



SOIL MANAGEMENT PLAN

Revision 1

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229311
Canal5Studio
October 10, 2016

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1. INTRODUCTION

Woodard & Curran has prepared this Soil Management Plan (SMP) for the Canal5Studio to assist and facilitate the proper handling, storage, characterization, transport, on-site reuse, and/or off-site reuse or disposal of excess soil generated during the redevelopment of the plaza area associated with the Canal Plaza property in Portland, Maine.

Redevelopment activities are anticipated throughout the area of the Canal Plaza property that fronts on Middle Street, and the steps that link the plaza to Union Street and the center parking area (in the direction of Exchange Street). These areas are collectively referred to as “the Site.” The approximate limits of the Site are presented in **Figure 1**.

This SMP also addresses groundwater that may incidentally be encountered during construction activities. This plan has been prepared for use during the construction process for activities such as utility and subsurface structure installation/relocation work, foundation installation, grading, paving, and landscaping.

1.1 BACKGROUND

Woodard & Curran understands that East Brown Cow has an interest in performing a significant enhancement to the plaza area associated with the Canal Plaza site. In addition, the project will include a stand-alone, single story building structure within the plaza. To date this building has been referred to as the “Guitar Pick” building during design coordination meetings, a name representative of the unique shape of the structure.

It is anticipated that the redevelopment activities described above will result in the disturbance of the current groundcover at the Site as well as excavation and earthwork activities associated with utilities, building foundations, re-grading, and final land and hardscaping.

1.2 SUMMARY OF EXPECTED SITE CONDITIONS

Woodard & Curran was retained by Canal5Studio to perform a subsurface investigation at the Site in order to assess the condition of soil that may be encountered during the anticipated redevelopment project. The focus of the subsurface investigation, which was performed on January 12, 2016, was to:

1. Assess potential contaminant concentrations in soil to evaluate potential risk to excavation and construction workers, as well as future users of the Site (i.e. commercial workers and visitors); and
2. Characterize soil that may be generated as excess during construction such that an appropriate reuse, treatment, or disposal option may be selected.

The results of this investigation were presented to Canal5Studio in a Draft Soil Characterization letter reported dated May 10, 2016. Consistent with the findings of this investigation, conditions that may be reasonably anticipated during future construction and redevelopment activities are as follows:

- Soil observed below the overlying brick and concrete hardscape of the plaza generally consisted of fill overlying glacial till and bedrock. The fill typically consisted of light to medium brown silty sand containing small rocks, gravel, pieces of concrete and brick, a black ash-like material, and a charcoal-like black material. Fill was observed at depths extending between 9 and 16 feet below the ground surface.
- Based on observed conditions and the received laboratory results of select soil samples that were analyzed as described below, shallow subsurface soil at the Site is consistent with “Urban Fill.” Urban Fill means soil mixed with other materials that has been placed over an area for the purpose of modifying the elevation of the land surface to facilitate development. Urban Fill is prevalent throughout Portland’s

peninsula and these materials and associated constituents are not necessarily indicative of a point source release of contaminants resulting from current or previous Site activities.

1.3 CONCLUSIONS RELATIVE TO KNOWN SITE CONDITIONS

The following is a summary of conclusions and implications relative to the proposed redevelopment activities based on the results of the January 12, 2016, subsurface investigation.

- None of the analytes detected at the Site exceed the (MEDEP) Remedial Action Guidelines (RAGs)¹ for the Construction Worker exposure scenario. As such, based on the available data from the subsurface investigation, conditions that may reasonably be anticipated during redevelopment activities at the Site are not expected to present a significant risk to the health of workers that may come into contact with soil during construction.
- Certain concentrations of analytes such as arsenic, lead, and polycyclic aromatic hydrocarbons (PAH) exceed the MEDEP RAGs under the scenarios that may be applicable after construction (e.g., Commercial Worker, Residential, and/or Park User). It is expected that these conditions will be managed through the use of engineering controls described below in Section 4 (i.e., soil cover systems).
- The results of the available laboratory analytical data indicate that excess soil that may be generated at the Site is unlikely to be classified as a hazardous waste. Consistent with the previous analytical results, it is probable that excess soil may be transported off-site for reuse or disposal at a MEDEP permitted facility, a commercial processing facility, or could be beneficially reused following appropriate MEDEP permitting.
- No groundwater analytical results are available for the Site. If groundwater is generated as waste during redevelopment, additional characterization will be required to assess possible handling and disposal requirements. However; based on observed soil conditions, it is probable that groundwater generated during construction, if any, may be managed and disposed of in accordance with Federal, State, and/or local permitting requirements.
- The construction of occupied residential space is not contemplated at this time at the Site. However, if residential occupancy is planned in the future, potential risk associated with possible vapor-phase contaminants will require further assessment and/or management in accordance with Section 4.4.2.

The following table presents the maximum and average detected analyte concentrations in soil at the Site as identified during the January 12, 2016, subsurface investigation.

¹ Please note that the MEDEP RAGs do not currently apply to soil at the Site as it is not currently involved in the Uncontrolled Hazardous Substance Sites program, Voluntary Remedial Action Program (VRAP), Brownfields program, Superfund program, or Resource Conservation and Recovery Act (RCRA) program. However, the contaminant concentrations presented in the RAGs were developed to be protective of human health and the environment, and have therefore been used as an analogous standard to achieve similar goals during future work at the Site.

Table 1: Summary of Known Soil Conditions

Compound	Maximum Detected Concentration	Average Detected Concentration	Remedial Action Guideline ¹				
			Leaching to Groundwater	Residential	Commercial Worker	Construction Worker	Urban Fill Background UPL
VOCs (mg/kg)							
Naphthalene	0.5J	0.5J	1.7	2,500	10,000	10,000	0.82
SVOCs (mg/kg)							
Naphthalene	0.53	0.53	1.7	2,500	10,000	10,000	0.82
2-Methylnaphthalene	0.29	0.29	3.6	500	3,600	600	0.41
Acenaphthylene	0.76	0.26	68	7,500	10,000	10,000	1.4
Acenaphthene	1	0.34	170	7,500	10,000	9,800	3.5
Dibenzofuran	0.58	0.20	-	130	1,000	950	-
Fluorene	1	0.34	120	5,000	10,000	10,000	4.4
Phenanthrene	14	4.43	97	3,700	10,000	8,900	6.1
Anthracene	2.5	0.94	2,400	10,000	10,000	3,800	6.7
Carbazole	1.1	1.10	-	540	1,400	10,000	0.53
Fluoranthene	15	5.92	10,000	5,000	10,000	10,000	10
Pyrene	13	4.90	10,000	3,700	10,000	10,000	9.5
Benzo(a)anthracene	6.8	2.77	10,000	2.6	35	430	27
Chrysene	7.1	2.79	10,000	260	3,500	10,000	6.4
Benzo(b)fluoranthene	4.3	2.07	10,000	2.6	35	430	6.8
Benzo(k)fluoranthene	4.7	2.03	10,000	26	350	4,300	12
Benzo(a)pyrene	5.7	2.39	10,000	0.26	3.5	43	5.2
Indeno(1,2,3-cd)pyrene	2.9	0.99	10,000	2.6	35	430	3.3
Dibenzo(a,h)anthracene	1.5	0.51	10,000	0.26	3.5	43	4.5
Benzo(g,h,i)perylene	3.1	0.99	10,000	3,700	10,000	10,000	16
Inorganics (mg/kg)							
Arsenic	12	9.97	-	1.4	4.2	42	-
Barium	73	50.00	-	10,000	10,000	10,000	-
Chromium (total) ²	26	19.00	-	510	5,100	2,800	-
Lead	480	180.83	10,000	340	1,100	950	-
Mercury	0.63	0.46	-	51	510	930	-
TCLP (mg/L)							
Lead ³	1.3	0.62	-	-	-	-	-

¹ RAG: Maine Remedial Action Guidelines for Sites Contaminated with Hazardous Substances, Maine DEP, revised February 5, 2016

² RAG for hexavalent chromium is used for a conservative comparison. There is no RAG for total chromium.

³ Regulatory limit for lead is 5 mg/L.

- = No RAG currently exists for this compound or exposure scenario

NA = sample was not analyzed for the listed analytical parameter

J = Result qualified as estimated during data validation

2. RESPONSIBILITIES

The developer of the Site is responsible for adopting, implementing, and amending, as appropriate, this SMP, and ensuring that the SMP is adhered to during the construction. This responsibility may be contractually transferred to the ~~General Contractor~~general contractor and/or the Environmental Professional as appropriate for the project. Specific requirements to be fulfilled by the responsible party include the following:

1. Maintain record keeping of the soil excavation, monitoring, on-site management, on-site reuse, and off-site reuse and disposal activities performed during the proposed construction work;
2. Document environmental investigations conducted at the Site in conjunction with the work including sampling results, and make this information available to designated employees and applicable contractors that will be conducting work in the area where the SMP will be implemented. These environmental investigations are generally described in Section 4.3.2 and in particular apply to potential unexpected conditions;
3. Ensure that work conducted at the Site that has the potential to disturb existing soil and/or generate excess soil is monitored and conducted in accordance with this SMP;
4. Assist the earthwork contractor with the recommended soil management activities (described herein); and
5. Provide training to on-Site workers as needed as described in Section 3.2.

2.1 CONTACT INFORMATION

The following contact information is provided for use during the implementation of this SMP:

Environmental Professional

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Project Manager
Woodard & Curran
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Portland, ME 04101
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207.756.2319 (c)
jsteinglass@woodardcurran.com

3. GENERAL HEALTH & SAFETY RECOMMENDATIONS

This section has been prepared to provide general health and safety information and recommend the minimum health and safety related procedures for construction and redevelopment work at the Site. This information is focused to assist persons not otherwise required to prepare their own health and safety plan (e.g., visitors) while engaged in activities at the Site.

Please note that the information presented in this section is not appropriate for use by any personnel that are required to prepare a Health and Safety Plan (HASP) in order to comply with any applicable Federal, State, local, or other health and/or safety requirements and safe construction practices.

3.1 PERSONAL PROTECTIVE EQUIPMENT (PPE)

Level D protection, as described below in Table 3, is suggested for initial entry on-site and for all activities except where higher levels of protection are required.

Table 2: Recommended PPE Summary	
PPE	Applicable Work Activities
Level D:	
Long-sleeved shirts and long pants Composite or steel toed boots with socks Hard hats Safety glasses Reflective safety/traffic vest Cut-resistant gloves	All Site work activities
Level D Modifications:	
Disposable nitrile or chemical resistant gloves Tyvek® or equivalent coveralls Rubber waders or boots	Handling of visibly contaminated sediment, soil, water, and other media

No Level C work activities are anticipated; however, Site conditions should be continuously monitored by appropriately trained personnel to ensure that conditions that require Level C or higher protection are not present.

3.2 TRAINING REQUIREMENTS

Based on known concentrations of contaminants as determined through previously described environmental investigations in the area of the Site, a comparison of analytical results to the MEDEP RAGs, and the activities and personnel that are anticipated to be on-site during construction and redevelopment (i.e., construction personnel and brief visits by non-construction personnel), no specific training is required. However, as a conservative measure, basic on-Site project-specific training is recommended for Site workers who may come into contact with Group 2 or 3 soil, as defined below in Section 4.3 (i.e., earthwork contractors, underground utility installers, landscapers, etc.). The Environmental Professional may provide this training. In addition, qualified personnel should continuously monitor Site conditions to identify potential unanticipated conditions that may warrant specialized training.

4. SOIL MANAGEMENT PLAN

4.1 OVERVIEW

All soil that is disturbed during the course of redevelopment (general Site construction, work in the public way, utility and other subsurface structure installation/relocation work, grading, paving, landscaping, and foundation installation, etc.) must be properly managed.

Provisions for the management and on-site reuse of soils that may generally be encountered or disturbed during construction are provided within this SMP. A portion of excavated soils may need to be transported off-site for disposal based on the design constraints of the project. In addition, dewatering may be necessary if groundwater is encountered during construction. Recommended practices to complete these activities are also described in this SMP.

Soil associated with work in the public way may be managed in accordance with this SMP but may also be transferred to the City of Portland for proper management and disposal.

The general soil and groundwater management process for the Site project is as follows:

1. **Initiation of Construction Activities:** Includes the pre-construction considerations in Section 4.2 and excavation and proper handling of soil during construction, as described in Sections 4.3 and 4.4.
2. **Soil Excavation Monitoring:** On-site material has been initially classified based on existing data. However, olfactory and visual observations are necessary throughout the project to identify potential unanticipated conditions as described in Section 4.3.
3. **On-site Reuse:** Based on existing data, soil that originated at the Site may be reused on-site without restriction, provided that it is managed in accordance with Section 4.4.
4. **Waste Characterization:** Group 2 soil (as defined below in Section 4.3) that originated from the Site and is disturbed during the course of construction and redevelopment, but cannot be reused at the Site is defined as "Special Waste." The proper handling, characterization, and off-site disposal or reuse of Special Waste are also described in the following sections. Excavated soil designated for off-site disposal (Special Waste) ~~shall~~ must be characterized by laboratory analyses prior to off-site transport as described in Section 4.6.
5. **Off-site Reuse or Disposal:** Results of the Waste Characterization will be used to determine how Special Waste will be disposed and to obtain receiving facility acceptance approval. The anticipated disposal options are as follows:
 - Off-site Disposal at Approved Landfills – Special Waste soil with concentrations below facility acceptance criteria is suitable for disposal at MEDEP permitted and approved landfills.
 - Off-site Recycling or Treatment at Other Facilities – Special Waste soil with concentrations below facility acceptance criteria is suitable for reuse or recycling off-site at a MEDEP permitted and approved facility. These facilities could reuse, recycle, or treat excess soil via asphalt batching, thermal desorption/destruction, or another permitted beneficial reuse such as in road base or other appropriate construction materials.
 - Off-site Reuse at Commercial Processing Facilities – Depending on the results of Waste Characterization activities, Special Waste soil may be acceptable for transport to commercial processing facilities in order to be reused in commercial applications (e.g., aggregate products such as road base, etc.). Each proposed reuse scenario must be approved by the Environmental Professional.

- Off-site Treatment or Disposal at Hazardous Waste Facilities – Though not anticipated, soil that meets one of the criteria for a characteristic hazardous waste as defined in 40 CFR 261 cannot be classified as a Special Waste and is classified as Group 3 soil (see definition below). This material must either be treated at a properly permitted facility to eliminate the hazardous characteristic or disposed of at a landfill or other facility permitted to accept hazardous waste.
- 6. **Confirmatory Sampling:** If necessary, confirmatory sampling may be conducted in select areas (to be determined by the Environmental Professional) prior to backfilling and/or redevelopment work. This is described in Section 4.7.
- 7. **Dewatering/Groundwater Management:** If groundwater is encountered during excavation activities and dewatering is necessary, groundwater shall be managed in accordance with Section 4.8.

4.2 INITIATION OF CONSTRUCTION ACTIVITIES

4.2.1 Potential Permits Required for Soil Excavation

Prior to conducting subsurface activities, DIG SAFE must be notified and a DIG SAFE permit number acquired. In addition, the Site owner and/or its representative(s) will be responsible for obtaining all permits (e.g., building, sewer connection, water, gas, etc.) and approvals from the appropriate Federal, State, or local regulatory authorities needed for activities associated with the construction project.

4.2.2 Site Access Control

Access to the Site during the performance of construction and redevelopment work shall be adequately restricted to prevent non-construction personnel from coming into contact with existing Site soil and/or Special Waste. These controls may include temporary or permanent perimeter fencing, signage, or a combination of similar measures.

4.2.3 Temporary Facilities/Utilities

Water supply needs for dust suppression and decontamination will be determined by the contractor in coordination with the Portland Water District, as needed. Possible construction water supply options include a temporary water service connection to the water main, or a fire hydrant located in the area of the Site.

4.2.4 Dust Control

Any area of soil that is disturbed or otherwise affected during construction and redevelopment work shall be maintained to minimize the creation and dispersion of dust. These areas may include but are not necessarily limited to active excavation areas, haul roads, active soil stockpiles and loading areas, entrances and exits to the Site, and adjacent public roadways. Dust suppression shall be conducted through regular sweeping and sprinkling of water, as necessary, and/or with an appropriate commercial grade dust suppressant. Several applications of water and/or other dust suppressant may be required each day to effectively manage dust.

To prevent the tracking of Site soils into the public roadways, a [stabilized construction entrance](#), tire wash area, [and/or similar provisions](#) must be established and the tires of each vehicle exiting the Site must be free of visible soil and dust. All truck tires and equipment will be inspected and cleaned as necessary prior to leaving the Site. In addition, regular street sweeping shall be conducted to clean the roadways adjacent to the Site where fugitive soil or dust ~~that is not properly addressed by the tire wash may be tracked~~.

[Any](#) water generated during dust control activities shall be managed in accordance with Section 4.8.

4.3 SOIL CHARACTERIZATION

Site conditions that may be anticipated during construction have been described in previous environmental reports, and summarized in Section 1.2. However, this information shall be supplemented by olfactory and visual observations throughout the project to identify potential unanticipated conditions that may prohibit on-site reuse. The appropriate monitoring procedures are described below in Section 4.3.2.

4.3.1 Soil Categories

Three soil groups are applicable for all construction work at and adjacent to the Site:

- **Group 1 Soils.** Group 1 soils are clean, uncontaminated soils. They have no visible or olfactory evidence of contamination (coal, ash, cinders, debris, and/or dark brown or black color) and exhibit no field photoionization detector (PID) results of greater than 20 parts per million (ppm). Based on previous investigations, it is possible that Group 1 soils will not be present at the Site or may be fairly limited in volume.

Group 1 soils may be reused at the Site without further restriction, may be reused off-site in accordance with Section 4.5, or if necessary due to design limitations of the project, disposed in accordance with Section 4.6.

- **Group 2 Soils.** Group 2 soils have visible and/or olfactory evidence of contamination and/or field screening readings of 20 ppm or greater on a PID. Visual evidence of contamination may include coal, ash, cinders, debris, and/or dark brown or black color. Group 2 soils often have a petroleum or tar odor.

Surficial and subsurface soils containing Urban Fill have been identified throughout the Site. Urban Fill soils, which have been observed to extend from surface grade to up to 16 feet below grade, are likely to fall into the Group 2 category. Group 2 soils are considered to be contaminated unless proper laboratory testing completed in accordance with Section 4.6 determines that contaminant concentrations are less than MEDEP RAGs for the Residential scenario, which would reclassify the material as Group 1. Any reclassification of Group 2 soils must be approved by the Environmental Professional.

Group 2 soils may be reused at the Site in accordance with the requirements of Section 4.4. Group 2 soils would be considered a "Special Waste" if they cannot be reused on-site. Special Waste must be disposed in accordance with Section 4.6.

- **Group 3 Soils.** If soils from the Site or adjacent areas are found to fall into the category of Hazardous Waste on the basis of Toxic Characteristic Leaching Procedure (TCLP) or other laboratory testing, those soils are characterized as Group 3 soils. Group 3 soils cannot be reused at the Site and must be removed and properly disposed as hazardous waste. Based on previous investigations in the area, Group 3 soils are not anticipated at the Site.

4.3.2 Soil Excavation Monitoring

During excavation activities at the Site, ~~the General Contractor or an assigned qualified party shall an Environmental Professional should~~ be present to monitor subsurface soil conditions ~~and~~, brief construction crews on soil handling and safety issues. ~~The Environmental Professional shall be called in to, and~~ assist in soil classifications and handling decisions ~~if soils are encountered that differ from the anticipated conditions, as described below.~~

Site personnel shall examine excavated materials continuously for visual and/or olfactory evidence of petroleum or other impacts that may indicate Group 2 or Group 3 soil. Visual evidence will include but is not necessarily limited to the following:

- observation of discoloration or staining;

- coal, ash, cinders, trash, or debris;
- the presence of free petroleum product; and/or
- olfactory evidence including, but not necessarily limited to, odors associated with petroleum, chlorinated solvents, or unknown materials.

An interpretation of analytical results generated during previous environmental investigations in the area relative to MEDEP RAGs indicates that soil disturbed during construction can be managed during redevelopment and reused on-site as described in Section 4.4. However, **if conditions different than those anticipated at the initiation of construction activities are encountered during excavation (e.g., significant staining, odor, or free petroleum product) work shall stop. Site personnel shall then notify the Environmental Professional to assist in planning further excavation, monitoring, and documentation as required.**

Relevant contact information for the Environmental Professional is presented in Section 2.1.

4.4 ON-SITE SOIL MANAGEMENT

In general, and as previously described, it is anticipated that existing soil located throughout the Site will be disturbed during construction and redevelopment activities. At a minimum, all Site soil that is disturbed during the performance of construction or redevelopment work shall be handled and stored in a manner that minimizes human contact and prevents the uncontrolled migration of soil away from the Site for the duration of the project.

4.4.1 On-Site Reuse

Consistent with known conditions, it is anticipated that Group 1 and Group 2 soil that is disturbed or otherwise affected during construction and redevelopment work may be reused at the Site without restriction, provided measures to minimize direct contact with existing soil during the future operation of the Site are installed by the completion of construction and redevelopment. Features that would minimize direct contact with existing soil include but are not limited to:

- asphalt pavement, concrete, brick, pavers, or other impervious materials;
- 6 inches or greater of clean materials (e.g., loam, topsoil) and landscaping; or
- permanent building foundations.

~~Approval by the Environmental Professional is required before materials may be considered "clean" and acceptable for reuse below landscaping.~~ Imported materials from appropriate sources, i.e., loam and topsoil from landscaping companies or virgin sources, do not require characterization or approval prior to use below landscaping.

Example soil reuse applications include backfill, grading, and landscaping materials. However, the Soil Characterization procedures described in Section 4.3 must be completed throughout the performance of construction and redevelopment activities to verify that on-site soil reuse is appropriate.

4.4.2 Construction of Occupied Structures

No groundwater or soil vapor analytical results are available for the Site. Unless an adequate investigation of potential vapor phase contamination is conducted, which indicates that conditions are acceptable without further action, occupied structures that may be constructed at the Site in the future should include a properly designed and installed vapor barrier and/or sub-slab ventilation system. Parking garages, which are not occupied or enclosed structures, are excluded from the vapor mitigation recommendation.

4.5 OFF-SITE REUSE

Group 1 soil that has been properly characterized and does not contain analyte concentrations above the available Residential RAGs may be acceptable for off-site reuse without further restriction. Each proposed off-site reuse application must not result in the significant degradation of existing environmental conditions at the reuse location. The acceptability of each proposed off-site reuse application must be verified and approved by the Environmental Professional prior to the removal of any Group 1 soil from the Site. It is unlikely that Group 2 soil will be acceptable for off-site reuse.

In addition, if significant volumes of excess naturally deposited clay that exists below fill material at the Site are generated during construction, alternative off-site reuse options may be available as approved by the Environmental Professional. This procedure would apply to undisturbed naturally deposited material that has been characterized to the satisfaction of the Environmental Professional (in concert with the MEDEP) to contain no analyte concentrations above the available Residential RAGs, and/or no concentrations of contaminants above state-wide established background concentrations for undeveloped properties. Material meeting these requirements may possibly be acceptable for reuse by commercial processing facilities (e.g., construction and earthwork contractors) in aggregate products such as road base and similar materials.

Each proposed reuse application must be non-residential and must not result in the significant degradation of existing environmental conditions at the reuse location. The acceptability of each proposed off-site reuse application must be verified and approved by the Environmental Professional prior to the removal from the Site.

4.6 SPECIAL WASTE SOIL MANAGEMENT

Any [Group 2](#) soil that originated from the Site or adjacent areas and is disturbed during the course of construction and redevelopment, but cannot be reused at the Site, is defined as "Special Waste." Special Waste soil that is excavated and designated for off-site disposal, shall either be stockpiled on-site or placed directly in DOT-approved shipping containers. These materials must be handled in the following manner:

1. Stockpiled Special Waste soil that is designated for off-site disposal shall be surrounded by a physical barrier or a combination of barriers, such as temporary or permanent perimeter fencing and/or signage, to prohibit access by unauthorized persons. The barriers shall be maintained so that they effectively prohibit such access for the duration of the work;
2. Stockpiled Special Waste soil that is designated for off-site disposal shall be covered with an impermeable material that is secured to minimize human or animal contact, wind entrainment of the soil, infiltration of precipitation, and erosion;
3. Dust suppression measures shall be employed to prevent the wind-borne entrainment and migration of soil particles from stockpiled Special Waste soil designated for off-site disposal during the active working or loading of this material; and
4. Erosion control measures shall be employed, as needed, to prevent the off-site runoff of soil from the Special Waste stockpile. Standard construction erosion control measures may include staked hay bales, plastic membrane, the covering of storm drain catch basins, or other suitable means, provided that off-site soil runoff is effectively prevented for the duration of time that the stockpile is present.

Excavated Special Waste soil that is designated for off-site disposal shall not be left uncovered or unsecured at the end of the workday. Prior to the end of each workday, all Special Waste must be either:

- Placed into a temporary stockpile and covered with poly sheeting; or
- Loaded into a covered dump trailer or lined and covered roll-off containers.

4.6.1 Waste Characterization

4.6.1.1 Previously Completed Waste Characterization

An initial round of Waste Characterization sampling has been completed by Woodard & Curran as part of the January 12, 2016, subsurface investigation and the resulting data is included in **Appendix A**. This data may be suitable to receive approval from a properly permitted receiving facility to dispose of up to 1,500 tons of Special Waste soil from the Site, as described below. Facility acceptance and approval coordination for this initial 1,500 tons of Special Waste soil will be conducted by the [General Contractor](#)~~general contractor~~, with documentation provided for review by the Environmental Professional.

4.6.1.2 Supplemental Waste Characterization

If the selected disposal facility requires further sampling and laboratory analysis prior to the removal of additional volumes of Special Waste soil from the Site, such supplemental Waste Characterization sampling shall be completed and/or documented by the [General Contractor](#)~~Environmental Professional at the discretion of the Owner~~. Associated activities will include Special Waste soil sampling, laboratory analysis, data review, and facility acceptance and approval coordination. Waste characterization samples may be obtained in-situ through test pitting or may be collected from existing stockpiles or containers so long as the samples provide an accurate and unbiased representation of the waste stream.

Supplemental Specific Waste Characterization analytical requirements and sampling frequency will be specified by the presumed selected off-site disposal or off-site reuse facility. However, it is anticipated that one (1) composite sample consisting of a minimum of five (5) grab sub-samples shall be collected for each 500 cubic yards of Special Waste soil that is designated for off-site reuse or off-site disposal.

The following list describes the typical Waste Characterization analytical parameters for each Supplemental Waste Characterization sample. However, this list must be verified prior to analysis to ensure that it meets specific disposal facility acceptance criteria.

- Total RCRA 8 metals (or TCLP RCRA 8 metals if required based on total concentrations)
- Volatile Organic Compounds (VOC)
- Semi-volatile Organic Compounds (SVOC)
- Total petroleum hydrocarbons (TPH)
- Polychlorinated biphenyls (PCBs)
- pH
- Corrosivity
- Reactivity (cyanide and sulfide)
- Flashpoint
- Pesticides and herbicides
- Paint filter test for free liquids (as appropriate for moist or wet soils)

4.6.2 Off-Site Disposal of Special Waste

Special Waste must be profiled and accepted at the designated MEDEP permitted receiving facility prior to off-site shipment. Proof of facility acceptance and approval, as well as the proposed shipment documentation, shall be ~~collected~~[provided to the Environmental Professional](#) for [project documentation by the General Contractor approval prior to the removal of any Special Waste from the Site.](#)

All Special Waste soil that is transported off-site must be shipped by a MEDEP licensed Non-Hazardous Waste Transporter under a MEDEP Nonhazardous Waste Transporter Manifest Special Waste Manifest. Following off-site transportation, clear copies of delivery tickets, acceptance tickets, weight slips, Bill of Lading forms, and/or manifests shall be provided for project documentation. An example copy of a MEDEP Non-Hazardous Waste Transporter Manifest is included for reference in **Appendix B**.

4.6.3 Off-Site Disposal of Hazardous Waste

Please note that soil that meets one of the criteria for a characteristic hazardous waste as defined in 40 CFR 261 (i.e., Group 3) is not anticipated at the Site. However, if hazardous waste is identified, notice shall be provided immediately to the Environmental Professional. This material cannot be reused and it must be disposed off-site. Appropriate receiving facility profiling, acceptance, and approval by the Environmental Professional is required prior to the removal of any hazardous waste from the Site.

4.7 VERIFICATION / CONFIRMATORY SOIL SAMPLING

It is not anticipated that verification and/or confirmatory sampling will be required at this time. However, if conditions are different than those anticipated (e.g., levels of contamination observed during construction or waste characterization sampling are greater than expected) additional sampling may be warranted. The decision to conduct verification / confirmatory sampling, and the rationale, methodology, and data quality objectives will be established by the Environmental Professional.

4.8 DEWATERING / GROUNDWATER MANAGEMENT

No information concerning current groundwater conditions or depth to the water table is available; however, it is possible that groundwater will be encountered during excavation activities. If dewatering is necessary to facilitate construction, the water will be pumped from the excavation and either:

1. Discharged to the ground surface within the immediate work area, provided that appropriate best management practices are implemented (e.g., erosion and sedimentation controls, engineered infiltration basin, etc.) to prevent the off-site migration of the generated materials.
2. Rejected into the ground by sumps excavated on-site with the location documented by the Environmental Professional.
3. If necessary, discharged to the municipal sewer system in accordance with all local, State, and Federal approvals necessary for the discharge of the water. In this instance, the water must be containerized (i.e. fractionation tank), tested, and pretreated if necessary, prior to disposal to meet the requirements of the Portland Water District. This process must be coordinated with the City of Portland Department of Public Works Engineering Division and the Portland Water District. Typical analytical requirements are listed below:
 - pH and Alkalinity
 - Total Suspended Solids
 - Cadmium
 - Copper
 - Lead
 - Nickel
 - Zinc
 - Silver
 - Arsenic
 - Total Cyanide
 - Flashpoint
 - Total Oil and Grease

- Chromium
 - Mercury
 - PAH
4. Managed on-site in appropriate containers (i.e. fractionation tank) for subsequent waste characterization and off-site disposal. Waste characterization must be conducted in accordance with the selected disposal facility's acceptance requirements.

4.9 DECONTAMINATION PROCEDURES

As a general practice, tools and equipment that come into contact with soil will be decontaminated prior to taking them off-site. This requirement will be applicable to all tools, heavy machinery, and excavating and hauling equipment used during excavation, stockpiling, and handling of Site soils. Decontamination shall include removal of visible soil and dust with a dry broom/brush and subsequent inspection. In the event that the dry brush technique is not sufficient to remove visible signs of soil and dust, wet decontamination consisting of washing down equipment with high-pressure water hoses, brushes, and/or steam must be performed. In addition, all tools and equipment that come into contact with groundwater at the Site shall be decontaminated such that free liquids, dirt, and silt are removed prior to taking them off-site.

All water generated during decontamination activities shall be managed in accordance with Section 4.8.

4.10 RECORDKEEPING AND REPORTING

Records shall be kept of all soil excavation and handling activities. Recordkeeping requirements are ultimately the responsibility of the developer, but in practice shall be fulfilled by the Site [General Contractor](#) ~~general contractor with the assistance of the Environmental Professional~~. These records shall include but not be limited to the following:

1. A list of the contractors and any subcontractors conducting soil excavation, on-site management and reuse, and off-site transport and reuse/disposal work;
2. Copies of HASP(s) used;
3. Copies of shipping records for all Special Waste soil that is transported off-site;
4. Copies of existing conditions and as-built site plans showing the areas of pavement, concrete, landscaping, permanent building foundations, etc.;
5. Copies of analytical results for samples collected for waste characterization (Section 4.6), confirmation sampling (Section 4.7), and/or groundwater discharge (Section 4.8); and
6. Copies of plans showing locations where groundwater was reinjected into sumps, if used, after dewatering.

In the event additional or unexpected contamination is discovered, soil characterization and/or verification soil sampling records will be retained and copies provided to the Environmental Professional.

5. REFERENCES

Woodard & Curran, 2016. Draft Soil Characterization. May 10.

FIGURES

Figure 1: Soil Boring Locations

APPENDIX A: PREVIOUSLY COMPLETED WASTE CHARACTERIZATION DATA

APPENDIX B: EXAMPLE MEDEP NON-HAZARDOUS WASTE TRANSPORTER MANIFEST



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