibrous Backing and Off-White Mastic**	**CHRY**	**25**	**5 CELL**	**70**	**B,C**	**N**
01-MISC-LJH-02	**24010218-2**	**100**	**Off-White/Multicolored Sheet Vinyl with Tan Fibrous Backing and Off-White Mastic**	**CHRY**	**25**	**5 CELL**	**70**	**B,C**	**N**
02-MISC-LJH-03	24010218-3A	90	Yellow Resinous Material	ND			100	B,C	Y
	24010218-3B	10	Tan Paper	ND		99 CELL	1		Y
03-MISC-LJH-04	24010218-4A	85	Tan Cove Base	ND			100	B,C	Y
	24010218-4B	10	Colorless/Yellow Mastic	ND			100	B,C	N
	24010218-4C	5	Tan Paper with Off-White Paint	ND		90 CELL	10		N
04-MISC-LJH-05	24010218-5A	95	White Sheet Vinyl with Gray Fibrous Backing	ND		30 CELL,FG	70	B,C	N
	24010218-5B	5	Off-White Mastic	ND			100	B	Y
05-MISC-LJH-06	24010218-6A	95	Black Cove Base	ND			100	B,C	Y

Nick Kuretich
Laboratory Analyst

Emily Thompson
Asbestos Lab Supervisor

AC = Actinolite
AM = Amosite
AN = Anthophyllite
CHRY = Chrysotile
CR = Crocidolite
TRM = Tremolite
Tr = Trace
ND = None Detected

AH = Animal Hair
CELL = Cellulose
FG = Fibrous Glass
MW = Mineral Wool
OT = Other
SYN = Synthetic
TL = Talc
W = Wollastonite

B = Binder
C = Calcite
D = Diatoms
G = Gypsum
M = Mica
OR = Organic
OP = Opaques
P = Perlite

Q = Quartz
T = Tar
V = Vermiculite

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Certificate of Analysis

NVLAP TESTING
NVLAP Lab Code 200860-0

Client Name	Pace Analytical Services, Inc	Date Collected:	2/12/2024
Street Address	12065 Lebanon Rd.	Date Received:	3/26/2024
City, State ZIP	Mt. Juliet, TN 37122	Date Analyzed:	3/28/2024
Attn:	James C Huckaba	Date Reported:	3/29/2024
Client Project Name:	L1717837 / WG2252161	Project ID:	24010218

Test Requested: **3002, Asbestos in Bulk Samples**
Method: EPA 600/R-93/116: Method for Asbestos in Bulk Building Materials, EPA -- 40 CFR Appendix E to Subpart E of Part 763, Interim Method for Asbestos in Bulk Insulation Samples

Sample Identification		Layer Percentage	Physical Description of Sample/Layer	Asbestos Detected	Asbestos Percentage	Non-Asbestos Fiber Percentage	Non-Fibrous Material Percentage	Matrix Material Composition	Homo-geneous (Y/N)
Client	Lab Sample Number								
05-MISC-LJH-06	24010218-6B	5	Yellow Mastic	ND			100	B	Y
05-MISC-LJH-07	24010218-7A	95	Black Cove Base	ND			100	B,C	Y
	24010218-7B	5	Yellow Mastic	ND			100	B	Y
08-MISC-LJH-08	24010218-8	100	Black Tar Paper	ND		80 CELL	20	T	N

Nick Kuretich
Laboratory Analyst

Emily Thompson
Asbestos Lab Supervisor

AC = Actinolite
AM = Amosite
AN = Anthophyllite
CHRY = Chrysotile
CR = Crocidolite
TRM = Tremolite
Tr = Trace
ND = None Detected

AH = Animal Hair
CELL = Cellulose
FG = Fibrous Glass
MW = Mineral Wool
OT = Other
SYN = Synthetic
TL = Talc
W = Wollastonite

B = Binder
C = Calcite
D = Diatoms
G = Gypsum
M = Mica
OR = Organic
OP = Opaques
P = Perlite

Q = Quartz
T = Tar
V = Vermiculite

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Certificate of Analysis

Client Name	Pace Analytical Services, Inc		Date Collected: 2/12/2024
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Method: EPA 600/R-93/116: Method for Asbestos in Bulk Building Materials, EPA -- 40 CFR Appendix E to Subpart E of Part 763, Interim Method for Asbestos in Bulk Insulation Samples

General Notes

- **ND** indicates no asbestos was detected; the method detection limit is 1 %.
- **Trace** or "< 1" indicates asbestos was identified in the sample, but the concentration is less than 1% and cannot be quantified without point counting.
- Samples identified as inhomogeneous (more than one layer) are separated into individual layers, and each layer is analyzed and reported separately.
- All regulated asbestos minerals (i.e. chrysotile, amosite, crocidolite, anthophyllite, tremolite, and actinolite) were sought in every layer of each sample, but only those asbestos minerals detected are listed. Amosite is the common name for the asbestiform variety of the mineral grunerite. Crocidolite is the common name used for the asbestiform variety of the mineral riebeckite.
- Tile, vinyl, foam, plastic, and fine powder samples may contain asbestos fibers of such small diameter (< 0.25 microns in diameter) that these fibers cannot be detected by PLM. For such samples, more sensitive analytical methods (e.g. TEM, SEM, and XRD) are recommended if greater certainty about asbestos content is required. Semi-quantitative bulk TEM floor tile analysis is accepted under NESHAP regulations.
- These results are submitted pursuant to Aerobiology Laboratory Associates, Inc.'s current terms and conditions of sale, including the company's standard warranty and limitation of liability provisions. No responsibility or liability is assumed for the manner in which the results are used or interpreted.
- Unless notified in writing to return the samples covered by this report, Aerobiology Laboratory Associates, Inc. will store the samples for a minimum period of thirty (30) days before discarding. A shipping and handling charge will be assessed for the return of any samples.
- Aerobiology does not guarantee the results of tape lifts, microvacs, wipe, and/or debris samples. Accurate analysis cannot be performed due to particle size, media used, and/or amount of material given. Analysis of these materials should be performed by a TEM. ***A result of ND does not indicate that the sample area does not contain asbestos. It means the analyst could not identify asbestos in the specific sample for the reasons listed above.***
- "When joint compound and/or tape is applied to a wallboard it becomes an integral part of the wallboard and in effect becomes one material forming a wall system." EPA 40 CFR Part 61 Aerobiology cannot distinguish joint compound from the same material used as skim coat. Therefore, it is very important that individuals collecting the samples clearly describe the sample composition so Aerobiology knows that the drywall system can be composited. If only joint sampling areas show layers with >1% asbestos, then material is joint compound. If samples from both joint sampling area and non-joint areas show layers with >1% asbestos, then the material should be considered "skim coat" or add-on material.

Notes Required by NVLAP

- This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.
- This test report relates only to the items tested or calibrated.
- This report is not valid unless it bears the name of a NVLAP-approved signatory.
- Any reproduction of this document must include the entire document in order for the report to be valid.

Appendix C

February 2024 Summary of Asbestos Sample Results

MAUL FOSTER ALONGI

Table
Summary of Asbestos Sample Results
Feburary 2024 - Limited ACM Sampling
Lincoln School Cleanup Project
Burns, Oregon

Sample Name	Sample Date	Material Description	Floor	Location	Bulk Asbestos	Condition (if detected)	Estimated Quantity (if detected)
01-MISC-LJH-01	**02/12/2024**	**Specled coating on vinyl flooring**	**Second Floor**	**Boy's Restroom**	**25% Chrysotile**	**Fair, Non-Friable**	**450 square feet**
01-MISC-LJH-02	**02/12/2024**	**Specled coating on vinyl flooring**	**Second Floor**	**Girl's Restroom**	**25% Chrysotile**	**Fair, Non-Friable**	**See 01-MISC-LJH 01**
02-MISC-LJH-03	02/12/2024	Brown mastic (asscoaited with white paneling)	Second Floor	IT Room	ND ND	--	--
03-MISC-LJH-04	02/12/2024	4" White cove base with mastic	Second Floor	IT Room	ND ND ND	--	--
04-MISC-LJH-05	02/12/2024	White sheet vinyl flooring	Second Floor	IT Room	ND ND	--	--
05-MISC-LJH-06	02/12/2024	4" Black cove base with mastic	Second Floor	Hallway	ND ND	--	--
05-MISC-LJH-07	02/12/2024	4" Black cove base with mastic	Second to third floor	Stairwell	ND ND	--	--
06-MISC-LJH-08	02/12/2024	Black vapor barrier	Second to third floor	Stairwell	ND	--	--

NOTES:
ND = not detected.

Appendix D

Health and Safety Plan

MAUL
FOSTER
ALONGI

Health and Safety Plan

Lincoln School Cleanup Project

550 North Court Avenue in Burns, Harney County, Oregon

Prepared for:

Oregon Department of Environmental Quality

October 23, 2024

Project No. M0785.28.001

Prepared by:

Maul Foster & Alongi, Inc.
3140 NE Broadway, Portland, OR 97232

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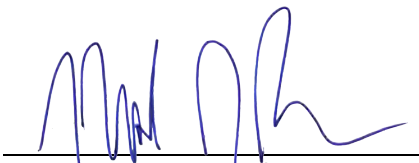
MAUL FOSTER ALONGI

Health and Safety Plan

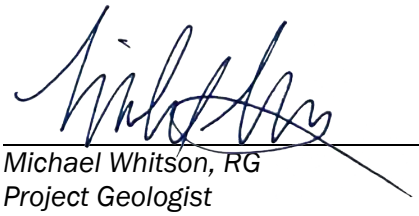
Lincoln School Cleanup Project - 550 North Court Avenue in Burns, Harney County, Oregon

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

Maul Foster & Alongi, Inc.



Michael Pickering, RG
Principal Hydrogeologist



Michael Whitson, RG
Project Geologist

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Contents

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Attachments

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Abbreviations

CFR	Code of Federal Regulations
COPC	chemical of potential concern
HASP	health and safety plan
HAZWOPER	Hazardous Waste Operations and Emergency Response
HSC	health and safety coordinator
JHA	job hazard analysis
MFA	Maul Foster & Alongi, Inc.
PIC	principal in charge
PPE	personal protective equipment
the Property	550 North Court Avenue in Burns, Harney County, Oregon
SSO	site safety officer

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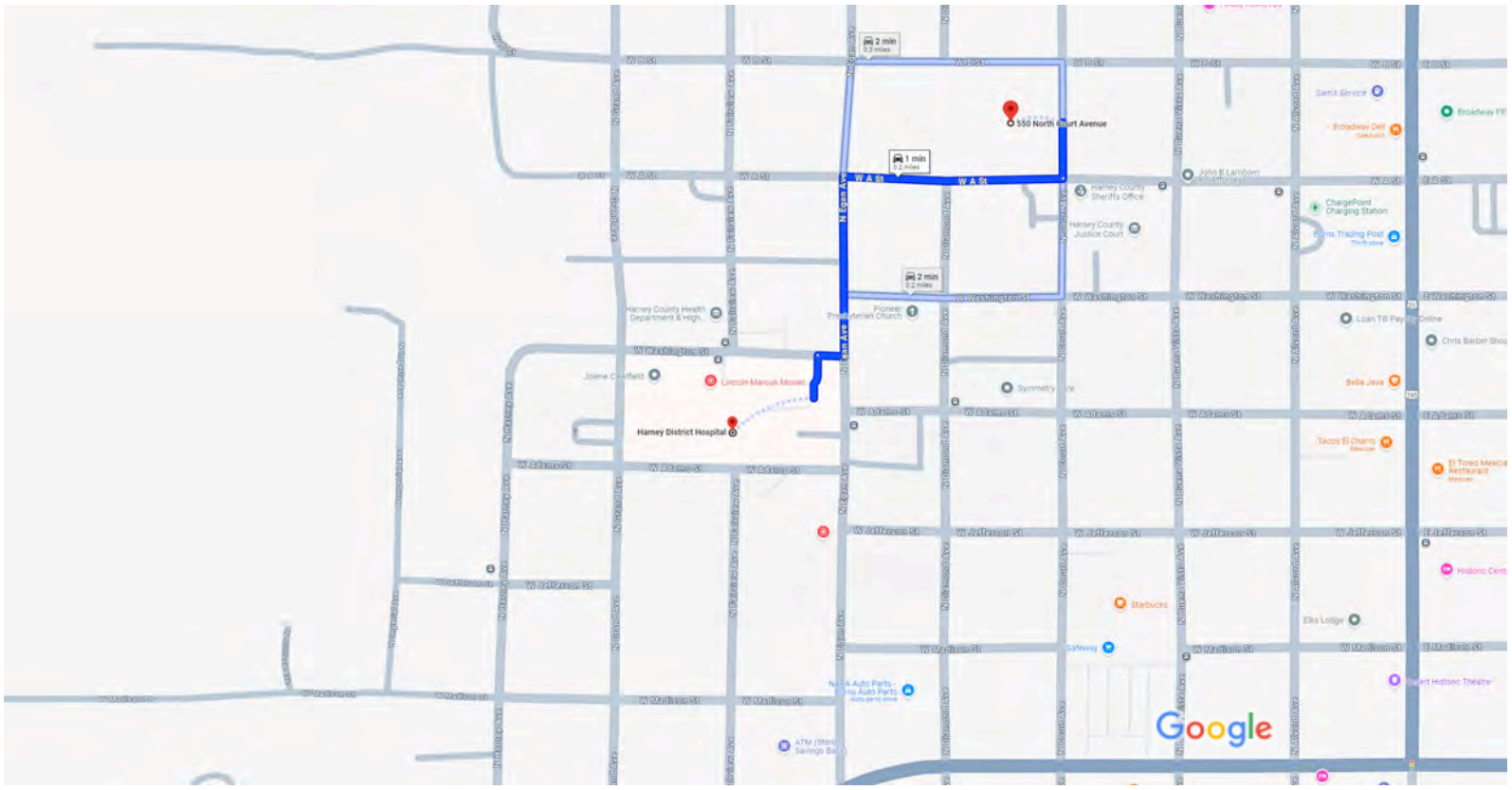
Google Maps

550 N Court Ave, Burns, OR 97720 to Harney Dist Hospital, 557 W Washington St, Burns, OR 97720

Drive 0.2 mile, 1 min



Map data ©2024 Google 100 ft

550 N Court Ave
Burns, OR 97720

1. Head south on N Court Ave toward W A St
   135 ft
2. Turn right at the 1st cross street onto W A St
   0.1 mi
3. Turn left onto N Egan Ave
   430 ft
4. Turn right onto W Washington St
   62 ft
5. Turn left
   105 ft

Harney Dist Hospital
557 W Washington St, Burns, OR 97720

1 Nearest Hospital/Emergency Medical Center

1.1 Nearest Hospital

Harney District Hospital: Emergency Room

557 W Washington St, Burns, OR 97720

Phone: 541-573-7281

Distance: 0.3 miles

Travel Time: 6 minutes (walking) or 1 minute (vehicle)

1.2 Route to Hospital from Property

See the map on the first page of this document.

1.3 Emergency Phone Numbers

Ambulance, Police, Fire	Dial 911
Chris Clough Project Manager	Cell: 503-330-7781
Michael Pickering Principal in Charge (PIC)	Cell: 971-227-2566
Nicole Bruneel Health and Safety Coordinator (HSC)	Cell: 208.949.3981

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 550 North Court Avenue in Burns, Harney County, Oregon (the Property). 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 Property are responsible for understanding and adhering to this HASP. Before fieldwork begins, the on-Property personnel will designate a site safety officer

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(SSO) who is familiar with health and safety procedures and with the Site. Safety deficiencies should be immediately communicated to the SSO and, if necessary, to the project manager, PIC/program manager, or MFA's HSC.

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

If MFA employees work on the Property for more than a year, this HASP will be reviewed at least annually. Additionally, this HASP will be updated as new or changed conditions are encountered to ensure that it reflects the current known hazards and requirements associated with the Property.

MFA personnel who will be working on the Property are required to read and understand this HASP. MFA personnel entering the work area must sign the personnel acknowledgment sheet (Section 17), 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	PIC
Chris Clough	Project Manager
To be determined	Field Personnel
Nicole Bruneel	HSC

4 Emergency Supplies and Equipment List

Equipment	Location and Notes
First Aid Kit	In work vehicle.
Fire Extinguishers	In work vehicle.
Mobile Phones	On MFA staff.
Traffic Cones	In work vehicle, will be used as needed.
Radios	Not applicable.
Water and Other Fluid Replenishment	In work vehicle.
Eyewash	In work vehicle.
Spill Kit	In work vehicle.

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Equipment	Location and Notes
Health and Safety Plan	In work vehicle.
Dust Meter	Not applicable.

5 Property Description and Background

5.1 Type of Property

The approximately 2-acre Site is in downtown Burns, Oregon; is roughly 0.2 miles west of Route 395 between West A Street and West B Street; and consists of one parcel (23S31E07CB05500). The Site is owned by Harney County and is generally situated in a residential area.

5.2 Buildings/Structures

The Site is developed with a former junior high school and shop building, both of which are currently vacant. A paved playground area and grass field with chain-link fencing are also present on-Site. The Site was previous used by Harney County School District as temporary administrative space. Based on a review of historical documents, the Property was undeveloped prior to development of the school building in 1928.

5.3 General Geologic/Hydrologic Setting

According to a previously completed site report[1], Site topography is relatively flat with a slight slope to the southeast and an elevation of approximately 4,204 feet above mean sea level.

Surface soils at the Site are predominantly Fury silt loam underlain by late Miocene to early Pliocene silicic ash-flow tuff associated with pumiceous air-fall tuff of rhyolitic and rhyodactic composition[1].

The inferred primary direction of groundwater flow near the Site is generally to the southeast, though localized variations in groundwater flow may exist. Site-specific investigations would be required to confirm groundwater flow direction. Site surface water is anticipated to flow towards Silvies River, located approximately 1 mile east of the Site, and into the Whiting Slough/Heifer Canyon area (if not intercepted by the municipal stormwater system)[1].

[1] *Analysis of Brownfield Clean-up Alternatives, Lincoln School, 550 North Court Avenue, Burns, Harney County, Oregon*, EPA ACRES Number: 249461. Prepared for Harney County, Oregon. Prepared by Cardno. October 21.

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6 Hazard Evaluation

6.1 Site Tasks and Operations

MFA has completed job hazard analyses (JHAs) for tasks that may be conducted on the Property, depending on the scope of work. JHAs are provided in Appendix A. The following list summarizes planned tasks and operations:

- Collecting potential asbestos-containing material samples
- Working in or near equipment.

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

6.2 Chemical Hazard Evaluation

Chemicals of potential concern (COPCs) are summarized in Appendix B.

6.3 Physical Hazards

The specific physical hazards and associated controls for work on the Property are described in the JHAs provided in Appendix A.

7 Property-Control Measures

Control of access to the Property will be established before the work begins. Control measures may include fencing, gates, and signs limiting access to everyone except authorized personnel. The exclusion zone is defined as the area of known or suspected contamination (e.g., the area where a well is being installed), and the contaminant reduction zone is where support activities take place (e.g., packing sample coolers, decontamination activities).

8 Health and Safety Training

MFA personnel who could be exposed to COPCs while conducting work on the Property will have completed training consistent with the Hazardous Waste Operations and Emergency Response (HAZWOPER) requirements in 29 Code of Federal Regulations (CFR) 1910.120(e) before beginning work on the Property. The training will include the following:

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- Identification of an SSO, and other safety and health personnel, if applicable
- Identification of safety and health hazards specific to work being conducted
- Proper use of required PPE
- Safe work practices required (e.g., fall protection, confined-space entry procedures, hot-work permits, general safety rules)
- Safe use of engineering controls and equipment
- Medical surveillance requirements, including the recognition of signs and symptoms that might indicate overexposure to hazards
- The project-specific emergency response plan/spill containment plan

The HSC will oversee training for MFA personnel conducting fieldwork. Training records, including an outline, signoffs, and competency records, will be maintained by the HSC.

While the HSC is responsible for maintaining training records, the project manager is responsible for verifying that the training status of field personnel is current before these personnel deploy to the field. MFA staff collecting asbestos-containing material samples will have been Asbestos Hazard Emergency Response Act accredited to ensure safe collection of samples without exposure to themselves or the environment.

9 Safety Equipment

9.1 Personal Protective Equipment

Individuals on the Property must wear PPE to protect against physical hazards. PPE required on the Property is typically modified Level D, which consists of the following:

- Hard hat
- High-visibility vest
- Work boots
- Safety glasses with side shields
- Nitrile gloves or equivalent if handling media potentially impacted or known to be impacted
- 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 the following:

- Hearing protection (to be worn during high-noise tasks)
- Chemical-resistant clothing, (e.g., Tyvek coveralls)
- Chemical-resistant boots

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- 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, or a visible sheen. MFA employees should contact the SSO and, if necessary, the project manager and/or the HSC as soon as possible after the discovery of unexpected contamination. The SSO and, if applicable, the project manager and/or HSC will determine any need for additional controls and/or training.

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

Project personnel are not permitted to reduce the specified level of required PPE without approval from the SSO or the project manager and/or HSC.

9.2 Safety Equipment

The SSO will be responsible for ensuring that the following safety equipment is available during fieldwork 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)
- Hand-washing station
- Eye-flushing station

9.3 Air Monitoring Equipment

Based on Property conditions, it is not anticipated that air monitoring will be necessary. MFA personnel will not enter regulated areas.

9.4 Communications Equipment

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

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10 Decontamination Procedures

10.1 Partial Decontamination Procedures

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

- Wash and rinse boots and outer gloves (if wearing two pairs) in containers in the contamination-reduction zone.
- Inspect Tyvek suit for stains, rips, or tears. If the suit is contaminated but is to be reused, full decontamination will be performed as described in Section 9.2. If the suit is damaged, it should not be reused; discard it in a container labeled for disposable items.
- Remove and inspect outer gloves. If they are ripped or otherwise damaged, discard them in a container labeled for disposable items.
- Remove respirator, if worn, and clean with premoistened alcohol wipes. Discard used cartridges at the frequency established by the SSO, project manager, or HSC.
- Wash hands and face with soap and water.

10.2 Full Decontamination Procedures

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

- 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, project manager, or HSC.
- Wash and rinse respirator in decontamination container labeled “respirators only.”
- Remove work boots and put on street shoes. Place work boots in a plastic bag or container.
- 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.

11 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):

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- 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 COPCs will be offered medical surveillance consistent with HAZWOPER requirements.

MFA will ensure that its employees who are authorized to wear respirators are medically evaluated and approved for respirator use, 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, including respirator clearance documentation.

Personnel medically cleared for respirator use will undergo an annual qualitative fit test. The MFA HSC or administrative designee will conduct the annual qualitative fit tests and will manage the documentation.

If employees are required to wear a respirator on the Property, the project manager will verify that the employee has a current annual respirator fit test.

12 Air Monitoring

Air monitoring will be conducted onsite by third-parties, however, MFA does not anticipate the need to conduct additional air monitoring and MFA personnel are not expected to enter into regulated abatement areas.

13 Emergency Response, Spill Containment, and Confined Space

MFA employees will follow the emergency response, spill response, and confined-space procedures described in the MFA Policies and Procedures Manual. Incidents will be documented on the incident report form included as Appendix C.

14 Pre-entry Briefing

MFA employees will conduct pre-entry briefings prior to beginning work on the Property (e.g., tailgate meetings; see the checklist provided as Appendix D). Additional briefings shall be conducted as the scope of work or conditions change throughout the project to ensure that employees are familiar

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with and are adhering to the appropriate safety and health protocol. Attendance and discussion topics will be documented on sign-in sheets that will be maintained by the SSO.

15 Periodic Evaluation

The project manager or designee will evaluate the effectiveness of this HASP by conducting periodic HASP audits. A HASP audit form is included as Appendix E. In addition, HASP effectiveness will be evaluated by tracking 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 this HASP, as appropriate. This HASP will be reviewed and updated at least annually. Updating this HASP as necessary ensures that it reflects the known hazards, conditions, and requirements associated with the project. MFA will maintain HASP audit or other periodic evaluation records and track all revisions to this HASP.

16 Safe Work Practices

The following safe work practices are provided to supplement the other information in 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. Whenever practicable, field personnel will remain upwind of drilling rigs, open excavations, and other ground-disturbing activities.
3. Subsurface work will 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.

17 Acknowledgment

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

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MFA personnel who will work at the Property 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 HASP available for review by contracted or subcontracted personnel for information only. This HASP does not cover the activities performed by employees of any other employer on the project. All contracted or subcontracted personnel are responsible for implementing their own health and safety program, including generating and using their own HASP.

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

Name	Title	Date

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Attachment A

Job Hazard Analyses

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Job Hazard Analysis

Task/Operation: Conducting Fieldwork		
Project Number: M0785.28.001		**Location/ Property Where Task/Operation Performed:** 550 North Court Avenue in Burns, Harney County, Oregon
Date Prepared: 04/15/2024 **Date Reviewed:** 5/1/2024	**Employee Preparing this Job Hazard Analysis (JHA):** Chris Clough **Employee Reviewing and Certifying this JHA:** Michael Pickering	
Job/Task Description		
This JHA describes hazards and required safe-work practices that are common to most types of fieldwork. See the separate task-specific JHA for hazards and safe-work practices that are unique to certain tasks (e.g., sampling contaminated media, working in remote areas).		
Physical Hazards		
Hazard/Risk	**Source of Hazard/Risk**	**Hazard/Risk Mitigation**
Heat/cold/sunburn	Weather.	Be aware of seasonal dangers, including frostbite, hypothermia, snow blindness, trench foot, and heat stress. Drink plenty of fluids, especially when perspiring. Wear sunscreen on exposed skin. Stop work if an employee feels symptoms of dehydration, overheating, or heat stroke. Move to a shaded area and drink water. During cold or wet conditions, wear adequate clothing to reduce the potential for hypothermia. If there is lightning in the area, seek indoor shelter immediately, if possible. If outdoors, get into a hard-topped vehicle and away from trees. Turn off all radios and electronic equipment.
Eye injury	Debris (e.g., soil, water, injection fluids) coming into contact with eyes; working in areas with low, dense vegetation.	Wear eye protection with side shields. If there is a splash hazard, wear tight-fitting chemical goggles. If chemicals come into contact with eyes, immediately wash chemicals out with water. Identify the location of the eyewash station before beginning the work.
Head injury	Heavy equipment, tools, overhead hazards impacting the head.	Wear a hard hat. Do not work near moving or heavy equipment or under overhead hazards.
Foot injury	Sharp objects that could be stepped on; large objects falling on feet.	Wear protective boots (composite or steel-toe).
Hand injury	Pinch points, sharp objects, stress from pulling rope, dermal contact with chemicals and contaminated media.	Wear protective gloves. Appropriate gloves should be identified in the HASP or Safe Work Plan. Avoid placing hands near operating equipment.
Hearing loss	Noise generated by heavy equipment/machinery.	Wear hearing protection such as earplugs or earmuffs.

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Task/Operation: Conducting Fieldwork		
Bodily harm, including to bystanders and the public and pedestrians in the locality of work	Heavy equipment, drilling rigs, support vehicles, traffic and public rights-of-way; potential to be struck, crushed, or impacted by moving objects.	Wear a safety vest for enhanced visibility. Use cones and caution tape to cordon off the immediate work area. Watch for and escort pedestrians away from the work area. Pause work if necessary. Ensure traffic control measures (e.g., traffic cones, signage) are in place. Do not work near moving or heavy equipment or under overhead hazards. Maintain eye contact with equipment operators. When working around vehicles or heavy equipment, know the locations of emergency equipment (e.g., fire extinguishers, emergency shutoff features).
	Potential to be struck by pressurized equipment and hoses	Install cable guards to prevent a suddenly disconnected hose from striking an individual or confirm with subcontractor that such safeguards are in place. Ensure pressurized tanks have safety relief valves. Do not work around pressurized equipment or within the radius of pressurized hoses.
Physical stress	Lifting heavy equipment and objects; conducting strenuous activities; kneeling on hard or gravel surfaces.	Use proper lifting techniques, i.e., bending and lifting with the legs and not the back. Do not twist at the waist when turning. Use the buddy system for heavy objects. Use knee pads or a kneeling pad. Take breaks and rest as needed.
Accidents with equipment/tools	Sample-collection equipment/tools.	Verify that you have the appropriate equipment/tools for your tasks. Use equipment/tools as intended by the manufacturer. Only use open blades or sharp-edged tools for their intended purposes. Stow tools in the vehicle properly; use appropriate cases and bags. Secure equipment (including compressed-gas cylinders) in the vehicle with netting and straps; do not leave loose—it can cause property damage or serious injuries to others or yourself.
Slips, trips, and falls	Uneven or unstable ground.	Maintain good housekeeping in work areas to minimize or eliminate slip/trip/fall hazards from equipment and supplies. Walk around rather than over hazards on the ground. Use caution when walking on uneven ground or in snowy and/or icy conditions. Dense vegetation may obscure dangerous features, including biological hazards, riverbanks, cliffs, unstable/steep slopes, excavations, and mine adits. Flagging or marking dangerous areas can help reduce the likelihood of injury.
Biological/Chemical Hazards		
Biological/Chemical Risk	**Source of Hazard/Risk**	**Hazard/Risk Mitigation**
Biological—animals	Livestock, deer; biting or stinging insects, spiders, and snakes; animal feces.	Do not turn your back on animals even if they seem docile. Make sure you have an escape plan in case an animal becomes aggressive. Use bug repellent. Insect nests should never be disturbed. Use snake chaps or shin guards when grass is above the ankle. Employees who are allergic to stings should not work in areas where there is a high risk of encountering stinging insects. Use a bar to clear spiders and/or snakes from objects and/or vegetation. Check well vaults and security lids for insects; use caution when opening. Avoid contact with animal feces. When working indoors, remove animal feces from the work area—if possible, without creating dust.
Biological—plants	Poisonous plants and other irritant vegetation (e.g., blackberry canes).	Do not touch or approach poisonous or irritant vegetation. Wear long pants and a long-sleeved shirt while on the site if poisonous plants and other irritant vegetation is present.

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Task/Operation: Conducting Fieldwork		
Exposure to chemicals in environmental media	Chemicals or hazardous materials in media.	See the task-specific JHA.
Additional Control Measures and Guidance		
Engineering Controls: No engineering controls specified. The need for engineering controls should be discussed with the project manager, health and safety coordinator, and subcontractors, and identified in the HASP or Safe Work Plan.		
General Safe-Work Practices and Guidance: • Employees should not eat or drink in the immediate area where sampling is being conducted. Employees should wash their hands and faces before eating or drinking. If used, nitrile gloves should be disposed of in a container labeled for disposable items. • Cones, barrier tape, or equivalent methods will be used to establish the work area, if feasible. • Tasks that must be conducted in the work area must be coordinated with equipment operators before work begins. Methods of communication, such as direct eye contact, hand signals, and/or verbal communication, will be established before work begins. • Employees should carry a cellular phone and/or a security radio.		
PPE: Hard hat (when working around heavy equipment, including drill rigs, or overhead hazards), work boots (protective composite or steel-toe boots when working around heavy equipment), high-visibility vest or outer garment, safety glasses with side shields, nitrile gloves (or other hand protection appropriate for the type of physical or chemical hazards present), hearing protection (earplugs or earmuffs) as needed. Use chemical goggles if there is a chemical splash hazard. Raspatory protection will be required within some areas of the Property, and around abatement activities.		

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Job Hazard Analysis

Task/Operation: Task-Specific Hazards		
Project Number: M0785.28.001		**Location/ Property Where Task/Operation Performed:** 550 North Court Avenue in Burns, Harney County, Oregon
Date Prepared: 04/15/2024 **Date Reviewed:** 5/1/2024	**Employee Preparing this Job Hazard Analysis (JHA):** Chris Clough **Employee Reviewing and Certifying this JHA:** Michael Pickering	
Job/Task Description		
This JHA is specific to certain elements of fieldwork that have unique hazards and require specific safe-work practices to mitigate those hazards. See the separate General Fieldwork Hazards JHA for hazards and safe-work practices that are common to most types of fieldwork.		
Sampling Contaminated Solid and Liquid Media		
Hazard/Risk	**Source of Hazard/Risk**	**Hazard/Risk Mitigation**
Exposure to chemicals or hazardous substances (e.g., asbestos) via direct contact and inhalation	Chemicals or hazardous materials in building materials.	See the chemical hazards summary table for applicable chemical hazards.
		Consult the HASP to identify the required PPE for preventing direct contact with contaminated media. Typical hazardous building materials sampling requires minimum PPE to include gloves, eye protection, and respiratory protection, to be determined by the Asbestos Hazard Emergency Response Act accredited inspector based on the nature of the material being sampled and other site requirements.
		Consult the HASP to identify required air monitoring equipment, respiratory protection, and action for preventing inhalation of contaminated dust and vapors.
		Ensure field staff have up-to-date Asbestos Hazard Emergency Response Act certifications for asbestos sampling.
Additional Control Measures and Guidance		
Engineering Controls: No engineering controls specified.		
General Safe-Work Practices and Guidance: • See the General Fieldwork Hazards JHA for safe-work practices and guidance common to most types of fieldwork. • If additional safe-work practices are needed to address unique, task-specific hazards, these should be specified in the HASP or Safe Work Plan.		

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Attachment B

Chemicals of Potential Concern

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Table
Chemical Hazards

Analyte	OSHA PEL (TWA)	ACGIH TLV (TWA)	NIOSH IDLH[(1)]	LEL (%)	IP (eV)	Other Hazard
Asbestos	0.1 fiber / cc	0.1 fiber / cc	NE	NA	NA	C
TPH						
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
VOCs						
Benzene	1 ppm	5 ppm	500 ppm	1.2	9.24	F, C, P, R
Chlorobenzene	75 ppm	10 ppm	1000 ppm	NA	NA	
Ethylbenzene	100 ppm	125 ppm	800 ppm	0.8	8.76	F, P
4-Isopropyltoluene	NE	NE	NE	NA	NA	
Isopropylbenzene	NE	NE	NE	NA	NA	
4-Methyl-2-pentanone	50 ppm	50 ppm	1800 ppm	1.8	NA	
Methyl tert-butyl ether	NE	50 ppm	NE	NA	NA	
n-Butylbenzene	NE	NE	NE	NA	NA	
n-Propylbenzene	NE	NE	NE	0.8	NA	
sec-Butylbenzene	NE	NE	NE	NA	NA	
Tetrachloroethene	100 ppm	25 ppm	150 ppm	NA	9.32	C
Trichloroethylene	100 ppm	300 ppm	1,000 ppm	NA	9.45	C, P
Toluene	100 ppm	150 ppm	500 ppm	1.1	8.82	E, F, P, R
1,2,4-Trichlorobenzene	NE	NE	NE	2.5	NA	P
1,2,3-Trimethylbenzene	NE	NE	NE	NA	NA	
1,2,4-Trimethylbenzene	NE	NE	NE	0.9	8.27	
1,3,5-Trimethylbenzene	NE	NE	NE	NA	8.39	
Xylenes	100 ppm	150 ppm	900 ppm	0.9	8.44–8.56	F, P
PAHs						
Acenaphthene	NE	NE	NE	0.6	NA	F, P
Benzo(a)anthracene	NE	NE	NE	NA	NA	C, P
Benzo(b)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
Fluoranthene	NE	NE	NE	NA	NA	SC, P
Fluorene	NE	NE	NE	NA	NA	
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						
Lead	0.05 mg/m^3	0.05 mg/m^3	100 mg/m^3	NA	NA	C, P

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Table
Chemical Hazards

Notes

ACGIH = American Conference of Governmental Industrial Hygienists.

C = carcinogen.

cc = cubic centimeter.

IDLH = immediately dangerous to life and health.

IP (eV) = ionization potential.

LEL = lower explosive limit.

NA = not available.

NE = not established.

NIOSH = National Institute for Occupational Safety and Health.

OSHA = Occupational Safety and Health Administration.

PEL = permissible exposure level.

TLV = threshold limit value.

TWA = time-weighted average.

Reference

[1]CDC. 2019. "Immediately Dangerous to Life or Health (IDLH) Values." Centers for Disease Control and Prevention, The National Institute for Occupational Safety and Health (NIOSH). October 8. Accessed September 13, 2022. http://www.cdc.gov/niosh/idlh/intridl4.html.

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Attachment C

Incident Report Form

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Health and 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 and Time of Incident: _____

Location: _____

Type of Incident (check all applicable items):

☐ Illness	☐ Health and safety infraction	☐ Vehicular accident
☐ Injury	☐ Fire, explosion, flash	☐ Electric shock
☐ Property damage or theft	☐ Chemical exposure	☐ Near miss
☐ Spill	☐ Other (describe):	

Description of Incident

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

Incident Reporter:

Name	Signature	Date

Health and Safety Coordinator:

Name	Signature	Date

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Attachment D

Tailgate Safety Meeting Checklist

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Tailgate Safety Meeting Checklist

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

Yes	NA	Information Reviewed
☐	☐	Emergency Response 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: _____

Additional Health and Safety Practices and Considerations

Attendees		
Name	Signature	Company
1)		
2)		
3)		
4)		
5)		

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Attachment E

HASP Audit Checklist

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HASP Audit Checklist

Project Name:	
Project No.:	
Project Location:	
Audit Date / Time:	
Person / Persons Performing Audit:	
MFA Personnel Interviewed or Conducting Fieldwork:	

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	Status			Comment	Recommendation	Assigned to:	Scheduled Completion Date:	Actions Completed:	Person Who Completed Actions:	Date Completed:	Current Status / Notes:
	Yes	No	N/A								
Audit Checklist Item											
1. Is there a written HASP for this project? If so, what is the revision date?											
2. Is the HASP available to project personnel?											
3. Does the HASP appear accurate and complete? For example, are the directions to the hospital and the emergency contact numbers accurate? Are the site contaminants listed?											
4. Do the JHAs appear accurate and complete? For example, do there appear to be risks addressed for all of the applicable activities?											
5. Do you observe violations of the HASP requirements?											
6. If applicable, are employees adhering to the respirator program (see SOP 03, Respiratory Protection)?											
Interview Questions											
7. Where do you keep the HASP for this project?											
8. Have you reviewed the HASP for this project? If so, what was your review process?											
9. Can you tell me how you conduct your site activities? Note to auditor—pick a JHA activity and identify major discrepancies between the answer and the JHA, if any.											
10. Do you have any health and safety questions or concerns? For example, have you observed things on this project that you thought were unsafe? Note to auditor—make sure we come up with a plan to promptly address any listed concerns.											

Signature of Person / Persons Conducting Audit		
Name	Signature	Date

Signature of Project Manager and Principal in Charge Acknowledging Review of Completed HASP Audit Checklist		
Name	Signature	Date

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Appendix E

Standard Operating Procedures

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Standard Operating Procedure

Decontamination of Field Equipment

SOP Number: 1
Date: 03/09/2021
Revision Number: 0.1

Scope and Application

This standard operating procedure (SOP) describes the decontamination procedure for field equipment that may come in contact with contaminated media and that Maul Foster & Alongi, Inc. (MFA) staff may reuse at multiple sample locations or sites. Decontamination is performed to reduce the potential for cross-contamination of samples that will be collected with multiuse equipment and that will undergo physical or chemical analyses. Other equipment that is multiuse—not used specifically for sample collection (e.g., water level meter, pump used for well development)—also requires decontamination. Finally, decontamination is necessary to minimize the potential for MFA staff's exposure to chemicals.

Typically, decontamination is not necessary for field equipment that is disposable and intended to be used only once (e.g., disposable bailer). Additionally, this SOP does not apply to equipment used by subcontractors, such as drilling equipment. However, MFA staff should confirm that subcontractors are implementing appropriate decontamination procedures to minimize the potential for cross-contamination of samples or MFA staff's exposure to chemicals.

Equipment and Materials Required

The following materials are necessary for this procedure:

- Nonphosphate detergent solution (e.g., Alconox, Liquinox)
- Distilled and potable water
- Personal protective equipment (as specified in the site-specific health and safety plan)
- Buckets to contain rinsate, brushes, paper towels

Depending on the site conditions and the types of contaminants that may be present, the use of other decontamination materials, such as deionized water, methanol, hexane, or isopropyl alcohol, may be necessary. The need for other materials should be determined prior to fieldwork. The decontamination procedures using other materials should be described in a site-specific sampling and analysis plan (SAP).

Methodology

When the site-specific SAP specifies additional or different requirements for decontamination, it takes precedence over this SOP. In the absence of a SAP, the following procedures shall be used.

General Sampling Procedure:

1. Rinse the equipment with potable water to remove visible soil, petroleum sheen, or contamination.

2. Scrub the equipment with a brush and solution of distilled water and nonphosphate detergent.

3. Rinse the equipment with distilled water.

4. Allow equipment to air dry, or dry it with paper towels.

5. At all times, ensure that the decontaminated equipment is stored so as to prevent it from becoming contaminated while not in use. Depending on the size of the equipment, it can be wrapped with new aluminum foil or placed in a new plastic bag.

Rinsate Storage:

All fluids resulting from equipment decontamination shall initially be contained in a bucket and then transferred to a Department of Transportation-approved container (e.g., 55-gallon drum) stored on site at a location that does not interfere with on-site activities (e.g., vehicle traffic, pedestrian areas). Place a label on each container and include the following information:

- The date on which fluids were placed in the container
- Contents (e.g., “water from equipment decontamination”)
- Contact information, including MFA staff or client phone number

Note that labels on containers exposed to sunlight or precipitation are prone to fading. Use a waterproof, indelible ink pen (e.g., Sharpie®) whenever possible. In the field notebook, keep a detailed inventory of all containers, including the number of containers, the approximate quantity of liquids generated, and a description of the source of the fluids. Provide this information to the MFA project manager. For future reference, take photographs of (1) each drum label, (2) the drum(s), and (3) the drum storage vicinity on site.

Note that some clients and site owners have specific requirements for labeling and storage of containers. The requirements should be determined in advance of the fieldwork.

Standard Operating Procedure

Lithologic Logging

SOP Number: 2
Date: 03/09/2021
Revision Number: 0.1

Scope and Application

This standard operating procedure (SOP) describes the methods for observing and documenting the physical characteristics of unconsolidated geologic materials (soil and sediment) encountered during field investigations. If a Maul Foster & Alongi, Inc. (MFA) project requires hard rock drilling and description of rock core or cuttings, procedures for describing rock should be specified in a project-specific sampling and analysis plan (SAP).

Equipment and Materials Required

The following materials are necessary for this procedure:

- Blank field forms (e.g., boring logs) for documenting observations
- Dry-erase board
- Camera
- Munsell soil color chart (where required)
- MFA field logging checklist

Methodology

When the project-specific SAP specifies additional or different requirements for lithologic logging, it takes precedence over this SOP. In the absence of a SAP, the procedures in this SOP shall be used. MFA uses a combination of the Unified Soil Classification System (USCS) and the ASTM International method D2487 for describing and classifying soil and sediment by visual and manual examination. Before beginning fieldwork, verify with the project manager the logging standard to be used.

Logging Process:

The objective of lithologic logging is to document the physical characteristics of soil and sediment encountered and the changes in characteristics with depth. Typically, changes with depth will define the strata encountered. Therefore, each stratum encountered should be identified and the following characteristics described in the order given:

- Depth interval of each stratum to the nearest tenth of a foot below ground surface
- USCS classification Group Name and Symbol
- Color, using the Munsell color chart
- Grain-size distribution, as percentages of fines (silt and clay combined), sand, and gravel
- Percentages of larger gravels (cobbles and boulders) if present.
- Consistency when the content of fines is 50 percent or greater

- Density when the combined percentage of sand and gravel is 50 percent or greater
- Sand and gravel grain shapes
- Chemical odors, if noticeable
- Structures, if present (e.g., laminae, pores)
- Presence of organic matter (e.g., roots, leaves, twigs, wood fragments)
- Moisture content as “dry,” “moist,” or “wet”
- If possible, a description of the origin of each stratum (e.g., fill, alluvium)

Standard Operating Procedure

Field Screening for VOCs in Soil

SOP Number: 3
Date: 03/09/2021
Revision Number: 0.1

Scope and Application

This standard operating procedure (SOP) describes the use of a photoionization detector (PID) to field screen soil for evidence of organic vapors. The PID measures the organic vapor concentration in parts per million, is not compound-specific.

Never rely on a stand-alone PID reading to identify organic chemical contamination in soil. Always collect multiple PID readings (e.g., at multiple depths along the length of a soil core), since it is the relative difference in concentration between multiple readings (e.g., a sudden increase in concentration at a certain depth interval) that is the typical indictor of contamination. Additionally, PID readings should always be accompanied by observation of the soil samples for other indictors of contamination, such as soil staining or chemical odors, so that these multiple lines of evidence can be used together to identify potential organic chemical contamination in the field.

Equipment and Materials Required

The following materials are necessary for this procedure:

- Personal protective equipment (as specified in the health and safety plan)
- PID with calibration gas
- Ziploc®-type bags
- Field forms or notebook for documenting PID readings

Methodology

When the project-specific sampling and analysis plan (SAP) specifies additional or different requirements for organic vapor field screening, it takes precedence over this SOP. In the absence of a SAP, the procedures in this SOP shall be used.

The electron volt (eV) rating for the PID lamp (e.g., 9.8, 10.6, 11.7) must be greater than the ionization potential (in eV) of a compound in order for the PID to detect the compound. A lamp of at least 9.8 eV should be used for petroleum hydrocarbons. A lamp of at least 10.6 eV should be used for typical chlorinated alkenes. If the project health and safety plan does not specify the lamp size, verify the compatibility of the lamp size with the anticipated compounds expected to be present in soil prior to the field activities, and confirm with the project manager.

General Sampling Procedure (Heading 3 No Number Style):

Calibration:

- The PID should be calibrated daily (or more frequently, as needed).
- Calibrate the PID according to the manufacturer's instructions.

- Document the calibration activities and results in the field notebook.

Measuring organic vapor content:

- Place a representative volume (generally, a "handful") of freshly exposed soil into a Ziploc-type bag.
- Seal the bag and gently knead the bag to loosen the soil.
- Let the bag set for several minutes to allow organic vapors, if present, to volatilize from the soil into the headspace of the bag.
- Partially open the bag so that the tip of the PID intake tube can be inserted into the bag but is not in contact with the soil, then close the bag seal around the intake tube.
- Record the PID measurement and document results in the field notes or boring log.

Static Sheen Test Procedure and Observations:

Sheen Test Procedure:

- Following the PID screen discussed above, add enough water to cover the soil in the container.
- Observe the water for signs of discoloration/sheen and characterize per the table below.

When static sheen testing is required or when making observations of a water surface the following table presents descriptions to be used (consistent with Department of Ecology Guidance)[1].

No Sheen (NS)	No visible sheen on the water surface
Slight Sheen (SS)	Light, colorless, dull sheen; spread is irregular, not rapid. Natural organic oils or iron bacteria in the soil may produce a slight sheen.
Moderate Sheen (MS)	Pronounced sheen over limited area; probably has some color/iridescence; spread is irregular, may be rapid; sheen does not spread over entire water surface.
Heavy Sheen (HS)	Heavy sheen with pronounced color/iridescence; spread is rapid; the entire water surface is covered with sheen.
Biogenic Film (BF)	False positive results may be generated by the presence of decaying organic matter and iron bacteria, which can produce a rainbow-like sheen similar to an oil sheen. These sheens, unlike oil sheens, can typically be broken up creating platy or blocky fragments when agitated or disturbed. Biogenic films can also be foamy.

[1] Department of Ecology. 2016. Guidance for remediation of petroleum contaminated sites. June.

Standard Operating Procedure

Surface and Subsurface Soil Sampling Using Hand Tools

SOP Number: 4
Date: 09/13/2023
Revision Number: 0.2

Scope and Application

This standard operating procedure (SOP) describes the use of hand tools for obtaining surface and subsurface soil samples for physical and/or chemical analysis.

Equipment and Materials Required

The following materials are necessary for this procedure:

- Personal protective equipment (as specified in the Health and Safety Plan)
- Tools appropriate for the conditions that may be encountered (e.g., spoon, trowel, shovel, hand auger); tools constructed of stainless steel are preferred.
- Stainless steel bowls
- Tape measure with increments in feet and tenths of a foot.
- Laboratory-supplied sample containers
- Laboratory chain-of-custody form and cooler with ice.
- Equipment decontamination supplies if sampling equipment will be reused between sample locations (see SOP 1 for equipment decontamination procedures).
- Field forms or notebook for documenting the sampling procedures.

Methodology

When the project-specific sampling and analysis plan (SAP) specifies additional or other requirements for soil sampling, it takes precedence over this SOP. In the absence of a SAP, the procedures in this SOP shall be used.

General Sampling Procedure:

- Don gloves as specified in the Health and Safety Plan; replace gloves with new gloves after each sample is collected.
- Clear the ground surface of brush, root mat, grass, leaves, and other debris.
- Use the selected hand tool to remove soil to the targeted sample depth. Use a measuring tape to verify that the sample depth is correct and record the depth in the field notebook or boring log.
- Describe and document the soil lithology in accordance with SOP 2.
- Use the selected hand tool to collect soil and homogenize in a decontaminated stainless-steel bowl or a dedicated Ziploc® bag and then transfer the sample to the sample container using hand tools.

- Before sample collection, and to the extent possible, use the selected hand tool to remove organic debris, anthropogenic material (e.g., brick, metal, glass), and gravels larger than 4 millimeters, unless a project-specific SAP directs otherwise.
- When sampling for gasoline-range total petroleum hydrocarbons (gasoline) or volatile organic compounds (VOCs), a subsample will be obtained from a discrete portion of the collected sample. To minimize the potential loss of volatiles during sampling, the subsample shall not be composited or homogenized. The sample container for gasoline and/or VOC analysis will be filled first if additional containers are necessary for other analysis. Specific procedures for collecting samples for gasoline and/or VOC analysis using the U.S. Environmental Protection Agency Method 5035 are specified in SOP 5.
- The sampling device and field equipment will be decontaminated between sample locations in accordance with SOP 1. Alternatively, new, disposable equipment can be used to collect each sample to preclude the need for equipment decontamination.

Backfilling Sample Locations:

Backfill in accordance with federal and state regulations (e.g., Oregon bentonite requirements per OAR 690-240-0035). Otherwise, manual excavations can be backfilled with excess soil remaining after sample collection, unless the project-specific SAP requires a different backfill procedure.

Standard Operating Procedure

Push-Probe Drilling

SOP Number: 7
Date: 03/09/2021
Revision Number: 0.1

Scope and Application

This standard operating procedure (SOP) describes the use of a push probe (i.e., Geoprobe™) to observe subsurface conditions and collect samples of various environmental media (e.g., soil, sediment, groundwater, soil vapor) for laboratory analysis. Push-probe drilling is generally not suitable for soils with gravel/rock clast larger than about 4 inches in diameter. If gravelly/rocky soils are expected at the project site, consider use of the sonic drilling method described in SOP 8.

Push-probe drilling can be used for a variety of purposes, including:

- Retrieving cores to document subsurface soil or sediment conditions and to obtain samples for physical and/or chemical evaluation
- Sampling soil vapors, using temporary well points
- Collecting reconnaissance groundwater samples from temporary well screens
- Installing permanent monitoring wells

Equipment and Materials Required

The following equipment and materials are necessary for this procedure:

- Push-probe drill rig and operator provided by a subcontractor to MFA. Ensure that the subcontractor is licensed to perform the drilling work.
- Sampling equipment appropriate for the media to be sampled (e.g., water level meter, pumps, hand tools, and pump tubing).
- Laboratory-supplied sample containers.
- Traffic cones, measuring tape, buckets.
- Department of Transportation (DOT)-approved containers (e.g., 55-gallon drum) for storing excess soil and decontamination water; the drums are typically provided by the drilling subcontractor.
- Boring log form and notebook.
- Equipment decontamination supplies if sampling equipment will be reused between sample locations (see SOP 1 for equipment decontamination procedures).
- Personal protective equipment (as required by the project health and safety plan).

Methodology

When the project-specific sampling and analysis plan (SAP) provides additional or different requirements for push-probe drilling, it takes precedence over this SOP. In the absence of a SAP, the procedures in this SOP shall be used.

Utility Locate:

- Before beginning the fieldwork, assess the proposed drilling location(s) for the presence of overhead and underground utilities, and adjust the locations, as needed, to avoid identified utilities.
- See SOP 18 for the utility locating procedures.

Push-Probe Drilling Process:

- The push-probe drilling rig is equipped with a soil sampling device that retrieves a continuous soil core. A combination of static force and percussion is used to drive the soil sampler into unconsolidated geologic material. A plastic liner placed inside the sampler contains the soil core and permits its removal from the sampler for examination. The sampler is driven into the subsurface, typically in 4- or 5-foot intervals, depending on the length of the sampling device. When each interval depth is reached, the soil sampler is removed from the ground, and the liner is removed to facilitate soil observation and sampling.
- This process is repeated for each soil sample interval until the targeted boring depth is reached.
- Ensure that the drilling subcontractor decontaminates all subsurface equipment before and after each boring. Document the decontamination procedures in the field notebook. Store decontamination water in DOT-approved containers for later off-site disposal.

Logging and Soil Sampling Process:

- Remove the soil core from the sampler for field screening, description, and sampling.
- Describe the lithology in accordance with SOP 2.
- Confirm the required depth interval(s) for soil sample collection and field screening with the MFA project manager, or conduct the work in accordance with the SAP. The sample interval may require adjustment based on core recovery, soil stratigraphy and characteristics, and evidence of contamination. Confirm any adjustments to the sample intervals with the project manager.
- If the project requires field screening for organic vapor, conduct it in accordance with SOP 3.
- If the project requires laboratory analyses for gasoline-range petroleum hydrocarbons or volatile organic compounds, conduct the sampling in accordance with SOP 5.
- Contain all soil core remaining after sample collection in DOT-approved containers for later off-site disposal. See SOP 1 for drum storage, labeling, and documentation procedures.

Reconnaissance Groundwater Sampling Process:

- Typically, reconnaissance groundwater samples are collected at the first occurrence of groundwater in a boring. Confirm the required depth and procedures for groundwater sample collection with the MFA project manager, or conduct the work in accordance with the SAP. If the project requires use of the low-flow sampling method, refer to SOP 9 for the low-flow sampling procedures.
- Reconnaissance groundwater samples are collected using a decontaminated stainless steel or disposable, temporary polyvinyl chloride well screen placed in the boring. If the soils in the boring are fine-grained and may cause excessive turbidity in groundwater, consider using a filter pack

around the screen to reduce turbidity. Alternatively, purging the well screen of groundwater prior to sample collection may also reduce the turbidity. See SOP 9 for purging procedures.

- Purging and sampling will be conducted using a peristaltic pump unless otherwise specified in the SAP. New tubing will be used for each boring. Field parameters (e.g., temperature, conductivity, and pH) will be recorded in accordance with SOP 9 during purging and sampling.

Monitoring Well Installation:

- If the project requires installation of a monitoring well in the boring, refer to SOP 11 for the well installation procedures. Confirm the procedures with the MFA project manager.

Borehole Abandonment Process:

- Abandon each borehole in accordance with local and state regulations/procedures. The abandonment will be performed by the drilling subcontractor.
- The abandonment procedure typically consists of backfilling the boring with granular bentonite and hydrating the bentonite with potable water.
- If the boring was advanced through concrete or asphalt, backfill the boring to about 6 inches below grade to allow for placement of asphalt or concrete in the remaining 6 inches to match the surface conditions.

Standard Operating Procedure

Low-Flow Groundwater Sampling

SOP Number: 9
Date: 06/29/2023
Revision Number: 0.2

Scope and Application

This standard operating procedure (SOP) describes use of the low-flow sampling method for collection of reconnaissance groundwater samples from borings and groundwater samples from monitoring wells. The method uses low pumping rates during purging and sample collection to minimize water-level drawdown and hydraulic stress at the well-aquifer interface.

Equipment and Materials Required

The following materials are necessary for this procedure:

- Personal protective equipment (as specified in the health and safety plan)
- Water quality meter (e.g., Oakton, YSI Inc. multiparameter meter)
- Turbidity meter
- Water-level meter
- Peristaltic pump and tubing
- Laboratory-supplied sample containers
- Laboratory chain-of-custody form and cooler with ice
- Filter if dissolved analyses will be performed
- Well construction logs documenting the screen depth and interval for all wells to be sampled
- Equipment decontamination supplies if sampling equipment will be reused between sample locations (see SOP 1 for equipment decontamination procedures)
- 5-gallon buckets with lids
- Department of Transportation-approved storage containers (e.g., drums, totes)
- Groundwater field sampling datasheet and notebook

Methodology

When the project-specific sampling and analysis plan (SAP) provides additional or different requirements for low-flow groundwater sampling, it takes precedence over this SOP. In the absence of a SAP, the procedures in this SOP shall be used.

General Sampling Procedure:

Water Level Measurement

- Water-level measurement procedures are described in detail in SOP 13.

- Open the well cap to allow the water level to equilibrate (approximately ten minutes).
- Measure the water level in the well, using an electronic water-level meter to the nearest 0.01 foot to determine the depth to groundwater below the top of the well casing.
- If light nonaqueous-phase liquid (LNAPL)is present (typically indicated by a dark, oily sheen on the top of the water level meter), discuss with the MFA project manager how to proceed.

Purging

- If the water level is above the top of the well screen, place the end of the sample tubing in the middle of the well screen interval. If the water level is below the top of the screen, place the end of the sample tubing at the midpoint between the water level and the bottom of the well screen.
- Typical low-flow sampling pumping rates range from 0.1 to 0.5 liters per minute, depending on the hydrogeologic characteristics at the site. The objective of the rate selected is to minimize excessive drawdown (<0.3 feet) of the water level.
- Measure water quality parameters (dissolved oxygen, pH, electrical conductivity, turbidity, and temperature) using a flow-through cell connected to the discharge end of the peristaltic pump tubing. Purging will be considered complete when the water quality parameters stabilize per the following for three consecutive readings taken over 3-minute intervals (consistent with EPA guidance)[1]:

Dissolved Oxygen (10% for values greater than 0.5 mg/L, if three Dissolved Oxygen values are less than 0.5 mg/L, consider the values as stabilized),
Specific Conductance (3%),
Temperature (3%),
pH (± 0.1 unit),
Oxidation/Reduction Potential (±10 millivolts).

- Document the purge procedures, including pumping rates, water quality parameter measurements, and the water level during purging, on the groundwater field sampling datasheet.
- Place purge water in Department of Transportation-approved containers (e.g., 55-gallon drum) stored on site. See SOP 1 for drum storage, labeling, and documentation procedures.

Sample Collection

- Following the purging process, collect groundwater samples in laboratory-supplied containers.
- Confirm the laboratory analytical methods and sample container requirement with the MFA project manager or project chemist. If analysis for gasoline-range petroleum hydrocarbons or volatile organic compounds (VOCs) is proposed, fill the sample containers for gasoline and VOC analysis before filling sample containers for other analytical methods. Sample containers for gasoline and VOC analysis shall be filled to capacity without overfilling and capped so that no headspace or air bubbles remain in the container.

[1] EPA. 2017. Low stress (low flow) purging and sampling procedure for the collection of groundwater samples from monitoring wells. September 19.

Low Yield (Alternate Method)

- If drawdown of the water table cannot be avoided by reducing the pumping rate, and the well goes dry during purging, discontinue pumping and water quality parameter measurements.
- Collect the groundwater sample after the water level above the well bottom recovers to 90 percent of the prepurge water level. For example, if the water level was 10 feet above the well bottom before purging, begin sampling when the water level has recovered to 9 feet or more above the well bottom.
- If the water column volume is insufficient to meet the sample volume requirement, allow the water level to again recover to 90 percent before continuing sampling. Repeat this procedure until all sample containers are filled.

Standard Operating Procedure

Underground Utility Locates

SOP Number: 18
Date: 03/09/2021
Revision Number: 0.1

Scope and Application

This standard operating procedure (SOP) describes the practices for locating underground utilities. Refer to the MFA health and safety plan (HASP) for additional information regarding communication procedures to be followed when an inadvertent utility strike occurs, as well as regarding methods for mitigating hazards during a utility strike.

Equipment and Materials Required

The following materials are necessary for this procedure:

- Personal protective equipment (as specified in the HASP)
- Marking materials (e.g., marking paint, stakes, flags)
- Field documentation materials

Methodology

When the project-specific sampling and analysis plan (SAP) specifies additional or different requirements for underground utility locates, it takes precedence over this SOP. In the absence of a SAP, the procedures in this SOP shall be used.

Before Conducting Utility Locates:

- Ensure that the locate will be conducted reasonably soon before the excavation work begins, e.g., within 48 hours. There may be project-specific conditions, e.g., weather and/or ground features that could cause markings to fade, which would require scheduling of the excavation work sooner than 48 hours after the locate.
- Clearly define the boundary of the work and the locations of all proposed excavations. Prepare a map of the project area showing the excavation locations.
- Interview site managers/property owners and obtain plans or drawings, if available, showing on-site utilities.
- For project work that will not take place in the public right-of-way, ensure that the public rights-of-way nearest to the project are identified and communicated during the one-call notification.
- Identify the township and range of the project area. This information can be easily attained by a quick email to MFA's GIS Exchange.
- If feasible, conduct a site visit to identify site conditions that could cause fading or disruption of marking paint. Such conditions could include gravel or ground sensitive to erosion and high traffic.
- Check the weather forecast to assess the potential for snow or rain to make marking utilities difficult or cause the markings to fade.

One-Call Utility Notification:

- If possible, initiate the one-call utility notification at least one week before the proposed work begins.
- Include a map or GPS coordinates when submitting the notification.
- Before conducting any excavation activities, confirm with each public utility that the utility locate has been completed.
- On remote or complicated sites, consider meeting public locators on site.
- Document the one-call ticket number and results in the project files.
- Provide the one-call ticket number to subcontractors who will be doing the excavations.

Private Utility Locate:

- Conduct the private utility locate only after confirmation that the public utility locate has been completed and all public utilities have been marked and the results reviewed by MFA staff who will be overseeing the excavations.
- Meet the private locator on site and participate in the entire private utility locate. Be engaged in the process, ask questions, and take time to walk the site thoroughly with the locator.
- Bring a copy of the one-call utility ticket and results of the one-call utility locater to check against the utility markings on the ground.
- If possible, have a site/property representative knowledgeable of on-site utilities participate in the private utility locate.
- If paint alone may not suffice to ensure clear marking of utilities, add vertical markers such as stakes or flags.
- Visually assess the area of the proposed excavation(s) to identify features potentially indicative of buried utilities. Have the private utility locator examine each feature identified below to assess the presence of buried utilities.
  - Examine adjacent public rights-of-way where public utilities have been marked for evidence of utilities that may extend onto the project site.
  - Identify nearby light poles, telephone poles, electrical utility poles, or other overhead utility poles with wires or conductors that run from the overhead utility, down the pole, and into the ground.
  - Identify the location of gas meters, water meters, or other aboveground junction boxes for evidence of utilities extending from these features into the ground.
  - Examine asphalt and concrete ground surfaces for discontinuities in the surface indicative of utility installations. Discontinuities may include recent patches of asphalt or concrete inlaid within older concrete or asphalt surfaces.
  - Identify manholes and catch basins indicative of buried storm or sanitary sewer pipes. Open manholes to examine the orientation of associated pipes to assess whether the utilities may be present near proposed excavations.
  - Identify tank ports and vent pipes.

- Identify irrigation systems and associated features such as valve boxes and controllers.
- Identify any other signs indicating the presence of buried utilities.
- Be wary of utility marks that suddenly begin or dead end.

Preparing to Perform Subsurface Activities after a Locate:

- Ensure that the markings are still visible when the work begins.
- Adjust locations, as needed, to avoid identified utilities, or use alternative methods such as nonmechanical excavation means (i.e., manual excavation or air-knifing) to a minimum depth of 5 feet.

Table
APWA UNIFORM COLOR CODE

	WHITE—Proposed Excavation
	PINK—Temporary Survey Markings
	RED—Electric Power Lines, Cables, Conduit and Lighting Cables
	YELLOW—Gas, Oil, Steam, Petroleum or Gaseous Materials
	ORANGE—Communication, Alarm or Signal Lines, Cables or Conduit
	BLUE—Potable Water
	PURPLE—Reclaimed Water, Irrigation and Slurry Lines
	GREEN—Sewers and Drain Lines

Source: Uniform Color Codes, ANSI Standard Z535.1. American Public Works Association. Revised 1999.

Appendix F

HUD Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing, Appendix 13.1

MAUL FOSTER ALONGI

Appendix 13.1: Wipe Sampling of Settled Dust for Lead Determination

Wipe samples for settled leaded dust can be collected from floors (both carpeted and uncarpeted), interior window sills, window troughs and other similar surfaces.

1. Wipe Sampling Materials and Supplies

A. **Disposable, moistened towelettes or baby wipes.** Wipe material should meet the performance criteria found in ASTM E 1792, "Standard Specification for Wipe Sampling Materials for Lead in Surface Dust," or equivalent, as required by 40 CFR 745.63.

B. **Non-sterilized, non-powdered disposable gloves.** Disposable gloves are required to prevent cross-sample contamination from hands. Use non-powdered gloves to preclude contamination of the wipe surface with powder from the gloves.

C. **Hard-shell, non-sterilized resealable containers.** Use containers (such as screw-top, plastic centrifuge tubes), for storage and transporting wipe samples (interior must be capable of being rinsed in the laboratory to recover all the lead on the sample). Do not use plastic baggies to transport or temporarily hold wipe samples unless the laboratory agrees to accept samples in them beforehand.

D. **Dust sample collection forms contained in these *Guidelines* or equivalent.** (See Forms 5.4 and 15.2.)

E. **Masking tape, at least one inch wide, to demarcate wipe areas and/or to tape down templates.** Tape is required when templates are not available for a given wipe area, especially for narrow, confined areas, such as interior window sills and window troughs.

F. **Labels for resealable containers and permanent marker.**

G. **Trash bags or other receptacles (do not use trash containers at the residence).**

H. **Measuring ruler or tape.** The measuring tool should be cleanable and capable of measuring to the nearest 1/16-inch or 1 mm.

I. **Templates (optional).** Hard, smooth and cleanable, rectangular or square templates are recommended as a method of defining the area to be wiped on floors. (Masking tape is usually a more practical method for defining the wipe area on narrow interior window sills and window troughs.) Use either non-reusable laminated paper or cardboard, or reusable metal or plastic. Non-reusable, disposable templates are permitted so long as they are not used for more than a single surface. Templates help to assure an accurate measurement of the wipe area, can save time, and, for composite samples, help to assure uniformity of subsample areas. Templates must be larger than 0.1 sq. ft. (approximately 4 in. x 4 in. or 10 cm x 10 cm), but smaller than 2 sq. ft. (approximately 17 in. x 17 in. or 40 cm x 40 cm). Templates for floors are typically 1 sq. ft. or 900 sq. cm which is large enough to provide sufficient dust for analysis. Templates are usually not used for windows due to the variability in size and shape (use masking tape instead).

J. **Rack, bag, or box to carry tubes (optional).**

K. **Disposable shoe coverings (optional).** Wearing disposable shoe covers when walking from one sampling site (e.g., a building) to another helps minimize transfer of dust. Shoe covers should not be worn in vehicles. Never walk on the surface to be wiped.

L. **Still or Video Camera (film, digital, or web) to record exact locations as well as sampling methods (optional).**

2. Single Surface Wipe Sampling Procedure

A. Outline the sample area.

1. The area to be sampled (i.e., the area to be wiped) must be a rectangle or square with measurable dimensions, so the area can be easily calculated.

2. If there is no visible dust on the surface, it is recommended that the wipe area be at least 1 sq. ft. (approximately 900 sq. cm) to obtain enough dust for analysis. If this amount of area is not available on an interior window sill or trough, make the wipe area as large as possible.

   The size of the area wiped must be at least 0.1 sq. ft. (approximately 4 in. x 4 in. or 10 cm x 10 cm) in order to obtain an adequate limit of quantitation. This is because 20 µg/wipe is a typical reporting limit of laboratories using routine analytical methods, and 20 µg/0.10 square feet = 200 µg/ft^2, which is close to the EPA-HUD clearance criterion for interior window sills.

3. For floors and other large flat surfaces: Identify the sample area (the area to be wiped). The sample area for floor samples should be about 1 square foot (or approximately 900 sq. cm). Do not walk on or touch the sample area. It is recommended that reusable or disposable templates be used to define sample areas on large flat areas such as floors. If using a reusable template, clean it before use with one or more new wipes. Carefully place the clean template on the sample area and, to keep it from moving while wiping, tape the outside edges to the floor or weight down the template. Minimize disturbance of dust in the sample area.

   If a template is not available, apply masking tape at least 1/2 inches wide to the perimeter of the sample area to form a square or rectangle. No measurement is required at this time. The tape should be positioned in a straight line and corners should be nominally at right angles.

4. For interior window sills, window troughs, and other narrow or confined rectangular surfaces: Identify the area to be wiped. If there is only one window in the room, select only half of a sill or trough, leaving the other half for a side-by-side sample if needed. Do not touch the area to be sampled. Apply two strips of adhesive tape across the sill to define a wipe area at least 0.1 square foot in size (approx. 4 inches x 4 inches or 10 cm x 10 cm), larger if possible. Templates are not recommended for window sills or troughs.

B. Inspect disposable wipes.

Inspect the wipes to determine if they are moist. If they have dried out, do not use them. When using a container that dispenses wipes through a "pop-up" lid, the first three wipes in the dispenser at the beginning of the day should be thrown away. The first wipes may be contaminated by the lid and are likely to have dried to some extent. Rotate the container before starting to ensure liquid inside the container contacts the wipes.

C. Prepare resealable containers.

Examine the hard-shell, resealable containers and make sure that they match the containers used for blind spiked wipe samples, if such samples are to be submitted to the laboratory. Partially unscrew the cap on an unused container to be sure that it can be opened.

D. Don gloves.

Don a new pair of disposable gloves. Use new gloves for each sample collected. It is not necessary to wipe gloved hands before sampling. Some people who are experienced in wipe sampling prefer to operate with just one gloved hand; some prefer a two-handed method. The single-gloved method is acceptable provided the ungloved hand does not touch the gloved hand, the wipe, the face of the template or tape that demarcates the wipe area, or the surface area to be wiped.

E. Sample floors and other large surfaces.

- Place container of wipes in the sample area.
- Select a wipe from its package and inspect it to make sure it is moist, clean, and free of fungus or other material. If it is acceptable, place the wipe at one corner of the area to be sampled with the wipe fully opened and flat on the surface.
- Make the first wipe pass, side-to-side.
- With the fingers together, grasp the wipe between the thumb and the palm. Press down firmly, but not excessively with the fingers and, if the wipe is large enough, the palm. If the sample area is a square or nearly a square, as should be the case with floor sampling, proceed to wipe side-to-side with as many "S"-like motions as are necessary to completely cover the entire sample area. (See Step 2F, below, for narrow, rectangular areas.) Exerting excessive pressure on the wipe will cause it to curl. Exerting too little pressure will result in poor collection of dust. Do not use only the fingertips to hold down the wipe, because there will not be complete contact with the surface and some dust may be missed. Attempt to pick up all dust from the sample area.
- Do not cross the template or the tape, but be sure to wipe the entire sample area. It is permissible to touch the template or tape with the wipe, but not the surface beyond.
- Make the second wipe pass, top-to-bottom.

- Fold the wipe in half with the contaminated side facing inward. (You may straighten the wipe by laying it on the sample area, contaminated side up, and folding it over.) Take care not to spill dust when folding. Once folded, place the wipe in the top corner of the sample area and press down firmly with the fingers (and the palm if the folded wipe is large enough). Repeat wiping the area with "S"-like or "Z"-like motions, but on the second pass, move in a top-to-bottom direction. Attempt to pick up all dust. Do not touch the contaminated side of the wipe with the hand or fingers. Do not shake the wipe in an attempt to straighten it out, since dust may be lost during shaking.
- Make the third wipe pass around the perimeter of the sampled area.
- Fold the wipe in half again with the dust collection side inward and repeat the wiping motion, pressing with the fingers and concentrating on collecting any remaining dust in the corners of the wipe area. If any visible dust remains, use a second wipe to collect the remaining dust, and clearly note the need to composite the wipes for analysis.
- Include spike samples in accordance with your quality assurance plan.

F. Sample interior window sills, window troughs, and other narrow rectangular areas.

If the surface is a narrow rectangle, two side-to-side passes must be made over the sample area, the second pass with the wipe folded so that the contaminated side faces inward. For an interior window sill or window trough, do not attempt to wipe the irregular edges presented by the contour of the window trough or the rounded inside edge of the interior sill. Avoid touching other portions of the window with the wipe. If there are paint chips or gross debris in the window trough, attempt to include as much of it as possible on the wipe. If it is apparent that all of the material cannot be picked up with one wipe, consider sampling only a part of the surface. Alternatively, field personnel may use a second wipe and insert it in the same container, but it is necessary first to consult with the analytical laboratory to determine if they can perform analysis of two wipes as a single sample. When performing single-surface sampling, do not use more than two single-surface wipes for each container. If heavily dust-laden, the wipe area should be smaller than if there is little or no visible dust.

G. Package the wipe sample.

After collecting as much dust as possible with the wipe, fold the wipe with the contaminated side facing inward again, and insert aseptically (without touching anything else) into the centrifuge tube or other hard-shelled container. If gross debris is present, such as paint chips in a window well, make every attempt to include as much of the debris as possible in the wipe.

H. Label the container.

Seal the centrifuge tube (or other equivalent rigid walled container) and label with the appropriate identifier. Record the laboratory submittal sample number on the field sampling form (see chapters 5 and 15). To avoid confusion, it is recommended that there be only one identifier for both the field and the laboratory.

I. Measure and record dimensions of wipe area.

After the sampling of an area has been completed, measure the dimensions of the surface area wiped to the nearest eighth of an inch using a tape measure or a ruler. Record specific measurements for each area wiped on the field sampling form. Do not estimate the surface area; measure it.

J. Prepare field blank.

Don new gloves. After collecting the last wipe sample in a dwelling unit (or in common areas within a building) but before decontamination (see Step 4, below), prepare a field blank sample. Remove a wipe from the package with a new glove, shake the wipe open, refold it in a manner similar to that used during the actual wipe sampling procedure, and then insert it into a centrifuge tube (or equivalent container used for the wipe samples) without touching any other surface or object. One blank wipe is collected for each dwelling unit or set of common areas sampled or, if more than one dwelling unit is sampled per day, one blank for every 20 field samples, whichever is less. Also, collect one blank for every lot of wipes used. Record the lot number, if available.

Analysis of the field blanks determines if the sample media is contaminated. Each field blank should be labeled with a unique identifier similar to the wipe samples so that the laboratory does not know which sample is the blank (i.e., the laboratory should be "blind" to the blank sample). A laboratory blank may also be submitted if the laboratory requests such a blank sample.

K. Complete form.

Fill out the appropriate field sampling forms (see form 5.4 or form 15.2 in these *Guidelines*) completely. Collect and maintain any field notes regarding type of wipe used, specific surface areas wiped, lot number, collection protocol, etc.

L. Dispose of Trash.

After sampling, remove all masking tape and put it in a trash bag. Before removing the last pair of disposable gloves, put all other contaminated gloves and other sampling debris used for the sampling period into a trash bag. Then remove the last pair of gloves and put them in the trash bag. Remove the trash bag when leaving the dwelling. Do not throw away gloves, wipes, etc. inside the dwelling unit where they could be accessible to young children. Besides being lead-contaminated, the plastic bag and gloves may be a suffocation hazard.

3. Composite Wipe Sampling

Whenever composite sampling is contemplated, consult with the analytical laboratory to determine if the laboratory is capable of analyzing composite samples and, if so, what wipes should be used and what annotation they add to analysis reports of composite samples. NLLAP accredited labs are required to note on the report that composite wipe analyses are not covered by their accreditation. This may cause problems with the admissibility of the data in any subsequent legal action. When conducting composite wipe sampling, the procedure stated above should be used with the following modifications:

A. When outlining the sample areas (step 2.a, above), set up all of these areas before sampling. For each component type (i.e., floor, sill or trough), the size of the subsample areas should be equivalent, so that one room is not over-sampled.

B. After preparing the centrifuge tube, complete the wiping procedure for each subsample (steps 2.d – 2.g, above). A separate wipe must be used for each subsample area sampled. After wiping each subsample area, carefully insert the wipe sample into the same centrifuge tube (no more than 4 wipes per tube).

C. Once all subsamples are in the tube, label the tube. Record a separate measurement for each area that is subsampled on the field collection form (see form 5.4a or form 14.2a for a sample form). Finally, complete trash collection and disposal (step 2.p**,** above), making sure that no masking tape or other debris is left behind.

In addition to these procedural modifications, only composite samples from similar components. The following rules for compositing should be observed:

- Composite samples from carpeted and hard surfaces separately (e.g., a single composite sample should not be collected from both carpeted and bare floors).
- Composite samples from each different component separately (e.g., bare floors go with bare floors, carpeted floors go with carpeted floors, troughs go with troughs, etc.).
- Composite samples within a single dwelling and for from common areas within a single building.

4. Decontamination

After sampling, wash hands thoroughly with plenty of soap and water before getting into car. A bathroom in the dwelling unit may be used for this purpose, with the owner's or resident's permission. If there is no running water in the dwelling unit, wet wipes may be used to clean hands. Tools, such as reusable templates and measuring devices, should be wiped clean. During sampling, inspectors must not eat, drink, smoke, or otherwise cause hand-to-mouth contact.

5. Spiked Samples

Unless required, it is not necessary to submit spiked samples in normal practice, because laboratories certified under the National Lead Laboratory Accreditation Program (NLLAP) must participate in a proficiency testing program. However, if additional confidence in the laboratory's reliability is desired, samples spiked with a known amount of leaded dust may be inserted into the sample stream randomly by the person conducting field sampling to determine if there is adequate quality control of the digestion process at the laboratory. Dust-spiked wipe samples should be submitted blindly to the laboratory at the rate of no less than one for every fifty field samples. Any laboratory can spike wipes. The laboratory performing the analysis of the field samples can also prepare the spike sample as long as the person performing the field sampling makes the spike sample indistinguishable from the field samples. The person conducting the field sampling should take the spike sample prepared in the laboratory and re-label the container with an identifier similar to the other field samples. The spike sample wipe should not be put into another container. Spike samples should be made using the same lot as that used in the field, if convenient. You should consider preparing field spikes in addition to the spikes that are part of the laboratory quality assurance protocol.

6. Quality Assurance/Quality Control

A. Blank Samples

If more than 5 µg/wipe is detected for a blank sample collected in a specific housing development, discuss the situation with the laboratory before deciding whether to resample the site. Blank correction of wipe samples is not recommended.

B. Spiked Samples

Blind analysis of spiked samples must fall within 80 and 120 percent of the true value. If the laboratory fails to obtain readings within the QA/QC error limits:

1. Two more spikes should be sent immediately to the lab for analysis.
2. If the two additional spike samples fail, the analyses of all samples in the batch associated with the spike should be considered invalid.

A full review of laboratory procedures may be necessary. Additional samples may need to be collected from the dwelling units from locations equivalent to the locations previously sampled.

7. Other Information and Standards

See chapter 5 and chapter 15 for additional information on dust wipe sampling in practice. Additional standards for wipe sampling can be found by consulting:

- ASTM E 1728, "Standard Practice for Field Collection of Settled Dust Samples Using Wipe Sampling Methods for Subsequent Lead Determination," (***http://www.astm.org/Standards/E1728.htm***);
- ASTM E 1792, "Standard Specification of Wipe Sampling Materials for Lead in Surface Dust," (***http://www.astm.org/Standards/E1792.htm***); and
- the EPA report, "Residential Sampling for Lead: Protocols for Dust and Soil Sampling," March 1995, (EPA 747-R-95-001), which is available from the National Lead Information Center (***http://www.epa.gov/lead/pubs/nlicdocs.htm***; document number 440) or EPA's National Environmental Publication Information System (***http://nepis.epa.gov*** at ***http://nepis.epa.gov/Exe/ZyPURL.cgi?Dockey=20012QUZ.txt***).

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