Earth Engineers

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February 29, 2024
Revised ***April 4***, 2024

Port of Camas-Washougal
24 South A Street
Washougal, Washington 98671
Attention: David Ripp, CEO

Phone: (360) 835-5560
E-mail: david@portcw.com

Subject: Geotechnical Work Plan – Overexcavation of Organic, Non-Structural Fill & Replacement with Structural Fill at Buildings A-D
Proposed Hyas Point Mixed-Use Development – Phase 1a and 1b
Port of Camas-Washougal
Southeast Corner of Intersection of South Marina Way and South 2nd Street
Washougal, Clark County, Washington
EE Report No. 10-24035-1-*R2*

Dear Mr. Ripp:

As requested, **Earth Engineers (EE)** is providing the revised Work Plan for overexcavating the existing organic, non-structural fill on the project site and replace with properly compacted structural fill. This report ***was first*** revised ***on March 31, 2024*** to respond to the comments provided by the State of Washington Department of Ecology (Washington DOE) in a March 15, 2024 letter addressed to the Port of Camas-Washougal. ***This report has now been revised again to respond to comments e-mailed from Danielle Gibson at Washington DOE to Jennifer Taylor at the Port on April 2, 2024. Ms. Gibson requested that the Work Plan be updated to remove all impacted soil within the influence zone of the building footings. The newest*** report revision additions are notated in bold, italics font. Our services were authorized by David Ripp, CEO for the Port of Camas-Washougal (Port) on February 6, 2024 by signing EEI Proposal No. 24-P039.

BACKGROUND

The Port intends to prepare the building pads for construction of conventional shallow foundations by overexcavating unsuitable soils and replacing with properly compacted structural fill. We previously issued a geotechnical investigation report (EEI Report No. 21-146-2 dated November 28, 2022) that addresses the proposed construction for the Hyas Point Phase 1a and 1b developments (previously referred to as The Waterfront at Parkers Landing – Phase 1 project) but that report did not include detailed recommendations specific to this scope of earthwork. Hyas

Point Phase 1a includes proposed Building A and B. Hyas Point Phase 1b includes proposed Building C and D. Since our report was issued, we understand the Port has obtained funding to overexcavate and replace the existing, organic, undocumented fill for Buildings A, B, C and D. The purpose of this Work Plan is to supplement the previously issued report and aid the contractors in bidding and conducting the work.

A "Soil Management and Cap Maintenance Plan, Former Hambleton Bros Log Yard" (SMCMP) was prepared for the Port for this site (prepared by Maul, Foster & Alongi [MFA], and dated March 16, 2015). The SMCMP specifies that Washington DOE must be notified by the Port concerning any potential impacts to the protective cap area. Note that all future reference to the "cap" in this Work Plan are referring to the SMCMP area.

A portion of the excavation work associated with this project will occur within the cap area. The cap is a fabric and gravel layer free of environmental contaminants placed on top of the residual contaminated soils (i.e. impacted soils) as described in the SMCMP. All future reference in this Work Plan to "impacted soils" are referring to the residual contaminated soils below the cap. The soil cap profile was designed by MFA to ensure the appropriate degree of protectiveness for ecological and human receptors from the impacted material that remains on the property. The soil cap is at least 2 feet thick, varies in thickness, and is installed on top of a demarcation fabric.

The MFA plan was prepared in accordance with the requirement of Washington Administrative Code (WAC) 173-340-440 and related provisions of the November 2007 update of the Washington State Model Toxics Control Act (MTCA). The SMCMP addresses soil management procedures to be followed in event of future development or any condition in which the caps are breached. Because a portion of the proposed building pad overexcavation work will occur within a cap area, that work will need to comply with the SMCMP recommendations, which are outlined later in this Work Plan. See Figure 1 below for the location of the cap area in relation to the proposed building pads.

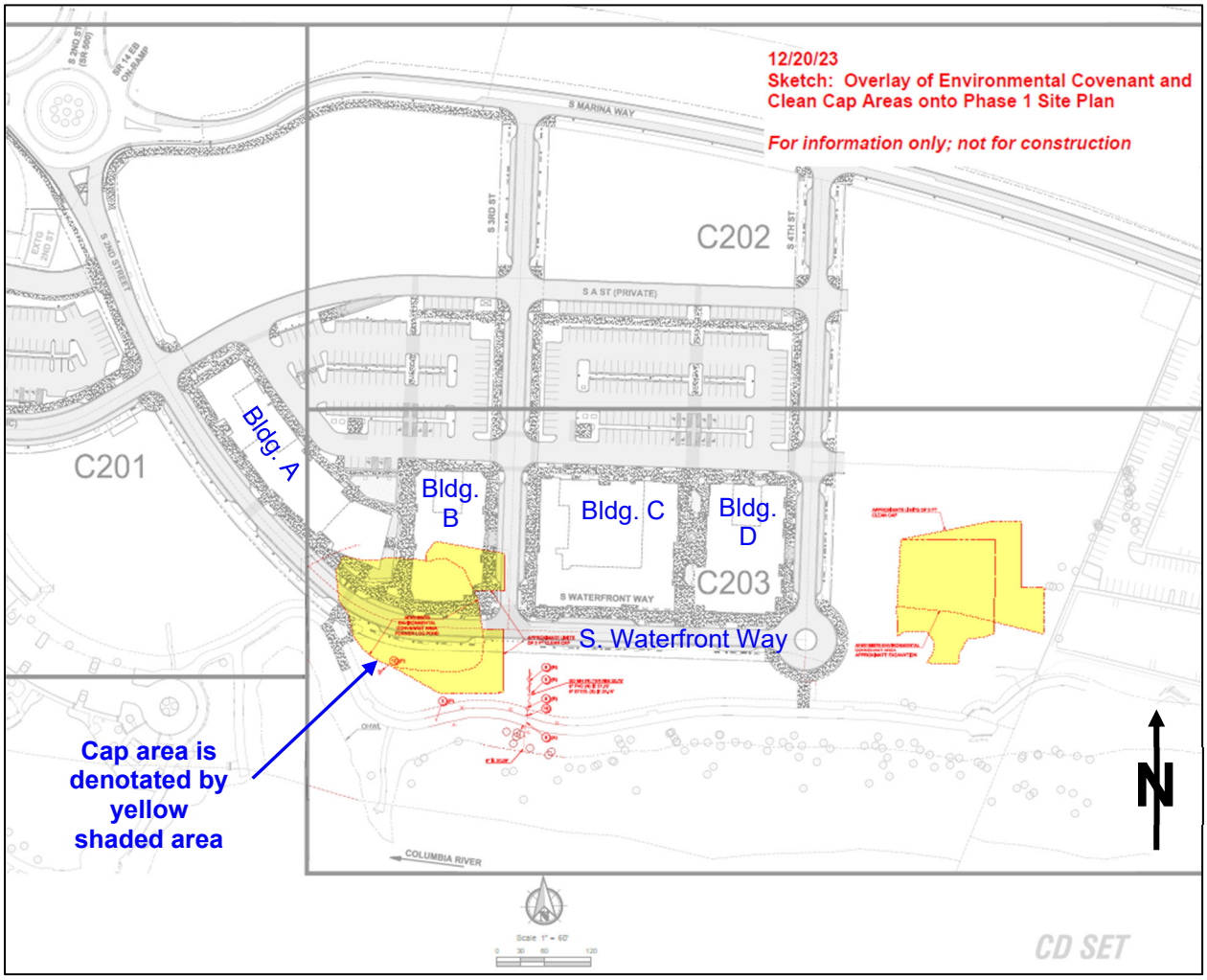


Figure 1: Site plan showing the location of the cap area in relation to the Building A and B pads (base drawing source: Sheet C200, titled "Erosion Control Plan Overview and Key Map For: Hyas Point, a Site Located in the City of Washougal, Washington," dated March 2023.

As noted in Section 3 of SMCMP, the indicator hazardous substances (IHS) in the impacted soil are residual-range organics (RRO), lead, mercury, polychlorinated biphenyls (PCBs), and carcinogenic polycyclic aromatic hydrocarbons (cPAHs). The contamination remains below the protective cap, and therefore all work that breaches the protective cap must adhere to the soil-management procedures outlined in the SMCMP. The SMCMP allows for contaminated soil below the cap to be breached during general construction activities, including but not limited to the following: utility or stormwater conveyance construction, underground structure or building foundation construction, and general earthwork and earth-moving activities. The preparation for foundation subgrade of proposed Buildings A through D and the installation of underground utilities in the proposed Waterfront Way located immediately south of the four buildings qualifies for disturbance of the impacted soil controlled by the SMCMP.

When redevelopment of the Port property requires alteration of the cap types and/or configuration, the Port is required to notify Washington DOE 30 days before construction. The following are approved cap options:

Table 1: Capping Options (reference SMCMP section 5)

Type of Use	Typical Section
Landscaping/green space: < 2 feet soil	• Geotextile as demarcation; no landscaping; impermeable surface required (e.g., pavement, impermeable liner to prevent infiltration, buildings)
2 to 3 feet soil	• Geotextile as demarcation layer; ground cover; gravel surfaces, or other surface as approved by Washington DOE; and grasses
Landscaping/green space: 3 to 6 feet soil	• Geotextile as demarcation layer; shrubs or trees; gravel surfaces, or other surface as approved by Washington DOE; and grasses
>6 feet soil	• No geotextile and no vegetation planting restrictions
Parking	Impermeable surface (minimum thickness of 3 inches) with clean subbase as necessary for construction
Building/structure	Slab-on-grade (minimum thickness of 3 inches) with clean subbase as necessary for construction
Sidewalk/pathway	Impermeable surface (minimum thickness of 2.5 inches) with clean subbase as necessary for construction or gravel surface with minimum 2 feet clean fill

Based on the March 15, 2024 letter from Washington DOE to the Port of Camas-Washougal, we understand Washington DOE is requiring that all impacted soil beneath the footprint of proposed buildings be removed because the buildings will prohibit future impacted soil remediation effort. Note that outside of the proposed building footprints ***and foundation influence zone***, the Port's plan is to only excavate and replace the soil that is unsuitable from a geotechnical standpoint. For these areas of the cap that are not beneath proposed building footprints ***and foundation influence zone***, some impacted soil may be left in place and capped in accordance with the procedures outlined in this Work Plan and the SMCMP, provided all of the geotechnical unsuitable soils are removed at EE's direction.

From a geotechnical engineering standpoint, we have determined that the foundation influence zone extends out away from the edge of the perimeter footings at a 1H:1V imaginary plane and extends no wider than 10 feet beyond the exterior footings. Given that the exterior footings are anticipated to be up to approximately 5 feet wider than the edge of the building, the foundation influence zone extends up to 15 feet beyond the building footprint. This 15-foot wide zone of full-depth impacted soil removal is reflected in the volume calculations for all 4 proposed buildings (A through D) in the Estimated Excavation Volumes section below and in the Ground Disturbance Plan attached.

Before the start of any work that will expose soil below the protective cap, a soil-handling Work Plan is required. The Work Plan shall identify:

1. The quantity of soil cap to be worked or moved and where it will be staged;
2. The quantity of impacted soil to be disturbed;
3. The location of where the disturbed soil will be placed on site, stockpiled, or disposed of;

4. The original cap layout;
5. And the restoration of an equally protective cap.

We envision that the earthwork will be divided into 2 phases: (1) all earthwork within the cap area, and (2) all earthwork outside the cap area. The work within the cap area requires the contractor to follow special protocols because of the impacted soil, whereas the work outside of the cap area can proceed as conventional earthwork. We envision that cap area work will occur first. Then once that is completed, the earthwork outside the cap area will proceed.

ESTIMATED EXCAVATION VOLUMES

Based on EEI's previously completed subsurface explorations (borings and test pits), we have a general understanding of the thickness of the existing fill to be removed from beneath the 4 building pads. Note that the existing fill soil may differ from what we have encountered. As such, we recommend some budget contingency to allow for unanticipated existing fill thickness.

The following is an estimate of the volume of soil to remove from each building pad. In the impacted soil area, we assume the top 3 feet of soil on average is clean cap soil that does not require removal from the property. *Note that all volumes referenced in this Work Plan are "in-place" volumes and do not include an expansion factor when loading into dump trucks or a contraction factor when compacting in place.*

The estimated soil volumes below do not include soils directly beneath proposed buildings that are geotechnically acceptable, but contaminated (i.e. impacted soil), and are mandated to be overexcavated and removed to satisfy Washington DOE requirements.

Building A:
Assumed 10 foot wide footings (5 feet outside the building line)
Assumed 10 feet of fill thickness to be removed (on average)
Assumed a foundation influence line of 1H:1V so excavate 10 feet horizontally beyond edge of exterior footings.
Estimated total overexcavation (in-place) volume: 12,400 cubic yards
Estimated total impacted soil overexcavation (in place) volume: 1,400 cubic yards
Estimated total non-impacted soil overexcavation (in-place) volume: 11,000 cubic yards

Building B:
Assumed 10 foot wide footings (5 feet outside the building line)
Assumed 10 feet of fill thickness to be removed (on average)
Assumed a foundation influence line of 1H:1V so excavate 10 feet horizontally beyond edge of exterior footings.
Estimated total overexcavation (in-place) volume: 8,700 cubic yards
Estimated total impacted soil overexcavation (in place) volume: 3,200 cubic yards
Estimated total non-impacted soil overexcavation (in-place) volume: 5,500 cubic yards

Building C:
Assumed 10 foot wide footings (5 feet outside the building line)
Assumed 10 feet of fill thickness to be removed (on average)
Assumed a foundation influence line of 1H:1V so excavate 10 feet horizontally beyond edge of exterior footings.
Estimated total non-impacted soil overexcavation (in-place) volume: 14,800 cubic yards

Building D:
Assumed 10 foot wide footings (5 feet outside the building line)
Assumed 10 feet of fill thickness to be removed (on average)
Assumed a foundation influence line of 1H:1V so excavate 10 feet horizontally beyond edge of exterior footings.
Estimated total non-impacted soil overexcavation (in-place) volume: 10,500 cubic yards

Roadway immediately south of Building A and B:
Assumed 222 feet long by 45 feet wide footprint (assume extending 5 feet south of south side of paved road edge)
Lay back the perimeter of excavation at 1H:1V: 414 linear feet of excavation perimeter
Assumed 15 feet[1] of fill thickness to be removed (on average)
Estimated total overexcavation (in-place) volume: 6,675 cubic yards
Estimated total impacted soil overexcavation (in place) volume: 1,350 cubic yards
Estimated total non-impacted soil overexcavation (in-place) volume: 5,325 cubic yards

OVEREXCAVATION RECOMMENDATIONS – CONTAMINATED SOIL CAPPED AREA

The following are our recommendations for the overexcavation of the portions of the project that are located within the capped area:

1. The work shall be in accordance with the SMCMP (see attached).

2. Protective Cap Soil (SMCMP Section 4.1)

    a. Only the designated portion of the contaminated soil cap that is designated for removal shall be disturbed. The remaining portion of the cap shall remain in place.

    b. Disturbance of the protective soil cap (i.e. above the demarcation fabric) will not involve any special health and safety requirements (outside of standard construction health and safety protocols).

    c. Care shall be taken to maintain cap integrity during construction activities taking place on the protective cap.

[1] Subsurface data in the street is not well-defined. Existing fill in nearby borings are approximately 10, 12 and 18 feet. Based on this data, we preliminarily estimate the average depth as 15 feet.

d. If the protective cap is disturbed, reconstruction will be required.

e. Ruts in the remaining protective cap are to be filled with clean fill to avoid ponding.

f. The remaining cap surface slopes must be retained for adequate stormwater flow, and best management practices must be implemented to prevent erosion of cap material.

3. Soil Beneath Cap (SMCMP Section 4.2)

   a. Impacted soil beneath the demarcation fabric must be handled separately from the clean protective cap soil in order to:

      i. Avoid cross-contamination.

      ii. Allow reuse of the protective cap for soil cap restoration activities.

      iii. Limit the amount of soil to be handled as impacted soil.

      iv. Ascertain the disposal status of impacted soil.

   b. To access the impacted soil, the demarcation fabric shall be cut away from the boundary of the excavation. To avoid creating a tear or gap in the demarcation fabric beyond the intended excavation area, the fabric shall not be pulled or torn by excavation equipment at the boundary of the excavation.

   c. Soil excavated below the demarcation fabric will be assumed to be impacted unless proven otherwise.

   d. The soil excavated below the cap must be segregated from other excavated soils (and the cap material) and handled as contaminated material.

   e. The excavated soil shall be stockpiled at the location shown on the attached figure. The impacted soil shall be placed on and covered by an impermeable liner at all times. Impacted soil can be stockpiled for up to 90 days without requiring a Resource Conservation and Recovery Act (RCRA) permit. The contractor shall obtain an RCRA permit if they will stockpile the impacted soil on site longer than 90 days.

   f. When impacted soil is excavated, stockpiling shall be limited to the extent possible.

   g. If soil must be stockpiled on top of the protective cap, then stockpiles of impacted soil shall be placed as close to the excavation as possible with the smallest footprint possible, and should be placed on and covered with an impermeable liner.

   h. Prior to placing the liner, the existing ground shall be cleared of debris and any objects that could have the potential to puncture the liner.

i. A berm, constructed of imported or unimpacted site soil, compost socks, hay bales, sandbags, or equivalent material as approved by the supervising engineer, shall be installed along the perimeter of the impacted soil stockpile(s).

j. The liner bottom and cover shall extend up and over the perimeter berm so there is no impacted soil contact with precipitation or stormwater runoff.

k. Impacted soil shall remain covered except when the stockpile is in use.

l. If impacted soil is released on the cap surface, the impacted cap surface shall be removed and handled as impacted soil. Any soil cap material that is removed shall be replaced with a clean soil cap.

m. Replacement demarcation fabric will be overlapped with existing fabric to the extent possible to maintain a consistent fabric covering.

4. Confirmation Sampling and Testing

a. Confirmation testing will be conducted in accordance with the Sampling and Analysis Plan (SAP; SMCMP Appendix A)and is only necessary to verify that all impacted soil within the footprint of proposed buildings has been removed.

b. Confirmation samples shall be collected from the sidewalls and floor of the excavation area to confirm concentrations of indicator hazardous substances (IHSs) remaining in soil are below cleanup levels as defined in Table 1 of the 2013 Washington DOE Draft Cleanup Action Plan (reference Table 2 below).

c. Samples shall be collected from the southern-most sidewall, along the impacted soil area to remain in place, to document concentrations of IHSs remaining in soil. However, removal of any remaining impacted soil along the southern-most excavation sidewall is not required, provided it is not beneath a proposed building footprint.

d. At least one confirmation sample shall be collected for every 20 feet horizontally along the sidewalls, and at least one confirmation sample shall be collected for every 400 square feet of the excavation floor footprint.

e. Samples shall be analyzed for all IHSs identified in Table 1 in the 2013 Washington DOE Cleanup Action Plan (reference Table 2 below).

f. If test results indicate that IHSs remain at concentrations above cleanup levels, additional excavation shall be performed, and another round of confirmation samples shall be collected in accordance with 4.a through 4.d.

g. Once test results indicate that all soil samples have IHSs levels below cleanup level, a fabric shall be placed between the excavated and unexcavated areas to demarcate between impacted and non-impacted soil. Fabric specifications are referenced in Section 7 below.

Table 2: Summary of Impacted Soil Cleanup Levels
(source: Table 1 in the 2013 Washington DOE Draft Cleanup Action Plan)

Indicator Hazardous Substances	Soil CULs (mg/kg)	Groundwater CULs (µg/L)
Metals		
Lead	250	NV
Mercury	2	NV
Polychlorinated Biphenyls		
Total PCBs	1	NV
Petroleum Hydrocarbons		
DRO	2000	500
RRO	2000	500
Carcinogenic Polycyclic Aromatic Hydrocarbons		
Benzo(a)anthracene	NV	NV
Benzo(a)pyrene	0.1	NV
Benzo(b)fluoranthene	NV	NV
Benzo(k)fluoranthene	NV	NV
Chrysene	NV	NV
Dibenzo(a,h)anthracene	NV	NV
Indeno(1,2,3-cd)pyrene	NV	NV
cPAH TEC	0.1	NV
Volatile Organic Compounds		
Methylene chloride	0.02	NV

Notes:

cPAH TEC = carcinogenic polycyclic aromatic hydrocarbon toxicity equivalent concentration.

CULs = Cleanup levels
DRO = diesel-range organics
µg/L = micrograms per kilogram
mg/kg = milligrams per kilogram
NV = no value
PCBs = polychlorinated biphenyls
RRO = residual range organics

5. Off-site disposal (SMCMP Section 4.3)

   a. Soil not meeting clean fill screening criteria will be disposed of off-site.

   b. All soil required for off-site disposal shall be characterized as described in the attached Sampling and Analysis Plan (SAP; SMCMP Appendix A).

   c. Results of analysis shall be used to determine the appropriate off-site disposal location according to Washington DOE and MTCA requirements.

d. All excavation and hauling of soils determined to be contaminated shall be performed by workers with appropriate certifications (i.e. 40-hour HAZWOPER) to do the work.

e. All records for hauling and disposal for any contaminated soil removed from the site shall be retained by the contractor and a copy provided to the Port.

6. Soil Cap Requirements (SMCMP Section 5.1)

    a. Any replacement soil cap material shall be obtained from on-site stockpiled clean soil cap material.

7. Geotextile Requirements (SMCMP Section 5.1.1)

    a. Geotextile to be used as the demarcation layer shall meet the minimum technical specifications as follows:

        i. Material: woven polypropylene geotextile

        ii. Color: safety orange, red, yellow, or neon green

        iii. Minimum burst strength: 200 psi

        iv. Minimum permittivity: 10 gpm/square foot

8. Vegetation (SMCMP Section 5.1.2)

    a. Areas of 2-foot minimum cap thickness are to be planted with grasses and vegetation that have shallow root systems. Shallow-rooted trees, shrubs, and grasses are allowed in areas of 3-foot minimum cap thickness.

9. Site Controls (SMCMP Section 6)

    a. The generation of impacted soil triggers the requirement to implement specific site controls.

    b. Fencing shall be maintained in order to restrict public access to areas of the property that are no longer contained by a cap. Signage shall be posted on the fencing separating the public from uncapped areas.

    c. The contractor shall prepare a health and safety plan before beginning the work. The health and safety plan shall be available for review by the Port and Washington DOE by request.

    d. The health and safety plan shall, at a minimum, set forth the requirements and protections for working in areas containing soil that may be chemically impacted, and shall include the following:

i. Current Hazardous Waste Operations and Emergency Response (HAZWOPER) certification for workers disturbing impacted soil.

ii. Indicator hazardous substances and site background.

iii. Personal protective equipment.

iv. Personal hygiene and decontamination protocols.

v. Medical surveillance.

vi. Hazard communication and site control.

vii. Recordkeeping and reporting.

10. Qualified Personnel (SMCMP Section 6.2.1)

a. Contractor will complete the development in compliance with OSHA regulations (29 Code of Federal Regulations [CFR] Section 1910.120 and 1926.65).

b. Workers in any area of the property that is temporarily uncapped during construction and those who will come in contact with impacted soil must be Qualified Personnel.

c. The Qualified Personnel must have received the HAZWOPER standard 40-hour training and/or received refresher training within the past 12 months.

d. Managers and supervisors directly overseeing the working crew shall have received an additional 8 hours of specialized training in hazardous waste management supervision.

11. Hazard Communication (SMCMP Section 6.4)

a. The contractor shall provide appropriate training for all personnel who will come in contact with potentially contaminated material.
b. The contractor shall label all waste containers consistent with 29 CFR Section 1910.1200.

c. All contractors doing work on the property in the vicinity of the disturbed cap shall obtain a copy and review the SMCMP and all attachments (attached).

12. Reporting (SMCMP Section 6.5)

a. The contractor shall maintain weekly reports of field activities during any active construction that disturbs impacted soil below the cap.

b. The Port will prepare or oversee the preparation of a project completion report. This report will document the management techniques used and the approximate volumes of materials handled, and will provide disposal information, disposal manifests, and analytical data generated during management of the impacted material.

c. The Port will maintain the contractor's weekly reports and project completion reports in a cap monitoring and construction master file.

d. Following redevelopment activities, the capped area shall be resurveyed by a Washington licensed surveyor retained by the Port and the environmental covenant shall be updated by the Port to document the new boundaries of impacted soil contained on the property.

13. Recordkeeping (SMCMP Section 6.6)

    a. The Port and any subsequent property owner shall maintain records, documenting the following:

        i. On-site placement of excavated soil, including delineation of the disposal areas and estimated volumes.

        ii. Off-site disposal of excavated soil, including waste characterization, shipping manifests, and disposal certificates.

        iii. Cap breach reports, including where the cap was breached, methods for replacement, figures showing areas of cap disturbance, material used, and any analytical results.

OVEREXCAVATION RECOMMENDATIONS – CLEAN SOIL

As specified in the SMCMP, soil that has concentrations of IHS that are below the current and relevant Washington DOE and MTCA cleanup levels can be disposed of as clean fill. The following are our recommendations for the overexcavation of the portions of the project that are not in the capped area:

1. EEI shall have a geotechnical inspector on site to confirm when the overexcavation has penetrated through the existing fill, and the overexcavation can be terminated.

2. The overexcavated material shall be removed from the site unless arrangement is made with the Port of Camas-Washougal to dispose of it on-site as non-structural fill. It is acceptable from a geotechnical standpoint to reuse the excavated soil as non-structural fill in landscape areas.

STRUCTURAL BACKFILL

The following are our recommendations for the structural backfill within the overexcavation area:

1. Prior to placing structural fill, the subgrade shall be free of standing water. Any loose, disturbed soil shall be recompacted. EEI's geotechnical inspector shall approve the subgrade prior to placement of the first lift of structural fill.

2. Because the footings are being designed for an allowable soil bearing capacity of 3,000 psf, granular structural fill (i.e. gravel, sandy gravel, or silty gravel) must be used. Soil may not be used for structural back.

3. In general, it should be assumed the existing cap material, when excavated, will not be appropriate for use as structural fill for buildings, but may be used as backfill for work in Waterfront Way. Once exposed, cap material that has concentrations of IHS that are below the current and relevant Washington DOE and MTCA cleanup levels can be stockpiled for future re-use.

4. Structural fill shall be granular, free of organics or other deleterious materials, have a maximum particle size less than 2 feet, have less than 50 percent passing the #4 sieve, be relatively well graded, have a liquid limit less than 45 and plasticity index less than 25. The on-site silty sand, sand, and silty gravel soils with cobbles and boulders (less than 2 feet diameter) are acceptable. Because we anticipate this work may occur during wet weather conditions, the fines content (i.e. material passing the #200 sieve) shall be no more than 5 percent. If the work is conducted in the dry summer months, then the fines content may be increased to 12 percent maximum. The on-site fine-grained silt and clay soils generally encountered near the ground surface are not acceptable. We recommend the top 2 feet of structural fill beneath structures (i.e. buildings and pavement) not contain oversize material (i.e. greater than 3 inches). Note that fill material with boulders up to 2 feet in size will require larger compaction equipment (i.e. a heavy roller).

   The Port has 2 nearby stockpiles of fill material that would be appropriate for use in the dry summertime, but this material is not acceptable during wet weather conditions because it contains an excessive proportion of fine-grained soil. We previously estimated the volume of material that could be used as approximately 7,800 cubic yards. If this material is used (during summertime grading conditions), it should be assumed some of it will need to be aerated as it may be over optimum moisture content.

5. The structural fill shall be placed in loose lifts no greater than 12 inches.

6. Because the structural fill material is granular, compaction should be achieved with a vibrating smooth drum roller. A jumping jack or hoepack attached to an excavator will be acceptable for limited areas where the roller cannot access. Ultimately, it is up to the contractor to select the proper compaction equipment that will achieve the required percent compaction.

7. The structural fill shall be moisture conditioned to within 3 percentage points below and 2 percentage points above optimum moisture as determined by ASTM D1557 (Modified Proctor). If water must be added, it should be uniformly applied and thoroughly mixed into the fill material.

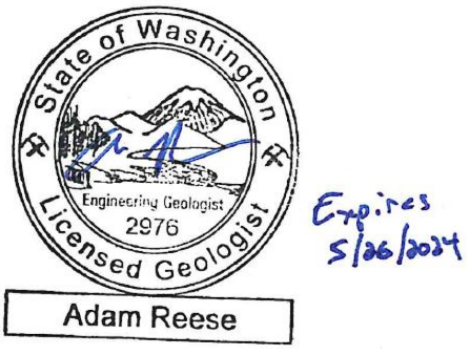
8. The structural fill shall be compacted to at least 95 percent of the maximum dry density as determined by ASTM D1557 (Modified Proctor).

9. Each lift of compacted structural fill shall be tested by EEI's geotechnical inspector.

LIMITATIONS

This Work Plan is not intended to address all conditions that the contractor may encounter at the site and it is possible that supplemental and/or revised recommendations may need to be provided at some later date. It should be noted that EEI is not acting as the Port's environmental consultant or providing any new environmental-related recommendations. The information provided in this Work Plan is referenced from the SMCMP and Table 1 of the 2013 Washington DOE Draft Cleanup Action Plan. If you have any questions pertaining to this Work Plan, or if we may be of further service, please contact Troy Hull at 360-567-1806 (office) or 360-903-2784 (cell).

Sincerely,
Earth Engineers



Troy Hull, P.E.
Principal Geotechnical Engineer

Adam Reese, L.G., L.E.G.
Principal Engineering Geologist

Attachments: Site Plan
Ground Disturbance Plan
SMCMP (MFA; March 16, 2015)

Report Distribution (e-mail only):
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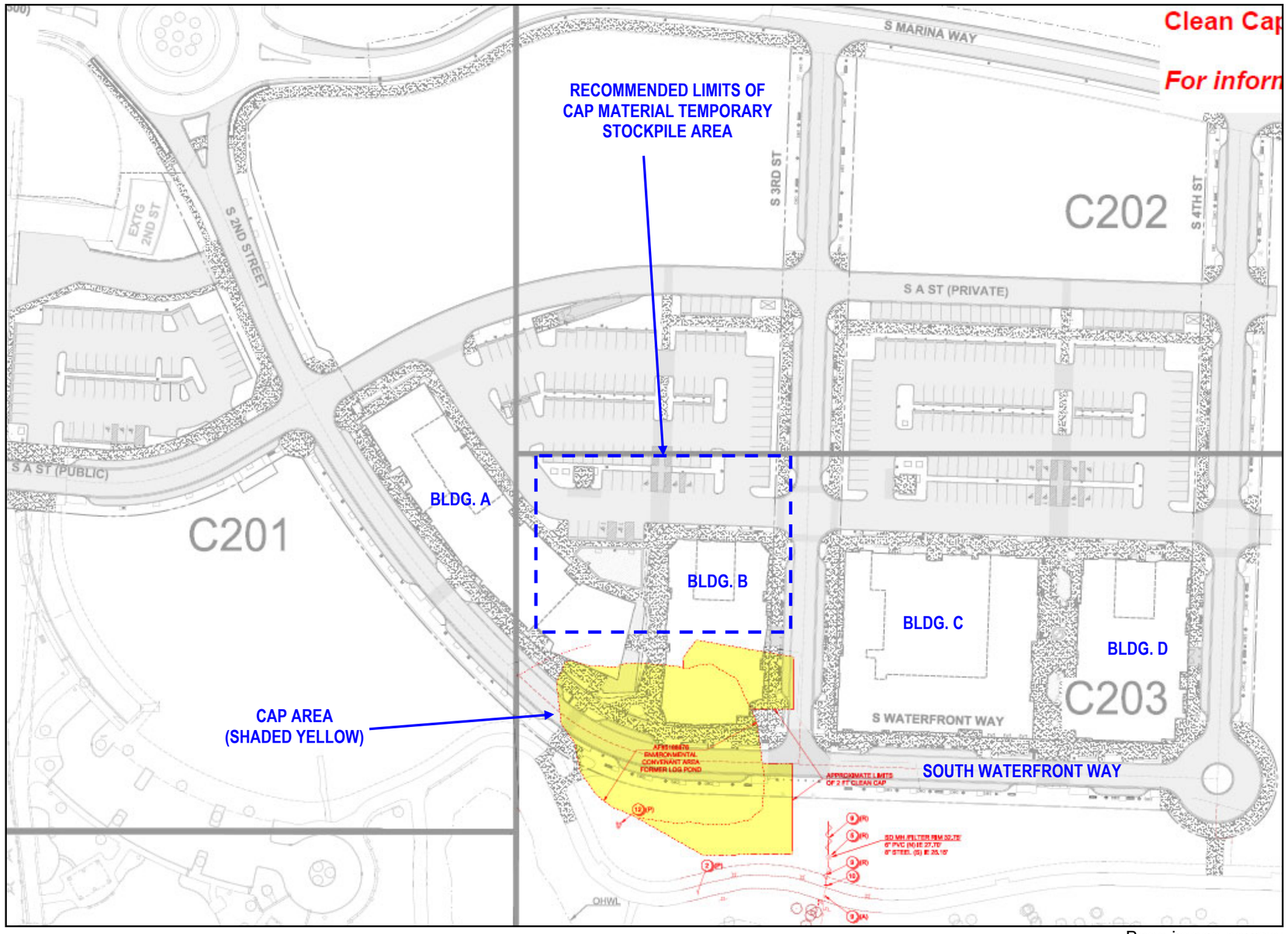
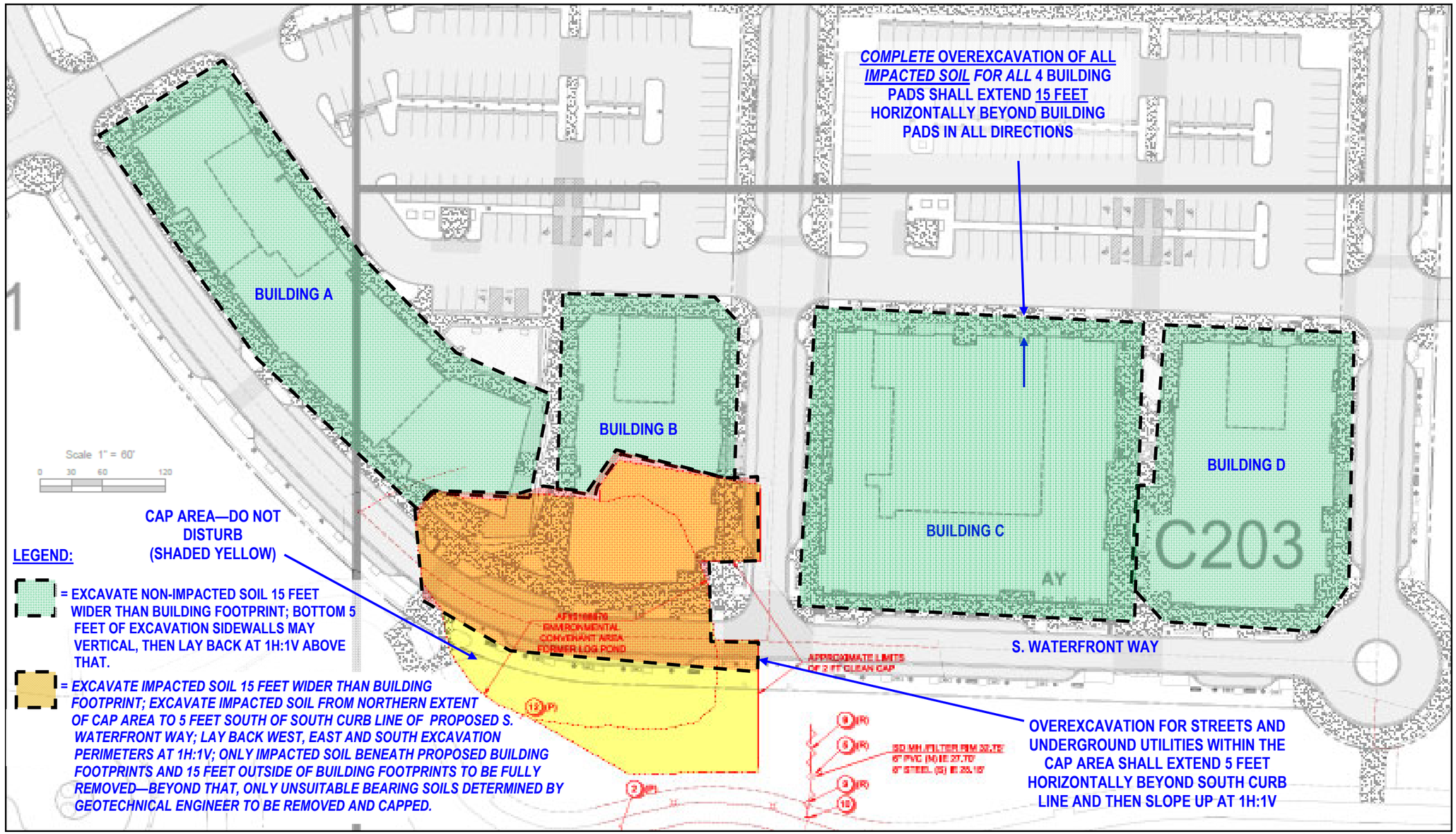
ATTACHMENT – SITE PLAN



Base image source: C200 dated March 2023

Earth Engineers	**Proposed Hyas Point Mixed-Use Development – Phase 1a and 1b** **Port of Camas-Washougal** **Southeast Corner of Intersection of South Marina Way and South 2nd Street** **Washougal, Clark County, Washington**	**Report No.** **10-24035-1-*R2***	**February 29, 2024** **Revised *April 4*, 2024**

ATTACHMENT – GROUND DISTURBANCE PLAN



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Earth Engineers	**Proposed Hyas Point Mixed-Use Development – Phase 1a and 1b** **Port of Camas-Washougal** **Southeast Corner of Intersection of South Marina Way and South 2nd Street** **Washougal, Clark County, Washington**	**Report No.** **10-24035-1-*R2***	**February 28, 2024** **Revised *April 4*, 2024**

SOIL MANAGEMENT AND CAP MAINTENANCE PLAN

FORMER HAMBLETON BROS LOG YARD

Prepared for

PORT OF CAMAS-WASHOUGAL

May 13, 2015

Project No. 0229.04.08

MAUL FOSTER ALONGI

Prepared by

Maul Foster & Alongi, Inc.

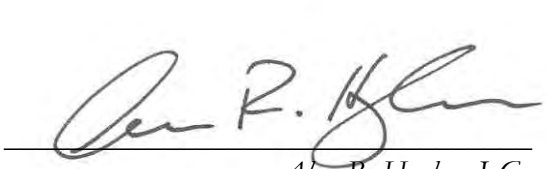
400 E Mill Plain Blvd., Suite 400, Vancouver WA 98660

SOIL MANAGEMENT AND CAP MAINTENANCE PLAN

HAMBLETON BROS. LOG YARD

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

MAUL FOSTER & ALONGI, INC.



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Senior Geologist

Jacob Faust, PE
Project Engineer

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ACRONYMS AND ABBREVIATIONS

CFR	Code of Federal Regulations
CUL	cleanup level
Ecology	Washington State Department of Ecology
LRIS	Lake River Industrial Site
MFA	Maul Foster & Alongi, Inc.
HAZWOPER	Hazardous Waste Operations and Emergency Response
MTCA	Model Toxics Control Act
OSHA	Occupational Safety and Health Act
Port	Port of Ridgefield
Property	the Port's Railroad Overpass property
RCRA	Resource Conservation and Recovery Act
RI/FS	remedial investigation and feasibility study
SAP	Sampling and Analysis Plan
SMCMP	Soil Management and Cap Maintenance Plan
USEPA	U.S. Environmental Protection Agency
WAC	Washington Administrative Code

1 INTRODUCTION

Maul Foster & Alongi, Inc. (MFA) has prepared this Soil Management and Cap Maintenance Plan (SMCMP) on behalf of the Port of Camas-Washougal (Port) for the portion of the former Hambleton Bros. Log Yard property which the Port owns (the Property), located at 335 South A Street, Washougal, Washington, shown in (Figure 1). Information pertaining to the soil management, cap description, and cap maintenance for the Property is provided here.

This SMCMP has been prepared in accordance with the requirement of Washington Administrative Code (WAC) 173-340-440 and related provisions of the November 2007 update of the Washington State Model Toxics Control Act (MTCA). This document addresses soil management procedures to be followed in the event of future development or of any condition in which the protective caps are breached. This document also addresses monitoring and maintenance procedures associated with the Property's protective caps. A decision matrix flow chart for conducting ground-disturbing work on the Property is provided as Figure 2.

The Property is located in sections 12 and 13 of township 1 north and range 3 east, and section 7 of township 1 north and range 4 east of the Willamette Meridian (see Figure 1). The Property is generally flat, with a slight slope toward the Columbia River (south). The Columbia River is at the Property's southern boundary, at the end of an approximately 32-foot downward slope.

The Property is bordered by Killian Pacific property (former Hambleton Lumber Mill property) and State Route 14 to the north and South 2nd Street to the west, with an undeveloped vacant lot to the east which is owned by the Port. Adjoining properties to the west of 2nd Street are a commercial hotel and a vacant building slated for commercial use. Properties located north of State Route 14 are in mixed commercial, residential, and light industrial use. Site features are shown on Figure 3.

2 PROJECT ROLES AND RESPONSIBILITIES

The roles and responsibilities for management of the Property are discussed below. The individuals identified below may change, and it is the responsibility of the party performing work to obtain up-to-date information.

2.1 Port of Camas-Washougal

The Port is the current owner of the Property. The Port will be considered the generator of all wastes removed from the Property, for as long as the Port holds ownership. If ownership of the Property changes, waste generation allocation will change to the new property owner. It is the Port (or subsequent owner) that will ultimately determine whether excavated material is managed on or off the Property, with the assistance and approval of the Washington State Department of Ecology

(Ecology). The Port, as long as it is an owner of the Property, must main records as specified in Section 6.6 and must provide these records to any subsequent property owner. The current director of operations is David Ripp, 360-835-5560.

2.2 Maul Foster & Alongi, Inc.

MFA is the environmental consultant and engineer for the project. MFA has performed and will continue to perform technical analysis and evaluation of plans related to future development; conduct sampling and evaluation of site activities, as necessary; document environmental conditions; and certify compliance with long-term monitoring and maintenance plans and this SMCMP. MFA will assist the Port with regulatory compliance and waste-handling determinations and can be reached at (360) 694-2691.

2.3 Washington State Department of Ecology

Ecology will continue to provide environmental oversight for future redevelopment projects that will encounter impacted site soil. The current Ecology project manager is Scott Rose, (360) 407-6347.

3 RESIDUAL CONTAMINATION IN SOIL

Residual-range organics (RRO), lead, mercury, polychlorinated biphenyls (PCBs), and carcinogenic polycyclic aromatic hydrocarbons (cPAHs) are the indicator hazardous substances in soil for the Property. The contamination remains below the protective caps; and therefore, all work on the Property that breaches the protective caps must adhere to the soil-management procedures outlined in this document. Figure 3 shows the locations of the caps on the property which must be maintained, and indicates which IHSs are likely present in soil beneath the cap at each location. The caps have been surveyed and the data can be made available upon request to MFA.

4 SOIL MANAGEMENT PROCEDURES

Before the start of any work that will expose soil below the protective caps at the Property, a soil-handling work plan will be required. The soil-handling work plan should identify the quantity of soil cap to be worked or moved and where it will be staged; the quantity of impacted soil to be disturbed; and where it will be placed on site, stockpiled, or disposed of. The work plan should show the original cap layout and the restoration of an equally protective cap, as applicable.

The following sections describe the general protocol for soil handling associated with specific construction conditions. Construction conditions outside those defined below will require evaluation

on a case-by-case basis to establish a protocol. The following conditions may be encountered during standard site-development activities.

4.1 Protective Cap Soil

Depending on the type of project, construction activities may be limited to disturbance of the protective cap zone. Disturbances of the protective soil cap (i.e., above demarcation fabric) will not involve any special health and safety requirements (outside standard construction health and safety protocols). Care shall be taken to maintain cap integrity during construction activities taking place on the protective cap. If the protective soil cap is disturbed, reconstruction will be required. Ruts in the protective cap are to be filled with clean fill to avoid ponding. Grading or moving cap material from one location to another will not be permitted if it creates an area in the cap that does not meet the minimum requirements (see Section 5). Cap surface slopes must be maintained for adequate stormwater flow, and best management practices must be implemented to prevent erosion of cap material. Details on cap restoration are provided in Section 5.

4.2 Soil beneath Cap

All construction activities that require excavation below the established or reconfigured cap (e.g., soil cap and demarcation fabric, pavement, concrete, building) and that will result in the disturbance of soil that may be impacted are required to comply with the protocol presented in this section. Impacted soil below the cap may be breached during general construction activities, including but not limited to the following: utility or stormwater conveyance construction, underground structure or building foundation construction, and general earthwork and earth-moving activities. Worker safety requirements pertaining to handling of impacted soil are provided in Section 6.2.

Soil above the demarcation fabric is clean fill. Should the soil cap become contaminated (e.g. contact or be mixed with soil from below the demarcation fabric), clean soil must be imported and used as replacement soil. Impacted soil beneath the demarcation fabric must be handled separately from the clean protective cap soil in order to:

- Avoid cross-contamination of clean protective cap soil.
- Allow reuse of the protective cap for soil cap restoration activities.
- Limit the amount of soil to be handled as impacted soil.
- Ascertain the disposal status of impacted soil.

Soil excavated below the demarcation fabric will be assumed to be impacted by IHSs unless proven otherwise. Therefore, the soil excavated below the cap must be segregated from other excavated soils and handled as contaminated material. Impacted soil can be handled either by placing it where it was originally excavated, by placing and capping at a new location on the Property consistent with approved cap options (see Section 5), or by disposing of the impacted soil off site.

The impacted soil that is generated from construction activities should not be placed on any portions of the Property including the clean soil cap, temporarily or otherwise without lining. Impacted soil, regardless of where the soil is stored, should be placed on and covered by an

impermeable liner at all times. Impacted soil can be stockpiled for up to 90 days without requiring a Resource Conservation and Recovery Act (RCRA) permit. A RCRA permit must be obtained to store impacted soil longer than 90 days.

When impacted soil is excavated, stockpiling should be limited to the extent possible. If soil must be stockpiled on top of the protective soil cap, then stockpiles of impacted soil should be placed as close to the excavation as possible with the smallest footprint possible, and should be placed on and covered with an impermeable liner. The existing ground should be cleared of debris and any objects that have the potential to puncture the liner. A berm, constructed of imported or unimpacted site soil, compost socks, hay bales, sandbags, or equivalent material as approved by the supervising engineer, is to be installed along the perimeter of the impacted soil stockpile. The liner bottom and cover must extend up and over the perimeter berm so there is no impacted soil contact with precipitation or stormwater runoff. Impacted soil is to remain covered except when the stockpile is in use. Impacted soil *must not* be mixed with cap soil. If impacted soil is released on the cap surface, the impacted cap surface is to be removed and handled as impacted soil. Any soil cap that is removed must be replaced with a clean soil cap. Cap systems other than clean soil will require approval by Ecology.

When excavation activity is expected to go below the established cap, the demarcation fabric should be cut away from the boundary of the proposed excavation. To avoid creating a tear or gap in the fabric beyond the excavation area, the fabric may not be pulled or torn by excavation equipment at the boundary of the excavation. Replacement fabric will be overlapped with existing fabric to the extent possible to maintain a consistent fabric covering.

The current cap configuration, thicknesses, and materials for the Property are shown in the attached drawings. A description of cap types approved by Ecology for the Property is provided in Section 5. If activities on the Property are expected to result in handling of impacted soils in a manner inconsistent with this plan or using a cap profile different from that previously approved, Ecology approval must be secured as described in Section 5.2.

4.2.1 Replacement at Original Excavation

Impacted soil placed into its original excavation (around foundations, pipes, or underground structures) should be compacted as directed by the engineer. New demarcation fabric matching the existing fabric specifications shall be installed over the re-placed impacted soil where the fabric will not be covered by an impervious surface, to form continuous coverage with adjacent fabric edges. Impervious surfaces are in and of themselves the demarcation layer.

When impacted soil is excavated and slated for placement at a different on-Property location, it is expected that the impacted soil will be transferred directly to its new location to limit stockpiling to the extent possible. If soil must be stockpiled on the Property including on top of the protective soil cap, then stockpiles of impacted soil should be placed as close to the excavation as possible, should cover the least possible amount of cap area, and should be placed on and covered with an impermeable liner. The existing grade should be cleared of debris and any objects that have the potential to puncture the liner. A berm constructed of imported or unimpacted site soil, compost socks, hay bales, sandbags, or equivalent material as approved by the supervising engineer is to be

installed along the perimeter of the impacted-soil stockpile. The liner bottom and cover must extend up and over the perimeter berm so that there is no impacted-soil contact with precipitation or stormwater runoff. Impacted soil is to remain covered except when in use. Impacted soil *must not* be mixed with cap soil. If impacted soil is released on the cap surface, the impacted cap surface is to be removed and handled as impacted soil. Any soil cap that is removed must be replaced with clean soil.

4.2.2 New Placement Location

If impacted soil cannot be re-placed in the original excavation, then the impacted soil may be used as backfill at other areas of the Property below an approved cap. Instances that may potentially warrant a new placement location include large excavations for subgrade, footing, or utility trenches, where re-placement in the original location is not possible. Upon approval of a new placement location (e.g., beneath landscaping area, roadbed, building structure, constructed staging area), the material must be capped consistent with minimum capping guidelines described in Section 5 of this SMCMP. If new capping profiles or materials are proposed (other than those listed below), approval from Ecology will be required.

4.3 Off-Site Disposal

Soil required for offsite disposal should be characterized as described in the attached Sampling and Analysis Plan (SAP). Results of analysis should be used to determine appropriate offsite disposal location according to Ecology and MTCA requirements. All excavation and hauling of soils determined to be contaminated should be performed by workers with appropriate certifications to do the work. All records for hauling and disposal for any soil removed from the site shall be retained and provided to the Port.

5 PROTECTIVE CAP

The soil cap profiles have been designed to ensure the appropriate degree of protectiveness for ecological and human receptors from the impacted material that remains on the Property. The following describes the cap conditions post remedial action at the Property.

A soil cap of varying thicknesses (but at a 2-foot minimum) was installed over the impacted locations of the site. The cap areas are 1.42 acres in total. See Record Drawings AB-4 and AB-6 for the property's graded areas and cap sections, respectively. The caps consist of demarcation fabric installed over contaminated soil and a minimum of two feet of clean soil. If the soil cap is disturbed, the cap must be reconstructed to match the preconstruction cap thickness and configuration or one of the other options provided below in this section.

When redevelopment of the Property requires alteration of the cap types and/or configuration, the Port will notify Ecology 30 days before construction. The following are approved cap options:

Table
Capping Options

Type of Use	Typical Section
Landscaping/green space	
<2 feet soil	• Geotextile as demarcation; no landscaping; impermeable surface required (e.g., pavement, impermeable liner to prevent infiltration, buildings)
2 to 3 feet soil	• Geotextile as demarcation layer; ground cover; gravel surfaces, or other surface as approved by Ecology; and grasses
3 to 6 feet soil	• Geotextile as demarcation layer; shrubs or trees; gravel surfaces, or other surface as approved by Ecology; and grasses
>6 feet soil	• No geotextile and no vegetation planting restrictions
Parking	Impermeable surface (min. thickness 3 inches) with clean subbase as necessary for construction
Building/structure	Slab-on-grade (min. thickness 3 inches) with subbase as necessary for construction
Sidewalk/pathway	Impermeable surface (min. thickness 2.5 inches) with clean subbase as necessary for construction or gravel surface with minimum 2 feet clean fill

5.1 Soil Cap Requirements

Soil from on-site stockpiles was used as clean capping material following testing and approval from Ecology. Should replacement capping material be necessary to re-establish minimum cap depths per the Capping Options Table, imported soil to be used as clean capping material will require analytical testing to show it is not impacted. The imported soil will follow guidelines that include, but are not limited to, the following.

The owner of the proposed fill material must hire a qualified environmental professional to obtain representative samples of the proposed fill material for laboratory analysis. The engineer and/or environmental professional will conduct sampling in accordance with the SAP found in Appendix A. Samples will be analyzed by a certified environmental testing laboratory. The owner of the proposed fill material is responsible for any and all costs associated with the sampling and analysis of fill material, unless an agreement is made that states otherwise. The final determination for acceptance of clean soil will be made at the discretion of the Port, in consultation with Ecology. The analysis described in the SAP will be used as a guide for decision making.

5.1.1 Geotextile

Geotextile to be used as the demarcation layer must at least meet the minimum technical specifications as follows:

1. Material: Woven Polypropylene Geotextile

2. Color: Safety Orange, Red, Yellow, or Neon Green
3. Burst Strength: 200 psi.
4. Permittivity: 10 gpm/sq. ft
5. UV Resistance: 70% after 200 hours

5.1.2 Vegetation

Areas of 2-foot-minimum cap thickness are to be planted with grasses and vegetation that have shallow root systems. Shallow-rooted trees, shrubs, and grasses are allowed in areas of 3-foot-minimum cap thickness.

5.2 Other Capping Material

Other capping material that may be used includes impermeable surfaces such as building foundations and footings and concrete surfaces or structures. If other surfacing materials are desired as part of future redevelopment activities (other than those listed in the table above), Ecology's approval is required.

6 SITE CONTROLS

The generation of impacted soil triggers the requirement to implement specific site controls. These controls are required in order to protect the adjacent environment and reduce potential exposure of the nearby public to the impacted soil material that remains capped at the Property.

6.1 Fencing and Signage

In the event of redevelopment activities that generate impacted soil, fencing should be maintained in order to restrict public access to areas of the Property that are no longer contained by a cap. Signage shall be posted on the fencing separating the public from uncapped areas.

6.2 Worker Health and Safety

All future redevelopment activities that penetrate the cap, and that thereby generate impacted soil, are to be conducted according to WAC 173-340-810; the Occupational Safety and Health Act (OSHA) of 1970 (29 U.S. Code Sec. 651 et seq.); the Washington Industrial Safety and Health Act (Chapter 49.17 Revised Code of Washington); and relevant regulations. The developer will be required to prepare a health and safety plan before beginning work; this plan should be available for review by the Port and/or Ecology by request. The health and safety plan shall, at a minimum, set forth the requirements and protections for working in areas containing soil that may be chemically impacted, and shall include the following:

- Current Hazardous Waste Operations and Emergency Response (HAZWOPER) certification for workers disturbing impacted soil
- Indicator hazardous substances and site background
- Personal protective equipment
- Personal hygiene and decontamination protocols
- Medical surveillance
- Hazard communication and site control
- Recordkeeping and reporting

6.2.1 Qualified Personnel

The developer will retain a contractor that will complete the development work in compliance with OSHA regulations (29 Code of Federal Regulations [CFR] § 1910.120 and § 1926.65); workers in any area of the Property that is temporarily uncapped during construction and those who will come in contact with impacted soil must be qualified personnel. The qualified personnel must have received the HAZWOPER standard 40-hour training and/or received refresher training in the past year. Managers and supervisors directly overseeing the working crew must have received an additional eight hours of specialized training in hazardous-waste management supervision.

6.3 Land Use Restrictions

The environmental covenant for the Property, found in the Completion Report, provides additional land use restrictions, and should be referenced and complied with when a new land use is proposed. Because impacted soil remains on the Property, there may be requirements associated with development and limitations to specific land uses.

6.4 Hazard Communication

Appropriate training must be provided for personnel who will come in contact with potentially contaminated material. Additionally, all waste containers must be labeled consistent with 29 CFR § 1910.1200.

All contractors doing work on the Property in the vicinity of the caps must obtain a copy of and review the completion report and all attachments.

6.5 Notification and Reporting

Ecology approval must be obtained prior to alteration of approved cap types and/or configuration. As indicated in Section 5.2, Ecology must be provided notice that alternate cap types/configuration are under consideration. This notice should be provided well in advance of development to allow time for the approval process. Ecology will review the request and provide approval or will request

additional information or analysis within 30 days. Construction of the alternate cap/types or configuration will not begin until receipt of Ecology approval.

The contractor shall maintain weekly reports of field activities during any active construction that disturbs soil or other cap material on the Property. The Port will prepare or oversee the preparation of a project completion report to document the management of impacted soil for each project in which such work is conducted. The report will document the management techniques used and the approximate volumes of materials handled, and will provide placement or disposal information, disposal manifests, and analytical data generated during management of the impacted material. The contractor's weekly reports and project completion reports will be maintained by the Port in a cap monitoring and construction master file.

6.6 Recordkeeping

The Port and any subsequent property owner must maintain records, documenting the following:

- On-site placement of excavated soil, including delineation of the disposal areas and estimated volumes
- Off-site disposal of excavated soil, including waste characterization, shipping manifests, and disposal certificates
- Cap breach reports, including where the cap was breached, methods for replacement, figures showing areas of cap disturbance, materials used, and any analytical results

7 PROTECTIVE CAP MONITORING AND MAINTENANCE

The protective cap requires regular and routine inspection to evaluate and maintain its integrity. Monitoring and, if required, maintenance should be conducted annually, at a minimum. This will provide an opportunity to correct small, localized failures before they become larger, more detrimental failures. In addition to annual inspection, an inspection is to take place after a large natural disaster occurs in close proximity to the Property, or after any other large-scale disturbance occurs near or at the Property. As the cap is the main barrier of protection between remaining impacted soil and human and ecological receptors, it is imperative that the cap maintain its intended integrity. This section outlines the monitoring and inspection procedure for each of the protective capping materials.

Monitoring personnel should complete the worksheet provided in Appendix B. The purpose of the monitoring event is to document existing conditions of capping materials and structures. The documentation can be used as a reference in evaluating the severity of cap degradation, if any, to determine if corrective action is required.

7.1 Soil Cap Inspection

The following describe the minimum observation and monitoring requirements per soil cap inspection. The Port will maintain record of all inspections for a minimum of 10 years. All recorded observations (using the worksheet in Appendix B) should be accompanied by photographs documenting the following:

- Overall cap condition
- Visible rills or gullies
- Evidence of stormwater ponding or concentrated flow
- Exposed demarcation fabric

7.2 Vegetation Inspection

The inspection for vegetation should be qualitative and quantitative. The following lists the minimum observation and monitoring requirements per inspection of site vegetation:

- Overall vegetation condition
- Overall vegetation percent coverage
- Areas of nonestablished or failing vegetation
- Areas of dead or dying vegetation
- Observance of invasive species

7.3 Corrective Action

If evidence of erosion or failure is observed in any of the abovementioned caps, the person conducting the inspection and reporting should consult with an engineer familiar with cap materials and structures. The engineer may decide that additional analysis or observation is necessary in order to determine if the damage will reduce the effectiveness of the protective cap. Corrective action will be evaluated on a case-by-case basis according to the type and/or severity of damage and the urgency. The following should be conducted in order to document damage and to evaluate a plan for corrective action:

1. Engineer's internal review of inspection reports and photographs
2. Site visit by the engineer to review damage
3. Additional measurement or analysis (survey, sample collection, or analysis)
4. Consultation with Ecology regarding the damage or deterioration and the engineering assessment
5. Proposal for repair prepared by the engineer (if determined necessary)
6. Obtaining and supervising a contractor completing repair work

7.4 Soil Cap and Vegetation Maintenance

Soil cap and vegetation maintenance will be conducted based on the findings of the annual monitoring report. If areas of the soil cap have eroded, replacement of the eroded areas with soil and vegetation will be required. This may require additional seeding and/or planting.

All vegetated areas should include a survey for invasive species as part of the routine maintenance. An attempt shall be made to eliminate observed invasive species.

LIMITATIONS

The services undertaken in completing this plan 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 plan is solely for the use and information of our client unless otherwise noted. Any reliance on this plan by a third party is at such party's sole risk.

Opinions and recommendations contained in this plan 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 plan.

FIGURES

Site Address: 335 South A Street, Washougal, Washington
Source: US Geological Survey (1990) 7.5-minute topographic quadrangle: Camas & Washougal
A portion of the David C. Parker DLC No. 48; situated in the SW 1/4 of the SE 1/4 of Section 12 and in the NE 1/4 of the NE 1/4 of Section 13, Township 1 N, Range 3E, W.M., Clark County, Washington

Note: Site boundary is approximate.

Legend

Site Boundary

Figure 1
Site Location

Port of Camas-Washougal
Washougal, Washington

0 1,000 2,000
Feet

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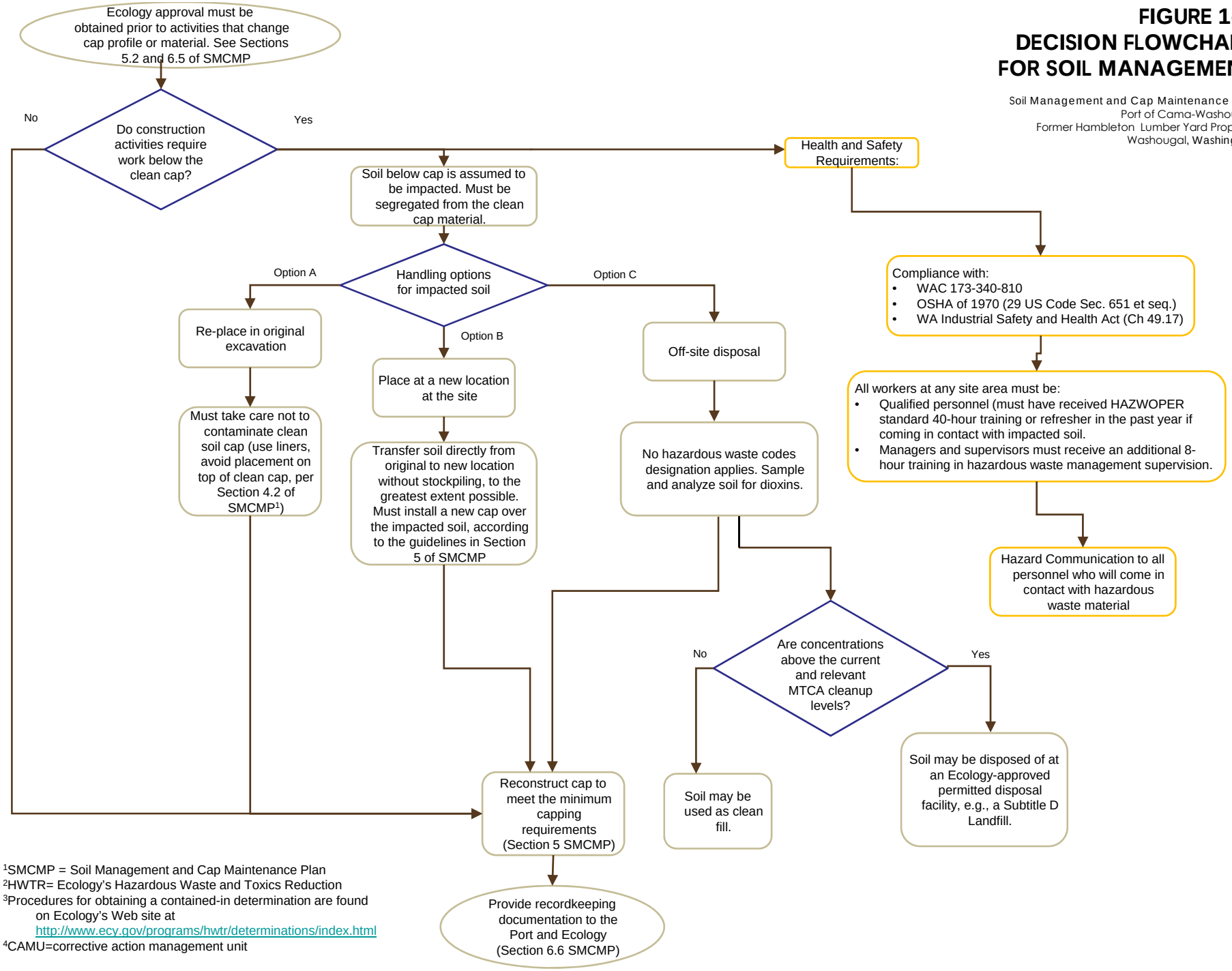
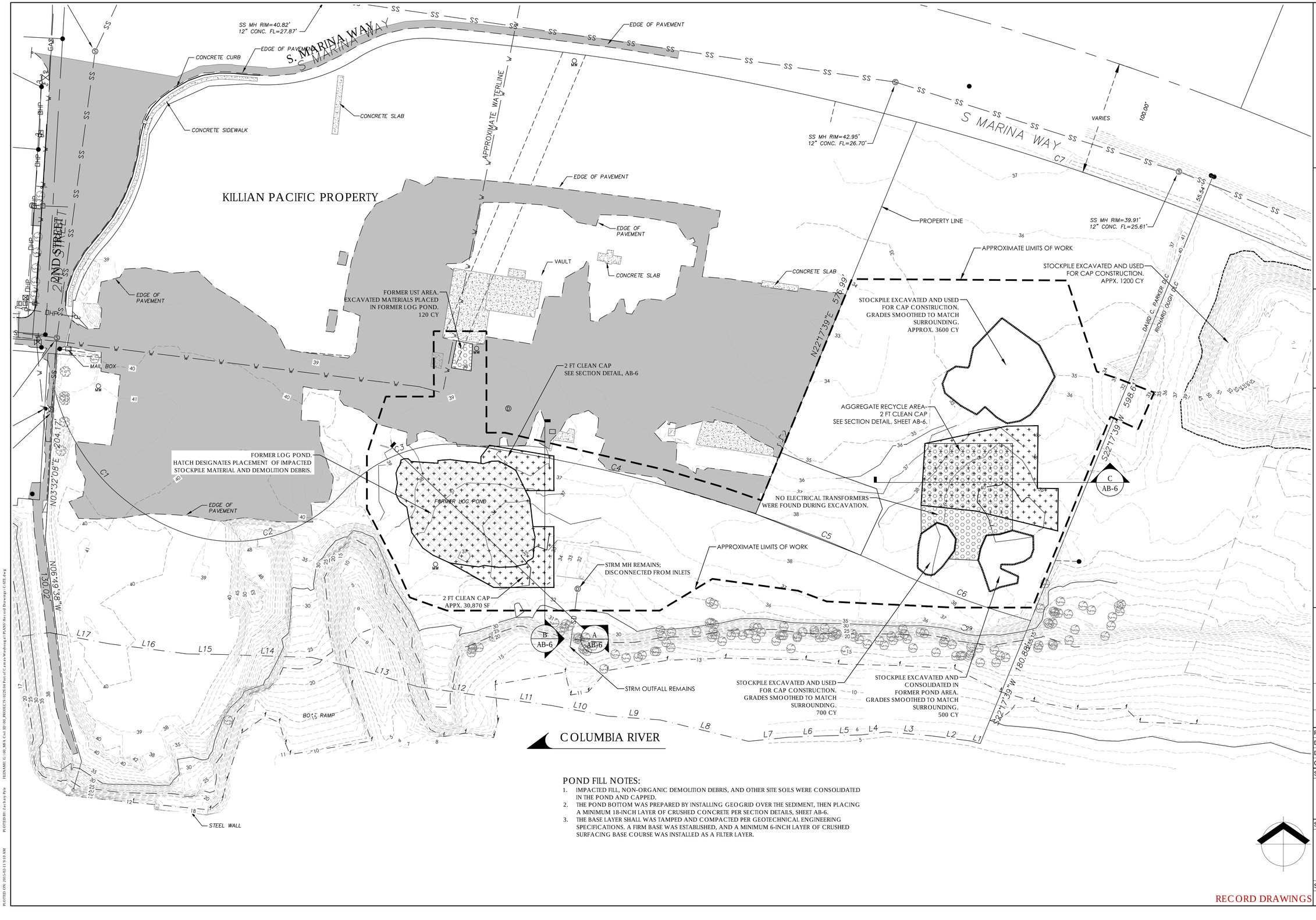
FIGURE 1-2
DECISION FLOWCHART FOR SOIL MANAGEMENT

Soil Management and Cap Maintenance Plan
Port of Cama-Washougal
Former Hambleton Lumber Yard Property
Washougal, Washington



[1]SMCMP = Soil Management and Cap Maintenance Plan
[2]HWTR= Ecology's Hazardous Waste and Toxics Reduction
[3]Procedures for obtaining a contained-in determination are found on Ecology's Web site at http://www.ecy.gov/programs/hwtr/determinations/index.html
[4]CAMU=corrective action management unit

DRAWINGS



POND FILL NOTES:

1. IMPACTED FILL, NON-ORGANIC DEMOLITION DEBRIS, AND OTHER SITE SOILS WERE CONSOLIDATED IN THE POND AND CAPPED.
2. THE POND BOTTOM WAS PREPARED BY INSTALLING GEOGRID OVER THE SEDIMENT, THEN PLACING A MINIMUM 18-INCH LAYER OF CRUSHED CONCRETE PER SECTION DETAILS, SHEET AB-6.
3. THE BASE LAYER SHALL WAS TAMPED AND COMPACTED PER GEOTECHNICAL ENGINEERING SPECIFICATIONS. A FIRM BASE WAS ESTABLISHED, AND A MINIMUM 6-INCH LAYER OF CRUSHED SURFACING BASE COURSE WAS INSTALLED AS A FILTER LAYER.

RECORD DRAWINGS

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PORT OF CAMAS-WASHOUGAL

JACOB W. FAUST
STATE OF WASHINGTON
51298
REGISTERED
PROFESSIONAL ENGINEER

FORMER HAMBLETON BROS. LOG YARD REMEDIAL ACTION RECORD DRAWINGS
PORT OF CAMAS-WASHOUGAL
WASHOUGAL, WASHINGTON

DESCRIPTION	DATE	ISSUE
RECORD DRAWINGS	12/31/2014	1
ISSUE FOR CONSTRUCTION	8/15/2014	1
ISSUE FOR BID	6/25/2014	1
####	####	####
####	####	####

PROJECT: 0229.04.08
DESIGNED: J. FAUST
DRAWN: Z. PYLE
CHECKED: A. HUGHES

SCALE
0 60' 120
NOTE: BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET, ADJUST SCALE ACCORDINGLY.

SHEET TITLE
SITE PLAN

SHEET
AB-4

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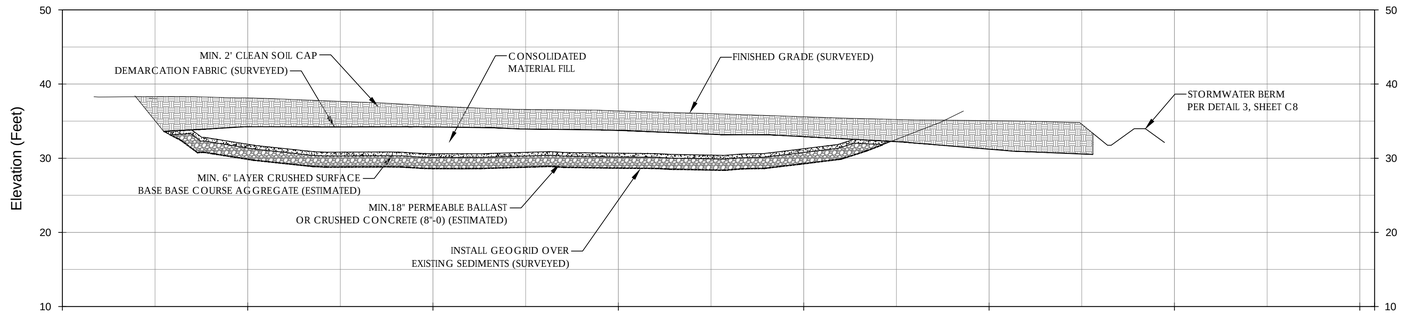
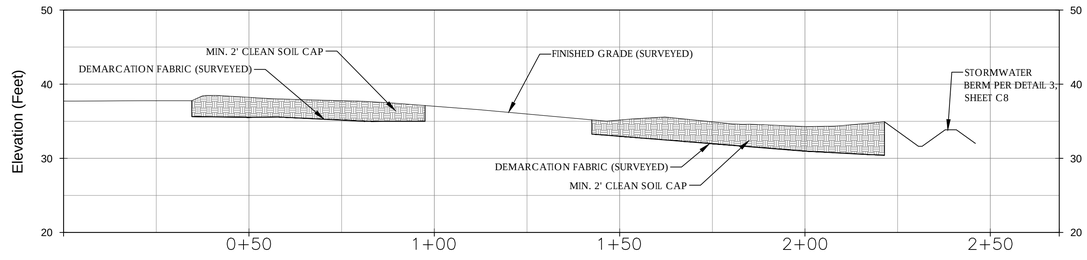


A / C5

POND AREA FILL, CAP, AND GRADING SECTION

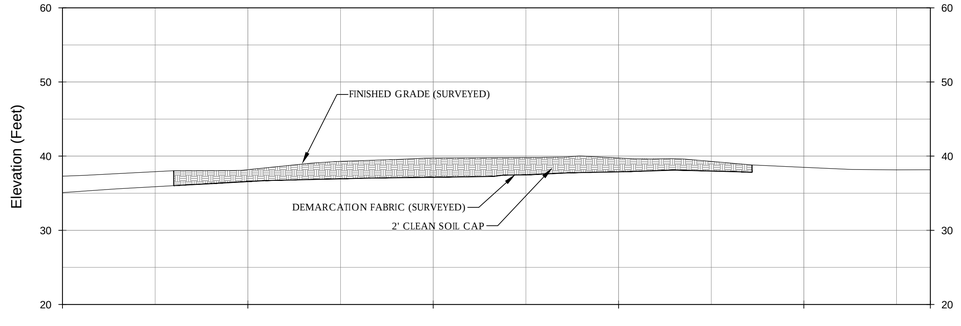
HORIZONTAL: 1" = 20'
VERTICAL: 1" = 10'



B / C5

POND AREA CAP AND GRADING SECTION

HORIZONTAL: 1" = 20'
VERTICAL: 1" = 10'



C / C5

FORMER AGGREGATE RECYCLE AREA CAP SECTION

HORIZONTAL: 1" = 20'
VERTICAL: 1" = 10'

RECORD DRAWINGS

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PORT OF CAMAS-WASHOUGAL

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FORMER HAMBLETON BROS. LOG YARD REMEDIAL ACTION RECORD DRAWINGS
PORT OF CAMAS-WASHOUGAL
WASHOUGAL, WASHINGTON

ISSUE	DATE	DESCRIPTION
—	####	####
—	6/25/2014	ISSUE FOR BID
—	8/15/2014	ISSUE FOR CONSTRUCTION
—	—	—
—	—	—
—	—	—
—	—	—

PROJECT: 0229.04.08
DESIGNED: J. FAUST
DRAWN: J. FAUST
CHECKED: A. HUGHES
SCALE

SHEET TITLE

SECTIONS

SHEET

AB-6

PLOTTED ON: 2015-02-11 9:12 AM PLOTTED BY: Zachary Pyle FILENAME: G:\00_MFA Civil 3D 00_PROJECTS\0229.04 Port of Camas-Washougal\PIANS\Record Drawings\C-GRAD.dwg

APPENDIX A

SAMPLING AND ANALYSIS PLAN

SAMPLING AND ANALYSIS PLAN

FORMER HAMBLETON LUMBER MILL

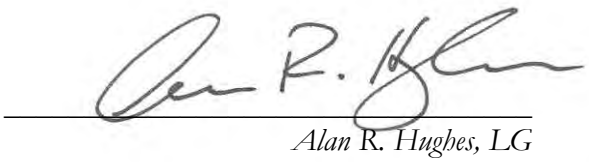
Prepared for
PORT OF CAMAS-WASHOUGAL
May 13, 2015
Project No. 0229.04.08

Prepared by
Maul Foster & Alongi, Inc.
400 E Mill Plain Blvd, Suite 400
Vancouver, WA 98660

MAUL
FOSTER
ALONGI

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

MAUL FOSTER & ALONGI, INC.



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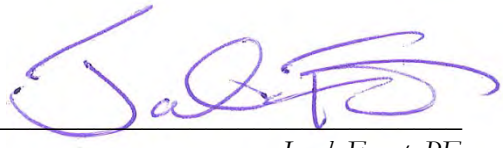

Jacob Faust, PE
Project Engineer

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TABLE

FOLLOWING REPORT:

TABLE

SAMPLE-HANDLING SUMMARY

ACRONYMS AND ABBREVIATIONS

CLARC	Cleanup Levels and Risk Calculation
COC	chain of custody
CUL	cleanup level
DRO	diesel-range organic
Ecology	Washington State Department of Ecology
GRO	gasoline-range organic
HCID	hydrocarbon identification
IDW	investigation-derived waste
IHSs	indicator hazardous substances
LCS	laboratory control sample
LDS	laboratory duplicate sample
MFA	Maul Foster & Alongi, Inc.
MS/MSD	matrix spike and matrix spike duplicate
MTCA	Model Toxics Control Act
NWTPH	Northwest Total Petroleum Hydrocarbons
PCB	polychlorinated biphenyl
Port	Port of Camas-Washougal
QA	quality assurance
QC	quality control
RRO	residual-range organic
SAP	Sampling and Analysis Plan
SMCMP	Soil Management and Cap Maintenance Plan
USEPA	U.S. Environmental Protection Agency
VOC	volatile organic compound

1 INTRODUCTION

Maul Foster & Alongi, Inc. (MFA) has prepared this Sampling and Analysis Plan (SAP) on behalf of the Port of Camas-Washougal (Port) to describe the methods and procedures for collecting and analyzing soil that is proposed for use as clean capping material, as well as soil that is intended for off-site disposal. The guidance presented in this SAP is applicable for soil sampling and analysis activities that are required for the Port's 335 South A Street property (Property), as defined in the Soil Management and Cap Maintenance Plan (SMCMP).

1.1 Sampling and Analysis Objectives

The objective of this SAP is to establish procedures for collection of data sufficient for their intended use. This SAP describes methods that will be used to achieve the following objectives:

- To analyze soil for indicator hazardous substances (IHSs) to determine the appropriate off-site disposal method. Sample results will be compared to the relevant Model Toxics Control Act (MTCA) soil cleanup levels (CULs) found in the Washington State Department of Ecology's (Ecology) Cleanup Levels and Risk Calculation (CLARC) database at the time of sampling and analysis.
- To ensure that imported soil capping material is not contaminated at concentrations greater than the relevant MTCA soil CULs found in the CLARC database at the time of sampling and analysis.
- To provide suitable sampling techniques, sample analysis methods, and data verification procedures that ensure data quality.

Samples will be collected as described in Section 2 of this SAP. Following sample collection, samples will be submitted for analysis and screened against CULs, consistent with Section 3. The quality of the data should be evaluated, using the standard data validation protocols presented in Section 4, before off-site disposal or acceptance as clean fill.

2 SAMPLE PROGRAM DESIGN

Procedures to be followed for specific scenarios are provided in this section.

2.1 Sampling of Excavated Soils for Off-Site Disposal

Soil should be stockpiled in order to facilitate the sampling method and organization. Composite sampling will best characterize each stockpile in order to complete a waste profile for the landfill. To

address variability of the soil, choose the most representative stockpile volume and number of samples appropriate for the area in question. The disposal facility may be consulted to determine the minimum needed for waste-profiling purposes.

A representative soil sample will be collected by compositing five subsamples of the material source. The sampler will dig to a depth of 1 foot with a clean shovel and will collect the subsample by hand with clean, disposable gloves. Gloves will be changed and the shovel will be decontaminated between composited samples, consistent with the procedures specified in Section 2.3. Subsamples will be selected to obtain representative material, based on visual inspection and best professional judgment. To the extent possible, subsamples should consist of fine-particle-sized material, with larger rocks removed. Subsamples will be homogenized in a clean container (e.g., a decontaminated stainless-steel bowl or a dedicated container) before being transferred into laboratory-supplied, 16-ounce glass jars. Glass jars are to be preserved as specified in Section 2.5 and samples are to be analyzed as described in Section 3.1.

2.2 Sampling of Imported Soil Cap Material

Soil imported to the Property to be used as clean cap material should be tested prior to acceptance. Soil will be sampled and analyzed before delivery to the Property to certify that it meets the design acceptance criteria. The contractor or contractor's designee will complete soil sampling of soil at the minimum frequency specified by the contract documents. The number of samples required will be based on the likelihood of contamination present, estimated amount of fill needed, and homogeneity of the fill source. For each volume of soil represented by a composite sample, the material should be tracked in a manner that allows rejection of the material if necessary, based on representative analytical results.

A representative soil sample will be collected by compositing, at a minimum, five subsamples of the material at the source. The sampler will dig to a depth of 1 foot with a clean shovel and will collect the subsample by hand with clean, disposable gloves. Gloves will be changed and the shovel will be decontaminated between composited samples, consistent with the procedures specified in Section 2.3. Subsamples will be selected to obtain a representative sample, based on visual inspection and best professional judgment. To the extent possible, subsamples should consist primarily of fine-particle-sized material, with larger rocks removed. Subsamples will be homogenized in a clean container (e.g., a decontaminated stainless-steel bowl or a dedicated container) before being transferred into laboratory-supplied, 16-ounce glass jars.

2.3 Decontamination

Sampling equipment will be decontaminated at a location away from surface water, but near the sampling location (i.e., equipment will not be removed from the Property to be decontaminated). Sampling equipment will be decontaminated using the following procedure:

- Rinse with clean tap or deionized water.
- Wash with nonphosphate detergent.

- Rinse with deionized water.
- Air dry.

All liquids used to decontaminate equipment will be considered investigation-derived waste (IDW) and will be disposed of as outlined in the following section.

2.4 Investigation-Derived Waste

IDW may include soil cuttings and decontamination fluids. Soil collected but not containerized for analysis should be placed back on the soil stockpile. If less than approximately 1 gallon of decontamination fluid is generated it can be land applied to the soil stockpile.

The IDW not reapplied to the soil stockpile will be segregated (e.g., soil and water) and containerized separately. Drums (tops and sides) will be labeled with their contents, the volume of material, the date of collection, and the origin of the material. At the end of each workday, the drums will be sealed and transferred to a designated secured area on the Property, where they will be stored pending waste profiling, transport, and off-site disposal at a permitted facility.

2.5 Sample Handling, Preservation, and Custody

The samples will be placed on ice in a shipping container with chain-of-custody (COC) paperwork and transported to an accredited laboratory for analysis. Samples should be preserved according to the requirements in the attached Table.

3 ANALYTICAL PROCEDURES AND QUALITY ASSURANCE CRITERIA

Samples that have been collected following the procedures in Section 2 will be analyzed following the methods presented in this section. Analytical results will be evaluated relative to CULs. Additional details on the analytical methods, quality control (QC) procedures required by the laboratory, and screening levels are provided below.

3.1 Analytical Methods for Excavated Soils

It is the responsibility of the party generating the impacted soil to verify current disposal requirements with the disposal facility.

Soil excavated from beneath the caps on the Property during construction activities will be analyzed for IHSs:

- Residual-range organics (RRO) by Northwest Total Petroleum Hydrocarbons (NWTPH)

- Semi-volatile petroleum products analytical method NWTPH-Dx,
- Lead by U.S. Environmental Protection Agency (USEPA) Method 6010,
- Mercury by USEPA Method 7471,
- Polychlorinated biphenyls (PCBs) by USEPA Method 8082, and
- Carcinogenic polycyclic aromatic hydrocarbons (cPAHs) by USEPA Method 8270 selective ion monitoring (SIM).

3.1.1 Screening Levels for Excavated Soils

A comparison of IHS concentrations with current MTCA soil CULs will determine the characterization and handling requirements.

3.2 Analytical Methods for Imported Clean Soil Cap Material

Soil intended for use as clean cap material or cover soil at the Property requires the following analyses, at a minimum (note that additional analyses may be requested by the Port or Ecology, upon obtaining information about the location and/or prior use of the intended fill source):

- Petroleum hydrocarbons by NWTPH hydrocarbon identification (HCID) method
- Thirteen priority pollutant metals (antimony, arsenic, beryllium, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, thallium, and zinc) by USEPA Methods 6010/6020/7471

If hydrocarbons are detected in the HCID analysis, followup quantification testing will be required as described below:

- Gasoline-range organic (GRO) detections in HCID require followup analyses of:
  - GROs by NWTPH-Gx
  - Volatile organic compounds (VOCs) by USEPA Method 8260B
- Diesel-range organic (DRO) detections in HCID require followup analyses of:
  - DROs by NWTPH-Dx
  - Benzene, toluene, ethylbenzene, and xylenes by 8260B
  - Polycyclic aromatic hydrocarbons (PAHs) by USEPA Method 8270 SIM
  - PCBs by USEPA Method 8082
- RRO detections in HCID require followup analyses of:

- RROs by NWTPH-Dx
- VOCs by USEPA Method 8260B
- Polycyclic aromatic hydrocarbons (PAHs) by USEPA Method 8270 SIM
- PCBs by USEPA Method 8082

3.2.1 Screening Levels for Imported Materials

Sample results for the analytes listed above must be below the lowest MTCA soil CULs found in the CLARC database at the time of sampling and analysis. The laboratory should be notified of the required reporting limits for proper sample screening.

3.3 Laboratory Quality Control Procedures

The laboratory will follow the QC procedures required by each analytical method. The laboratory QC will be used to assess the accuracy and precision of the laboratory analysis. The QC procedures that may be required by the method are described below. The acceptance criteria established by the analytical laboratory and the guidelines referenced in Section 4.2 of this SAP will be used to assess the suitability of laboratory QC.

3.3.1 Calibration Verification

Instruments will initially be calibrated at the start of the project or sample run, as required, and when any ongoing calibration does not meet control criteria. The number of points used in the initial calibration is defined in the analytical method. Calibration will be continued as specified in the analytical method to track instrument performance. If a continuing calibration does not meet control limits, analysis of project samples will be suspended until the source of the control failure is either eliminated or reduced to within control specifications. Any project samples analyzed while the instrument was outside control limits will be reanalyzed.

3.3.2 Matrix Spike/Matrix Spike Duplicate

Matrix spike and matrix spike duplicate (MS/MSD) samples are analyzed to assess the matrix effects on the accuracy of analytical measurements. MS/MSD samples will be prepared by spiking investigative samples with known amounts of analytes before extraction, preparation, and analysis. The MS/MSD samples will be used to assess accuracy and precision of the analytical method by measuring the target compounds' recovery in the investigative matrices.

3.3.3 Method Blanks

Method blanks are prepared using analyte-free (reagent) water and are processed with the same methodology (e.g., extraction, digestion) as the associated investigative samples. Method blanks are used to document contamination from laboratory analytical processes. A method blank shall be prepared and analyzed in every analytical batch.

The results from the method blank analyses are used to verify that reagents and preparation do not impart unacceptable bias to the investigative sample results. The presence of analytes in the method blank sample will be evaluated against method-specific thresholds. If analytes are present in the method blank above the method-specific threshold, corrective action will be taken to eliminate the source of contamination before analysis proceeds. Investigative samples of an analytical batch associated with method blank results outside acceptance limits will be qualified, as appropriate.

3.3.4 Laboratory Control Samples

Laboratory control samples (LCSs) are prepared by spiking laboratory-certified, reagent-grade water with the analytes of interest or with a certified reference material that has been prepared and analyzed. The result for percent recovery of the LCS is a data quality indicator of the accuracy of the analytical method and laboratory performance.

3.3.5 Laboratory Duplicate Samples

Laboratory duplicate samples (LDSs) are prepared by the laboratory by splitting an investigative sample into two separate aliquots and separately preparing and analyzing each aliquot. The results for relative percent difference of the primary investigative sample and the respective LDSs are used to measure precision in the analytical method and laboratory performance. For nonaqueous matrices, sample heterogeneity may affect the measured precision for the LDSs.

3.3.6 Surrogate/Labeled Analogue Compounds

Surrogates and labeled analogue compounds are used to evaluate the recovery of an analyte from individual samples. Surrogate recoveries will be reported by the laboratory and will be used to assess data quality.

3.4 Analytical Data Reporting

The analytical laboratory will provide analytical data packages that include laboratory quality assurance (QA) and QC results to permit independent and conclusive determination of data quality. Data quality will be determined by the reviewer, using the data evaluation procedures described in Section 4. The results of the evaluation will be used to determine whether project data quality objectives are being met.

Required laboratory data deliverables, including electronic deliverables, are listed below.

- Transmittal cover letter
- Case narrative
- Analytical results
- COC
- QA/QC results
- Qualifier definitions

4 DATA VALIDATION AND USABILITY

Data verification is confirmation by examination and provision of objective evidence that specified requirements have been fulfilled (USEPA, 2001). Data verification includes evaluating the completeness, correctness, and compliance of a specific data set against the method, procedural, or contractual specifications (USEPA, 2002). Data validation is confirmation by examination and provision of objective evidence that the particular requirements for specific intended use have been fulfilled (USEPA, 2001). Data validation is an analyte- and sample-specific process that extends the evaluation of data beyond method, procedural, or contractual compliance (i.e., data verification) to the analytical quality of a specific data set (USEPA, 2002). Data verification and validation will be consistent with the procedures outlined in Sections 4.1 and 4.2, respectively.

The specific data reduction, verification, reporting procedures, and assigned personnel will vary for each laboratory; however, all procedures will be completed in accordance with the laboratory's QA plan and standard operating procedures.

4.1 Data Verification

Data verification will consist of a completeness check that is performed before the data review process continues in order to determine whether the required information (the complete data package) is available for further review. It applies to both hard-copy and electronic deliverables. The following QC checks for data reviews will be performed for all generated data:

- Verify that batch QC was implemented properly and analyzed at the required frequency.
- Verify that holding times for extraction and analyses and for sample reservation were met.
- Verify that the quantitation limits and method detection limits were suitable for screening against the required CULs.
- Verify that all project and QC sample results were properly reported and flagged.
- Review COC documentation to verify completeness of the sample set for each data package submitted.
- Assess the impact of laboratory QC procedures and samples.

The laboratory analyst will be responsible for the reduction of raw data generated at the laboratory bench and to verify that the data reduction performed by the laboratory instrument is correct.

The following QC check for data verification will be performed for all generated data:

- Verify that calibrations and calibration checks comply with laboratory criteria.

This QC check will be performed by laboratory analysts, the assigned laboratory project manager or supervisor, laboratory QC specialists, or a combination of these personnel. After the data reports have been reviewed and verified, the laboratory reports will be signed and released for distribution.

4.2 Data Validation Methods

The validation of analytical data will be performed for 100 percent of the data report packages for each analysis type generated by each analytical laboratory. The data validation review will include review of the following items from the Tier II (S2AVE) laboratory data reports: consistency with the COC, holding times, surrogate recoveries, MS recoveries, field duplicate agreement, MSD and laboratory duplicate precision, and method blank analyses. Refer to USEPA (2009) for S2AVE-level data validation and verification requirements.

Data validation reports will provide the appropriate data validation label (i.e., S2AVE or S4VEM). The data validator will review data and assign data qualifiers to sample results, following sections of the USEPA procedures for inorganic data (USEPA, 2010), organic data (USEPA, 2008b), and dioxins (USEPA, 2011); and method-specific guidelines (e.g., USEPA, 2008a).

The purpose of this independent review will be to verify that the laboratory QC program is adequate and that the laboratory met the performance criteria. A full data validation will be performed on the first data package generated for the specific project and contractor laboratory. If problems are encountered, an independent Tier IV (S4VEM) data validation review of laboratory performance criteria may be performed.

Data qualifiers are used to classify sample data as to their conformance to QC requirements. The most common qualifiers are listed below:

- J—Estimate, qualitatively correct but quantitatively suspect.
- R—Reject, data not suitable for any purpose.
- U—Not detected at a specified detection limit.

Poor surrogate recovery, blank contamination, or calibration problems, among other things, can cause the sample data to be qualified. Whenever sample data are qualified, the reasons for the qualifications will be stated in the data validation report. QC criteria not defined in the guidelines for evaluating analytical data are adopted, where appropriate, from the analytical method.

LIMITATIONS

The services undertaken in completing this plan 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 plan 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 plan 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 plan.

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TABLE

Table
Sample-Handling Summary
Former Hambleton Lumber Mill Property SMCMP
Sampling and Analysis Plan

Analyte	Method	Suggested Volume	Container	Number of Containers	Preservative	Storage Temperature	Holding Time from Collection
Soil							
Polycyclic Aromatic Hydrocarbons	USEPA 8270	4 ounces	Glass Jar	1	none	4 degrees C	14 days
Volatile Organic Compounds	USEPA 8260	4 ounces	Glass Jar	1	none	4 degrees C	14 days
Polychlorinated Biphenyls	USEPA 8082	4 ounces	Glass Jar	1	none	4 degrees C	14 days
Total Petroleum Hydrocarbons—Hydrocarbon Identification	NWTPH-HCID	4 ounces	Glass Jar	1	none	4 degrees C	14 days
Total Petroleum Hydrocarbons—Diesel and Oil	NWTPH-Dx	4 ounces	Glass Jar	1	none	4 degrees C	14 days
Total Petroleum Hydrocarbons—Gasoline	NWTPH-Gx	4 ounces	Glass Jar	1	none	4 degrees C	14 days
Metals	USEPA 6010/6020/7471	4 ounces	Glass Jar	1	none	4 degrees C	six months

NOTES:

C = Celsius.

NWTPH = Northwest Total Petroleum Hydrocarbons.

SMCMP = Soil Management and Cap Maintenance Plan.

USEPA = U.S. Environmental Protection Agency.

APPENDIX B

MONITORING WORKSHEET

SITE INSPECTION SUMMARY REPORT
PORT OF CAMAS-WASHOUGAL CAP VISUAL MONITORING

Project Number:	0229.04.08		
Date:			
Weather:			
Completed By:			
River Level:		**24hr Precip:**	

Photograph Requirements:

Overview photograph of each cap component to capture composite view of entire cap.

Any noted changes or damage to the cap.

General Observations:

General cap condition and smoothness.

Stormwater flow characteristics (if monitoring conducted during wet weather).

Activity on the site.

Visible changes since previous inspection.

Standing water or areas of concentrated surface water flow.

Visible demarcation fabric.

Specific Observations: To be noted with photographs, measurements, and locations:

Vegetated Cap:

- Vegetative cover with estimated coverage.
- Areas of surface erosion (rills/gullies, concentrated sediment deposits).
- Standing water or concentrated surface water flow.
- Cracking of soil surface perpendicular or parallel to riverbank.
- Invasive species present (location and quantity).

Gravel Cap:

- Surface erosion or displacement of gravel.
- Pumping of subgrade soils to gravel surface.
- Damage, tracking, or penetrations.

Asphalt Cap:

- Settling or bulging indicating differential settlement or heaving.
- Cracking or buckling indicating lateral expansion or contraction.

Measurements:

Length and depth of any surface erosion or damage.

Estimated areal coverage of vegetation on soil cap.

Depth of gravel and soil caps at edges adjacent to pavement cap.

SITE INSPECTION SUMMARY REPORT
PORT OF CAMAS-WASHOUGAL CAP VISUAL MONITORING

Project Number:	0229.04.08	
Date:		
Weather:		
Completed By:		
River Level:		**24hr Precip:**

General Observations:

Specific Observations: To be noted with photographs, measurements, and locations:

Vegetated Cap:

Gravel Cap:

Asphalt Cap:

Measurements:

SITE INSPECTION SUMMARY REPORT
PORT OF CAMAS-WASHOUGAL CAP VISUAL MONITORING

Project Number:	0229.04.08
Date:	

Location (Station or Coordinates)	Observations	Photo Log