RI Data Report
Remedial Investigation
North Marina Ameron/Hulbert Site
Port of Everett, Washington

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Prepared for

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1.0 INTRODUCTION

This report presents the initial results for a Remedial Investigation (RI) being performed at the Port of Everett (Port) North Marina Ameron/Hulbert Site (Site) in Everett, Washington (Figures 1 and 2). The RI is being performed under Agreed Order (AO) No. 6677 between the Port, Ameron International and the Hulberts [the potentially liable parties (PLPs)], and the Washington State Department of Ecology (Ecology). The AO stipulates that, prior to completing the RI, the initial results of the RI will be evaluated to determine whether additional data are needed to adequately define the nature and extent of contamination for the purposes of the RI and associated feasibility study (FS). This report describes the RI field activities conducted to date, presents the results, and identifies areas that require further investigation. A more detailed description of the physical and environmental Site conditions will be presented in the RI/FS report.

The Site is owned by the Port and is part of a larger area, referred to as the North Marina Area. The Site is being redeveloped into the Craftsman District to support commercial and recreational users of the North Marina Area. Previous investigations and interim cleanup actions have been conducted under Ecology's Voluntary Cleanup Program (VCP) on portions of the Site. However, Ecology requested that the entire Site undergo an RI/FS under formal agreement with Ecology as part of the Puget Sound Initiative (PSI).

2.0 FIELD INVESTIGATION

The RI field activities were carried out between November 22, 2010 and February 22, 2011 in general accordance with the Work Plan. This section describes the RI activities and any deviations from the procedures specified in the approved RI/FS Work Plan (Work Plan; Landau Associates 2010a).

As part of the Work Plan, data gaps were identified for potentially-affected media (soil, groundwater, sediment, and catch basin sediment) that required additional delineation of the nature and extent of contamination to develop and evaluate cleanup action alternatives, and to select a final cleanup action. Following completion of the initial RI field activities, the Collins Building was removed from the southeastern portion of the Site by the Port. Based on a site reconnaissance completed in the area of the former Collins Building, additional areas requiring investigation were identified. Investigation of the Collins Building area was completed in accordance with Addendum No. 1 to the Work Plan (Landau Associates 2011) and follow-up testing that was reviewed and approved by Ecology through a series of email exchanges and conference calls.

Additional delineation sampling was conducted in the area of the former Collins Building to support cleanup for the planned expansion of the Craftsman District boatyard into the former Collins Building area. The results of that sampling are included in the emergency action cleanup plan developed to address expedited cleanup in the planned boatyard expansion area (Landau Associates 2011b). The planned emergency action is discussed further in Section 3.2.1.4.

The RI soil investigation is discussed in Section 2.1, the sediment investigation is discussed in Section 2.2, the groundwater investigation is discussed in Section 2.3, and the catch basin sediment investigation is discussed in Section 2.4. The results of the initial RI field investigation are presented in Section 3.0.

2.1 SOIL

The soil investigation consisted of collecting soil samples from 45 direct-push soil borings, 5 monitoring well boreholes completed with a hollow-stem auger (HSA), and 6 test pits to evaluate soil conditions, including soil type and evidence of potential impacts to soil quality. Soil samples from each exploration were selected for chemical analyses, except as described in the following sections. Sampling locations, sample collection, field screening, and chemical analysis are described below.

2.1.1 SAMPLING LOCATIONS

The soil exploration locations are shown on Figure 3. All borings in Areas G, J, M, and on the Norton Industries property were completed approximately at the locations proposed in the Work Plan.

Due to utilities, two borings in Area I (I-FA-100 and I-FA-101) were moved from their proposed locations. I-FA-100 was moved approximately 20 ft west and I-FA-101 was moved approximately 50 ft west and 30 ft. south. Soil samples were collected from most of the explorations for chemical analysis. However, in accordance with the Work Plan, soil samples were not collected for chemical analysis at locations selected for groundwater monitoring only if no evidence of potential soil contamination was observed.

Thirty-two focused area (FA in sample location identification) borings and test pits were located based on knowledge of previous use, observations of potentially affected materials (e.g., apparent sandblast media) made during previous Site activities, and/or data from soil or groundwater samples collected during previous investigations. Nineteen general characterization (GC in sample location identification) borings were located to evaluate soil quality in areas with little existing data. Further rationale for the sampling locations is presented in Section 8.1 and Table 16 of the Work Plan, and in Work Plan Addendum #1.

The depths of samples collected were defined by the Work Plan and field screening results. At focused area borings, general characterization borings, and test pits where no evidence of contamination was observed, samples were generally collected from 0 to 1 ft, 1 to 2 ft, and 2 to 3 ft BGS. At locations where evidence of potential contamination (e.g., staining, odor, fill type) was observed, samples were collected from the apparent affected area and below the apparent affected area, if practical. In accordance with the Work Plan, exceptions to this procedure were at J-FA-100, where a soil sample from the capillary fringe was collected, and at I-FA-100 and I-FA-101, where only a sample from 2 to 3 ft BGS at I-FA-100 was collected because no evidence of soil contamination was observed at these locations during field screening and previous soil cleanup had been completed. Additional samples were collected from the top of the saturated zone at RI-MW-2, RI-MW-4, RI-MW-5, M-GC-102, and G-GC-103 to evaluate total organic carbon (TOC) and/or to collect a soil sample for grain size analysis (GSA).

2.1.2 SOIL SAMPLE COLLECTION

Soil samples were collected using a truck-mounted direct-push drilling rig, a truck-mounted hollow-stem auger drilling rig, or a rubber-tired backhoe. Direct-push soil samples were obtained from the soil borings using a closed-piston sampling device with a core sampler. Hollow-stem auger soil samples were collected using a 3.25-inch outside diameter (OD) split-spoon sampler. At locations where the ground surface was paved, 0 ft was considered to be immediately below the asphalt base course layer for sample labeling purposes, although the estimated depth of the sample relative to ground surface was recorded on the exploration logs and is presented in the data tables. Test pit samples collected from 0 to 4 ft BGS were collected by scraping sidewalls with a stainless-steel spoon, while samples from below 4 ft

were collected from the excavator bucket, with care taken to collect soil that was not in contact with the sides of the bucket.

Soil samples for laboratory analysis were selected based on the criteria identified in the Work Plan and field screening results (described below). Soil samples to be analyzed by U.S. Environmental Protection Agency (EPA) Method 8260 for volatile organic compounds (VOCs) or for the analysis of gasoline-range petroleum hydrocarbons [total petroleum hydrocarbons (TPH)-Gx] by Method NWTPH-Gx were collected and preserved in accordance with EPA Method 5035 before disturbing the sample. The remaining portion of the selected soil sample interval was placed into a decontaminated stainless-steel bowl and homogenized using a decontaminated stainless-steel spoon. Larger-sized material (gravel or wood fragments greater than 2 millimeters in diameter) was removed by hand-sorting. The sample was then transferred to the appropriate laboratory-supplied sample containers. All soil sampling equipment was decontaminated using a tap water rinse, Alconox wash, and distilled water rinse between samples.

2.1.3 SOIL SAMPLE FIELD SCREENING

The soil classification of each soil sample collected was evaluated by the Landau Associates' field representative and recorded on a Log of Exploration form, and the sample was field-screened for evidence of contamination. Field-screening was conducted by visually inspecting the soil for staining and other evidence of environmental impact, and monitoring soil vapors for VOCs using a portable photoionization detector (PID). Field screening results were recorded on the Log of Exploration form. Exploration logs for each soil boring and monitoring well borehole are provided in Appendix A.

2.1.4 SOIL SAMPLE CHEMICAL ANALYSES

Soil samples collected for analysis under the general characterization protocol and the focused area protocol were analyzed for selected metals (antimony, arsenic, cadmium, chromium, copper, lead, mercury, and zinc) using EPA Methods 6020; and selectively analyzed for carcinogenic polycyclic aromatic hydrocarbons (cPAHs) using EPA Method 8270C select ion monitoring (SIM); polychlorinated biphenyls (PCBs) by EPA Method 8082; semivolatile volatile organic compounds (SVOCs) by EPA Method 8270; dioxins/furans by EPA Method 1613; total petroleum hydrocarbons by hydrocarbon identification method (NWTPH-HCID) and/or diesel-range and oil-range petroleum hydrocarbons using Method NWTPH-Dx, as indicated in Table 1. Gasoline-range petroleum hydrocarbons using Method NWTPH-Gx and VOCs by EPA Method 8260B were also analyzed if field screening suggested the potential presence of these constituents, and samples were analyzed for pH by EPA Method 9045 where evidence of potential concrete-like waste was observed. Samples collected from the saturated zone at

selected locations were analyzed for TOC by EPA Method 9060A and GSA by American Society for Testing and Materials (ASTM) Method D422.

At locations where multiple samples were collected, the shallow samples were initially submitted for analysis and samples from the remaining intervals were archived and subsequently analyzed for constituents that were detected at concentrations greater than preliminary screening levels (PSLs) in the interval above.

2.2 MARINE SEDIMENT

In accordance with the Work Plan, surface sediment grab samples were collected from 8 sampling stations, identified as A/H-SED-1 through A/H-SED-8, as shown on Figure 4. Sediment samples were collected using the procedures described in the Sediment Investigation Sampling and Analysis Plan (SAP; Work Plan Appendix G). Samples were retrieved at each sampling station using a 36-ft landing craft vessel with a Pneumatic Power Grab sampler. Samples for laboratory analysis were collected from the upper 10 centimeters (cm) of sediment in the sampler, homogenized in a stainless-steel bowl, and placed in the appropriate sample container.

In accordance with the Work Plan, the sediment samples were analyzed for the following list of Sediment Management Standard [SMS; Washington Administrative Code (WAC) 173-204) chemicals: metals (arsenic, cadmium, chromium, copper, lead, mercury, and zinc and antimony) by EPA Method 6020; SVOCs by EPA Method 8270C; PCBs by EPA Method 8082; and conventional parameters [GSA (ASTM D422); TOC (EPA Method 9060A); total volatile solids (TVS: EPA Method 1680); total solids (EPA Method 160.3); ammonia (SM4500; NH_3D Mod); and total sulfides (SM4500; $S^{2-}F$ Mod]. Sediment samples collected from stations A/H-SED-1 and A/H-SED-4 were also analyzed for dioxins/furans by EPA Method 1613.

2.3 GROUNDWATER

Groundwater investigation activities took place between November 22, 2010 and February 22, 2011. Five monitoring wells (RI-MW-1 through RI-MW-5) were installed in Area I, Area J, and Area M. Monitoring well locations were chosen to evaluate groundwater conditions near the point of discharge to surface water, downgradient of current or former industrial operations, and spatially to allow for development of groundwater elevation contours.

Grab samples were collected from direct-push borings at 18 locations throughout the Site. Additionally, a grab sample was collected of groundwater discharge from a concrete basin sump located within the manufacturing building in Area G. Monitoring wells, grab samples, and sump sample locations were positioned either to characterize groundwater near its point of discharge to surface water

along the shoreline, for general characterization purposes, or to further characterize upland areas of interest, as described in Section 8.2 and Table 16 of the Work Plan, and in Work Plan Addendum #1.

Groundwater sampling activities are described below. Analytical results are discussed in Section 3.2.

2.3.1 MONITORING WELL SAMPLING

Five new RI groundwater monitoring wells and three existing groundwater monitoring wells were sampled on December 15, 2010. The five new RI groundwater monitoring wells were installed and developed between December 7 and December 13, 2010. Three existing monitoring wells, located in Area G and Area M, were also re-developed (prior to sampling) between December 10 and December 13, 2010. Locations of new and existing monitoring wells are shown on Figure 5 and are similar to the locations proposed in the Work Plan. Two-inch diameter PVC monitoring wells were installed to depths ranging from 12 to 16 ft below ground surface (BGS). Boreholes for the wells were drilled using a truck-mounted HSA drilling rig. The monitoring wells were constructed using a 10-ft. section of 0.020-inch machine-slotted polychlorinated vinyl chloride (PVC) well screen installed to intersect the water table and a 10/20 silica sand filter pack was placed from the bottom of the well to approximately 1 ft above the top of the screen. Due to the presence of multiple utilities, a vactor truck was used to pre-clear the shoreline well locations (RI-MW-1, -2, and -3) prior to HSA drilling. Wells were developed with a Honda trash pump, a Waterra valve, and/or a peristaltic pump. At least 5 casing volumes were pumped from each well, except at RI-MW-1 and RI-MW-3, where wells were pumped dry and allowed to recharge a minimum of three times. Further details regarding well installation and development are provided in the Groundwater SAP (Work Plan Appendix G). Exploration logs and as-built diagrams for the newly installed wells are included in Appendix A.

The Work Plan identifies that monitoring wells will be monitored during two events as part of the RI; one, already completed, during the wet season (November to March) and one during the dry season (June through October) . The first event took place on December 15, 2010. Samples collected from wells installed within 200 ft of the shoreline (RI-MW-1 through RI-MW-4) were collected within one hour of low tide to minimize potential marine surface water influence. Wells farther inland were sampled within approximately 3 hours of low tide. As discussed in Section 2.3.2 below, the groundwater water level measurements indicate that the inland wells were not appreciably tidally influenced.

Groundwater samples were collected using a peristaltic pump and low flow sampling techniques, as described in the Work Plan. Prior to and during sample collection, field parameters (pH, temperature, conductivity, turbidity, oxidation reduction potential, and dissolved oxygen) were monitored and recorded on sample collection forms. Field parameters are summarized in Table 2.

Due to suspected laboratory bis(2-ethylhexyl)phthalate (BEHP) contamination and anomalous results in the first round of sampling for mercury, arsenic, and oil-range petroleum hydrocarbons, additional groundwater samples were collected from selected monitoring wells on February 22, 2011. This second round of groundwater monitoring consisted of sampling and analyzing samples from monitoring wells ECI-MW-3, RI-MW-1, RI-MW-3, and RI-MW-5 for BEHP, wells RI-MW-1 through RI-MW-4 for dissolved mercury, well ECC-EC-3 for dissolved arsenic, and monitoring well RI-MW-4 for oil-range petroleum hydrocarbons. The additional groundwater monitoring was approved by Ecology via email correspondence on February 17, 2011 (Kallus 2011). The results of the supplemental groundwater monitoring are discussed in Section 3.2.3.

2.3.2 GROUNDWATER LEVEL MEASUREMENTS

Groundwater levels were measured for all monitoring wells at low tide, intermediate tide, and high tide to determine groundwater elevations and evaluate tidal influence on groundwater elevations. High and intermediate water levels were collected on January 21, 2011, and low tide water levels were collected on February 22, 2011. The depth to groundwater at each well was measured from a surveyed reference point at the top of the PVC well casing.

2.3.3 DIRECT-PUSH GROUNDWATER GRAB SAMPLING

Groundwater grab samples were collected from 18 direct-push borings at the locations shown on Figure 5. The locations are similar to those shown in the Work Plan and Work Plan Addendum #1. Boreholes were drilled using a truck-mounted direct-push drill rig. Four-foot long stainless-steel well screens were placed in the boreholes and centered at depths ranging between approximately 8 and 10 ft BGS.

The temporary wells were purged using a peristaltic pump until the water was clear or for 10 minutes (whichever occurred first), or until the well had been pumped dry at least once. During purging, field parameters (pH, temperature, conductivity, turbidity, oxidation reduction potential, and dissolved oxygen) were monitored and recorded on sample collection forms. In accordance with the procedures described in the Work Plan, groundwater samples collected for heavy metals analysis were field filtered, groundwater samples collected from direct-push borings for organic analyses (except VOCs) were centrifuged to settle particulates prior to analysis, and groundwater samples collected from monitoring wells were centrifuged if the sample turbidity exceeded 10 NTU. Immediately after completing the sample collection, the screens and casing were removed and the boreholes were filled with bentonite chips.

2.3.4 GROUNDWATER SUMP SAMPLING

A groundwater grab sample was collected from the discharge of the concrete basin sump in the manufacturing building in Area G on December 20, 2010. The discharge line from the sump was plumbed on the exterior of the building prior to sampling by Ameron International personnel. The grab sample was collected from a spigot while the sump was operating.

2.3.5 GROUNDWATER SAMPLE CHEMICAL ANALYSES

Selected groundwater samples were analyzed for dissolved metals (antimony, arsenic, cadmium, chromium, copper, lead, mercury, and zinc) by EPA Method 200.8; hexavalent chromium by EPA Method 7196A; VOCs by EPA Method 8260B; TPH by method NWTPH-HCID, NWTPH-Dx, and/or NWTPH-Gx; SVOCs by EPA Method8270/8270D; cPAHs by EPA Method 8270SIM; and PCBs by EPA Method 8082, as indicated in Table 3. In accordance with the Work Plan, groundwater samples collected from direct-push borings and analyzed for SVOCs, cPAHs, PCBs, and TPH-Dx were centrifuged prior to analysis. Due to limited sample volume, groundwater samples collected from J-FA-100 and the sump were not centrifuged prior to analysis for TPH-Dx. Groundwater samples collected from monitoring wells and analyzed for the above-listed parameters were centrifuged prior to analysis if the turbidity of the sample was greater than 10 NTU.

Due to suspected phthalate lab contamination, selected groundwater samples from the December 12, 2010 sampling event were reanalyzed for SVOCs. Based on the results of the reanalysis and a laboratory review of its analytical procedures, lab contamination was confirmed and the original data were rejected. Results for the reanalysis for SVOCs are presented in the data table. The analyses and results for specific wells are discussed in Section 3.2.3.

2.4 CATCH BASIN SEDIMENT

Catch basin sediment samples were collected on November 24, 2010 from four catch basins along the stormwater trunk line (SD-3, -4, -7, and CB111) and one catch basin that contributes to the trunk line near its outfall (CB101), located as shown on Figure 4. Samples were collected by repeatedly scraping the bottom of the catch basin with a dedicated jar attached to a telescoping pole until adequate sample volume was collected. Collected sediment was homogenized in a stainless-steel bowl and placed in appropriate sample containers. Samples from SD-3, SD-4, SD-7, and CB-111 were analyzed for metals (antimony, arsenic, cadmium, chromium, copper, lead, mercury, and zinc); SVOCs; TPH-Dx; PCBs; TOC; hexavalent chromium; and percent solids; using the methods previously listed for soil. CB-101 was analyzed for total metals, SVOCs, TPH-Dx, PCBs, TOC, and percent solids. Further details describing catch basin sampling are presented in Section 2.3 of the Work Plan.

2.5 GRAVEL PAD CONSTRUCTION

In accordance with Work Plan Addendum #1, a gravel pad was constructed within the footprint of the former Collins Building to provide access for a drill rig where proposed borings were located in an area of standing water. Prior to construction, proposed pad construction materials from Cemex in Everett, Washington, were sampled and analyzed for metals (arsenic, cadmium, chromium, copper, lead, mercury, and zinc) by Method SW6020 to confirm that naturally occurring concentrations of heavy metals in the borrow material did not exceed the Site PSLs. Analytical results indicated metals concentrations below Site PSLs. This material was used to build a pad in the standing water area approximately 45 ft by 30 ft by 1 ft deep. A nonwoven geotextile separation layer was placed on the ground surface prior to placement of the fill. Data from the gravel pad material testing are presented in Table 4.

2.6 QA SAMPLES

Blind field duplicate, matrix spike, and matrix spike duplicate samples were collected for soil, groundwater, marine sediment, and catch basin sediment samples. Field duplicate frequency was one per 20 samples, or at least one per sampling event for all analyses. A field rinsate blank was also collected following decontamination of non-dedicated soil sampling equipment following collection of a potentially contaminated sample. Following the initial round of groundwater sampling, a filter blank sample was collected to rule out filter media as a potential source of mercury detected in groundwater samples collected on December 15, 2010.

3.0 RI RESULTS

This section present the physical results of the RI based on observations made during soil explorations and groundwater level measurements, and the results of the analytical testing of soil, groundwater, marine sediment, and catch basin solids.

3.1 PHYSICAL RESULTS

Site stratigraphy and hydrogeologic conditions encountered during the RI are presented in this section. The soil stratigraphy is considered with respect to the Site Filling History section in the Historical Site Development Analysis (Appendix B of the Work Plan) and observations made during drilling (see logs in Appendix A). The groundwater levels are evaluated to determine the direction of groundwater flow and tidal influences at the Site (see Table 6).

3.1.1 SUBSURFACE STRATIGRAPHY

The entire Site is located on former aquatic lands that consisted primarily of intertidal deposits (i.e., tideflats) that were filled to current ground surface elevations ranging from about 16 to 18 ft mean lower low water (MLLW). The earliest documented filling began in the early to mid-1900s and by 1973 the entire upland portion of the Site was filled to its current footprint (Pinnacle GeoSciences 2010). The fill used to create the upland portion of the Site is primarily hydraulically-placed dredge fill. There are also lesser amounts of fill resulting from Site use and facility development referred to in this document as General Fill and waste materials, as discussed below. Site stratigraphy is discussed in the following sections from deepest to shallowest units.

3.1.1.1 Native Tideflat Sediment

Ten borings were drilled to explore for the depth to the native tideflat surface. The native tideflat surface was typically encountered at a depth of about 18 to 20 ft, as might be expected considering that it was primarily an intertidal area. The native tideflat surface was indicated by the occurrence of a black, organic-rich silty sand (J-FA-101and J-FA-102), silt with organic matter and scattered wood fragments (M-GC-106 and RI-MW-4), or at the base of a thick sequence of wood debris in the case of I-FA-101. The native marine sediment encountered below the fill soil is a medium dense, silty sand to sandy silt with wood and shell fragments, which is very similar to the dredge material used to fill the site as discussed below.

3.1.1.2 Hydraulic Dredge Fill

Several episodes of hydraulically-placed dredge filling at the Site have been identified in the historical record (Pinnacle GeoSciences 2010). The hydraulic dredge fill is found throughout the Site, most typically at a depth of between one ft and seven ft BGS, and it generally extends to the native marine tideflat surface. It is typically a gray, loose to medium dense, poorly-graded fine to medium sand with silt, or silty, fine to medium sand, with shell pieces and wood fragments. The white shell fragments, in particular, help to distinguish the sand as a dredge fill. It was interpreted as occurring across the Site, although different areas were filled at different times and some areas likely had several episodes of hydraulic filling. The last documented dredge filling occurred in 1973 and included most of Area I and the northern portion of Area J. A berm was constructed along the west and east sides of Area I at that time to contain the dredge fill. The location of the eastern berm is shown on Figure 3.

The dredge fill was encountered at ground surface beneath the eastern portion of the former Collins Building. It was also encountered at a relatively shallow depth of between 1 to 3 ft around the Ameron pole manufacturing building. It was encountered at a depth of 4 to 7 ft in the southern-most portion of Area G (G-GC-106 and G-GC-107, and G-GC-109) and northern portions of Area M. Its deepest initial occurrence was observed in several of the borings drilled along the northern Site boundary where it was first encountered at depths ranging from 6 to 10 ft. In this area, historical analyses indicate a drainage ditch existed until approximately 1981 or 1982 (Pinnacle Geosciences 2010).

Soil samples were collected from the hydraulic fill saturated zone at three locations (G-GC-103, M-GC-102, and RI-MW-2) and analyzed for TOC for potential use in evaluating groundwater contaminant transport characteristics or for modifying Method B cleanup levels based on Site-specific conditions. Results are presented in Table 5 and indicate a TOC range of 0.1 percent to 1.3 percent.

In addition, grain-size analyses (GSA) were conducted on hydraulic fill samples from the saturated zone at RI-MW-2, RI-MW-4, and RI-MW-5 for potential use in estimating hydraulic conductivity for the uppermost hydrostratigraphic unit. The GSA results are presented in Appendix B and are generally consistent with hydraulic fill. The one exception is the soil sample collected from RI-MW-2 (10 to 11 ft), which is a gravelly medium to coarse sand; RI-MW-2 is located along the shoreline and the coarser soil at this location is likely associated with the dike constructed to retain hydraulically dredged sediment that was used for Site filling.

3.1.1.3 General Fill

General Fill is identified overlying the hydraulic dredge fill across much of the Site. The General Fill appears to be mostly structural fill placed as a trafficking surface to support paving and other Site development purposes such as filling and grading to create suitable conditions for facility construction.

The Site is paved except for a small area in the northwest portion of Area G and in the southeast portion of Area M. Beneath the pavement there is a 0.2 to 1-foot layer of gravelly sand "base course" layer. In several of the GC boring locations (G-GC-100, G-GC-102, G-GC-105), and in the area of the former Collins Building (M-FA104 through M-FA-108) hydraulic dredge fill was identified directly below the pavement and base course and there was no General Fill identified.

The General Fill is typically a brown to gray, loose to medium dense, gravelly to clean, fine to coarse or fine to medium sand. In some locations it is very similar to the dredge sand except it is lacking in shell fragments. In some areas it includes fine roots, organics and/or wood fragments, which may be related to former ground surfaces as some areas of the site were filled in multiple episodes over time (Pinnacle GeoSciences 2010). Some specific observations about the General Fill derived from the drilling data reviewed relative to the site historical analysis include:

- General fill in Area G, which was completed between 1956 and 1965, is generally a 1- to 3-ft-thick layer of brown, fine to medium sand to gravelly fine to coarse sand, with silt and occasionally wood debris. Wood pieces and wood debris was commonly found in the sand encountered below a depth of depth of 3 ft in Area G west of the manufacturing building.
- The General Fill along the northern property boundary of Areas G and I and southern-most Norton Industries property to the north of the Site (essentially the stormwater trunk line alignment) occurs to a depth of around 6 to 10 ft, where abundant organics and decomposing wood or fine sand with wood fragments and organics are found.
- Black wood and charcoal were observed at a depth of 6 to 7 ft in one boring (G-GC-108), and hydraulic fill was observed both above and below this layer suggesting several episodes of hydraulic filling in this area.
- General fill placed in the border area along the east side of Area J and west side of Area M (J-GC-100, J-GC-101, and M-GC-104) consists of 2 ft of brown fine to medium sand.
- The deepest occurrence of General Fill was at RI-MW-3 and J-FA-102, where it was observed to extend to 10 and 18 ft depth, respectively. The thicker fill at RI-MW-3 is most likely a remnant of a soil dike that was constructed to contain dredge fill placed in the 1970s, as discussed above.

3.1.1.4 Waste Materials

Local areas of waste materials were observed in some explorations around the Site, primarily in those areas previously identified for characterization due to the presence of known or potential contamination shown on Figure 3. They included:

- An angular, black, magnetic, granular material that may be a sand-blast media. This black sand was observed in pockets and as thin layers along the west border of Area G, generally limited to the upper 1 to 2 ft of soil, in the area previously identified as suspected to contain blasting sand waste (G-FA-100 and G-FA-104 to G-FA-109).

- A similar black to bluish-black, granular sand-size waste material identified as apparent sandblast media was also observed in M-FA-102 at a depth of 7.5-8.0 ft BGS in the south portion of Area M.
- A soft, white to gray silt-like material with a concrete-like odor was observed in G-FA-101 and G-FA-103 along the northern property line of Area G stormwater trunk line corridor in the area previously identified as suspected concrete-slurry waste material.
- Colored (red, tan and orange) silt-like material was observed to comprise a portion of the material used to fill three former concrete settling basins on the eastern side of the pole polishing building in Area G (G-FA-110, -111, and -112).
- Demolition waste, consisting of broken bricks and broken concrete blocks, was observed at depth in the northern portion of Area J from 13 to 18.5 ft (J-FA-102), and at a depth of 7.5 ft in the southern portion of Area M in M-FA-102.
- Wood debris was observed at three Site locations (G-FA-104, I-FA-101 and J-FA-100) and at two locations on the Norton Industries property to the north (N-FA-101 and N-FA-103). The observed wood debris ranged in thickness from less than 1 ft to about 6 ft. The borings were not advanced to below the wood debris at a number of locations.

3.1.2 HYDROGEOLOGY

The uppermost hydrostratigraphic unit at the Site consists of the saturated portion of the hydraulic fill and underlying native sediment. The native marine sediment unit encountered in Site borings is similar in composition to the hydraulic fill unit and, as such, does not act as an aquitard to the groundwater in the overlying hydraulic fill. Although an aquitard to the uppermost hydrostratigraphic unit was not encountered during the RI, Site shallow groundwater flow is largely controlled by its discharge to marine surface water to the west. As a result, the lack of definition of the underlying aquitard does not significantly limit the interpretation of shallow groundwater flow for the Site.

Water level measurements in the uppermost hydrostratigraphic unit were recorded on January 19, 2011 at high and intermediate tide and on February 22, 2011 at low tide. The measured water levels were then converted to elevations and are presented in Table 6. The groundwater elevations ranged from 6.36 to 14.49 ft above MLLW.

Groundwater elevation contours for measurements collected during high, intermediate, and low tides are presented on Figures 6, 7, and 8, respectively. Based on these figures, groundwater flow is generally to the northwest toward the 12th Street Yacht Basin during high, intermediate, and low tide measurements,. However, groundwater elevations in the northeast portion of the Site appear to be influenced by operation of the groundwater sump located in the Ameron manufacturing building.

Groundwater fluctuations in response to tidal influences in shoreline wells ranged from approximately 0.70 ft at RI-MW-2 to 4.75 ft at RI-MW-3. The water levels in the remaining inland wells

were relatively static, although minor fluctuations of less than 0.1 ft were observed in some of the inland wells between the high and intermediate tide measurements (which were measured on the same day). Greater variations in groundwater elevations were observed at some inland groundwater wells based on the low tide gauging event, but this round of measurements was conducted about 1 month following the gauging for the high and intermediate tides, so differences in groundwater elevations are more likely caused by temporal factors other than tides over this extended time frame.

3.2 ANALYTICAL RESULTS

A total of 80 soil samples (and 6 blind field duplicate soil samples), 34 groundwater samples (and 4 blind field duplicate groundwater samples), 6 marine surface sediment samples (and 1 blind field duplicate sediment sample) and 5 catch basin samples (and 1 blind field duplicate catch basin sample) were collected during the field investigation. Fifteen of the groundwater samples were collected from the 8 groundwater monitoring wells, 18 of the groundwater samples were collected from temporary well points, and 1 groundwater sample was collected from the sump associated with the manufacturing building in Area G. Soil, groundwater, and sediment samples were submitted to Fremont Analytical of Seattle, Washington for analysis. Soil and sediment samples for analysis for dioxins/furans were submitted to Axys Analytical Services of Sidney, British Columbia for analysis. Groundwater samples from the February 22, 2010 lab comparison sampling event were submitted to Analytical Resources, Inc. (ARI), in Tukwila, WA, for analysis.

The samples were analyzed and validated according to the quality control procedures described in the Upland Investigation SAP and Sediment Investigation SAP, Appendices F and G of the Work Plan, respectively. All of the data were determined to be acceptable for use and no data were rejected, with the following exceptions.

During the initial round of groundwater sampling (December 15, 2010), BEHP was detected by Fremont Analytical in samples collected from four of the eight monitoring wells at concentrations greater than its PSL [2.2 micrograms per liter (µg/L). The detected concentrations ranged from 13.6 µg/L to 137 µg/L. Given that BEHP is a common laboratory contaminant, a portion of one sample (RI-MW-5) was submitted to ARI for reanalysis; BEHP was not detected in the sample at a concentration greater than the reporting limit of 1 µg/L. The original analysis by Fremont Analytical indicated a concentration of BEHP of 40.5 µg/L in the sample from RI-MW-5. Fremont Analytical subsequently reviewed their sample preparation procedures and identified a piece of plastic tubing in place of copper tubing on an instrument used in the sample preparation. Fremont Analytical reanalyzed the original groundwater samples for SVOCs; BEHP in all the reanalyzed samples was below the reporting limit. Based on the results of the

reanalysis, the original SVOC data were rejected. SVOCs data for reanalysis is presented in Section 3.2.3 and results are presented in Table 16.

The relative percent difference (RPD) between the analytical results for some analytes in the blind field duplicate soil sample pairs was higher than the control limit of 35 percent for five soil samples, one marine sediment sample, and one catch basin sediment sample. The high RPD is likely related to sample heterogeneity rather than analytical precision. These results were qualified as estimates (J flagged) in the data tables.

Data validation reports are maintained in Landau Associates' files and are available upon request.

3.2.1 SOIL

Analytical results for soil are discussed by area in the following sections. PSLs for soil are presented in Table 7. A comparison of the soil results to the PSLs is presented in Tables 8 through 11 and exceedances of the soil PSLs are shown on Figure 9. It is important to recognize that natural levels of both arsenic and copper exist that are above the PSLs currently being used to review the site data. Arsenic soil concentrations elevated above the PSL are known to occur naturally in soil in parts of Snohomish County, as evidenced by the elevated arsenic concentrations contained in the crushed rock imported to the Site in 2006 during construction of the Craftsman District. In addition, areas in Puget Sound are also known to contain copper at levels greater than the Ecology-established copper background level of 36 mg/kg currently being used as the PSL for the Site. In a 2005 study of copper in natural Puget Sound glacial deposits being used as aggregate sources (and fully investigated to be free of any man-made contamination), the 90^{th} percentile concentration of copper was 51 mg/kg with an upper range of 113 mg/kg from a basalt crushing operation (Aspect Consulting 2005).

Soil samples were tested for a broad range of constituents. No soil samples exceeded the PSLs for SVOCs, PCBs, or VOCs, except for samples collected from the Norton Industries property that may be unrelated to Site releases. Only two of 42 soil samples collected from the Site exceeded the cPAHs PSL, including one sample collected from the Norton Industries property (N-FA-102) that may not be related to Site releases. Soil concentrations that are more than three times the PSLs are highlighted in Table 8 (metals) and on Figure 9 to identify the locations with more highly elevated concentrations relative to the PSLs.

In general, soil contamination was limited to those areas where contamination was anticipated based on existing analytical data and/or observations made during previous investigations, interim actions or site historical analyses. Site soil contamination primarily consists of heavy metals (antimony, arsenic, lead, and possibly copper) and limited areas of diesel- and oil-range petroleum hydrocarbon contamination. Gasoline-range petroleum hydrocarbon contamination was detected at one location

(N-FA-103B) on the Norton Industries property that may be unrelated to Site releases. Copper is considered a possible soil contaminant because copper concentrations exceeding the PSL based on protection of groundwater occurred at a number of locations, but the presence of copper groundwater contamination has not been confirmed, as is discussed in Section 3.2.3.

3.2.1.1 Area G

The primary focus of the Area G investigation was to delineate the extent of previously detected soil contamination along the northern and western boundaries of Area G, and to characterize soil conditions and the nature of fill material in previously uninvestigated areas. Soil samples were collected from 18 direct-push borings and 6 test pits. Samples were analyzed for a range of compounds as summarized in Table 1.

A comparison of the results to the PSLs, presented in Tables 8 through 11, shows that TPH, SVOCs (including cPAHs), PCBs, and VOCs were not detected in Area G soil at concentrations greater than the PSLs. In addition, at 11 of 24 soil sampling locations, no chemical constituent was detected in soil at a concentration greater than the PSLs. Other than a minor exceedance of the copper PSL (G-GC-100), soil concentrations did not exceed the PSLs in any Area G general characterization (GC) soil samples.

Metals (antimony, arsenic, copper, and lead) were detected at 13 of 24 soil sampling locations in Area G at concentrations exceeding one or more of the PSLs (Table 8). Antimony concentrations exceeding the PSL [32 milligrams per kilogram (mg/kg)] in Area G soil ranged from 42.2 mg/kg to 303 mg/kg. The arsenic concentrations exceeding the PSL (20 mg/kg) ranged from 20.5 mg/kg to 3,270 mg/kg. The copper concentrations exceeding the PSL (36 mg/kg) ranged from 38 mg/kg to 1,420 mg/kg. The lead concentrations exceeding the PSL (250 mg/kg) ranged from 417 mg/kg to 1,460 mg/kg.

The highest concentrations of metals, and all samples with exceedances of antimony and lead, were from soil samples that included an angular, black sand-sized material (apparent sandblasting media). Lower levels of arsenic (24.5 mg/kg to 70.0 mg/kg) and copper (33.9 to 540 mg/kg) were detected in most of the samples of apparent concrete-slurry waste material. The arsenic levels in the concrete-slurry waste are all below the MTCA soil industrial cleanup level for arsenic based on direct contact of 88 mg/kg.

Locations with PSL exceedances for metals in soil are shown on Figure 9 and are concentrated in the following three areas where soil contamination was anticipated to be present based on previous investigations and observations:

- Antimony, arsenic, copper, and lead were detected at concentrations exceeding the PSLs along the western boundary of Area G where apparent sandblast media was observed in one soil boring (G-FA-100) and five test pits (G-FA-104 through -107 and -109). Impacted soil

encountered in this area was limited to the upper 2 ft. Although a clean bottom sample was not obtained at location G-FA-105, hydraulic dredge fill was indicated at a depth of 3.0 ft , so contamination would not be expected below this depth.

- Arsenic (50.8 to 70 mg/kg) and copper (58.8 to 81.1 mg/kg) were detected at concentrations exceeding the PSLs along the northern leasehold boundary in the vicinity of the stormwater trunk line alignment at locations G-FA-101 and G-FA-103. Soil samples consisting of soft, white, silt-like material collected from these locations also exhibited elevated pH (10.7 to 11.9), which is indicative of potential concrete slurry waste material. Impacted soil in this area is generally encountered between 1 and 9 ft BGS.
- Arsenic (24.5 mg/kg to 50.6 mg/kg) and/or copper (33.9 to 540 mg/kg) were detected at concentrations exceeding the PSL within three former concrete settling basins on the eastern side of the lab/storage building (G-FA-110 through -112). The concrete bottom depth of the settling basins was encountered at 5 ft BGS in the three borings.

In addition to the above exceedances, copper was detected at a concentration of 38.7 mg/kg in the surface sample collected at G-GC-100, which slightly exceeds the PSL for protection of groundwater based on the Puget Sound background concentrations. Otherwise, general characterization sampling (GC series borings) in Area G did not exceed any PSLs.

3.2.1.2 Area I

Area I was subject to extensive characterization and compliance monitoring sampling prior to and following implementation of the Site interim action (Landau Associates 2010b). As a result, RI soil characterization in Area I was limited to the area along the eastern boundary of the southern half of Area I, west and south of Interim Action Area G-1a. One soil sample was collected for metals analysis from direct-push boring I-FA-100. As is indicated in Table 8, copper was detected in the sample collected from a depth of 2 to 3 ft BGS at a concentration of 57.3 mg/kg, which is greater than the PSL. Evidence of impact to soil was not observed during field screening at I-FA-101 or during installation of the shoreline monitoring wells (RI-MW-1 through -3); therefore, soil samples were not collected from these locations for chemical analysis.

3.2.1.3 Area J

The Area J soil investigation was focused primarily on characterization of soil in the northern portion of Area J where petroleum hydrocarbon impacts were previously observed and in the area of former sawmill structures including a wood refuse burner and boiler house. In addition, general characterization samples were collected from a previously uninvestigated area in the southeastern portion of Area J. Soil samples for chemical analysis were collected from five direct-push borings. Samples were analyzed for a range of compounds as summarized in Table 1.

A comparison of the results to the PSLs, presented in Tables 8 through 11, shows that TPH, SVOCs (including cPAHs), PCBs, and dioxins/furans were not detected in Area J soil at concentrations greater than the PSLs. At four of the five soil sampling locations, no analytical parameters were detected in soil at concentrations greater than the PSLs. Copper was detected in soil at one location (J-FA-102) at a concentration of 101 mg/kg, which is greater than the PSL based on protection of groundwater. Evidence of impact to soil was not observed during installation of monitoring well RI-MW-4; therefore, soil samples were not collected for chemical analysis from this location.

3.2.1.4 Area M

The primary focus of the Area M soil investigation was to characterize soil in areas of previous industrial and commercial operations (work yards for buildings along West Marine View Drive and the footprint of the former Collins Building following demolition). In addition, general characterization samples were collected from previously uninvestigated areas to evaluate the quality of fill material placed at the Site. Soil samples were collected from 16 direct-push borings. In addition, soil samples were collected during drilling for the installation of monitoring well RI-MW-5. Samples were analyzed for a range of constituents as summarized in Table 1.

A comparison of the results to the PSLs, presented in Tables 8 through 11, shows that SVOCs (with the exception of cPAHs at one location as discussed below) and PCBs were not detected in Area M soil at concentrations greater than the PSLs. At 10 of 16 soil sampling locations, no analytical parameters were detected in soil at a concentration greater than the PSLs. Metals (arsenic, copper, and/or lead) were detected at 5 of 24 soil sampling locations in Area M at concentrations exceeding the PSLs, TPH was detected at 2 locations at concentrations greater than the PSL, and cPAHs were detected at one location at a concentration greater than the PSL. Locations with exceedances for metals, cPAHs, and TPH in soil are shown on Figure 9. As is shown, impacted soil was identified at five locations within Area M:

- Arsenic (76.4 mg/kg) and copper (111 mg/kg) were detected at concentrations greater than the PSLs in the 0 to 1 ft sample from M-GC-102
- Copper (54.1 mg/kg) was detected at a concentration greater than the PSL in the 0 to 1 ft sample at M-FA-101.
- Copper (1,410 mg/kg), lead (270 mg/kg), and arsenic (290 mg/kg), were detected at concentrations greater than the PSLs in the sample collected from 7 to 7.5 ft BGS at M-FA-102. The cPAHs concentration (0.226 mg/kg) also exceeded the PSL in this sample.
- Arsenic (35.3 mg/kg) was detected at a concentration greater than the soil PSL in the 0 to 1 ft sample at M-FA-102b.
- Copper (52.1 mg/kg) and lead (294 mg/kg) were detected at concentrations greater than the PSLs in the 0 to 1 ft sample at M-FA-103.

No evidence of contamination was observed at these locations during field screening, except for M-FA-102 where blue-black sand-sized material (apparent sandblast media) was observed in the sample interval. All metals PSL exceedances occurred in General Fill or apparent waste materials, and no exceedances were detected in samples collected from hydraulic fill.

Diesel-range (M-GC-105) and heavy oil-range (M-GC-105 and M-FA-105) petroleum hydrocarbons (TPH-Dx) were detected at concentrations greater than the PSLs at two locations within the former Collins Building footprint. At M-GC-105, areas of black, petroleum hydrocarbon-cemented sand and woodchips were observed at the ground surface and extending to a depth of approximately 0.5 ft BGS. Samples collected from the cemented material and the soil immediately below the material (1 to 1.5 ft BGS) exhibited heavy oil concentrations of 34,700 mg/kg and 5,420 mg/kg, respectively, and diesel-range concentrations of 6,100 mg/kg and 872 mg/kg, respectively. TPH was not detected at concentrations greater than the laboratory reporting limits in the sample collected from 4 to 5 ft BGS where hydraulic dredge fill was encountered. At M-FA-105, heavy oil-range petroleum hydrocarbons were detected at a concentration of 2,340 mg/kg in the sample collected from 0 to 1 ft BGS, which slightly exceeds the PSL (2,000 mg/kg). TPH was not detected at concentrations greater than the laboratory reporting limits in the sample collected from 4 to 5 ft BGS at M-FA-105.

An emergency cleanup action will be conducted in association with the Craftsman District boatyard expansion to address these petroleum exceedances. These data and the planned emergency action are discussed in more detail in the emergency action cleanup plan (Landau Associates 2011b).

3.2.1.5 Norton Industries Property

Four direct-push soil borings were conducted in two areas of the Norton Industries property, located along the north boundary of the Site, as shown on Figure 3. Two borings (N-FA-100 and N-FA-101) were completed north of Area I where arsenic and copper were detected at concentrations greater than the PSLs during post-interim action compliance monitoring. Two borings (N-FA-102 and N-FA-103) were completed north of the oil-affected area discovered along the northern boundary of Area G during a storm sewer repair project. Soil samples were analyzed for a range of compounds as discussed in Section 2.1.4 and summarized in Table 1.

Copper was detected at concentrations greater than the PSL at each of the sampling locations and ranged in concentration from 45.8 mg/kg to 194 mg/kg. The highest concentrations were detected at a depth of 3 to 4 ft at N-FA-101 (152 mg/kg) where concrete-like material was observed and at a depth of 6 to 7 ft BGS at N-FA-103B (194 mg/kg) where wood debris was observed. Arsenic (28.3 mg/kg) was detected at a concentration slightly greater than the PSL in the wood debris sample collected from 6 to 7 ft BGS at N-FA-103B.

Detected concentrations of cPAHs (0.789 mg/kg), total PCBs (3.85mg/kg), and trichloroethene (TCE; 0.0480 mg/kg) were greater than the screening levels at N-FA-102 at a depth of 2 to 3 ft BGS. The vertical extent of contamination was not defined at this location. Gasoline-range petroleum hydrocarbons were detected at a concentration of 413 mg/kg at N-FA-103B at a depth of 6 to 7 ft BGS, which exceeds the PSL (100 mg/kg).

Gasoline-range petroleum hydrocarbon, TCE, and PCBs PSL exceedances did not occur in RI samples collected from within the Site boundary, and only one cPAHs PSL exceedance occurred within the Site (M-FA-102). The lack of continuity or consistency in PSL exceedances between the Site and Area N analytical results support the conclusion that the PSL exceedances in Area N are not related to Site releases.

3.2.2 MARINE SEDIMENT

Marine sediment quality was evaluated to determine if previous Site activities had impacted sediment quality to an extent that could pose a threat to human health or adversely affect biological resources. To make this determination, the analytical results for the sediment samples were compared to the SMS (WAC 173-204) Sediment Quality Standards (SQS) and the Cleanup Screening Levels (CSL). Some of the SQS and CSL values are expressed on a TOC-normalized basis and, therefore, applicable sample results have been organic carbon normalized. Table 12 presents organic carbon-normalized results and Table 13 presents non-organic carbon-normalized (dry-weight) results.

Sediment data compared to the SMS SQS and CSL are also presented in Tables 12 and 13. This comparison of the sediment sample analytical results to the SMS criteria indicates that no concentrations exceed the CSL or SQS.

Two sediment samples (A/H-SED-1 and A/H-SED-4) were analyzed for dioxins and furans. Dioxins and furans were detected in the samples at low concentrations [TEQ = 2.41 nanograms per kilogram (ng/kg) and 1.77 ng/kg, respectively]. Dioxins and furans do not have promulgated SQS and CSL values. However, the Dredged Material Management Program (DMMP) Agencies have developed interim guidance for dispersive and non-dispersive dredged material suitability (DMMP 2010). Detected concentrations of dioxins in sediment at the Site are below the DMMP interim criteria of 4 ng/kg, which is based on an upper bound estimate of the distribution of dioxin in sediments from non-urban areas of Puget Sound.

Reporting limits for six constituents (hexachlorobenzene, 1,2,4-trichlorobenzene, 1,2-dichlorobenzene, 1,4-dichlorobenzene, hexachlorobutadiene, and benzyl butyl phthalate) exceeded the SMS carbon-normalized criteria in some samples. However the TOC values were within the range typically found in Puget Sound and the dry-weight concentrations for these constituents were below the

apparent effects thresholds (AETs) that are based on dry-weight concentrations. Ecology recommends that, in areas with low TOC values (which results in higher reporting limits), the use of dry-weight AETs be considered along with the organic carbon-normalized criteria.

Ammonia, total sulfides, and TVS results were used to evaluate potential adverse effects on sediment due to high organic content, wood debris, etc. No wood debris was observed during sediment sampling. None of the samples exceeded the threshold of 25 percent wood by weight (as measured by TVS). Although SMS criteria are not promulgated for ammonia and total sulfides, the detected concentrations for these constituents do not appear to be elevated. Based on these data, wood debris does not appear to be a significant environmental concern for Site sediment.

Concentrations of TOC ranged from 1.76 to 2.43 percent and are considered typical of Puget Sound sediment.

3.2.3 GROUNDWATER

The groundwater analytical results were compared to the groundwater PSLs presented in Table 14), which includes five constituents for which PSLs were not developed in the Work Plan (cis-1,2-dichloroethene, di-n-butylphthalate, diethylphthalate, 1-methylnaphthalene, and hexavalent chromium). Analytical results for RI groundwater sampling events are presented in Tables 15 through 18. PSL exceedances for dissolved arsenic and copper are shown on Figures 10 and 11, respectively, because these are the only COCs with confirmed multiple exceedances of the groundwater PSLs. Concentrations that are at least three times greater than the PSL are highlighted in both the tables and figures to identify locations that have more highly elevated PSL exceedances.

VOCs, cPAHs, and PCBs constituents did not exceed the groundwater PSLs in any of the groundwater samples. BEHP exceeded its groundwater PSL in one sample, petroleum hydrocarbons in the diesel and/or oil ranges exceeded the PSLs in two samples, and a few heavy metals (primarily arsenic and copper) exceeded the PSLs in multiple samples. However, a number of the exceedances either were not reproducible in follow-up sampling or the exceedances were associated with groundwater samples collected from temporary borings instead of monitoring wells, which may have resulted in analytical results that are biased high. Additional discussion of the RI groundwater data that may not be representative of groundwater quality on a Site-wide basis is presented in the following section.

3.2.3.1 Potentially Unrepresentative Groundwater Analytical Results

There are a number of factors that suggest that many of the groundwater PSL exceedances detected during the first round of RI groundwater monitoring are not representative of Site groundwater quality due to laboratory quality control issues, groundwater sampling methods, and possibly other

unidentified factors. This conclusion is supported by laboratory reporting narrative, the lack of reproducibility of some results, and the consistent and measurable difference in concentrations for some constituents detected in groundwater samples collected from monitoring wells versus concentrations in samples collected from direct-push borings. Site-wide anomalous groundwater quality results are discussed in this section and localized anomalous results are discussed in the following sections addressing specific Site areas.

As previously discussed, selected groundwater samples collected during the December 2010 sampling event were reanalyzed for SVOCs due to suspected phthalate lab contamination issues. The original data were rejected and the results for the reanalysis are presented in this section. In addition, only a single phthalate (BEHP) exceedance occurred in a second round of groundwater samples collected from selected monitoring wells on February 22, 2011 to analyze for a number of constituents that exhibited anomalous results during the first round of monitoring. The single BEHP exceedance is discussed further in Section 3.2.3.3

Mercury was detected above the groundwater PSL in a number of monitoring well and direct-push groundwater samples during the first round of groundwater sampling. Because mercury had not been detected in any groundwater samples previously collected from the Site or the greater North Marina Area, and because mercury has not been detected at elevated concentrations in Site soil, it was considered an anomalous result that may not be representative of Site groundwater quality. As a result, mercury was tested for in samples collected from five monitoring wells during the February 22, 2011 second round of groundwater sampling. Mercury was not detected in any of the samples above the reporting limit. As a result, it is likely that the mercury PSL exceedances that occurred during the first round of groundwater sampling are not representative of groundwater quality. The specific cause of the elevated mercury concentrations has not been determined, although a rinsate blank collected from one of the field filters did not exhibit detectable concentrations of mercury, so cross-contamination from sampling equipment does not appear to be the cause.

Dissolved copper groundwater concentrations exhibited significantly more elevated concentrations in samples collected from direct-push borings than in samples collected from monitoring wells. The average dissolved copper concentration for direct-push samples where dissolved copper was detected is 24.7 µg/L compared to 3.4 µg/L in groundwater samples collected from monitoring wells. The three highest dissolved copper groundwater concentrations also correspond to the three highest turbidity readings (see Tables 2 and 18). A similar trend is apparent in dissolved zinc concentrations, although none of the zinc concentrations exceed the PSL. These results support the conclusion that the elevated copper concentrations detected in groundwater samples collected from direct-push borings are an

artifact of the sampling process; because the samples were filtered, these elevated concentrations likely result from fine grained particulates that passed through the filter media, poor filter performance, or both.

3.2.3.2 Field Parameters

Conductivity, pH, temperature, turbidity, dissolved oxygen (DO), and oxidation/reduction potential (ORP) were measured in all monitoring wells and most direct-push borings from which groundwater samples were collected, as presented in Table 2. Some field parameters were not measured in some of the direct-push boring samples because insufficient water was present.

Conductivity ranged from 317 to 2472 micro-Siemens per centimeter (µS/cm). The highest conductivities were detected in groundwater samples collected from direct-push borings, which may be biased high due to the high turbidity present in these samples. Conductivity measured in groundwater collected from monitoring wells ranged from 317 to 1,975 µS/cm and was generally highest in groundwater samples collected from the shoreline wells.

Groundwater pH ranged from 5.93 to 8.76, but generally fell between 6.2 and 7.5. Turbidity ranged from 1.3 to 175 NTU in monitoring wells and 28.2 to greater than 1,000 NTU in groundwater samples collected from direct-push borings. Turbidity readings for direct-push samples were collected prior to filtration or centrifuging, so the turbidity data are not representative of the samples submitted for analysis.

Groundwater temperature ranged from 9.0 to 12.8 degrees Celsius in groundwater samples collected from monitoring wells and 6.95 to 14.5 degrees Celsius in groundwater samples collected from direct-push borings. The greater range in temperature in groundwater samples collected from direct-push borings may result from the influence of the ambient temperature of the temporary sampling equipment or the longer exposure of the groundwater samples to ambient air temperature due to the slower extraction rates associated with some of the direct-push sampling locations.

ORP ranged from -218 to 98.9 millivolt (mv). However, ORP was negative, indicating reduced groundwater conditions, in all but one sample collected during the first round of sampling and about half of the groundwater samples collected during the second round. The increase in the number of locations with positive ORP values during the second round of sampling is likely due to greater precipitation recharge, which contains higher oxygen concentrations than groundwater.

3.2.3.3 Area G

The purpose of the groundwater investigation in Area G was to characterize post-interim action groundwater quality, evaluate groundwater quality in areas of previous soil exceedances, and to evaluate general groundwater quality within and downgradient of operations areas. In Area G, two groundwater

samples were collected from direct-push borings (G-GC-100 and G-FA-113), two samples were collected from existing monitoring wells (SEE-EC-3 and P-10), and one sample was collected from a sump within the Ameron manufacturing building (sample collected via a sampling port installed by Ameron on the exterior of the manufacturing building). Samples were analyzed for a range of constituents including dissolved metals, TPH, SVOCs, and VOCs, as identified in Table 3.

A comparison of the results to the PSLs, presented in Tables 15 through 18, shows that TPH, SVOCs, and VOCs were not detected at concentrations greater than the PSLs in Area G. Dissolved arsenic concentrations exceeded the PSL (5 µg/L) in two of the five groundwater samples analyzed for metals (16.7 µg/L at P-10 and 256 µg/L at SEE-EC-3) during the initial round of groundwater sampling. SEE EC-3 was re-sampled for dissolved arsenic on February 22, 2011, and exhibited a significantly lower dissolved arsenic concentration of 35.6 µg/L for this second round of sampling.

SEE-EC-3 is located in the immediate vicinity of deposits of angular black sand (apparent sandblast media), which contains highly elevated arsenic concentrations. The occurrence of the apparent sandblast media could affect groundwater quality at SEE-EC-3, but it also may be due to reducing (low oxygen) conditions resulting from high organic content in the hydraulic fill and the presence of wood debris deposits. This geochemical process [conversion of arsenate ($As+^{5}$) to the more soluble arsenite ($As+^{3}$)] has occurred elsewhere in the North Marina Area, resulting in elevated arsenic groundwater concentrations through the mobilization of naturally occurring arsenic in the aquifer matrix.

As shown in Table 2, reduced groundwater conditions were measured at all groundwater monitoring wells sampled during the first round of RI groundwater monitoring and at about half the locations during the second round of groundwater monitoring. The concentration of arsenic at SEE-EC-3 decreased by almost an order of magnitude from the first to the second round of sampling and the ORP increased by a similar amount, which is consistent with elevated arsenic concentrations being related to groundwater reducing conditions. Regardless of the cause, dissolved arsenic is not migrating a significant distance downgradient from SEE-EC-3, as demonstrated by:

- The low dissolved arsenic concentration in the groundwater sample collected from I-FA-100 (0.984 µg/L), located less than 100 ft downgradient from SEE-EC-3
- The low concentration at I-FA-101 (< 1.0 ug/L), which is downgradient from G-FA-109 (where a substantial layer of the black sand was found), and
- The downgradient RI-MW-1 and RI-MW-2 water quality data (<1.0 µg/L and 1.6 µg/L respectively).

Dissolved copper concentrations exceeded the PSL (3.1 µg/L) at G-GC-100 (61.5 µg/L) and at P10 (5.23 µg/L). As discussed in Section 3.2.3.1, because the groundwater sample at G-GC-100 was collected from a direct-push boring rather than a monitoring well, it is likely the elevated copper concentration is an artifact of the sampling method and not representative of groundwater quality. This is

further supported by the high turbidity measured in the sample prior to filtration (551 NTU) and the observed condition of the groundwater sample at the time of collection, which exhibited a brown tint.

3.2.3.4 Area I

The purpose of the RI groundwater investigation in Area I was primarily characterization of groundwater quality near its point of discharge to surface water. Groundwater quality samples were also collected to evaluate post-interim action groundwater conditions in the area of observed concrete-like waste material and apparent sandblast media along the eastern boundary of Area I, and downgradient of current and historical operations in Area G. Samples were collected from three shoreline wells (RI-MW-1 through RI-MW-3) and from two direct-push borings in the eastern portion of Area I (I-FA-100 and I-FA-101).

Groundwater grab samples collected from the borings I-FA-100 and I-FA-101 were analyzed for dissolved metals and VOCs. VOCs were not detected at concentrations greater than the PSLs. Copper and mercury were detected in both of the samples at concentrations greater than the PSLs. The detected concentrations of copper at I-FA-100 and I-FA-101 were 5.75 µg/L and 7.15 µg/L, respectively, which slightly exceed the copper PSL. As described in Section 3.2.3.1, the copper concentrations detected in groundwater samples collected from direct-push borings appear to be biased high and not representative of groundwater quality.

Samples collected from the three shoreline monitoring wells were analyzed for dissolved metals, SVOCs, cPAHs, and VOCs. SVOCs (except for BEHP), cPAHs, and VOCs were not detected at concentrations greater than the PSLs. Copper was detected in shoreline well RI-MW-1 at a concentration of 4.35µg/L, which is slightly greater than the PSL (3.1 µg/L).

Mercury was detected in groundwater samples collected from direct-push borings I-FA-100 and I-FA-101 and each of the shoreline wells at concentrations ranging from 0.133 µg/L to 0.480 µg/L during the first round of groundwater sampling, which are greater than the PSL (0.1 µg/L). But, mercury was not detected above the reporting limit of 0.02 µg/L during the second round of sampling and, as previously discussed in Section 3.2.3.1, the mercury detections that occurred during the first round of groundwater monitoring do not appear to be representative of Site groundwater quality.

BEHP was detected in the sample from RI-MW-3 at a concentration of 6.8 µg/L during the second round of groundwater monitoring, which is greater than the PSL (2.2 µg/L). However, BEHP was not detected in the sample collected from RI-MW-3 during the first round of groundwater monitoring. Because BEHP is such a ubiquitous laboratory contaminant, it is possible that the BEHP exceedance in RI-MW-3 is the result of laboratory contamination.

3.2.3.5 Area J

RI groundwater quality monitoring was conducted in Area J to characterize post-interim action groundwater quality downgradient of the 1993 MSRC interim action area and interim action area J-3, and to evaluate groundwater quality in the area of former mill structures where petroleum hydrocarbons were observed in 2007 during construction associated with the Craftsman District. In addition, general characterization groundwater sampling was conducted in the eastern portion of Area J. Groundwater samples were collected from one monitoring well (RI-MW-4) and three direct-push borings (J-FA-100, J-FA-102, and J-GC-100).

Samples were analyzed for a range of constituents including TPH, dissolved metals, SVOCs, cPAHs, VOCs, and PCBs as indicated in Table 3. As is indicated in the tables, SVOCs, cPAHs, VOCs and PCBs were not detected in Area J groundwater samples at concentrations greater than the PSLs.

Copper was detected at three locations at concentrations greater than the PSL at concentrations ranging from 8.45 µg/L to 127 µg/L. All of the copper PSL exceedances occurred in samples collected from direct-push borings, which appear to exhibit biased high results that are not representative of groundwater quality, as previously discussed.

Arsenic and lead were detected at J-FA-100 at concentrations of 7.35 µg/L and 143 µg/L, respectively, which are greater than their respective PSLs of 5 µg/L and 8.1 µg/L. J-FA-100 is also the location where the highest copper concentration was detected (127 µg/L) in RI groundwater samples. The highly elevated concentrations of copper and lead detected in the sample collected from J-FA-100, combined with the high turbidity measured (greater than 1,000 NTU) and the brown color the sample exhibited at the time of sampling, support the conclusion that the elevated dissolved metals concentrations are associated with turbidity and are not be representative of groundwater quality.

Mercury was detected at RI-MW-4 at a concentration of 0.337 µg/L during the first round of sampling, which is greater than the PSL. Similar to other locations, mercury was below the reporting limit in the second round of groundwater sampling and the initial mercury exceedance is not considered representative of Site groundwater quality.

TPH was detected at two locations in Area J at concentrations greater than the PSLs. Diesel-range and heavy oil-range petroleum hydrocarbons were detected at J-FA-100 at concentrations of 881 µg/L and 2,240 µg/L, respectively, and heavy oil-range petroleum hydrocarbons were detected at RI-MW-4 at a concentration of 1,390 µg/L. The PSL for both diesel-range and heavy oil-range petroleum hydrocarbons is 500 µg/L. Neither sheen nor petroleum hydrocarbon odor was present at either location at the time of sampling. J-FA-100 is located in the vicinity of an area of petroleum impact observed to the north of the former MSRC building during construction associated with the Craftsman District. As

noted previously, the sample from J-FA-100 had high turbidity and was brown in color. Thus, the measured TPH concentrations may be due to particles entrained in the sample and not representative of actual groundwater quality, particularly for the less soluble TPH fractions.

RI-MW-4 is located downgradient of the 1993 MCRC interim action area. A groundwater sample was collected from RI-MW-4 during the second round of groundwater sampling on February 22, 2011 because evidence of petroleum hydrocarbon contamination was not observed during field screening, which was inconsistent with detection of oil-range petroleum hydrocarbons above the PCL in the groundwater sample collected during the first round of sampling. The sample was analyzed for TPH-Dx, which was not detected. These results suggest that the petroleum hydrocarbon exceedance detected at RI-MW-4 during the original round of sampling is not representative of groundwater quality.

3.2.3.6 Area M

RI groundwater quality monitoring was conducted in Area M to characterize groundwater quality downgradient of previous operational areas associated with the former mill, the Collins Building, and the marine/auto repair-related businesses along West Marine View Drive. In addition, general characterization groundwater sampling was conducted in previously uninvestigated areas located to the north and west of the former Collins Building and in the northeastern corner of the Site. Groundwater samples were collected from two monitoring wells (ECI-MW-3 and RI-MW-5) and 10 direct-push borings. Samples were analyzed for a range of constituents including TPH, dissolved metals, SVOCs, cPAHs, VOCs, and PCBs as indicated in Table 3.

As is indicated in the tables, SVOCs, cPAHs, VOCs and PCBs were not detected in Area M groundwater samples at concentrations greater than the PSLs. However, it should be noted that BEHP exceeded the PSL in monitoring wells ECI-MW-3 and RI-MW-5 in the original analysis prior to those results being rejected due to laboratory contamination (see Section 3.2). Copper was detected at M-FA-103 at a concentration of 3.20 µg/L, which is slightly greater than the PSL (3.1 µg/L). Arsenic was detected at concentrations greater than the PSL (5 µg/L) at locations M-GC-100 (9.80 µg/L), ECI-MW-3 (18.2 µg/L), and M-FA-104 (6.0 µg/L) in the northern portion of Area M.

Mercury was detected at concentrations greater than the PSL (0.1 µg/L) at M-GC-103 (1.09 µg/L) and at RI-MW-5 (0.125 µg/L) during the first round of groundwater sampling. As discussed in Section 3.2.3.1, a second round of groundwater monitoring was conducted due to anomalous results for mercury and other constituents, and a sample was collected from RI-MW-5 on February 22, 2011 during the second round of sampling. The sample was analyzed by ARI for mercury; mercury was not detected at a concentration greater than the laboratory reporting limit of 0.02 µg/L. Based on these results, it

appears that the elevated mercury concentration detected during the first round of monitoring may not be representative of groundwater quality.

It is important to note that dissolved copper was not detected in the groundwater sample collected from M-FA-102. Even though the soil sample collected from this location contained apparent sandblast media and exhibited a copper concentration of 1,410 mg/kg, and the sample was collected from below the groundwater table, the groundwater dissolved copper concentration was below the reporting limit of 0.5 µg/L. The combination of the dissolved copper groundwater concentration below the reporting limit and the highly elevated copper concentration in a soil sample collected from below the water table at the same location support the conclusion that the elevated concentrations of copper present in Site soil are not causing elevated copper concentrations in groundwater.

3.2.3.7 Norton Industries

Two groundwater samples were collected from the Norton Industries property, one sample was collected north of Area I (N-FA-100) and one sample was collected from north of Area G (N-FA-102). The samples were analyzed for dissolved metals (N-FA-100) and for TPH, SVOCs, cPAHs, VOCs, and PCBs (N-FA-102). TPH, SVOCs, cPAHs, VOCs, and PCBs were not detected at concentrations greater than the PSLs. Dissolved copper was detected in the samples at concentrations of 18.3 µg/L (N-FA-100) and 3.60 µg/L (N-FA-102), which slightly exceed the copper PSL of 3.1 µg/L.

3.2.4 CATCH BASIN SEDIMENT

The stormwater system investigation was focused on the evaluation of stormwater sediment collected from catch basins in areas of the Site with industrial activities, which included four locations along the trunk line and one location in the vicinity of the new Bayside Marine dry stack storage building that contributes to the trunk line. The main trunk line was likely installed circa 1981-1982 (Pinnacle GeoSciences 2010) and is composed of corrugated metal pipe. The main trunk line appears to suffer from ongoing corrosion and there have been two incidents of pipe collapse in recent years.

Catch basin sediment samples were analyzed for metals, SVOCs, TPH-Dx, percent solids, and PCBs. In addition, samples collected from catch basins along the northern Site boundary were analyzed for hexavalent chromium, a constituent possibly associated with Norton Industries. Analytical results for catch basin sediment samples are summarized in Table 19 (carbon normalized) and Table 20 (dry weight).

The quality of sediment accumulated in a functioning stormwater collection and conveyance system is not regulated under environmental regulations, other than the proper management for waste disposal purposes. However, since system stormwater discharges to the 12th Street Marina, the analytical

results for catch basin sediment samples were compared to SMS SQS and CSL criteria for marine sediment. Exceedances of the SMS criteria are summarized as follows:

- Arsenic (568 mg/kg) and copper (734 mg/kg) were detected in the sample collected from CB 111 at concentrations greater than the SQS and CSL. This is the last catch basin on the trunk line prior to discharge to the 12th Street Marina and receives stormwater from multiple locations.
- Zinc was detected in every sample at concentrations exceeding the SQS. Concentrations ranged from 869 mg/kg to 5,210 mg/kg. The detected concentrations exceed both the SQS and the CSL with the exception of the detected concentration of zinc in the sample from SD-7, which exceeds the SQS, but is less than the CSL. The highest zinc concentration (5,210 mg/kg) was detected at CB-101, which is located to the south of the trunk line in the vicinity of the Bayside Marine building; this elevated concentration could result from drainage from the Bayside Marine building metal roof, which is routed through CB-101, although the composition of the roof has not been determined.
- PAHs [fluorene (41 mg/kg OC), phenanthrene (207 mg/kg OC), and fluoranthene (208 mg/kg OC)] were detected in the sample collected from SD-3 at concentrations greater than the SQS. Multiple PAHs exceeded the dry weight criteria equivalent to the SMS SQS and CSL.
- Phthalates were detected in samples from four of the five catch basins at concentrations greater than the criteria (Table 19). Based on the issue with BEHP laboratory contamination identified in Site groundwater samples (see Section 2.3.5), there is a potential that some of the phthalate exceedances are associated with laboratory contamination. Benzyl butyl phthalate was detected in the sample collected from SD-3 at a concentration of 36.0 mg/kg, which is greater than the SQS. BEHP was detected in four catch basins at concentrations greater than the SQS and in two catch basins at concentrations greater than both the SQS and CSL. The detected concentrations greater than the criteria range from 49.1 mg/kg to 354 mg/kg. Di-n-octyl phthalate was detected in the sample collected from CB101 at a concentration of 166 mg/kg, which is greater than the SQS.
- Total PCBs were detected in the sample from SD-3 at a concentration of 1.7 mg/kg dry weight (12.7 mg/kg OC), which is essentially equal to the SQS (12 mg/kg OC). PCBs were not detected in any downgradient catch basins, suggesting that it is an isolated occurrence.
- TPH-D was detected in the samples from SD-3, SD-4, and SD-7. There are no SMS criteria for TPH-D. The detected concentrations are less than the PSLs for soil.

Comparison of dry weight data to the AETs results in similar constituent exceedances as the carbon-normalized data except that a number of SVOC constituents in the sample collected from SD-3, which had a TOC concentration of 13.2 percent, exceeded the AETs that did not exceed the SQS and CSL.

It should be noted that while many of the catch basins along the trunk line have been periodically cleaned out, significant sediment accumulation is present in the trunk line itself. Since the timing of sediment deposition in the trunk line is not known, but may predate the recently accumulated sediment in the catch basins, the sediment quality in the trunk line may vary from that in the catch basins.

It is also important to note that the sediment quality directly in front of the outfalls shows no evidence of impact from the constituents detected in the catch basin sediment at elevated concentrations, indicating that no significant release of stormwater sediment to marine sediment has occurred.

4.0 CONCLUSIONS AND RECOMMENDATIONS

Based on the results of the RI soil, groundwater, sediment, and catch basin sediment investigations presented in this report, conclusions regarding Site environmental condition and recommendations for addressing remaining RI data gaps are presented in the following sections.

4.1 CONCLUSIONS

Conclusions regarding Site conditions are presented in the following sections. Conclusions are subdivided into conclusions regarding physical and environmental conditions.

4.1.1 GEOLOGY/ HYDROGEOLOGY

Site geologic and hydrogeologic conditions encountered during the RI are generally consistent with those anticipated based on previous investigations:

- Most of the Site is paved and is generally underlain by a near-surface sand and/or gravel trafficking layer. General Fill and waste materials are mostly found at shallow depths of between 1 and 7 ft BGS.
- Hydraulic dredge fill underlies the pavement, General Fill and waste materials to depths of about 18 to 20 ft BGS.
- Native marine sediment underlies the hydraulic fill, and is sometimes identified by a black, organic silt layer, with soil composition similar in nature to the hydraulic fill.
- Groundwater generally flows to the west within the hydraulic dredge fill, toward Port Gardner Bay, although groundwater in the northeast corner of the Site appears to be locally affected by the groundwater sump that is operated in the Ameron Manufacturing Building.

4.1.2 ENVIRONMENTAL CONDITIONS

The environmental conditions encountered during the RI are consistent with expectations based on previous investigations and observations during the interim action. General and specific conclusions regarding environmental conditions are presented by media in the following sections.

4.1.2.1 Marine Sediment

None of the six samples of Site marine sediment, which included samples collected in the vicinity of outfalls that discharge to the aquatic portion of the Site, exceeded SMS, the related AETs, or the DMMP dioxins/furans criteria for open water disposal. These results are consistent with other recent sediment quality characterization in the 12th Street Marina.

4.1.2.2 Groundwater

No RI groundwater sample exceeded the PSLs for any VOC, cPAH, or PCB compound. No SVOC compound exceeded the groundwater PSLs except for a single BEHP exceedance. Confirmed exceedances of the groundwater PSLs on the Site are limited to dissolved arsenic and copper. Petroleum hydrocarbons in the diesel and/or oil ranges were exceeded in two samples. Specific conclusions regarding groundwater conditions at the Site are as follows:

- Arsenic groundwater contamination appears to be associated with reducing conditions in groundwater leaching naturally occurring arsenic from the aquifer matrix. This conclusion is supported by the presence of reduced groundwater conditions throughout the Site, and the lack of correlation between the locations of arsenic soil contamination and the location of arsenic groundwater contamination. Regardless of the cause of Site arsenic groundwater contamination, it does not appear to be migrating significant distances and is not present in monitoring wells located in the vicinity of the shoreline.
- Although mercury was detected above the PSL in a number of groundwater samples during the first round of sampling, the lack of detectable mercury concentrations in the second round of sampling indicates that the exceedances were likely the result of laboratory error, or some other factor that resulted in the anomalous and unreproducible elevated mercury groundwater concentrations detected during the first round of monitoring.
- Groundwater analytical results for copper and lead, and possibly oil- and diesel-range petroleum hydrocarbons, appeared to be biased high in samples collected from direct-push borings. Copper slightly exceeded the groundwater PSL in two of eight monitoring wells. However, highly elevated copper concentrations were detected in a number of direct-push groundwater samples, and the three highest copper groundwater concentrations correlate to the three highest turbidity readings. Similarly, the only exceedance of the lead and diesel-range petroleum hydrocarbon groundwater PSLs, and the highest oil-range petroleum hydrocarbon PSL, are associated with the direct-push boring that exhibited the highest turbidity reading.
- Because of the absence of detectable concentrations of petroleum hydrocarbons at RI-MW-4 during the second groundwater monitoring event, the single exceedance may not be representative of groundwater quality in this area.
- Because BEHP is a common lab contaminant, and was only detected in one of two sampling events at one location (RI-MW-3), the single exceedance may be the result of lab contamination and not representative of groundwater quality.

4.1.2.3 Soil

No soil samples collected from the Site exceeded the soil PSLs for VOCs, SVOCs (except cPAHs), or PCBs, although the PSLs for some of these constituents were exceeded in soil samples collected from the Norton Industries property (as discussed below). In general, soil contamination was limited to those areas where contamination was anticipated based on existing analytical data, observations during the 2006 interim action, and the results of the historical review. Site soil contamination primarily consisted of heavy metals contamination (antimony, arsenic, lead, and possibly copper) and limited areas

of diesel- and oil-range petroleum hydrocarbon contamination. Additionally, one sample (M-FA-102) exceeded the cPAHs soil PSL by a factor of less than two, but more significant exceedances of metals PSLs were detected in the same sample. Specific conclusions regarding soil conditions at the Site are as follows:

- Highly elevated metals concentrations in soil are all associated with samples collected from locations where apparent sandblast media is present. Low level metals contamination is primarily associated with apparent concrete slurry waste material. Low level soil metals contamination not associated with visible evidence of waste materials was only encountered at three locations in Area M.
- Soil concentrations exceeding the PSLs were only encountered in one of 19 general characterization (GC) locations, supporting the conclusion that soil contamination is limited to areas that were either known or suspected to have been impacted by past Site releases based on previous observations and the results of the historical review.
- Gasoline-range petroleum hydrocarbons, PCBs, and cPAHs contamination was detected at one location on the Norton Industries property. These constituents did not exceed the PSLs at any locations on the Site, except for a single cPAHs exceedance at the southern end of the Site. The presence of these hazardous substances in this area appears to be unrelated to Site releases.
- Copper is considered a possible soil contaminant because copper concentrations exceeded the PSL based on protection of groundwater at a number of locations. However, no copper soil concentration exceeded the PSL based on direct contact. Because the presence of copper in groundwater above the PSL has not been confirmed, copper is only considered a potential soil COC.

4.1.2.4 Catch Basin Sediment

Sediment in the catch basins exhibited concentrations greater than SMS marine sediment criteria for some metals, SVOCs, and PCBs. SMS criteria, although not applicable for regulatory purposes, were used for screening catch basin sediment to evaluate the need for source control activities. The constituents present at elevated concentrations in catch basin sediment were not detected in marine sediment at concentrations greater than the SMS criteria.

A summary of the constituents detected in the catch basin samples is as follows:

- Elevated zinc concentrations were encountered in all catch basin sediment samples. The highest zinc concentration was detected in catch basin CB-101, which is located to the south of the trunk line adjacent to the Bayside Marine building.
- Highly elevated arsenic was only detected in catch basin CB-111, which is the catch basin located the farthest downgradient on the trunk line and closest to the outfall.
- PCBs and a number of SVOCs (mostly PAHs) exhibited elevated concentrations in the sediment sample collected from catch basin SD-3, the farthest upgradient catch basin of those sampled. Many of the same SVOCs were detected in the next catch basin downgradient, but at much lower concentrations, indicating that the source of elevated SVOC and PCB concentrations is in the vicinity, or upgradient of, SD-3. The significantly lower concentrations in the downgradient catch basin sediment samples suggest that the oil/water separator downgradient of SD-3 is functioning properly.

4.2 RECOMMENDATIONS

Based on the conclusions presented in the preceding section, the following additional RI activities are recommended to address the remaining data gaps that need to be filled to adequately delineate the nature and extent of Site contamination:

- No further evaluation of Site sediment quality is warranted
- Install one monitoring well downgradient from direct-push location J-FA-100 and sample for dissolved metals and petroleum hydrocarbons to evaluate whether the PSL exceedances measured in the groundwater samples collected from the direct-push borings are representative of groundwater quality in this area.
- Install one monitoring well in the vicinity of G-GC-100 and sample for dissolved copper to evaluate whether the copper PSL exceedances measured in the groundwater samples collected from the direct-push borings are representative of groundwater quality in this area
- Collect an additional round of groundwater samples from all existing wells and analyze for those constituents that exceeded the PSLs at each location to confirm results.
- Collect and analyze one or more surface water samples for copper and arsenic to establish background surface water quality in the vicinity or the three shoreline wells.
- Advance two shallow soil borings in the northwestern portion of Area G to evaluate the lateral bounds of metals in surface soil in the vicinity of G-FA-100 and to evaluate the vertical extent of metals in the vicinity of G-FA-105.
- Advance two shallow borings in the vicinity of M-GC-102 and two shallow borings in the vicinity of M-FA-103 to evaluate the lateral bounds of metals in shallow soil.
- Advance two soil borings to evaluate the lateral bounds of metals and cPAHs contamination in subsurface soil in the vicinity of M-FA-102
- Collect and test sediment samples from the stormwater trunk line to evaluate whether sediment quality varies from that present in catch basin sediment.

5.0 USE OF THIS DOCUMENT

This report has been prepared for the exclusive use of the Port of Everett for specific application to the North Marina Ameron/Hulbert RI/FS Project. No other party is entitled to rely on the information, conclusions, and recommendations included in this document without the express written consent of the Port and Landau Associates. Further, the reuse of information, conclusions, and recommendations provided herein for extensions of the project or for any other project, without review and authorization by the Port and Landau Associates, shall be at the user's sole risk. Landau Associates warrants that within the limitations of scope, schedule, and budget, our services have been provided in a manner consistent with that level of care and skill ordinarily exercised by members of the profession currently practicing in the same locality under similar conditions as this project. We make no other warranty, either express or implied.

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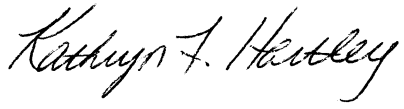
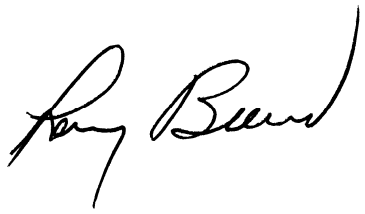


Kathryn F. Hartley
Senior Project Scientist



Lawrence D. Beard, P.E., L.G.
Principal

LDB/ KFH/tam

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Miles

Data Source: ESRI 2008

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North Marina Ameron/Hulbert Site RI/FS Work Plan Everett, Washington	**Vicinity Map**	Figure 1

Legend

J — Investigation Area Designation and Boundary

Riparian and Intertidal Habitat Bench

Approximate North Marina Ameron/Hulbert Site Boundary

Note
1. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

0 160 320
Scale in Feet

Data Source: Google Earth Pro (2011 Image)

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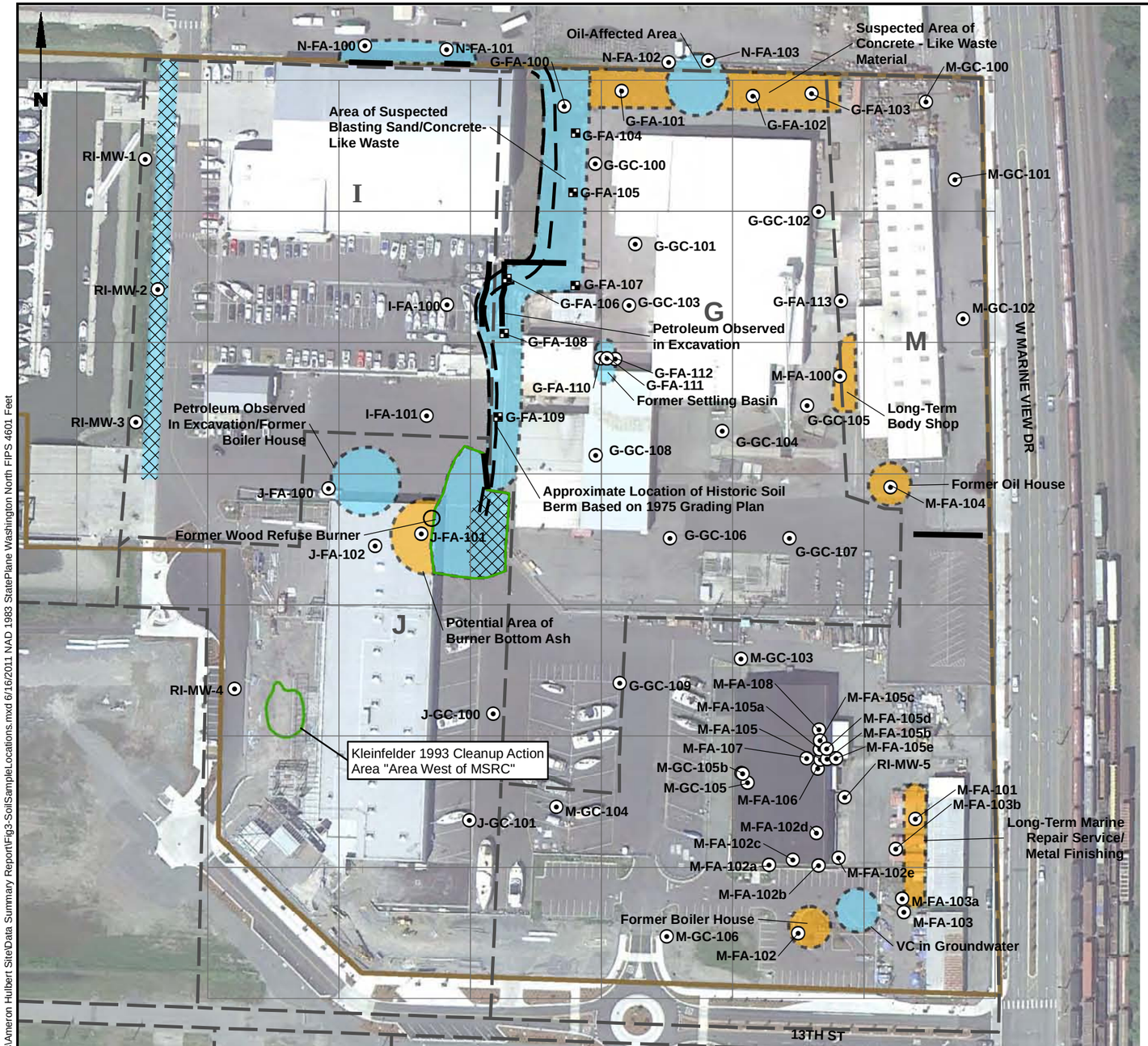
North Marina Ameron/Hulbert Site Data Summary Report Port of Everett, Washington	**Current Site Features**	Figure 2

Y:\Projects\147029\Mapdocs\Ameron Hulbert Site\Data Summary Report\Fig2-Current Site Features.mxd 3/31/2011



Legend

- Soil Boring Location
- Test Pit Location
- Residual Contamination Present at Excavation Sidewall
- Arsenic - affected crushed rock containment Area
- Characterization in Areas of Known Contamination
- Characterization in Areas of Potential Contamination
- 150' Sample Grid
- Approximate Ameron/Hulbert Site Boundary
- **G** - Area Designation

0 150 300

Scale in Feet

Note

1. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

Data Source: Google Earth Pro (2011 Image)

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LANDAU ASSOCIATES

North Marina Ameron/Hulbert Site Data Summary Report Port of Everett, Washington	**Soil Sample Locations**	Figure 3

N

Outfall
Outfall
Outfall
Outfall
Outfall
Outfall
Outfall

A/H-SED-5
A/H-SED-7
A/H-SED-1
A/H-SED-2
A/H-SED-3
A/H-SED-6
A/H-SED-8
A2-13
A/H-SED-4

RI-SED-7
RI-SED-6
RI-SED-5
RI-SED-4
RI-SED-3
RI-SED-2
RI-SED-1
RI-SED-8
RI-SED-9

CB110
CB111
CB109
CB108
CB101
CB103
Storm Filter Treatment System
Stormwater Pre-treatment
CB102
CB105
CB104
CB107
Trench Drain
CB106
CB
Capped for Future Development
To Sanitary Sewer
Initial Treatment System
CB114
By Pass to Outfall
CB115
CB
CB201
CB203
CB202
CB
CB
CB219
CB204
CB205
CB206
CB207
CB208
CB209
CB210
CB214
CB212
CB211

SD-7
SD-6
SD-5
SD-4
OWS
SD-8
SD-16
SD-15
SD-3
GW-1
SD-9
SD-2
SD-14
SD-1
SD-10
SD-13
SD-12
SD-11

G
M
J

13TH ST

Legend

- Sediment Sampling Locations
- Samples Archived for Potential Laboratory Analysis
- Catch Basin Sediment Sampling Location
- Landau Associates Sediment Sampling Locations (2009)
- SAIC Sediment Sample Location (2009)
- Catch Basin and Piping
- Approximate Ameron/Hulbert Site Boundary
- G - Area Designation

Note

1. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

0 150 300

Scale in Feet

Data Source: Google Earth Pro (2011 Image)

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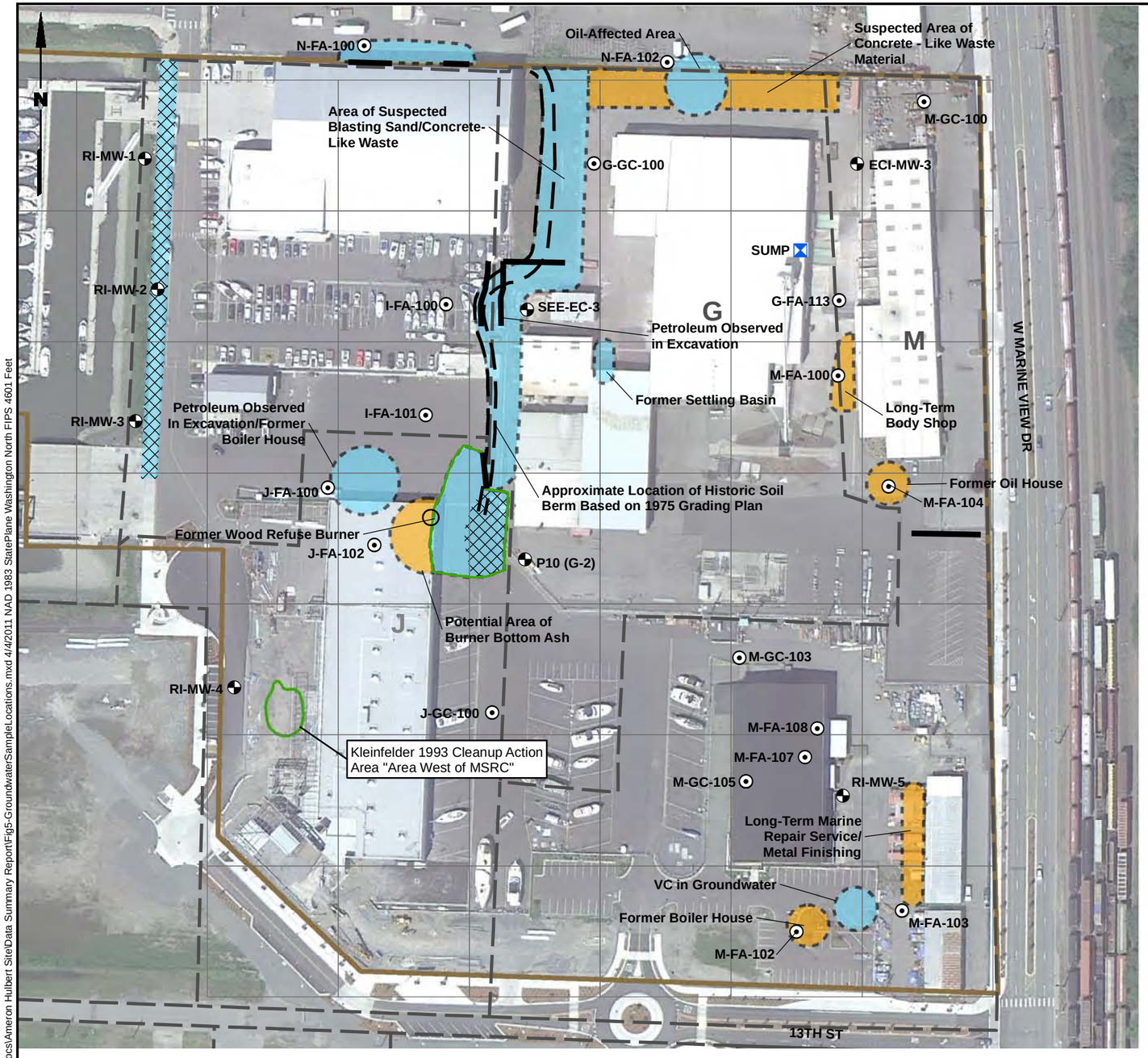
North Marina Ameron/Hulbert Site Data Summary Report Port of Everett, Washington	**Sediment and Catch Basin Sample Locations**	Figure 4

Y:\Projects\147029\Mapdocs\Ameron Hulbert Site\Data Summary Report\Fig-4_Sediment and CatchBasin Locations.mxd 4/4/2011 NAD 1983 StatePlane Washington North FIPS 4601 Feet



Legend

- Groundwater Monitoring Well Locations
- Groundwater Borehole Sample Location
- Sump Sample Location
- Residual Contamination Present at Excavation Sidewall
- Arsenic - Affected Crushed Rock Containment Area
- Characterization in Areas of Known Contamination
- Characterization in Areas of Potential Contamination
- 150' Sample Grid
- Approximate Ameron/Hulbert Site Boundary
- G - Area Designation

0 150 300

Scale in Feet

Note

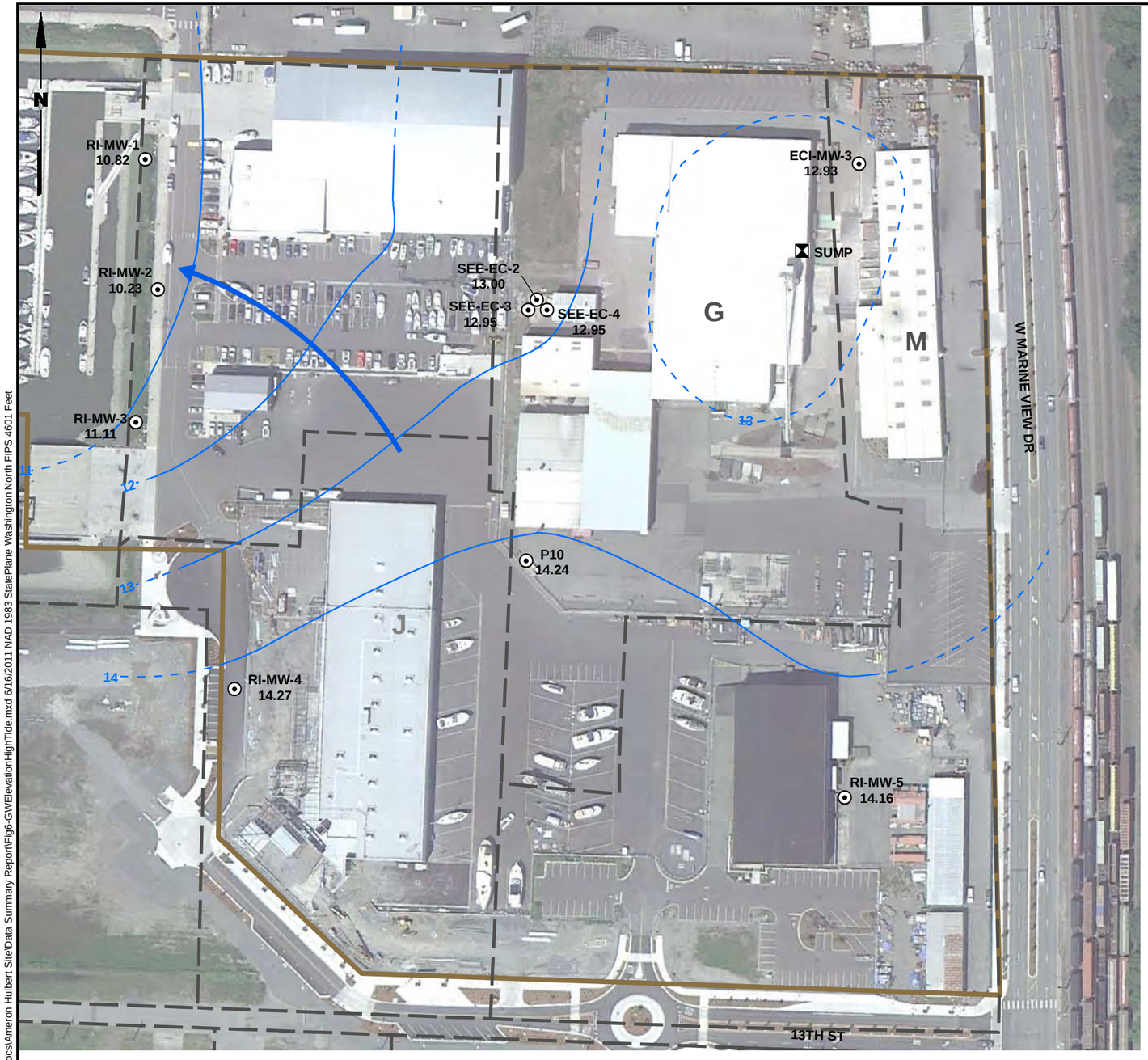
1. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

Data Source: Google Earth Pro (2011 Image)

Y:\Projects\147029\Mapdocs\Ameron Hulbert Site\Data Summary Report\Fig5-GroundwaterSampleLocations.mxd 4/4/2011 NAD 1983 StatePlane Washington North FIPS 4601 Feet

LANDAU ASSOCIATES

North Marina Ameron/Hulbert Site Data Summary Report Port of Everett, Washington	**Groundwater Sample Locations**	Figure 5



Legend

- RI-MW-5 / 14.16 — Groundwater Sample Location and Elevation (ft)
- AGI & Earth Consultants, Inc. Concrete Settling Basin Sump Sample Location (1992)
- Groundwater Elevation Contour (ft)
- Approximate Ameron/Hulbert Site Boundary
- G - Area Designation
- Estimated Direction of Groundwater Flow

0 150 300

Scale in Feet

Note

1. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.
2. Groundwater monitoring data recorded on 1/19/2011 between 15:00 and 15:45.
3. All water level data used in commutation of groundwater contours except SEE-EC-2 and SEE-EC-4.

Data Source: Google Earth Pro (2011 Image)

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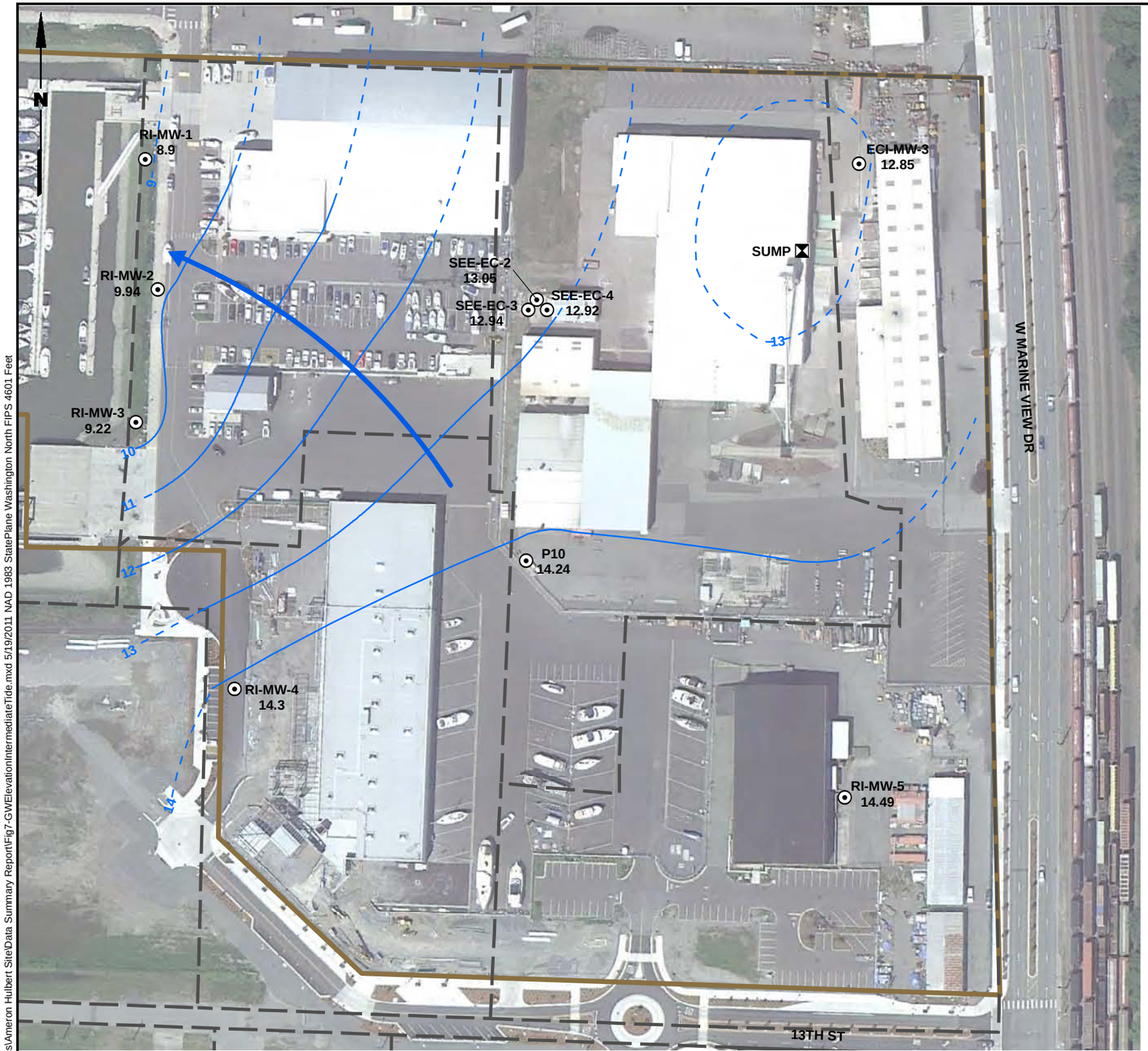
North Marina Ameron/Hulbert Site Data Summary Report Port of Everett, Washington	**Groundwater Elevation Contour Map - High Tide January 19, 2011**	Figure 6



Legend

- RI-MW-5 / 14.49 — Groundwater Sample Location and Elevation (ft)
- AGI & Earth Consultants, Inc. Concrete Settling Basin Sump Sample Location (1992)
- Groundwater Elevation Contour (ft)
- Approximate Ameron/Hulbert Site Boundary
- G - Area Designation
- Estimated Direction of Groundwater Flow

0 150 300

Scale in Feet

Note

1. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.
2. Groundwater monitoring data recorded on 1/19/2011 between 10:10 and 11:00.
3. All water level data used in commutation of groundwater contours except SEE-EC-2 and SEE-EC-4.

Data Source: Google Earth Pro (2011 Image)

Y:\Projects\147029\Mapdocs\Ameron Hulbert Site\Data Summary Report\Fig7-GWElevationIntermediateTide.mxd 5/19/2011 NAD 1983 StatePlane Washington North FIPS 4601 Feet

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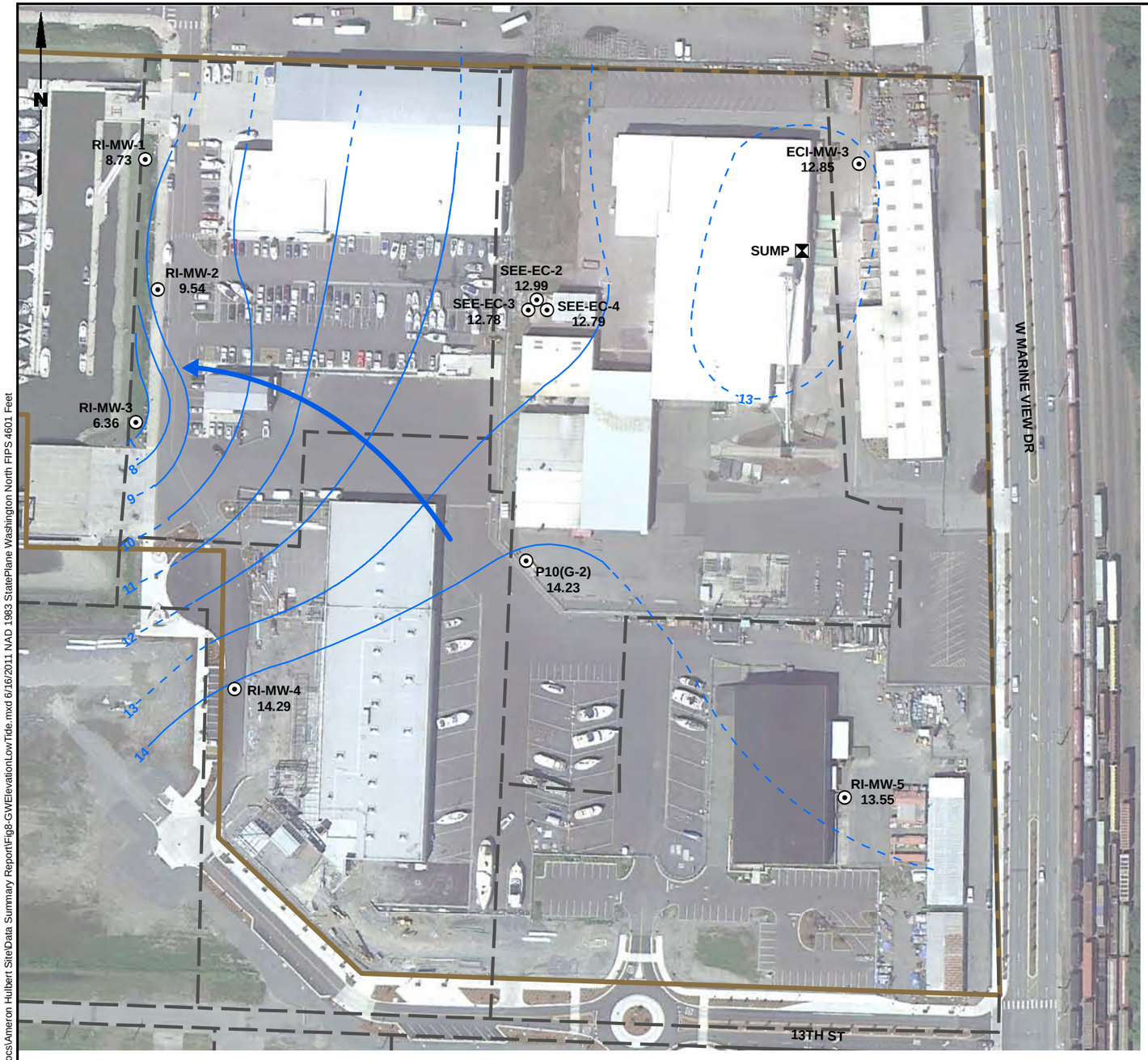
North Marina Ameron/Hulbert Site Data Summary Report Port of Everett, Washington	**Groundwater Elevation Contour Map - Intermediate Tide January 19, 2011**	Figure 7



Legend

- RI-MW-5 13.55 — Groundwater Sample Location and Elevation (ft)
- AGI & Earth Consultants, Inc. Concrete Settling Basin Sump Sample Location (1992)
- Groundwater Elevation Contour (ft)
- Approximate Ameron/Hulbert Site Boundary
- G - Area Designation
- Estimated Direction of Groundwater Flow

0 150 300

Scale in Feet

Note

1. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.
2. Groundwater monitoring data recorded on 2/22/2011 between 13:00 and 14:00.
3. All water level data used in commutation of groundwater contours except SEE-EC-2 and SEE-EC-4.

Data Source: Port of Everett (2009 Image)

Y:\Projects\147029\Mapdocs\Ameron Hulbert Site\Data Summary Report\Fig8-GWElevationLowTide.mxd 6/16/2011 NAD 1983 StatePlane Washington North FIPS 4601 Feet

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North Marina Ameron/Hulbert Site Data Summary Report Port of Everett, Washington	**Groundwater Elevation Contour Map - Low Tide February 22, 2011**	Figure 8

Y:\Projects\147029\Mapdocs\Ameron Hulbert Site\Data Summary Report\Fig9-AnalyticalResultsSoilRevised.mxd 6/16/2011 NAD 1983 StatePlane Washington North FIPS 4601 Feet

Legend

- Soil Sample Results Exceed Preliminary Screening Level, Only Cu is Greater than 3x the Preliminary Screening Level
- Soil Sample with a Concentration Greater than 3x the Preliminary Screening Level
- Soil Sample Exceeded Preliminary Screening Level - Represents Soil Remaining
- Soil Sample Exceeds Copper Preliminary Screening Level Based on Protection of Groundwater - Represents Soil Remaining
- Soil Sample Below Preliminary Screening Level
- Soil Sample With No Analytical Data
- Previous Soil Sample Exceeded Preliminary Screening Level - Constituent that exceeds is noted below sample name - Represents Soil Remaining
- Previous Soil Sample Below Preliminary Screening Levels - Represents Soil Remaining
- Previous Soil Sample Exceeds Copper Preliminary Screening Level - Represents Soil Remaining
- Previous Soil Sample Locations with No Analytical Data

- 150' Sample Grid
- Approximate Ameron/Hulbert Site Boundary
- G - Area Designation

0 150 300

Scale in Feet

Data Source: Port of Everett (2009 Image)

Note

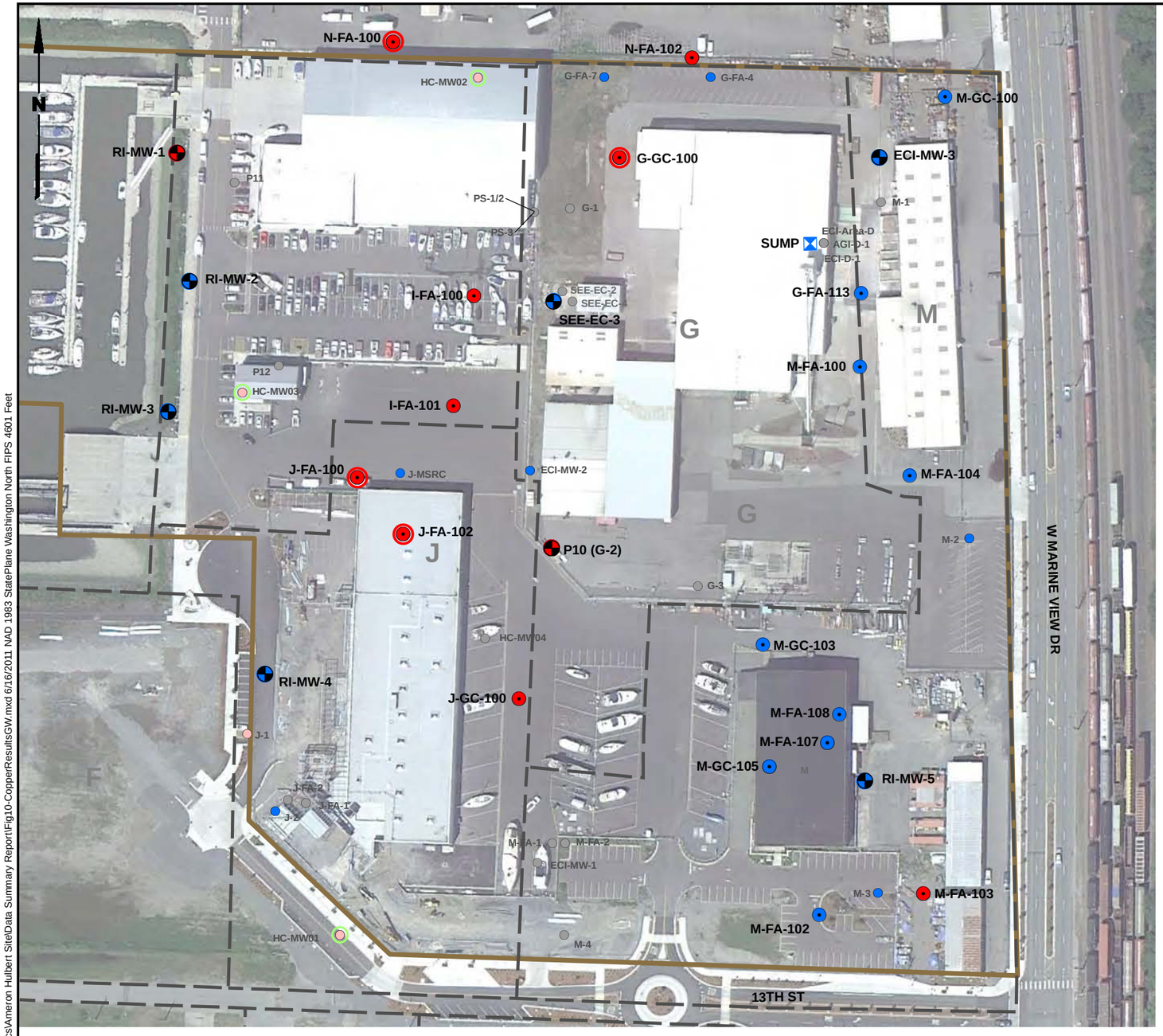
1. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.
2. As = Arsenic; Cu = Copper; CPAH = Carcinogenic polycyclic aromatic hydrocarbons VC = Vinyl Chloride; Pb = Lead; TCE = Trichloroethene; GRO = Gasoline-Range Organics; DRO = Diesel-Range Organics
3. Analytes in red text are present at a concentration greater than 3x the Preliminary Screening Level.

LANDAU ASSOCIATES

North Marina Ameron/Hulbert Site
Data Summary Report
Port of Everett, Washington

Soil Analytical Results

Figure
9



Legend

- Monitoring Well
- Soil Boring
- Previous Groundwater Sample Exceeded Preliminary Screening Level - (Only exceedances in dissolved concentrations are shown).
- Previous Groundwater Sample Locations with No Analytical Data
- Groundwater Sample with a Concentration Greater than 3x the Preliminary Screening Level
- Groundwater Sample Exceeds Preliminary Screening Level (3.1 µg/L) - (Only exceedances in dissolved concentrations are shown).
- Groundwater Sample Does Not Exceed Preliminary Screening Level For Copper
- Approximate North Marina Ameron/Hulbert Site Boundary
- **G** - Area Designation

0 150 300

Scale in Feet

Note

1. **Black** text indicates RI well or boring groundwater sampling locations
   Gray text indicates former well or groundwater sampling locations.
2. Cu = Copper
3. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

Data Source: 6/19/2002 Google Earth Image

Y:\Projects\147029\Mapdocs\Ameron Hulbert Site\Data Summary Report\Fig10-CopperResultsGW.mxd 6/16/2011 NAD 1983 StatePlane Washington North FIPS 4601 Feet

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North Marina Ameron/Hulbert Site Data Summary Report Port of Everett, Washington	**Groundwater Analytical Results for Copper**	Figure 10

Y:\Projects\147029\Mapdocs\Ameron Hulbert Site\Data Summary Report\Fig11-ArsenicResultsGW.mxd 6/8/2011 NAD 1983 StatePlane Washington North FIPS 4601 Feet

Legend

- Monitoring Well
- Soil Boring
- Previous Groundwater Sample Exceeded Preliminary Screening Level - Constituent that exceeds is noted below sample name (for metals analyses, only exceedances in dissolved concentrations are shown).
- Previous Groundwater Sample Locations with No Analytical Data
- Groundwater Sample with a Concentration Greater than 3x the Preliminary Screening Level
- Groundwater Sample Exceeds Preliminary Screening Level (20 µg/L) - (Only exceedances in dissolved concentrations are shown).
- Groundwater Sample Does Not Exceed Preliminary Screening Level for Arsenic
- Approximate North Marina Ameron/Hulbert Site Boundary
- G - Area Designation

0 150 300

Scale in Feet

Note

1. **Black** text indicates RI well or boring groundwater sampling locations
   Gray text indicates former well or groundwater sampling locations.
2. As = Arsenic
3. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

Data Source: 6/19/2002 Google Earth Image

LANDAU ASSOCIATES

North Marina Ameron/Hulbert Site Data Summary Report Port of Everett, Washington	**Groundwater Analytical Results for Arsenic**	Figure 11

TABLE 1
SOIL CHARACTERIZATION SAMPLE ANALYSIS GRID
AMERON/HULBERT RI/FS
PORT OF EVERETT

Sample Name	Depth Range	Date Collected	Area ID	Sample Type	Metals	PAH	cPAHs	PCBs	TPH-Gx TPH-Dx	TPH-HCID	SVOCs	VOCs	Dioxins / Furans	pH	TOC
G-FA-100	(0-1)	11/30/2010	G	Boring	X										
G-FA-100	(1-2)	11/30/2010	G	Boring	X										
G-FA-101	(4.5-5.5)	11/30/2010	G	Boring	X		X							X	
G-FA-101	(10.5-11.5)	11/30/2010	G	Boring	X										
G-FA-102	(3-4)	11/30/2010	G	Boring	X		X							X	
G-FA-103	(1-2)	11/30/2010	G	Boring	X		X							X	
G-FA-103	(5.5-6.5)	11/30/2010	G	Boring	X		X		X			X		X	
G-FA-103	(8-9)	11/30/2010	G	Boring	X										
G-FA-104	(0-1)	12/6/2010	G	Test Pit	X										
G-FA-104	(1-2)	12/6/2010	G	Test Pit	X										
G-FA-105	(0.3-0.8)	12/6/2010	G	Test Pit	X										
G-FA-105	(1-2)	12/6/2010	G	Test Pit	X										
G-FA-106	(1-1.2)	12/6/2010	G	Test Pit	X										
G-FA-106	(1-1.5)	12/6/2010	G	Test Pit	X										
G-FA-106	(3-3.5)	12/6/2010	G	Test Pit	X									X	
G-FA-107	(0-1)	12/6/2010	G	Test Pit	X		X								
G-FA-107	(1-2)	12/6/2010	G	Test Pit	X										
G-FA-108A	(0-1)	12/6/2010	G	Test Pit	X										
G-FA-108B	(0-1)	12/6/2010	G	Test Pit	X										
G-FA-108	(1-2)	12/6/2010	G	Test Pit	X										
G-FA-109	(0.5-1)	12/6/2010	G	Test Pit	X										
G-FA-109	(1-2)	12/6/2010	G	Test Pit	X										
G-FA-110	(3.5-4.5)	12/20/2010	G	Boring	X										
G-FA-111	(2-3)	12/20/2010	G	Boring	X										
G-FA-112	(3-4)	12/20/2010	G	Boring	X										
G-FA-113	(1-2)	11/22/2010	G	Boring	X		X								
G-FA-113	(3-4)	11/22/2010	G	Boring	X		X		X						
G-GC-100	(1.5-2.5)	12/20/2010	G	Boring	X		X		X						
G-GC-100	(2.5-3.5)	12/20/2010	G	Boring	X										
G-GC-101	(0.2-1.2)	12/20/2010	G	Boring	X		X								
G-GC-102	(1.5-2.5)	12/20/2010	G	Boring	X		X								

TABLE 1
SOIL CHARACTERIZATION SAMPLE ANALYSIS GRID
AMERON/HULBERT RI/FS
PORT OF EVERETT

Sample Name	Depth Range	Date Collected	Area ID	Sample Type	Metals	PAH	cPAHs	PCBs	TPH-Gx TPH-Dx	TPH-HCID	SVOCs	VOCs	Dioxins / Furans	pH	TOC
G-GC-103	(0.2-1.2)	12/20/2010	G	Boring	X		X								
G-GC-103	(7.2-8.2)	12/20/2010	G	Boring											X
G-GC-104	(0.2-1.2)	12/20/2010	G	Boring	X		X		X						
G-GC-105	(1-2)	11/22/2010	G	Boring	X			X			X				
G-GC-106	(1-2)	11/22/2010	G	Boring	X		X								
G-GC-107	(1-2)	11/22/2010	G	Boring	X		X								
G-GC-108	(0.2-1.2)	12/20/2010	G	Boring	X		X								
G-GC-109	(1-2)	11/29/2010	G	Boring	X						X				
I-FA-100	(3-4)	12/17/2010	I	Boring	X										
RI-MW-2	(10-11)	12/8/2010	I	Monitoring Well											X
J-FA-100	(5-6)	11/29/2010	J	Boring	X			X	X		X				
J-FA-101	(28-29)	11/29/2010	J	Boring	X		X		X				X		
J-FA-102	(14-15)	11/29/2010	J	Boring	X		X								
J-FA-102	(19-20)	11/29/2010	J	Boring	X										
J-GC-100	(1-2)	11/29/2010	J	Boring	X		X								
J-GC-101	(1-2)	11/29/2010	J	Boring	X		X								
M-FA-100	(1-2)	11/22/2010	M	Boring	X		X								
M-FA-101	(0-1)	12/17/2010	M	Boring	X										
M-FA-101	(1-2)	12/17/2010	M	Boring	X										
M-FA-102	(7-7.5)	12/1/2010	M	Boring	X			X			X				
M-FA-102	(9-10)	12/1/2010	M	Boring	X		X								
M-FA-103	(1-2)	12/2/2010	M	Boring	X										
M-FA-103	(2-3)	12/2/2010	M	Boring	X										
M-FA-104	(0.5-1.5)	11/22/2010	M	Boring	X		X		X						
M-FA-105	(0-1)	1/28/2011	M	Boring	X			X	X (Dx, EPH)	X	X				
M-FA-105	(4-5)	1/28/2011	M	Boring					X						
M-FA-106	(0-1)	1/28/2011	M	Boring		X		X		X					
M-FA-107	(0-1)	1/28/2011	M	Boring		X		X		X					
M-FA-108	(0-1)	1/28/2011	M	Boring		X		X		X					
M-GC-100	(1-2)	11/30/2010	M	Boring	X			X			X				
M-GC-101	(1-2)	11/30/2010	M	Boring	X		X								

TABLE 1
SOIL CHARACTERIZATION SAMPLE ANALYSIS GRID
AMERON/HULBERT RI/FS
PORT OF EVERETT

Sample Name	Depth Range	Date Collected	Area ID	Sample Type	Metals	PAH	cPAHs	PCBs	TPH-Gx TPH-Dx	TPH-HCID	SVOCs	VOCs	Dioxins / Furans	pH	TOC
M-GC-102	(1-2)	11/30/2010	M	Boring	X		X								
M-GC-102	(2-3)	11/30/2010	M	Boring	X										
M-GC-102	(7-8)	11/30/2010	M	Boring											X
M-GC-103	(1-2)	12/17/2010	M	Boring	X		X								
M-GC-104	(1.5-2.5)	12/2/2010	M	Boring	X		X								
M-GC-105	(0-0.2)	1/28/2011	M	Boring	X			X	X (Dx)	X	X				
M-GC-105	(0.5-1.5)	1/28/2011	M	Boring					X (Dx)						
M-GC-105	(4-5)	1/28/2011	M	Boring					X (Dx)						
M-GC-106	(0-1)	12/2/2010	M	Boring			X								
N-FA-100	(0.3-1.3)	12/1/2010	N	Boring	X										
N-FA-100	(1.3-2.3)	12/1/2010	N	Boring	X										
N-FA-101	(3-4)	12/1/2010	N	Boring	X									X	
N-FA-101	(4-5)	12/1/2010	N	Boring	X										
N-FA-102	(2-3)	12/1/2010	N	Boring	X			X	X		X	X			
N-FA-103	(1.3-2.3)	12/1/2010	N	Boring	X										
N-FA-103B	(6.3-7.3)	12/1/2010	N	Boring	X			X	X		X	X			
N-FA-103B	(10.3-11.3)	12/1/2010	N	Boring	X				X						
RI-MW-5	(0-1)	12/7/2010	M	Monitoring Well	X		X								
M-FA-105a (0-1)	(0-1)	3/18/2011	M	Boring					X						
M-FA-105b (0-1)	(0-1)	3/18/2011	M	Boring					X						
M-GC-105b (0-1)	(0-1)	3/18/2011	M	Boring	X[(b)]										
M-FA-102a (0-1)	(0-1)	3/18/2011	M	Boring	X										
M-FA-102b (0-1)	(0-1)	3/18/2011	M	Boring	X				X						
M-FA-102c (0-1)	(0-1)	3/19/2011	M	Boring	X				X						
M-FA-102d (0-1)	(0-1)	3/20/2011	M	Boring	X				X						
M-FA-102e (0-1)	(0-1)	3/21/2011	M	Boring	X				X						
M-FA-103a (0-1)	(0-1)	3/18/2011	M	Boring	X										

(a) PZ-10 is located at P-10. PZ-10 was taken during the drilling for the P-10 monitoring well.

(b) Sample M-GC-105b (0-1) Metals analyzed for Toxicity Characteristic Leaching Procedure (TCLP) only

TABLE 2
GROUNDWATER MONITORING FIELD PARAMETERS FOR 2010-2011
AMERON-HULBERT RI/FS
PORT OF EVERETT

Sample Location	Date Sampled	pH	Conductivity (µS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature (degrees C)	Oxygen Reduction Potential (mv)
MONITORING WELLS:							
ECI-MW-3	12/15/2010	6.44	474	8.46	0.8	11.35	-98.0
	2/22/2011	5.93	317	45.5	2.01	9.29	33.8
P10 (0-2)	12/15/2010	6.67	555	12.7	1.60	11.06	-160
SEE-EC-3	12/15/2010	6.37	474	10.0	1.11	12.72	-140
	2/22/2011	6.22	1914	5.17	1.66	10.58	-17.3
RI-MW-1	12/15/2010	6.65	1975	49.1	1.96	12.80	-68.9
	2/22/2011	6.14	1442	178	3.74	10.05	92.6
RI-MW-2	12/15/2010	7.31	1037	61.8	0.62	14.18	-107
	2/22/2011	6.67	665	9.70	2.18	12.01	-23.0
RI-MW-3	12/15/2010	6.88	1109	36.7	3.02	12.63	-55.9
	2/22/2011	6.24	551	12.5	5.22	9.69	98.9
RI-MW-4	12/15/2010	7.53	428	29.5	0.81	11.70	-137
	2/22/2011	7.01	1388	1.3	5.61	9.93	80.1
RI-MW-5	12/15/2010	6.82	394	175	1.62	11.02	-108
	2/22/2011	6.32	351	3.01	1.76	9.03	-17.5
GROUNDWATER BORINGS:							
G-GC-100	12/20/2010	6.58	1770	551	2.57	12.50	-96.6
I-FA-100	12/17/2010	6.53	1570	385	5.14	14.55	-126
I-FA-101	12/17/2010	6.42	2142	38.2	7.55	8.58	-116
J-FA-100	11/29/2010	7.01	1580	>1000	NM	6.95	-191
J-FA-102	11/29/2010	8.76	1636	>1000	4.00	11.77	-219
J-GC-100	11/29/2010	6.86	530	91.3	4.25	11.97	-126
M-FA-102	12/1/2010	6.50	1090	362	2.34	14.22	119
M-FA-103	12/2/2010	6.93	362	31.8	5.83	10.43	-42.2
M-FA-107	1/28/2011	7.23	1170	NM	1.00	8.87	NM
M-FA-108	1/28/2011	7.49	829	NM	1.15	9.03	NM
M-GC-100	11/30/2010	6.82	554	28.2	3.42	10.33	-110
M-GC-103	12/17/2010	7.12	603	389	2.27	12.70	-145
M-GC-105	1/28/2011	6.93	1800	NM	1.24	9.67	NM
N-FA-100	12/1/2010	6.56	2367	80.7	3.50	10.07	-98.3
N-FA-102	12/1/2010	7.79	2472	45.2	4.11	13.44	-134

NM = Not measured due to insufficient water.
degrees C = degrees Celsius.
µS/cm = micro siemens/centimeter.
NTU = nephelometric turbidity unit.
mg/L = milligrams per liter.
Values may be rounded.
Temperature, pH, conductivity, total dissolved solids, and turbidity values are the final measured values.
Dissolved oxygen values are the down hole measurement collected prior to purging the well.

TABLE 3
WATER CHARACTERIZATION SAMPLE ANALYSIS GRID
RI/FS WORK PLAN - AMERON/HULBERT SITE
PORT OF EVERETT, WASHINGTON

Sample Name	Date Collected	Area ID	Sample Type	Dissolved Metals	Hexavalent Chromium	cPAHs	TPH-Gx TPH-Dx	TPH-HCID	SVOCs	VOCs	PCBs
ECI-MW-3	12/15/2010	M	Monitoring Well	X	X	X			X	X	
G-FA-113	11/22/2010	G	Boring	X				X		X	
G-GC-100	12/20/2010	G	Boring	X			X (Gx, Dx)			X	
I-FA-100	12/17/2010	I	Boring	X						X	
I-FA-101	12/17/2010	I	Boring	X						X	
J-FA-100	11/29/2010	J	Boring	X		X	X (Dx)	X	X	X	X
J-FA-102	11/29/2010	J	Boring	X				X		X	
J-GC-100	11/29/2010	J	Boring	X						X	
M-FA-100	11/22/2010	M	Boring	X				X		X	
M-FA-102	12/1/2010	M	Boring	X		X		X	X	X	X
M-FA-103	12/2/2010	M	Boring	X				X		X	
M-FA-104	11/22/2010	M	Boring	X				X		X	
M-FA-107	1/28/2011	M	Boring	X				X		X	
M-FA-108	1/28/2011	M	Boring					X		X	
M-GC-100	11/30/2010	M	Boring	X		X		X	X	X	
M-GC-103	12/17/2010	M	Boring	X						X	
M-GC-105	1/28/2011	M	Boring	X			X (Dx)	X		X	
N-FA-100	12/1/2010	N	Boring	X						X	
N-FA-102	12/1/2010	N	Boring	X		X		X	X	X	X
P10 (G-2)	12/15/2010	G	Monitoring Well	X						X	
RI-MW-1	12/15/2010	I	Monitoring Well	X		X			X	X	
RI-MW-1	2/22/2011	I	Monitoring Well	X (Hg)					X (BEHP)		
RI-MW-2	12/15/2010	I	Monitoring Well	X		X			X	X	
RI-MW-2	2/22/2011	I	Monitoring Well	X (Hg)							
RI-MW-3	12/15/2010	I	Monitoring Well	X		X			X	X	
RI-MW-3	2/22/2011	I	Monitoring Well	X (Hg)					X (BEHP)		
RI-MW-4	12/15/2010	J	Monitoring Well	X		X	X (Dx)	X	X	X	
RI-MW-4	2/22/2011	J	Monitoring Well	X (Hg)			X (Dx)				
RI-MW-5	12/15/2010	M	Monitoring Well	X		X		X	X	X	
RI-MW-5	2/22/2011	M	Monitoring Well	X (Hg)					X (BEHP)		
SEE-EC-3	12/15/2010	G	Monitoring Well	X						X	
SEE-EC-3	2/22/2011	G	Monitoring Well	X (As)							
SUMP	12/20/2010	G	SUMP	X		X	X (Dx)	X	X	X	

TABLE 4
GRAVEL PAD ANALYTICAL DATA
AMERON/HULBERT RI/FS
PORT OF EVERETT

	Preliminary Screening Level	Crushed Sample 2 (Dry/Sieve) CHM110107-11 1/7/2011	Crushed Sample 2 (As Received) CHM110107-11 1/7/2011	Crushed Sample CHM110106-6 1/6/2011
TOTAL METALS (mg/kg)				
Method SW6020				
Arsenic	20	**1.87** J	**0.873** J	**12.4** J
Cadmium	80	0.20 U	0.20 U	**0.300** J
Chromium	120,000	**34.3**	**21.6**	**19.8**
Copper	3,000/36	**28.3**	**11.1**	**17.5**
Lead	250	**2.32**	**1.27**	**6.89**
Mercury	24	0.20 U	0.20 U	0.20 U
Zinc	24,000	**24.1**	**12.1** J	**78.5** J

U = Indicates the compound was undetected at the reported concentration.
J = Indicates the analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
Bold = Detected compound.

TABLE 5
CONVENTIONAL SOIL ANALYTICAL RESULTS
AMERON/HULBERT RI/FS
PORT OF EVERETT

	Depth (ft BGS)	G-FA-101 (4-5) 4.5-5.5	G-FA-102 (2-3) 3-4	G-FA-103 (1-2) 1-2	G-FA-103 (5.5-6.5) 5.5-6.5	G-FA-106 (3-3.5) 3-3.5	G-GC-103 (7-8) 7.2-8.2	M-GC-102 (6-7) 7-8	N-FA-101 (3-4) 3-4	RI-MW-2 (10-11) 10-11
	Preliminary Screening Level	CHM101201-1/ CHM110201-6 11/30/2010	CHM101201-1/ CHM110201-6 11/30/2010	CHM101201-1 11/30/2010	CHM101201-1 11/30/2010	CHM101220-4/ CHM110201-6 12/6/2010	CHM101220-07 12/20/2010	CHM101201-1 11/30/2010	CHM101202-16/ CHM110201-6 12/1/2010	CHM101208-9 12/8/2010
CONVENTIONALS										
Total Organic Carbon (%) (Method 9060A)		--	--	--	--	--	**1.34**	0.0968 J	--	0.802
pH		11.9 J	10.7 J	11.9	11.9	8.26 J	--	--	8.73 J	--

J = Indicates the analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
Bold = Detected compound.
ft BGS = Feet below ground surface

TABLE 6
MONITORING WELL GROUNDWATER ELEVATIONS
AMERON-HULBERT
PORT OF EVERETT

		1/19/2011 (1500-1545) High Tide		1/19/2011 (1010-1100) Intermediate Tide		2/22/2011 (1300-1400) Low Tide	
Well ID	**TOC Elevation**	**Measured DTW (ft)**	**GW Elevation (ft)**	**Measured DTW (ft)**	**GW Elevation (ft)**	**Measured DTW (ft)**	**GW Elevation (ft)**
RI-MW-1	17.23	6.41	10.82	8.33	8.9	8.50	8.73
RI-MW-2	17.66	7.43	10.23	7.72	9.94	8.12	9.54
RI-MW-3	18.07	6.96	11.11	8.85	9.22	11.71	6.36
RI-MW-4	18.1	3.83	14.27	3.80	14.3	3.81	14.29
RI-MW-5	15	0.84	14.16	0.51	14.49	1.45	13.55
ECI-MW-3	15.07	2.14	12.93	2.22	12.85	2.22	12.85
P10(G-2)	15.86	1.62	14.24	1.62	14.24	1.63	14.23
SEE-EC-2	16.67	3.67	13.00	3.62	13.05	3.68	12.99
SEE-EC-3	16.48	3.53	12.95	3.54	12.94	3.70	12.78
SEE-EC-4	16.49	3.54	12.95	3.57	12.92	3.70	12.79

TOC = Top of Casing (2" diameter PVC well casing)
DTW = Depth to Water

TABLE 7
SOIL CLEANUP LEVELS FOR DETECTED CONSTITUENTS
AMERON/HULBERT SITE, PORT OF EVERETT, WASHINGTON

Analyte	Selected Surface Water ARAR (µg/l) (1)	MTCA Protection of Groundwater as Surface Water (2)	MTCA Method B Direct Contact (3)	Background (4)	Practical Quantitation Limit (5)	Preliminary Screening Level (6)
TOTAL PETROLEUM HYDROCARBONS (mg/kg)						
Gasoline range	--	--	30/100 (a,b)	--	5.0	30/100 (b)
Diesel range	--	--	2,000 (a)	--	10.0	2,000
Oil range	--	--	2,000 (a)	--	10.0	2,000
Mineral oil	--	--	4,000 (a)	--	10.0	4,000
Benzene	51 (c)	0.29	18.0 (d)	--	0.05	0.29
Toluene	15,000 (e)	110	6,400 (f)	--	0.03	110
Ethyl Benzene	2,100 (e)	18.0	8,000 (f)	--	0.05	18
m,p-Xylene	1,600 (g)	15 (h)	16,000 (f)	--	0.06	15
o-Xylene	16,000	150	160,000 (f)	--	0.04	150
Xylenes, Total	1,600 (g)	15 (h)	16,000 (f)	--	--	15 (h)
METALS (mg/kg)						
Aluminum	--	55,000 (i)	77,000 (i)	33,000	6.4	55,000 (i)
Antimony	640 (e)	580	32	--	3.8	32
Arsenic	0.14 (e,j)	0.06	20 (k)	7	5.0	20 (k)
Barium	2,000	1,650	16,000	--	0.30	1,650
Beryllium	273 (l)	4,300	160	0.6	0.10	160
Boron	--	--	16,000	--	0.71	16,000
Cadmium	8.8 (e)	1.2	80 (f)	1	0.20	80 (m)
Calcium	--	--	--	--	--	-- (n)
Chromium	240,000 (l)	$1x10^6$ (o)	120,000	48	0.60	120,000
Cobalt	--	--	--	--	0.39	--
Copper	2.4 (m)	1.1	3,000 (f)	36	1.0	3000/ 36 (m,p)
Iron	--	--	--	59,000	3.1	-- (n)
Lead	8.1 (e,j)	1,620	250 (q)	24	2.0	250 (q)
Manganese	--	--	11,000	1,200	0.1	11,000
Mercury	0.03 (e,j)	0.03	24 (f)	0.07	0.05	24 (m)
Nickel	8.2	11	1,600 (f)	48	2.5	1,600 (m)
Selenium	71	7.4	400 (f)	--	6.4	400 (m)
Silicon	--	--	--	--	5.7	--
Silver	26,000	4,400	400 (f)	--	0.64	400 (m)
Sodium	--	--	--	--	6.6	-- (n)
Sulfur	--	--	--	--	--	--
Thallium	0.47	0.67	5.6	--	5.9	5.9
Vanadium	--	--	560		0.63	560
Zinc	81 (e,j)	101	24,000 (f)	85	0.60	24,000 (m)

TABLE 7
SOIL CLEANUP LEVELS FOR DETECTED CONSTITUENTS
AMERON/HULBERT SITE, PORT OF EVERETT, WASHINGTON

Analyte	Selected Surface Water ARAR (µg/l) (1)	MTCA Protection of Groundwater as Surface Water (2)	MTCA Method B Direct Contact (3)	Background (4)	Practical Quantitation Limit (5)	Preliminary Screening Level (6)
SVOCs (mg/kg)						
4-Methylphenol	--	--	--	--	0.23	--
Benzoic acid	--	--	320,000	--	1.70	320,000
Di-n-Octyl phthalate	--	--	1,600	--	0.19	1,600
Fluorene	3,500 (e)	553	3,200 (f)	--	0.20	553
Phenanthrene	26,000 (r)	12,000	24,000	--	0.20	12,000
Anthracene	26,000 (l)	12,000	24,000 (f)	--	0.14	12,000
Fluoranthene	90 (l)	89	3,200 (f)	--	0.06	89
Pyrene	2,600 (l)	3,600	2,400 (f)	--	0.15	2,400
Di-n-butylphthalate	2,900	100	8,000		0.33	100
bis(2-Ethylhexyl)phthalate	2.2 (e)	4.9	71 (d)	--	0.27	4.9
PAHs (mg/kg)						
Acenaphthene	640	66	4,800	--	0.02	66
Naphthalene	4,900 (l)	140	1,600 (f)	--	0.02	140
2-Methylnaphthalene	32	--	320	--	0.02	320
Benzo(g,h,i)perylene	--	--	--		0.02	--
Benzo(a)anthracene	0.018 (e)	0.13	TEQ (s)	--	0.02	TEQ (s)
Chrysene	0.018 (e)	0.14	TEQ (s)	--	0.02	TEQ (s)
Benzo(b)fluoranthene	0.018 (e)	0.43	TEQ (s)	--	0.02	TEQ (s)
Benzo(k)fluoranthene	0.018 (e)	0.43	TEQ (s)	--	0.02	TEQ (s)
Benzo(a)pyrene	0.018 (e)	0.35	0.14 (c)	--	0.02	0.14
Indeno(1,2,3-cd)pyrene	0.018 (e)	1.3	TEQ (s)	--	0.02	TEQ (s)
Dibenz(a,h)anthracene	0.018 (e)	0.65	TEQ (s)	--	0.02	TEQ (s)
cPAH TEQ		--	0.14		--	0.14 (m)
PCBs (mg/kg)						
Aroclor-1248	--	--	--	--	0.04	Total PCBs
Aroclor-1254	0.0017 (j)	-- (t)	1.60	--	0.04	Total PCBs (u)
Aroclor-1260	--	--	--	--	0.04	Total PCBs
Total PCBs	0.000064 (j)	--	0.5 / 1.0 (a)	--	0.04	1.0 (u)
Dioxins/Furans (ng/kg)						
Dioxins/Furans TEQ	0.0000000051	0.27	11	5.2	--	5.2
TBT (µg/kg)						
Butyl Tin Trichloride	--	--	--	--	0.12	--
Dibutyl Tin Dichloride	--	--	--	--	--	--
Dibutyl Tin Ion	--	--	--	--	0.08	--
Tributyl Tin Chloride	--	--	--	--	0.03	--
TBT as TBT Ion	0.01	7,400	23,400	--	4	7,400

TABLE 7
SOIL CLEANUP LEVELS FOR DETECTED CONSTITUENTS
AMERON/HULBERT SITE, PORT OF EVERETT, WASHINGTON

Analyte	Selected Surface Water ARAR (µg/l) (1)	MTCA Protection of Groundwater as Surface Water (2)	MTCA Method B Direct Contact (3)	Background (4)	Practical Quantitation Limit (5)	Preliminary Screening Level (6)
VOCs (mg/kg)						
1,1-Dichloroethane	--	--	16,000	--	0.002	16,000
Trichloroethene (TCE)	6.7	0.04	11	--	0.002	0.04
Sec-Butylbenzene	--	--	--	--	0.002	--
N-Butylbenzene	--	--	--	--	0.003	--
Acetone	800	3.2	8,000 (f)	--	0.005	3.2
Methyl Ethyl Ketone	4,800	--	48,000 (f)	--	0.003	48,000
1,1,1-Trichloroethane	420,000 (l)	3,400	72,000 (f)	--	0.005	3,400
Tetrachloroethene	3.30 (e,c)	0.04	1.9 (k)	--	0.004	1.9 (m)
Methylene Chloride	590	2.6	130	--	0.007	2.6
1,2,4-Trimethylbenzene	400		4,000		0.002	4,000
1,3,5-Trimethylbenzene	400	--	4,000 (f)	--	0.004	4,000
Isopropylbenzene	800	--	8,000 (f)	--	0.002	8,000
n-Propylbenzene	--	--	--	--	0.002	--
4-Isopropyltoluene	--	--	--	--	0.002	--
n-Butylbenzene	--	--	--	--	0.002	--

TABLE 7
SOIL CLEANUP LEVELS FOR DETECTED CONSTITUENTS
AMERON/HULBERT SITE, PORT OF EVERETT, WASHINGTON

-- = Soil criteria not established.
Shaded value = selected as proposed preliminary screening level.
TEQ = Toxicity Equivalency Quotient. TEQ is based on individual Toxicity Equivalency Factors (TEFs) of benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, ideno(1,2,3-cd)pyrene, and dibenz(a,h)anthracene.

(1) Selected surfacewater ARARs; the minimum ARAR was selected for use in 3-phase model calculation for development of the soil cleanup level protective of groundwater as surface water, unless otherwise noted.
(2) MTCA Method B values based on protection of marine surface water using MTCA equation 747-1 (February 2001), unless otherwise noted.
(3) MTCA Method B standard formula values based on direct contact (Ecology's CLARC, accessed) unless otherwise noted.
(4) From Ecology's Natural Background Soil Metals Concentrations in Puget Sound (1994). Used 90th percentile for Puget Sound unless noted otherwise. Background for dioxins/furans from Ecology's Natural Background for Dioxinx/Furans in Washington Soil (2010).
(5) Practical quantitation limits (PQLs) based on 10 times the analytical method detection limits.
(6) Preliminary Cleanup Screening Level based on lowest soil criteria corrected for PQL and background, as indicated by shading.
(a) MTCA direct contact cleanup level/federal Toxics Substance Control Act (TSCA; 40 CFR Part 761.61) cleanup standard for high occupancy areas.
(b) MTCA Method A Cleanup Screening Level is 30 mg/kg when benzene is present and 100 mg/kg when benzene is not present.
(c) Selected surface water ARAR used for calculation of soil Cleanup Screening Level protective of groundwater is based on the federal criteria because it is considered sufficiently protective of human health for carcinogens as described in WAC 173-340-740(3).
(d) MTCA Method B soil standard formula value based on criteria as a carcinogen.
(e) EPA National Recommended Water Quality Criteria - Section 304 Clean Water Act
(f) MTCA Method B soil standard formula value based on criteria as a non-carcinogen.
(g) Potable groundwater levels were used for screening purposes in absence of applicable surface water levels. Unless other wise noted, the minimum level between state and federal ARARs and MTCA Method B was selected.
(h) Based on protection of drinking water.
(i) Based on EPA national rick-based screening level, April 2009 (http://www.epa.gov/region09/superfund/prg/index.html)
(j) EPA Water Quality Standards (National Toxics Rule) - 40 CFR 131
(k) The MTCA Method A soil Cleanup Screening Level for unrestricted land use was used for arsenic because it was established based on adjustments for background. From Responsiveness Summary for the Amendments to the Model Toxics Control Act Cleanup Regulation Chapter 173-340 WAC. 1991.
(l) MTCA Method B Surface Water Equation (Standard Fomula Values)
(m) Proposed Cleanup Screening Level is the Method B direct human contact Cleanup Screening Level. Empirical evidence, based on groundwater analytical results, indicate that current concentrations of constituent in soil are protective of groundwater and, therefore, need only be compared to Cleanup Screening Levels protective of direct human contact.
(n) Cleanup levels are not needed for iron, magnesium, calcium, potassium, and sodium because they are essential nutrients.
(o) Calculated Cleanup Screening Level is greater than 100% of constituent.
(p) Copper Proposed Cleanup Screening Level is 36 mg/kg for the Ameron/Hulbert Site based on its presence in groundwater at several locations throughout the Site, but will be further evaluated during the RI/FS.
(q) MTCA Method A soil Cleanup Screening Level based on preventing unacceptable blood lead levels.
(r) No criteria available for phenanthrene. Therefore, as requested by Ecology, anthracene was used as a surrogate.
(s) As requested by Ecology a TEQ will be computed for each sample containing carcinogenic PAHs above reporting limits and compared to the benzo(a)pyrene Cleanup Screening Level in accordance with WAC 173-340-708(8)(e).
(t) No cleanup level protective of groundwater was calculated using Ecology's three-phase partitioning model due to lack of available Henry's law constant.
(u) Selected cleanup standard is based on the federal criteria because it represents an acceptable risk less than 1x10-5, consistent with WAC 173-340-740(3)(b)(i).

TABLE 8
METALS - SOIL ANALYTICAL RESULTS
AMERON/HULBERT RI/FS
PORT OF EVERETT

TOTAL METALS (mg/kg)
Method SW6020

	Depth	Preliminary	Antimony	Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Zinc
	Ft bgs	**Screening Level:**	**32**	**20**	**80**	**120,000**	**3,000/36**	**250**	**24**	**24,000**
G-FA-100 (0-1)[1]	0-1	11/30/2010	**272**	**3270**	**4.50**	**94.5**	**1330**	**1460**	0.20 U	**5750**
G-FA-100 (1-2)	1-2	11/30/2010	**2.37**	**21.8**	0.20 U	**34.9**	**38.0**	**8.81**	0.20 U	**44.6**
G-FA-101 (4-5)[2]	4.5-5.5	11/30/2010	**9.38**	**58.4**	**0.213**	**146**	**62.8**	**30.1**	0.20 U	**98.0**
G-FA-201 (4-5) - Dup of G-FA-101 (4-5)[2]	4.5-5.5	11/30/2010	**9.95**	**70.0**	**0.221**	**177**	**71.2**	**33.8**	0.20 U	**123**
G-FA-101 (10.5-11.5)	10.5-11.5	11/30/2010		**11.2**			**28.2**			
G-FA-102 (2-3)	3-4	11/30/2010	**0.824**	**8.81**	0.20 U	**38.5**	**27.5**	**8.74**	0.20 U	**41.9**
G-FA-103 (1-2)[2]	1-2	11/30/2010	**7.80**	**50.8**	**0.269**	**28.7**	**58.8**	**72.4**	0.20 U	**132**
G-FA-103 (5.5-6.5)[2]	5.5-6.5	11/30/2010	**10.5**	**62.5**	**0.308**	**35.6**	**81.1**	**75.7**	0.20 U	**139**
G-FA-103 (8-9)	8-9	11/30/2010		**7.71**			**27.8**			
G-FA-104 (0-1)[1]	0-1	12/6/2010	**171**	**714**	**1.97**	**77.0**	**714**	**594**	0.20 U	**2580**
G-FA-104 (1-2)	1-2	12/6/2010	**2.10**	**13.1**			**25.2**	**11.5**		
G-FA-105 (0.3-0.8)[1]	0.3-0.8	12/6/2010	**303**	**1210**	**3.25**	**60.2**	**1030**	**996**	0.20 U	**4020**
G-FA-105 (1-2)	1-2	12/6/2010	**24.1**	**177**			**95.5**	**85.8**		
G-FA-106 (1-1.2)[1]	1-1.2	12/6/2010	**237**	**1120**	**3.66**	**21.3**	**1380**	**946**	0.20 U	**3540**
G-FA-106 (1-1.5)[1]	1-1.5	12/6/2010	**11.7**	**50.9**	**1.34**	**32.4**	**44.1**	**39.0**	0.20 U	**245**
G-FA-106 (3-3.5)	3-3.5	12/6/2010	**5.08**	**4.54**			**16.9**	**4.96**		
G-FA-107 (0-1)[1]	0-1	12/6/2010	**127**	**521**	**1.82**	**93.9**	**423**	**417**	0.20 U	**2240**
G-FA-107 (1-2)	1-2	12/6/2010	0.20 U	**3.07**			**12.1**	**3.62**		
G-FA-108A (0-1)	0-1	12/6/2010	**127**	**556**	**1.65**	**53.6**	**477**	**501**	0.20 U	**2220**
G-FA-108B (0-1)	0-1	12/6/2010	**42.2**	**150**	**1.19**	**85.2**	**204**	**132**	0.20 U	**1090**
G-FA-108 (1-2)	1-2	12/6/2010	**0.672**	**3.87**			**19.9**	**13.8**		
G-FA-109 (0.5-1)[1]	0.5-1	12/6/2010	**297**	**1310**	**3.84**	**36.4**	**1420**	**1060**	0.20 U	**4130**
G-FA-109 (1-2)	1-2	12/6/2010	**7.46**	**20.5**			**33.5**	**28.3**		
G-FA-110 (3.5-4.5)[2]	3.5-4.5	12/20/2010	**1.05**	**50.6**	**0.387**	**463**	**540**	**13.5**	0.20 U	**473**
G-FA-111 (2-3)[2]	2-3	12/20/2010	**0.674**	**29.0**	0.20 U	**176**	**196**	**12.4**	0.20 U	**241**
G-FA-112 (3-4)[2]	3-4	12/20/2010	**1.58**	**24.5**	**0.333**	**29.6**	**33.9**	**20.8**	0.20 U	**113**
G-FA-113 (0-1)	1-2	11/22/2010	0.20 U	**1.97**	0.20 U	**21.5**	**18.0**	**6.34**	0.20 U	**26.2**
G-FA-113 (2-3)	3-4	11/22/2010	0.20 U	**9.82**	0.20 U	**53.6**	**20.1**	**26.4**	0.20 U	**98.9**
G-GC-100 (0-1)	1.5-2.5	12/20/2010	0.20 U	**3.42**	0.20 U	**19.8**	**38.7**	**7.58**	0.20 U	**42.4**
G-GC-100 (1-2)	2.5-3.5	12/20/2010					**16.7**			
G-GC-101 (0-1)	0.2-1.2	12/20/2010	**0.262**	**5.94**	0.20 U	**22.9**	**15.9**	**8.90**	0.20 U	**61.4**
G-GC-102 (0-1)	1.5-2.5	12/20/2010	0.20 U	**3.82**	0.20 U	**23.6**	**18.1**	**6.21**	0.20 U	**42.7**
G-GC-103 (0-1)	0.2-1.2	12/20/2010	0.20 U	**3.24**	0.20 U	**23.2**	**15.9**	**5.09**	0.20 U	**46.8**
G-GC-104 (0-1)	0.2-1.2	12/20/2010	0.20 U	**3.72**	0.20 U	**20.0**	**13.2**	**7.82**	**0.228**	**43.6**
G-GC-105 (0-1)	1-2	11/22/2010	0.20 U	**7.66**	0.20 U	**46.4**	**31.0**	**11.2**	0.20 U	**99.9**
G-GC-205 (0-1) - Dup of G-GC-105 (0-1)	1-2	11/22/2010	0.20 U	**7.69**	0.20 U	**58.7**	**33.4**	**12.3**	0.20 U	**93.9**
G-GC-106 (0-1)	1-2	11/22/2010	0.20 U	**5.79**	0.20 U	**46.1**	**20.2**	**5.46**	0.20 U	**69.2**
G-GC-107 (0-1)	1-2	11/22/2010	**0.734**	**12.6**	0.20 U	**54.7**	**35.2**	**20.9**	0.20 U	**121**
G-GC-108 (0-1)	0.2-1.2	12/20/2010	0.20 U	**1.77**	0.20 U	**21.2**	**10.5**	**3.70**	0.20 U	**36.5**
G-GC-109 (0-1)	1-2	11/29/2010	0.20 U	**2.46**	0.20 U	**12.4**	**15.8**	**2.76**	0.20 U	**21.3**
I-FA-100 (2-3)	3-4	12/17/2010	0.20 U	**17.8**	**0.571**	**84.3**	**57.3**	**11.6**	**0.198** J	**135**
J-FA-100 (4-5)	5-6	11/29/2010	0.20 U	**7.34**	0.20 U	**30.7**	**16.0**	**3.14**	0.20 U	**33.3**
J-FA-101 (27-28)	28-29	11/29/2010	0.20 U	**6.43**	0.20 U	**35.5**	**15.5**	**4.68**	0.20 U	**36.3**
J-FA-102 (13-14)	14-15	11/29/2010	**1.03**	**5.86**	**0.204**	**44.2**	**101**	**16.0**	0.20 U	**23.5**
J-FA-102 (18-19)	19-20	11/29/2010					**18.0**			
J-GC-100 (0-1)	1-2	11/29/2010	0.20 U	**5.33**	0.20 U	**31.6**	**20.7**	**5.67**	0.20 U	**37.6**
J-GC-101 (0-1)	1-2	11/29/2010	0.20 U	**3.49**	0.20 U	**18.6**	**17.7**	**3.13**	0.20 U	**27.6**
M-FA-100 (0-1)	1-2	11/22/2010	0.20 U	**8.88**	0.20 U	**81.7**	**34.8**	**17.9**	0.20 U	**119**
M-FA-101 (0-1)	0-1	12/17/2010	0.20 U	**5.76**	**0.428**	**65.0**	**54.1**	**18.3**	0.20 U	**128**
M-FA-101 (1-2)	1-2	12/17/2010					**9.26** J			
M-FA-102 (7-7.5)[1]	7-7.5	12/1/2010	**10.5**	**290**	**2.04**	**52.8**	**1410**	**270**	0.20 U	**4700**
M-FA-102 (9-10)	9-10	12/1/2010		**5.64**			**18.9**	**3.36**		
M-FA-102a (0-1)	(0-1)	3/18/2011	0.2 U	**5.4**	**0.2**	**28.5**	**21.6**	**8**	0.02 U	**41**
M-FA-102b (0-1)	(0-1)	3/18/2011	**0.3**	**25.3**	**0.5**	**43**	**124**	**73**	**0.08**	**188**
M-FA-102b (1-2)	(1-2)	3/18/2011		**14.3**						
M-FA-102c (0-1)	(0-1)	3/18/2011		**4.1**						
M-FA-102d (0-1)	(0-1)	3/18/2011		**6.4**						
M-FA-102e (0-1)	(0-1)	3/18/2011		**3.0**						
M-FA-103 (0-1)	1-2	12/2/2010	**1.34**	**3.06**	**0.341**	**33.5**	**52.1**	**294**	0.20 U	**45.8**
M-FA-103 (1-2)	2-3	12/2/2010					**13.4**	**3.22**		
M-FA-103a (0-1)	(0-1)	3/18/2011					**119**	**127**		
M-FA-104 (0-1)	0.5-1.5	11/22/2010	0.20 U	**8.44**	0.20 U	**45.1**	**23.8**	**26.5**	0.20 U	**103**
M-FA-105 (0-1)	0-1	1/28/2011	0.20 U	**4.67**	**0.365**	**25.1**	**24.4**	**11.6**	**0.123**	**89.3**
M-GC-100 (0-1)	1-2	11/30/2010	0.20 U	**1.87**	0.20 U	**20.8**	**10.2**	**5.50**	0.20 U	**25.2**
M-GC-101 (0-1)	1-2	11/30/2010	**2.46**	**12.3**	0.20 U	**25.8**	**23.2**	**30.3**	0.20 U	**43.2**
M-GC-102 (0-1)	1-2	11/30/2010	**9.44** J	**58.0**	**0.250**	**31.6**	**73.0** J	**54.5**	0.20 U	**125**
M-GC-202 (0-1) - Dup of M-GC-102 (0-1)	1-2	11/30/2010	**14.8** J	**76.4**	**0.315**	**25.1**	**111** J	**75.0**	0.20 U	**129**
M-GC-102 (1-2)	1-2	11/30/2010		**3.43** J			**14.8**			
M-GC-103 (0-1)	1-2	12/17/2010	0.20 U	**8.66**	0.20 U	**54.0**	**35.1**	**7.68**	0.20 U	**107**
M-GC-104 (0-1)	1.5-2.5	12/2/2010	**0.772**	**7.52**	0.20 U	**25.9**	**20.81**	**7.62**	0.20 U	**78.7**
M-GC-105 (0-0.2)	0-0.2	1/29/2011	**9.96** J	**5.24**	**0.470**	**46.9**	**25.4**	**128**	**1.21**	**216**
M-GC-10502 (0-0.2) - Dup of M-GC-105 (0-0.2)	0-0.2	1/29/2011	**3.59** J	**5.87**	**0.434**	**54.7**	**21.0**	**138**	**1.07**	**223**
M-GC-106 (0-1)	0-1	12/2/2010	**0.319**	**6.51**	0.20 U	**26.0**	**17.2**	**8.95**	0.20 U	**54.1**
N-FA-100 (0-1)	0.3-1.3	12/1/2010	**0.648**	**5.69**	0.20 U	**22.8**	**45.8**	**51.5**	0.20 U	**76.3**
N-FA-100 (1-2)	1.3-2.3	12/1/2010					**17.4**			
N-FA-101 (3-4)	3-4	12/1/2010	**0.312**	**7.57**	0.20 U	**31.3**	**152**	**21.3**	0.20 U	**61.0**
N-FA-101 (4-5)	4-5	12/1/2010					**30.3**			
N-FA-102 (2-3)	2-3	12/1/2010	**1.48**	**8.89**	**0.431**	**34.5**	**50.7**	**114**	0.20 U	**231**
N-FA-103 (1-2)	1.3-2.3	12/1/2010					**18.9**	**2.09**		
N-FA-103B (6-7)	6.3-7.3	12/1/2010	**2.86**	**28.3**	**0.460**	**94.3**	**194**	**58.7**	0.20 U	**86.8**
N-FA-103B (10-11)	10.3-11.3	12/1/2010		**5.56**			**27.9**			
RI-MW-5 (0-1)	0-1	12/7/2010	**2.09**	**4.38**	0.20 U	**36.8**	**19.4**	**6.15**	0.20 U	**69.8**

U = Indicates the compound was undetected at the reported concentration.
J = Indicates the analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
Bold = Detected compound.
Boxed value indicates exceedance of preliminary screening level.
Shaded box indicates a detection is greater than 3 times the preliminary screening level

Notes:
1. Apparent sandblast media
2. Apparent concrete slurry waste

TABLE 9
TPH - SOIL ANALYTICAL RESULTS
AMERON/HULBERT RI/FS
PORT OF EVERETT

	Depth (Ft bgs) Preliminary Screening Level	G-FA-103 (5.5-6.5) 5.5-6.5 CHM101201-1 11/30/2010	G-FA-113 (2-3) 3-4 CHM101122-2 11/22/2010	G-GC-100 (0-1) 1.5-2.5 CHM101220-07 12/20/2010	G-GC-104 (0-1) 0.2-1.2 CHM101220-07 12/20/2010	J-FA-100 (4-5) 5-6 CHM101201-1 11/29/2010	J-FA-101 (27-28) 28-29 CHM101201-1/L15821-1 11/29/2010	M-FA-102b (0-1) 0-1 SO09D/SO96A 3/18/2011	M-FA-102c (0-1) 0-1 SO09D/SO96A 3/18/2011	M-FA-102d (0-1) 0-1 SO09D/SO96A 3/18/2011
NWTPH-HCID (µg/L)										
Gasoline	30/100									
Mineral Spirits	2,000									
Kerosene	2,000									
Diesel Range Organics (DRO)	2,000									
Diesel (Fuel Oil)	2,000									
Mineral Oil	4,000									
Heavy Oil	2,000									
Heavy Oil Range Organics	2,000									
NWTPH-Dx (mg/kg)										
Diesel Range Organics (DRO)	2,000					20 U	20 U	30	6	22
Diesel (Fuel Oil)	2,000		20 U	20 U	20 U	20 U	20 U			
Mineral Oil	4,000		40 U	40 U	40 U	40 U	40 U			
Heavy Oil	2,000		50 U	50 U	50 U	50 U	50 U			
Heavy Oil Range Organics	2,000							40	12	75
EXTRACTABLE PETROLEUM HYDROCARBONS ((mg/kg)										
Aromatic Hydrocarbons										
C8-C10										
C10-C12										
C12-C16										
C16-C21										
C21-C34										
Aliphatic Hydrocarbons										
C8-C10										
C10-C12										
C12-C16										
C16-C21										
C21-C34										
NWTPH-Gx (mg/kg)										
Gasoline Range Organics (GRO)	30/100	**87.0** J								
Gasoline	30/100	5.0 U								

TABLE 9
TPH - SOIL ANALYTICAL RESULTS
AMERON/HULBERT RI/FS
PORT OF EVERETT

	Depth (Ft bgs) Preliminary Screening Level	M-FA-102e (0-1) 01-1 SO09D/SO96A 3/18/2011	M-FA-104 (0-1) 0.5-1.5 CHM101122-2 11/22/2010	M-FA-105 (0-1) 0-1 CHM110202-5/CHM110131-4 1/28/2011	M-FA-105 (4-5) 4-5 CHM110207-1 1/28/2011	M-FA-105a (0-1) 0-1 SO09D/SO96A 3/18/2011	M-FA-105b (0-1) 0-1 SO09D/SO96A 3/18/2011	M-FA-106(0-1) 0-1 CHM101202-16/CHM110131-4 12/2/2010	M-FA-107 (0-1) 0-1 CHM110131-4 1/28/2011	M-FA-108 (0-1) 0-1 CHM110131-4 1/28/2011
NWTPH-HCID (µg/L)										
Gasoline	30/100			20 U				20 U	20 U	20 U
Mineral Spirits	2,000			30 U				30 U	30 U	30 U
Kerosene	2,000			50 U				50 U	50 U	50 U
Diesel Range Organics (DRO)	2,000			50 U				50 U	50 U	50 U
Diesel (Fuel Oil)	2,000		D					50 U	50 U	50 U
Mineral Oil	4,000			100 U				100 U	100 U	100 U
Heavy Oil	2,000			100 U				100 U	100 U	100 U
Heavy Oil Range Organics	2,000		D					100 U	100 U	100 U
NWTPH-Dx (mg/kg)										
Diesel Range Organics (DRO)	2,000	5.4		153	20 U	33	5.6 U			
Diesel (Fuel Oil)	2,000		20 U	20 U	20 U					
Mineral Oil	4,000		40 U	40 U	40 U					
Heavy Oil	2,000		50 U	50 U	50 U					
Heavy Oil Range Organics	2,000	11		2340	50 U	260	44			
EXTRACTABLE PETROLEUM HYDROCARBONS ((mg/kg)										
Aromatic Hydrocarbons										
C8-C10				38.5 J						
C10-C12				2.97 J						
C12-C16				18 J						
C16-C21				104 J						
C21-C34				597 J						
Aliphatic Hydrocarbons										
C8-C10				30.1 J						
C10-C12				3.66 J						
C12-C16				23.5 J						
C16-C21				370 J						
C21-C34				1200 J						
NWTPH-Gx (mg/kg)										
Gasoline Range Organics (GRO)	30/100									
Gasoline	30/100									

TABLE 9
TPH - SOIL ANALYTICAL RESULTS
AMERON/HULBERT RI/FS
PORT OF EVERETT

	Depth (Ft bgs) Preliminary Screening Level	M-GC-105 (0-0.2) 0-0.2 CHM110131-4/CHM110202-5 1/29/2011	Dup of M-GC-105 (0-0.2) M-GC-10502 (0-0.2) 0-0.2 CHM110131-4/CHM110202-5 1/29/2011	M-GC-105 (0.5-1.5) 0.5-1.5 CHM110207-1 1/29/2011	M-GC-105 (4-5) 4-5 CHM110209-8 1/29/2011	N-FA-102 (2-3) 2-3 CHM101202-16 12/1/2010	N-FA-103B (6-7) 6.3-7.3 CHM101202-16 12/1/2010	Dup of N-FA-103B (6-7) N-FA-203B (6-7) 6.3-7.3 CHM101202-16 12/1/2010	N-FA-103B (10-11) 10.3-11.3 CHM101213-7 12/1/2010
NWTPH-HCID (µg/L)									
Gasoline	30/100	20 U	20 U						
Mineral Spirits	2,000	30 U	30 U						
Kerosene	2,000	50 U	50 U						
Diesel Range Organics (DRO)	2,000	50 U	50 U						
Diesel (Fuel Oil)	2,000	D	D						
Mineral Oil	4,000	100 U	100 U						
Heavy Oil	2,000	100 U	100 U						
Heavy Oil Range Organics	2,000	D	D						
NWTPH-Dx (mg/kg)									
Diesel Range Organics (DRO)	2,000	6100		872		167	78.5	103	
Diesel (Fuel Oil)	2,000	20 U		20 U	20 U	20 U	20 U	20 U	
Mineral Oil	4,000			40 U	40 U	40 U	40 U	40 U	
Heavy Oil	2,000	50 U		50 U	50 U	50 U	50 U	50 U	
Heavy Oil Range Organics	2,000	34700		5420					
EXTRACTABLE PETROLEUM HYDROCARBONS ((mg/kg)									
Aromatic Hydrocarbons									
C8-C10									
C10-C12									
C12-C16									
C16-C21									
C21-C34									
Aliphatic Hydrocarbons									
C8-C10									
C10-C12									
C12-C16									
C16-C21									
C21-C34									
NWTPH-Gx (mg/kg)									
Gasoline Range Organics (GRO)	30/100					**280.0** J	**413.0** J	**10.1**	
Gasoline	30/100					5.0 U	5.0 U	5.0 U	

D = Indicates detection at or above the listed reporting limit
U = Indicates the compound was undetected at the reported concentration.
J = Indicates the analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
Bold = Detected compound.
Boxed value indicates exceedance of preliminary screening level.
Shaded box indicates a detection is greater than 3 times the preliminary screening level

TABLE 10
PCB/PAH/SVOC - SOIL ANALYTICAL RESULTS
AMERON/HULBERT RI/FS
PORT OF EVERETT

	Depth (Ft BGS)	G-FA-101 (4-5)	Dup of G-FA-101 (4-5) G-FA-201 (4-5)	G-FA-102 (2-3)	G-FA-103 (1-2)	G-FA-103 (5.5-6.5)	G-FA-107 (0-1)	G-FA-113 (0-1)	G-FA-113 (2-3)	G-GC-100 (0-1)	G-GC-101 (0-1)
		4.5-5.5	4.5-5.5	3-4	1-2	5.5-6.5	0-1	1-2	3-4	1.5-2.5	0.2-1.2
	Preliminary Screening Level	CHM101201-1/ CHM110201-6 11/30/2010	CHM101201-1 11/30/2010	CHM101201-1/ CHM110201-6 11/30/2010	CHM101201-1 11/30/2010	CHM101201-1 11/30/2010	CHM101208-9 12/6/2010	CHM101202-4 11/22/2010	CHM101122-2 11/22/2010	CHM101220-07 12/20/2010	CHM101220-07 12/20/2010
PAHs (mg/kg)											
Method SW8270SIM											
Naphthalene	140										
1-Methylnaphthalene											
2-Methylnaphthalene	320										
Acenaphthene	66										
Acenaphthylene											
Fluorene	550										
Phenanthrene	12,000										
Anthracene	12,000										
Fluoranthene	89										
Pyrene	2,400										
Benzo(a)anthracene	TEQ	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	**0.046** J	**0.0456** J	0.05 U	0.05 U	**0.0594**
Chrysene	TEQ	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	**0.0450** J	0.05 U	0.05 U	0.05 U
Benzo(b)fluoranthene	TEQ	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	**0.047** J	0.05 U	0.05 U	0.05 U	**0.109**
Benzo(k)fluoranthene	TEQ	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Benzo(a)pyrene	TEQ	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	**0.046** J	0.05 U	0.05 U	0.05 U	**0.0991**
Indeno(1,2,3-cd)pyrene	TEQ	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	**0.0546**	**0.0453** J	0.05 U	0.05 U	0.05 U
Dibenzo(a,h)anthracene	TEQ	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Benzo(g,h,i)perylene											
cPAH TEQ	0.14	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	**0.06** J	**0.01** J	0.05 U	0.05 U	**0.12**
SEMIVOLATILES (mg/kg)											
Method SW8270											
Aniline											
Phenol											
Bis(2-chloroethyl)ether											
2-Chlorophenol											
1,3-Dichlorobenzene											
1,4-Dichlorobenzene											
1,2-Dichlorobenzene											
Benzyl Alcohol											
Bis(2-chloroisopropyl)ether											
2-Methylphenol (o-cresol)											
Hexachloroethane											
N-Nitroso-di-n-propylamine											
4-Methylphenol (p-cresol)											
3-Methylphenol (m-cresol)											
Nitrobenzene											
Isophorone											
2-Nitrophenol											
2,4-Dimethylphenol											
Bis(2-chloroethoxy)methane											
2,4-Dichlorophenol											
1,2,4-Trichlorobenzene											
Naphthalene	140										
4-Chloroaniline											
Hexachlorobutadiene											
4-Chloro-3-methylphenol											
2-Methylnaphthalene	320										
1-Methylnaphthalene											
Hexachlorocyclopentadiene											
2,4,6-Trichlorophenol											
2,4,5-Trichlorophenol											
2-Chloronaphthalene											
2-Nitroaniline											
1,4-Dinitrobenzene											

TABLE 10
PCB/PAH/SVOC - SOIL ANALYTICAL RESULTS
AMERON/HULBERT RI/FS
PORT OF EVERETT

	Depth (Ft BGS)	G-FA-101 (4-5) 4.5-5.5	Dup of G-FA-101 (4-5) G-FA-201 (4-5) 4.5-5.5	G-FA-102 (2-3) 3-4	G-FA-103 (1-2) 1-2	G-FA-103 (5.5-6.5) 5.5-6.5	G-FA-107 (0-1) 0-1	G-FA-113 (0-1) 1-2	G-FA-113 (2-3) 3-4	G-GC-100 (0-1) 1.5-2.5	G-GC-101 (0-1) 0.2-1.2
	Preliminary Screening Level	CHM101201-1/ CHM110201-6 11/30/2010	CHM101201-1 11/30/2010	CHM101201-1/ CHM110201-6 11/30/2010	CHM101201-1 11/30/2010	CHM101201-1 11/30/2010	CHM101208-9 12/6/2010	CHM101202-4 11/22/2010	CHM101122-2 11/22/2010	CHM101220-07 12/20/2010	CHM101220-07 12/20/2010
Acenaphthylene											
1,3-Dinitrobenzene											
Dimethylphthalate											
2,6-Dinitrotoluene											
1,2-Dinitrobenzene											
Acenaphthene	66										
3-Nitroaniline											
2,4-Dinitrophenol											
Dibenzofuran											
2,4-Dinitrotoluene											
4-Nitrophenol											
2,3,4,6-Tetrachlorophenol											
2,3,5,6-Tetrachlorophenol											
Fluorene	550										
4-Chlorophenyl phenyl ether											
Diethylphthalate											
4,6-Dinitro-2-methylphenol											
Diphenylamine											
Azobenzene											
4-Bromo phenyl phenyl ether											
Hexachlorobenzene											
Pentachlorophenol											
Phenanthrene	12,000										
Anthracene	12,000										
Carbazole											
Di-n-butylphthalate	100										
Fluoranthene	89										
Pyrene	2,400										
Benzyl Butyl phthalate											
bis (2-Ethylhexyl) adipate											
Benzo(a)anthracene	TEQ										
Chrysene	TEQ										
bis (2-Ethylhexyl) phthalate	4.9										
Di-n-octyl phthalate	1,600										
Benzo(b)fluoranthene	TEQ										
Benzo(k)fluoranthene	TEQ										
Benzo(a)pyrene	0.14										
Indeno(1,2,3-cd)pyrene	TEQ										
Dibenz(a,h)anthracene	TEQ										
Benzo(g,h,i)perylene											
Benzoic Acid	320,000										
cPAH TEQ	0.14										
PCBs (mg/kg)											
Method SW8082											
Aroclor 1016											
Aroclor 1221											
Aroclor 1232											
Aroclor 1242											
Aroclor 1248											
Aroclor 1254											
Aroclor 1260											
Total PCBs	1										

TABLE 10
PCB/PAH/SVOC - SOIL ANALYTICAL RESULTS
AMERON/HULBERT RI/FS
PORT OF EVERETT

	Depth (Ft BGS)	G-GC-102 (0-1) 1.5-2.5	G-GC-103 (0-1) 0.2-1.2	G-GC-104 (0-1) 0.2-1.2	G-GC-105 (0-1) 1-2	Dup of G-GC-105 (0-1) G-GC-205 (0-1) 1-2	G-GC-106 (0-1) 1-2	G-GC-107 (0-1) 1-2	G-GC-108 (0-1) 0.2-1.2	G-GC-109 (0-1) 1-2	J-FA-100 (4-5) 5-6
	Preliminary Screening Level	CHM101220-07 12/20/2010	CHM101220-07 12/20/2010	CHM101220-07 12/20/2010	CHM101122-2 11/22/2010	CHM101122-2 11/22/2010	CHM101122-2 11/22/2010	CHM101122-2 11/22/2010	CHM101220-07 12/20/2010	CHM101201-1 11/29/2010	CHM101201-1 11/29/2010
PAHs (mg/kg)											
Method SW8270SIM											
Naphthalene	140										
1-Methylnaphthalene											
2-Methylnaphthalene	320										
Acenaphthene	66										
Acenaphthylene											
Fluorene	550										
Phenanthrene	12,000										
Anthracene	12,000										
Fluoranthene	89										
Pyrene	2,400										
Benzo(a)anthracene	TEQ	0.05 U	0.05 U	0.05 U			0.05 U	0.05 U	0.05 U		
Chrysene	TEQ	0.05 U	0.05 U	0.05 U			0.05 U	0.05 U	0.05 U		
Benzo(b)fluoranthene	TEQ	0.05 U	0.05 U	0.05 U			0.05 U	0.05 U	0.05 U		
Benzo(k)fluoranthene	TEQ	0.05 U	0.05 U	0.05 U			0.05 U	0.05 U	0.05 U		
Benzo(a)pyrene	TEQ	0.05 U	0.05 U	0.05 U			0.05 U	0.05 U	0.05 U		
Indeno(1,2,3-cd)pyrene	TEQ	0.05 U	0.05 U	0.05 U			0.05 U	0.05 U	0.05 U		
Dibenzo(a,h)anthracene	TEQ	0.05 U	0.05 U	0.05 U			0.05 U	0.05 U	0.05 U		
Benzo(g,h,i)perylene											
cPAH TEQ	0.14	0.05 U	0.05 U	0.05 U			0.05 U	0.05 U	0.05 U		
SEMIVOLATILES (mg/kg)											
Method SW8270											
Aniline					0.2 U	0.2 U				0.2 U	0.2 U
Phenol					0.2 U	0.2 U				0.2 U	0.2 U
Bis(2-chloroethyl)ether					0.2 U	0.2 U				0.2 U	0.2 U
2-Chlorophenol					0.1 U	0.1 U				0.1 U	0.1 U
1,3-Dichlorobenzene					0.1 U	0.1 U				0.1 U	0.1 U
1,4-Dichlorobenzene					0.1 U	0.1 U				0.1 U	0.1 U
1,2-Dichlorobenzene					0.1 U	0.1 U				0.1 U	0.1 U
Benzyl Alcohol					0.1 U	0.1 U				0.1 U	0.1 U
Bis(2-chloroisopropyl)ether					0.1 U	0.1 U				0.1 U	0.1 U
2-Methylphenol (o-cresol)					0.1 U	0.1 U				0.1 U	0.1 U
Hexachloroethane					0.1 U	0.1 U				0.1 U	0.1 U
N-Nitroso-di-n-propylamine					0.1 UJ	0.1 UJ				0.1 U	0.1 U
4-Methylphenol (p-cresol)					0.1 U	0.1 U				0.1 U	0.1 U
3-Methylphenol (m-cresol)					0.1 U	0.1 U				0.1 U	0.1 U
Nitrobenzene					0.2 U	0.2 U				0.2 U	0.2 U
Isophorone					0.1 U	0.1 U				0.1 U	0.1 U
2-Nitrophenol					0.2 U	0.2 U				0.2 U	0.2 U
2,4-Dimethylphenol					0.1 U	0.1 U				0.1 U	0.1 U
Bis(2-chloroethoxy)methane					0.1 U	0.1 U				0.1 U	0.1 U
2,4-Dichlorophenol					0.2 U	0.2 U				0.2 U	0.2 U
1,2,4-Trichlorobenzene					0.1 U	0.1 U				0.1 U	0.1 U
Naphthalene	140				0.1 U	0.1 U				0.1 U	0.1 U
4-Chloroaniline					0.5 U	0.5 U				0.5 U	0.5 U
Hexachlorobutadiene					0.1 U	0.1 U				0.1 U	0.1 U
4-Chloro-3-methylphenol					0.5 U	0.5 U				0.5 U	0.5 U
2-Methylnaphthalene	320				0.1 U	0.1 U				0.1 U	0.1 U
1-Methylnaphthalene					0.1 U	0.1 U				0.1 U	0.1 U
Hexachlorocyclopentadiene					0.1 U	0.1 U				0.1 U	0.1 U
2,4,6-Trichlorophenol					0.2 U	0.2 U				0.2 U	0.2 U
2,4,5-Trichlorophenol					0.2 U	0.2 U				0.2 U	0.2 U
2-Chloronaphthalene					0.1 U	0.1 U				0.1 U	0.1 U
2-Nitroaniline					0.5 U	0.5 U				0.5 U	0.5 U
1,4-Dinitrobenzene					0.5 U	0.5 U				0.5 U	0.5 U

TABLE 10
PCB/PAH/SVOC - SOIL ANALYTICAL RESULTS
AMERON/HULBERT RI/FS
PORT OF EVERETT

	Depth (Ft BGS)	G-GC-102 (0-1) 1.5-2.5	G-GC-103 (0-1) 0.2-1.2	G-GC-104 (0-1) 0.2-1.2	G-GC-105 (0-1) 1-2	Dup of G-GC-105 (0-1) G-GC-205 (0-1) 1-2	G-GC-106 (0-1) 1-2	G-GC-107 (0-1) 1-2	G-GC-108 (0-1) 0.2-1.2	G-GC-109 (0-1) 1-2	J-FA-100 (4-5) 5-6
	Preliminary Screening Level	CHM101220-07 12/20/2010	CHM101220-07 12/20/2010	CHM101220-07 12/20/2010	CHM101122-2 11/22/2010	CHM101122-2 11/22/2010	CHM101122-2 11/22/2010	CHM101122-2 11/22/2010	CHM101220-07 12/20/2010	CHM101201-1 11/29/2010	CHM101201-1 11/29/2010
Acenaphthylene					0.1 U	0.1 U				0.1 U	0.1 U
1,3-Dinitrobenzene					0.5 U	0.5 U				0.5 U	0.5 U
Dimethylphthalate					0.1 U	0.1 U				0.1 U	0.1 U
2,6-Dinitrotoluene					0.1 U	0.1 U				0.1 U	0.1 U
1,2-Dinitrobenzene					0.1 U	0.1 U				0.1 U	0.1 U
Acenaphthene	66				0.1 U	0.1 U				0.1 U	0.1 U
3-Nitroaniline					0.5 U	0.5 U				0.5 U	0.5 U
2,4-Dinitrophenol					0.2 U	0.2 U				0.2 U	0.2 U
Dibenzofuran					0.1 U	0.1 U				0.1 U	0.1 U
2,4-Dinitrotoluene					0.1 U	0.1 U				0.1 U	0.1 U
4-Nitrophenol					0.5 UJ	0.5 UJ				0.5 U	0.5 U
2,3,4,6-Tetrachlorophenol					0.1 U	0.1 U				0.1 U	0.1 U
2,3,5,6-Tetrachlorophenol					0.1 U	0.1 U				0.1 U	0.1 U
Fluorene	550				0.1 U	0.1 U				0.1 U	0.1 U
4-Chlorophenyl phenyl ether					0.1 U	0.1 U				0.1 U	0.1 U
Diethylphthalate					0.1 U	0.1 U				0.1 U	0.1 U
4,6-Dinitro-2-methylphenol					0.2 U	0.2 U				0.2 U	0.2 U
Diphenylamine					0.5 U	0.5 U				0.5 U	0.5 U
Azobenzene					0.1 U	0.1 U				0.1 U	0.1 U
4-Bromo phenyl phenyl ether					0.1 U	0.1 U				0.1 U	0.1 U
Hexachlorobenzene					0.1 U	0.1 U				0.1 U	0.1 U
Pentachlorophenol					0.2 U	0.2 U				0.2 U	0.2 U
Phenanthrene	12,000				0.1 U	0.1 U				0.1 U	0.1 U
Anthracene	12,000				0.1 U	0.1 U				0.1 U	0.1 U
Carbazole					0.5 U	0.5 U				0.5 U	0.5 U
Di-n-butylphthalate	100				**1.22** J	**0.721** J				1.44 U	0.656 U
Fluoranthene	89				0.1 U	0.1 U				0.1 U	0.1 U
Pyrene	2,400				0.1 U	0.1 U				0.1 U	0.1 U
Benzyl Butyl phthalate					0.1 U	0.1 U				0.1 U	0.1 U
bis (2-Ethylhexyl) adipate					0.1 U	0.1 U				0.1 U	0.1 U
Benzo(a)anthracene	TEQ				0.08 U	0.08 U				0.08 U	0.08 U
Chrysene	TEQ				0.08 U	0.08 U				0.08 U	0.08 U
bis (2-Ethylhexyl) phthalate	4.9				0.1 U	0.1 U				0.1 U	0.1 U
Di-n-octyl phthalate	1,600				0.1 U	0.1 U				0.1 U	0.1 U
Benzo(b)fluoranthene	TEQ				0.08 U	0.08 U				0.08 U	0.08 U
Benzo(k)fluoranthene	TEQ				0.08 U	0.08 U				0.08 U	0.08 U
Benzo(a)pyrene	0.14				0.08 U	0.08 U				0.08 U	0.08 U
Indeno(1,2,3-cd)pyrene	TEQ				0.08 U	0.08 U				0.08 U	0.08 U
Dibenz(a,h)anthracene	TEQ				0.08 U	0.08 U				0.08 U	0.08 U
Benzo(g,h,i)perylene					0.08 U	0.08 U				0.08 U	0.08 U
Benzoic Acid	320,000				0.2 U	0.2 U				0.2 U	0.2 U
cPAH TEQ	0.14				0.08 U	0.08 U				0.08 U	0.08 U
PCBs (mg/kg)											
Method SW8082											
Aroclor 1016					0.1 U	0.1 U					0.1 U
Aroclor 1221					0.1 U	0.1 U					0.1 U
Aroclor 1232					0.1 U	0.1 U					0.1 U
Aroclor 1242					0.1 U	0.1 U					0.1 U
Aroclor 1248					0.1 U	0.1 U					0.1 U
Aroclor 1254					0.1 U	0.1 U					0.1 U
Aroclor 1260					0.1 U	0.1 U					0.1 U
Total PCBs	1				0.1 U	0.1 U					0.1 U

TABLE 10
PCB/PAH/SVOC - SOIL ANALYTICAL RESULTS
AMERON/HULBERT RI/FS
PORT OF EVERETT

	Depth (Ft BGS)	J-FA-101 (27-28)	J-FA-102 (13-14)	J-GC-100 (0-1)	J-GC-101 (0-1)	M-FA-100 (0-1)	M-FA-102 (7-7.5)	M-FA-102 (9-10)	M-FA-104 (0-1)	M-FA-105 (0-1)	M-FA-106(0-1)
		28-29	14-15	1-2	1-2	1-2	7-7.5	9-10	0.5-1.5	0-1	0-1
	Preliminary Screening Level	CHM101201-1/ L15821-1 11/29/2010	CHM101201-1 11/29/2010	CHM101201-1 11/29/2010	CHM101201-1 11/29/2010	CHM101122-2 11/22/2010	CHM101202-16 12/1/2010	CHM101213-7 12/1/2010	CHM101122-2 11/22/2010	CHM110202-5/ CHM110131-4 1/28/2011	CHM101202-16/ CHM110131-4 12/2/2010
PAHs (mg/kg)											
Method SW8270SIM											
Naphthalene	140										0.05 U
1-Methylnaphthalene											0.05 U
2-Methylnaphthalene	320										0.05 U
Acenaphthene	66										0.05 U
Acenaphthylene											0.05 U
Fluorene	550										0.05 U
Phenanthrene	12,000										0.05 U
Anthracene	12,000										0.05 U
Fluoranthene	89										0.05 U
Pyrene	2,400										0.05 U
Benzo(a)anthracene	TEQ	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U		0.05 UJ	0.05 U		0.05 U
Chrysene	TEQ	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U		0.05 UJ	0.05 U		0.05 U
Benzo(b)fluoranthene	TEQ	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U		0.05 UJ	0.05 U		0.05 U
Benzo(k)fluoranthene	TEQ	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U		0.05 UJ	0.05 U		0.05 U
Benzo(a)pyrene	TEQ	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U		0.05 UJ	0.05 U		0.05 U
Indeno(1,2,3-cd)pyrene	TEQ	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U		**0.150** J	0.05 U		0.05 U
Dibenzo(a,h)anthracene	TEQ	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U		0.05 UJ	0.05 U		0.05 U
Benzo(g,h,i)perylene											0.05 U
cPAH TEQ	0.14	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U		**0.015** J	0.05 U		0.05 U
SEMIVOLATILES (mg/kg)											
Method SW8270											
Aniline							0.2 U			0.2 U	
Phenol							0.2 U			0.2 U	
Bis(2-chloroethyl)ether							0.2 U			0.2 U	
2-Chlorophenol							0.1 U			0.1 U	
1,3-Dichlorobenzene							0.1 U			0.1 U	
1,4-Dichlorobenzene							0.1 U			0.1 U	
1,2-Dichlorobenzene							0.1 U			0.1 U	
Benzyl Alcohol							0.1 U			0.1 U	
Bis(2-chloroisopropyl)ether							0.1 U			0.1 U	
2-Methylphenol (o-cresol)							0.1 U			0.1 U	
Hexachloroethane							0.1 U			0.1 U	
N-Nitroso-di-n-propylamine							0.1 U			0.1 U	
4-Methylphenol (p-cresol)							0.1 U			0.1 U	
3-Methylphenol (m-cresol)							0.1 U			0.1 U	
Nitrobenzene							0.2 U			0.2 U	
Isophorone							0.1 U			0.1 U	
2-Nitrophenol							0.2 U			0.2 U	
2,4-Dimethylphenol							0.1 U			0.1 U	
Bis(2-chloroethoxy)methane							0.1 U			0.1 U	
2,4-Dichlorophenol							0.2 U			0.2 U	
1,2,4-Trichlorobenzene							0.1 U			0.1 U	
Naphthalene	140						0.1 U			0.1 U	
4-Chloroaniline							0.5 U			0.5 U	
Hexachlorobutadiene							0.1 U			0.1 U	
4-Chloro-3-methylphenol							0.5 U			0.5 U	
2-Methylnaphthalene	320						0.1 U			0.1 U	
1-Methylnaphthalene							0.1 U			0.1 U	
Hexachlorocyclopentadiene							0.1 U			0.1 U	
2,4,6-Trichlorophenol							0.2 U			0.2 U	
2,4,5-Trichlorophenol							0.2 U			0.2 U	
2-Chloronaphthalene							0.1 U			0.1 U	
2-Nitroaniline							0.5 U			0.5 U	
1,4-Dinitrobenzene							0.5 U			0.5 U	

TABLE 10
PCB/PAH/SVOC - SOIL ANALYTICAL RESULTS
AMERON/HULBERT RI/FS
PORT OF EVERETT

	Depth (Ft BGS)	J-FA-101 (27-28)	J-FA-102 (13-14)	J-GC-100 (0-1)	J-GC-101 (0-1)	M-FA-100 (0-1)	M-FA-102 (7-7.5)	M-FA-102 (9-10)	M-FA-104 (0-1)	M-FA-105 (0-1)	M-FA-106(0-1)
		28-29	14-15	1-2	1-2	1-2	7-7.5	9-10	0.5-1.5	0-1	0-1
	Preliminary Screening Level	CHM101201-1/ L15821-1 11/29/2010	CHM101201-1 11/29/2010	CHM101201-1 11/29/2010	CHM101201-1 11/29/2010	CHM101122-2 11/22/2010	CHM101202-16 12/1/2010	CHM101213-7 12/1/2010	CHM101122-2 11/22/2010	CHM110202-5/ CHM110131-4 1/28/2011	CHM101202-16/ CHM110131-4 12/2/2010
Acenaphthylene							0.1 U			0.1 U	
1,3-Dinitrobenzene							0.5 U			0.5 U	
Dimethylphthalate							0.1 U			0.1 U	
2,6-Dinitrotoluene							0.1 U			0.1 U	
1,2-Dinitrobenzene							0.1 U			0.1 U	
Acenaphthene	66						0.1 U			0.1 U	
3-Nitroaniline							0.5 U			0.5 U	
2,4-Dinitrophenol							0.2 U			0.2 U	
Dibenzofuran							0.1 U			0.1 U	
2,4-Dinitrotoluene							0.1 U			0.1 U	
4-Nitrophenol							0.5 U			0.5 U	
2,3,4,6-Tetrachlorophenol							0.1 U			0.1 U	
2,3,5,6-Tetrachlorophenol							0.1 U			0.1 U	
Fluorene	550						0.1 U			0.1 U	
4-Chlorophenyl phenyl ether							0.1 U			0.1 U	
Diethylphthalate							0.1 U			0.1 U	
4,6-Dinitro-2-methylphenol							0.2 U			0.2 U	
Diphenylamine							0.5 U			0.5 U	
Azobenzene							0.1 U			0.1 U	
4-Bromo phenyl phenyl ether							0.1 U			0.1 U	
Hexachlorobenzene							0.1 U			0.1 U	
Pentachlorophenol							0.2 U			0.2 U	
Phenanthrene	12,000						**0.260**			0.1 U	
Anthracene	12,000						0.1 U			0.1 U	
Carbazole							0.5 U			0.5 U	
Di-n-butylphthalate	100						0.501 U			0.1 U	
Fluoranthene	89						**0.501**			0.1 U	
Pyrene	2,400						**0.420**			0.1 U	
Benzyl Butyl phthalate							**14.1**			0.1 U	
bis (2-Ethylhexyl) adipate							0.1 U			0.1 U	
Benzo(a)anthracene	TEQ						**0.140**			0.08 U	
Chrysene	TEQ						**0.230**			0.08 U	
bis (2-Ethylhexyl) phthalate	4.9						**0.330**			**0.141**	
Di-n-octyl phthalate	1,600						0.1 U			0.1 U	
Benzo(b)fluoranthene	TEQ						**0.340**			0.08 U	
Benzo(k)fluoranthene	TEQ						**0.280**			0.08 U	
Benzo(a)pyrene	0.14						**0.130**			0.08 U	
Indeno(1,2,3-cd)pyrene	TEQ						**0.180**			0.08 U	
Dibenz(a,h)anthracene	TEQ						0.08 U			0.08 U	
Benzo(g,h,i)perylene							**0.140**			0.08 U	
Benzoic Acid	320,000						0.2 U			0.2 U	
cPAH TEQ	0.14						**0.226**			0.08 U	
PCBs (mg/kg)											
Method SW8082											
Aroclor 1016							0.1 U		0.1 U		0.1 U
Aroclor 1221							0.1 U		0.1 U		0.1 U
Aroclor 1232							0.1 U		0.1 U		0.1 U
Aroclor 1242							0.1 U		0.1 U		0.1 U
Aroclor 1248							0.1 U		0.1 U		0.1 U
Aroclor 1254							0.1 U		0.1 U		0.1 U
Aroclor 1260							0.1 U		0.1 U		0.1 U
Total PCBs	1						0.1 U		0.1 U		0.1 U

TABLE 10
PCB/PAH/SVOC - SOIL ANALYTICAL RESULTS
AMERON/HULBERT RI/FS
PORT OF EVERETT

	Depth (Ft BGS)	M-FA-107 (0-1) 0-1	M-FA-108 (0-1) 0-1	M-GC-100 (0-1) 1-2	M-GC-101 (0-1) 1-2	M-GC-102 (0-1) 1-2	Dup of M-GC-102 (0-1) M-GC-202 (0-1) 1-2	M-GC-103 (0-1) 1-2	M-GC-104 (0-1) 1.5-2.5	M-GC-105 (0-0.2) 0-0.2
	Preliminary Screening Level	CHM110131-4 1/28/2011	CHM110131-4 1/28/2011	CHM101201-1 11/30/2010	CHM101201-1 11/30/2010	CHM101201-1 11/30/2010	CHM101201-1 11/30/2010	CHM101217-8 12/17/2010	CHM101202-16 12/2/2010	CHM110131-4/ CHM110202-5 1/29/2011
PAHs (mg/kg)										
Method SW8270SIM										
Naphthalene	140	0.05 U	0.05 U							
1-Methylnaphthalene		0.05 U	0.05 U							
2-Methylnaphthalene	320	0.05 U	0.05 U							
Acenaphthene	66	0.05 U	0.05 U							
Acenaphthylene		0.05 U	0.05 U							
Fluorene	550	0.05 U	0.05 U							
Phenanthrene	12,000	0.05 U	0.05 U							
Anthracene	12,000	0.05 U	0.05 U							
Fluoranthene	89	0.05 U	0.05 U							
Pyrene	2,400	0.05 U	0.05 U							
Benzo(a)anthracene	TEQ	0.05 U	0.05 U		0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	
Chrysene	TEQ	0.05 U	0.05 U		0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	
Benzo(b)fluoranthene	TEQ	0.05 U	0.05 U		0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	
Benzo(k)fluoranthene	TEQ	0.05 U	0.05 U		0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	
Benzo(a)pyrene	TEQ	0.05 U	0.05 U		0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	
Indeno(1,2,3-cd)pyrene	TEQ	0.05 U	0.05 U		0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	
Dibenzo(a,h)anthracene	TEQ	0.05 U	0.05 U		0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	
Benzo(g,h,i)perylene		0.05 U	0.05 U							
cPAH TEQ	0.14	0.05 U	0.05 U		0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	
SEMIVOLATILES (mg/kg)										
Method SW8270										
Aniline				0.2 U						0.2 U
Phenol				0.2 U						0.2 U
Bis(2-chloroethyl)ether				0.2 U						0.2 U
2-Chlorophenol				0.1 U						0.1 U
1,3-Dichlorobenzene				0.1 U						0.1 U
1,4-Dichlorobenzene				0.1 U						0.1 U
1,2-Dichlorobenzene				0.1 U						0.1 U
Benzyl Alcohol				0.1 U						0.1 U
Bis(2-chloroisopropyl)ether				0.1 U						0.1 U
2-Methylphenol (o-cresol)				0.1 U						0.1 U
Hexachloroethane				0.1 U						0.1 U
N-Nitroso-di-n-propylamine				0.1 U						0.1 U
4-Methylphenol (p-cresol)				0.1 U						0.1 U
3-Methylphenol (m-cresol)				0.1 U						0.1 U
Nitrobenzene				0.2 U						0.2 U
Isophorone				0.1 U						0.1 U
2-Nitrophenol				0.2 U						0.2 U
2,4-Dimethylphenol				0.1 U						0.1 U
Bis(2-chloroethoxy)methane				0.1 U						0.1 U
2,4-Dichlorophenol				0.2 U						0.2 U
1,2,4-Trichlorobenzene				0.1 U						0.1 U
Naphthalene	140			0.1 U						**0.179**
4-Chloroaniline				0.5 U						0.5 U
Hexachlorobutadiene				0.1 U						0.1 U
4-Chloro-3-methylphenol				0.5 U						0.5 U
2-Methylnaphthalene	320			0.1 U						**0.0901** J
1-Methylnaphthalene				0.1 U						0.1 U
Hexachlorocyclopentadiene				0.1 U						0.1 U
2,4,6-Trichlorophenol				0.2 U						0.2 U
2,4,5-Trichlorophenol				0.2 U						0.2 U
2-Chloronaphthalene				0.1 U						0.1 U
2-Nitroaniline				0.5 U						0.5 U
1,4-Dinitrobenzene				0.5 U						0.5 U

TABLE 10
PCB/PAH/SVOC - SOIL ANALYTICAL RESULTS
AMERON/HULBERT RI/FS
PORT OF EVERETT

	Depth (Ft BGS)	M-FA-107 (0-1) 0-1	M-FA-108 (0-1) 0-1	M-GC-100 (0-1) 1-2	M-GC-101 (0-1) 1-2	M-GC-102 (0-1) 1-2	Dup of M-GC-102 (0-1) M-GC-202 (0-1) 1-2	M-GC-103 (0-1) 1-2	M-GC-104 (0-1) 1.5-2.5	M-GC-105 (0-0.2) 0-0.2
	Preliminary Screening Level	CHM110131-4 1/28/2011	CHM110131-4 1/28/2011	CHM101201-1 11/30/2010	CHM101201-1 11/30/2010	CHM101201-1 11/30/2010	CHM101201-1 11/30/2010	CHM101217-8 12/17/2010	CHM101202-16 12/2/2010	CHM110131-4/ CHM110202-5 1/29/2011
Acenaphthylene				0.1 U						0.1 U
1,3-Dinitrobenzene				0.5 U						0.5 U
Dimethylphthalate				0.1 U						0.1 U
2,6-Dinitrotoluene				0.1 U						0.1 U
1,2-Dinitrobenzene				0.1 U						0.1 U
Acenaphthene	66			0.1 U						0.1 U
3-Nitroaniline				0.5 U						0.5 U
2,4-Dinitrophenol				0.2 U						0.2 U
Dibenzofuran				0.1 U						0.1 U
2,4-Dinitrotoluene				0.1 U						0.1 U
4-Nitrophenol				0.5 U						0.5 U
2,3,4,6-Tetrachlorophenol				0.1 U						0.1 U
2,3,5,6-Tetrachlorophenol				0.1 U						0.1 U
Fluorene	550			0.1 U						0.1 U
4-Chlorophenyl phenyl ether				0.1 U						0.1 U
Diethylphthalate				0.1 U						0.1 U
4,6-Dinitro-2-methylphenol				0.2 U						0.2 U
Diphenylamine				0.5 U						0.5 U
Azobenzene				0.1 U						0.1 U
4-Bromo phenyl phenyl ether				0.1 U						0.1 U
Hexachlorobenzene				0.1 U						0.1 U
Pentachlorophenol				0.2 U						0.2 U
Phenanthrene	12,000			0.1 U						**0.0850** J
Anthracene	12,000			0.1 U						0.1 U
Carbazole				0.5 U						0.5 U
Di-n-butylphthalate	100			0.746 U						0.1 U
Fluoranthene	89			0.1 U						**0.118**
Pyrene	2,400			0.1 U						**0.285**
Benzyl Butyl phthalate				0.1 U						0.1 U
bis (2-Ethylhexyl) adipate				0.1 U						**0.232**
Benzo(a)anthracene	TEQ			0.08 U						0.08 U
Chrysene	TEQ			0.08 U						0.08 U
bis (2-Ethylhexyl) phthalate	4.9			0.1 U						0.1 U
Di-n-octyl phthalate	1,600			0.1 U						0.1 U
Benzo(b)fluoranthene	TEQ			0.08 U						0.08 U
Benzo(k)fluoranthene	TEQ			0.08 U						0.08 U
Benzo(a)pyrene	0.14			0.08 U						0.08 U
Indeno(1,2,3-cd)pyrene	TEQ			0.08 U						0.08 U
Dibenz(a,h)anthracene	TEQ			0.08 U						0.08 U
Benzo(g,h,i)perylene				0.08 U						0.08 U
Benzoic Acid	320,000			0.2 U						0.2 U
cPAH TEQ	0.14			0.08 U						0.08 U
PCBs (mg/kg)										
Method SW8082										
Aroclor 1016		0.1 U	0.1 U	0.1 U						0.1 U
Aroclor 1221		0.1 U	0.1 U	0.1 U						0.1 U
Aroclor 1232		0.1 U	0.1 U	0.1 U						0.1 U
Aroclor 1242		0.1 U	0.1 U	0.1 U						0.1 U
Aroclor 1248		0.1 U	0.1 U	0.1 U						0.1 U
Aroclor 1254		0.1 U	**0.125**	0.1 U						0.1 U
Aroclor 1260		0.1 U	0.1 U	0.1 U						0.1 U
Total PCBs	1	0.1 U	**0.125**	0.1 U						0.1 U

TABLE 10
PCB/PAH/SVOC - SOIL ANALYTICAL RESULTS
AMERON/HULBERT RI/FS
PORT OF EVERETT

	Depth (Ft BGS)	Dup of M-GC-105 (0-0.2) M-GC-10502 (0-0.2) 0-0.2	M-GC-106 (0-1) 0-1	N-FA-102 (2-3) 2-3	N-FA-103B (6-7) 6.3-7.3	RI-MW-5 (0-1) 0-1
	Preliminary Screening Level	CHM110131-4/ CHM110202-5 1/29/2011	CHM101202-16 12/2/2010	CHM101202-16 12/1/2010	CHM101202-16 12/1/2010	CHM101208-9 12/7/2010
PAHs (mg/kg)						
Method SW8270SIM						
Naphthalene	140					
1-Methylnaphthalene						
2-Methylnaphthalene	320					
Acenaphthene	66					
Acenaphthylene						
Fluorene	550					
Phenanthrene	12,000					
Anthracene	12,000					
Fluoranthene	89					
Pyrene	2,400					
Benzo(a)anthracene	TEQ		**0.0800**			0.05 U
Chrysene	TEQ		**0.196**			0.05 U
Benzo(b)fluoranthene	TEQ		**0.178**			0.05 U
Benzo(k)fluoranthene	TEQ		0.05 U			0.05 U
Benzo(a)pyrene	TEQ		**0.0978**			0.05 U
Indeno(1,2,3-cd)pyrene	TEQ		**0.0445** J			0.05 U
Dibenzo(a,h)anthracene	TEQ		0.05 U			0.05 U
Benzo(g,h,i)perylene						
cPAH TEQ	0.14		**0.13** J			0.05 U
SEMIVOLATILES (mg/kg)						
Method SW8270						
Aniline		0.2 U		0.2 U	0.2 U	
Phenol		0.2 UJ		0.2 U	0.2 U	
Bis(2-chloroethyl)ether		0.2 U		0.2 U	0.2 U	
2-Chlorophenol		0.1 UJ		0.1 U	0.1 U	
1,3-Dichlorobenzene		0.1 U		0.1 U	0.1 U	
1,4-Dichlorobenzene		0.1 U		0.1 U	0.1 U	
1,2-Dichlorobenzene		0.1 U		0.1 U	0.1 U	
Benzyl Alcohol		0.1 U		0.1 U	0.1 U	
Bis(2-chloroisopropyl)ether		0.1 U		0.1 U	0.1 U	
2-Methylphenol (o-cresol)		0.1 UJ		0.1 U	0.1 U	
Hexachloroethane		0.1 U		0.1 U	0.1 U	
N-Nitroso-di-n-propylamine		0.1 U		0.1 U	0.1 U	
4-Methylphenol (p-cresol)		0.1 UJ		0.1 U	0.1 U	
3-Methylphenol (m-cresol)		0.1 UJ		0.1 U	0.1 U	
Nitrobenzene		0.2 U		0.2 U	0.2 U	
Isophorone		0.1 U		0.1 U	0.1 U	
2-Nitrophenol		0.2 UJ		0.2 U	0.2 U	
2,4-Dimethylphenol		0.1 UJ		0.1 U	0.1 U	
Bis(2-chloroethoxy)methane		0.1 U		0.1 U	0.1 U	
2,4-Dichlorophenol		0.2 UJ		0.2 U	0.2 U	
1,2,4-Trichlorobenzene		0.1 U		0.1 U	0.1 U	
Naphthalene	140	**0.123**		**0.430** J	0.1 U	
4-Chloroaniline		0.5 U		0.5 U	0.5 U	
Hexachlorobutadiene		0.1 U		0.1 U	0.1 U	
4-Chloro-3-methylphenol		0.5 UJ		0.5 U	0.5 U	
2-Methylnaphthalene	320	**0.0690** J		**0.246**	0.1 U	
1-Methylnaphthalene		0.1 U		0.1 U	0.1 U	
Hexachlorocyclopentadiene		0.1 U		0.1 U	0.1 U	
2,4,6-Trichlorophenol		0.2 UJ		0.2 U	0.2 U	
2,4,5-Trichlorophenol		0.2 UJ		0.2 U	0.2 U	
2-Chloronaphthalene		0.1 U		0.1 U	0.1 U	
2-Nitroaniline		0.5 U		0.5 U	0.5 U	
1,4-Dinitrobenzene		0.5 U		0.5 U	0.5 U	

TABLE 10
PCB/PAH/SVOC - SOIL ANALYTICAL RESULTS
AMERON/HULBERT RI/FS
PORT OF EVERETT

	Depth (Ft BGS)	Dup of M-GC-105 (0-0.2) M-GC-10502 (0-0.2) 0-0.2	M-GC-106 (0-1) 0-1	N-FA-102 (2-3) 2-3	N-FA-103B (6-7) 6.3-7.3	RI-MW-5 (0-1) 0-1
	Preliminary Screening Level	CHM110131-4/ CHM110202-5 1/29/2011	CHM101202-16 12/2/2010	CHM101202-16 12/1/2010	CHM101202-16 12/1/2010	CHM101208-9 12/7/2010
Acenaphthylene		0.1 U		0.1 U	0.1 U	
1,3-Dinitrobenzene		0.5 U		0.5 U	0.5 U	
Dimethylphthalate		0.1 U		0.1 U	0.1 U	
2,6-Dinitrotoluene		0.1 U		0.1 U	0.1 U	
1,2-Dinitrobenzene		0.1 U		0.1 U	0.1 U	
Acenaphthene	66	0.1 U		0.1 U	0.1 U	
3-Nitroaniline		0.5 U		0.5 U	0.5 U	
2,4-Dinitrophenol		0.2 UJ		0.2 U	0.2 U	
Dibenzofuran		0.1 U		0.1 U	0.1 U	
2,4-Dinitrotoluene		0.1 U		0.1 U	0.1 U	
4-Nitrophenol		0.5 UJ		0.5 U	0.5 U	
2,3,4,6-Tetrachlorophenol		0.1 UJ		0.1 U	0.1 U	
2,3,5,6-Tetrachlorophenol		0.1 UJ		0.1 U	0.1 U	
Fluorene	550	0.1 U		**0.246**	0.1 U	
4-Chlorophenyl phenyl ether		0.1 U		0.1 U	0.1 U	
Diethylphthalate		0.1 U		0.1 U	0.1 U	
4,6-Dinitro-2-methylphenol		0.2 UJ		0.2 U	0.2 U	
Diphenylamine		0.5 U		0.5 U	0.5 U	
Azobenzene		0.1 U		0.1 U	0.1 U	
4-Bromo phenyl phenyl ether		0.1 U		0.1 U	0.1 U	
Hexachlorobenzene		0.1 U		0.1 U	0.1 U	
Pentachlorophenol		0.2 UJ		0.2 U	0.2 U	
Phenanthrene	12,000	**0.187** J		**1.26** J	0.1 U	
Anthracene	12,000	0.1 U		0.1 U	0.1 U	
Carbazole		0.5 U		0.5 U	0.5 U	
Di-n-butylphthalate	100	0.1 U		**9.89** J	1.5 U	
Fluoranthene	89	**0.170**		**1.29** J	0.1 U	
Pyrene	2,400	**0.282**		**1.32** J	0.1 U	
Benzyl Butyl phthalate		0.1 U		0.1 U	0.1 U	
bis (2-Ethylhexyl) adipate		**0.198**		0.1 U	0.1 U	
Benzo(a)anthracene	TEQ	0.08 U		**0.492** J	0.08 U	
Chrysene	TEQ	0.08 U		**0.830** J	0.08 U	
bis (2-Ethylhexyl) phthalate	4.9	0.1 U		**0.461**	**0.331**	
Di-n-octyl phthalate	1,600	0.1 U		0.1 U	0.1 U	
Benzo(b)fluoranthene	TEQ	0.08 U		**0.983** J	0.08 U	
Benzo(k)fluoranthene	TEQ	0.08 U		**1.01** J	0.08 U	
Benzo(a)pyrene	0.14	0.08 U		**0.492** J	0.08 U	
Indeno(1,2,3-cd)pyrene	TEQ	0.08 U		**0.492** J	0.08 U	
Dibenz(a,h)anthracene	TEQ	0.08 U		0.08 U	0.08 U	
Benzo(g,h,i)perylene		0.08 U		**0.399** J	0.08 U	
Benzoic Acid	320,000	0.2 U		0.2 U	0.2 U	
cPAH TEQ	0.14	0.08 U		**0.798** J	0.08 U	
PCBs (mg/kg)						
Method SW8082						
Aroclor 1016		0.1 U		0.1 U	0.1 U	
Aroclor 1221		0.1 U		0.1 U	0.1 U	
Aroclor 1232		0.1 U		0.1 U	0.1 U	
Aroclor 1242		0.1 U		0.1 U	0.1 U	
Aroclor 1248		0.1 U		0.1 U	0.1 U	
Aroclor 1254		0.1 U		**3.85**	0.1 U	
Aroclor 1260		0.1 U		0.1 U	0.1 U	
Total PCBs	1	0.1 U		**3.85**	0.1 U	

U = Indicates the compound was undetected at the reported concentration.
UJ = The analyte was not detected in the sample; the reported sample reporting limit is an estimate.
J = Indicates the analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
Bold = Detected compound.
Boxed value indicates exceedance of preliminary screening level.
Shaded box indicates a detection is greater than 3 times the preliminary screening level

TABLE 11
VOC/DIOXINS - SOIL ANALYTICAL RESULTS
AMERON/HULBERT RI/FS
PORT OF EVERETT

	Depth (Ft bgs) Preliminary Screening Level	G-FA-103 (5.5-6.5) 5.5-6.5 CHM101201-1 11/30/2010	N-FA-102 (2-3) 2-3 CHM101202-16 12/1/2010	N-FA-103B (6-7) 6.3-7.3 CHM101202-16 12/1/2010	Dup of N-FA-103B (6-7) N-FA-203B (6-7) 6.3-7.3 CHM101202-16 12/1/2010	J-FA-101 (27-28) 28-29 CHM101201-1/ L15821-1 11/29/2010	Dup of J-FA-101 (27-28) J-FA-201 (27-28) 28-29 L15821-2 11/29/2010
VOLATILES (mg/kg)							
Method SW8260B							
Dichlorodifluoromethane (CFC-12)		0.06 U	0.06 U	0.06 U	0.06 U		
Chloromethane		0.06 U	0.06 U	0.06 U	0.06 U		
Vinyl Chloride		0.002 U	0.002 U	0.002 U	0.002 U		
Bromomethane		0.09 U	0.09 U	0.09 U	0.09 U		
Chloroethane		0.06 U	0.06 U	0.06 U	0.06 U		
Trichlorofluoromethane (CFC-11)		0.05 U	0.05 U	0.05 U	0.05 U		
1,1-Dichloroethene		0.05 U	0.05 U	0.05 U	0.05 U		
Methylene Chloride	2.6	0.03 U	0.03 U	0.03 U	0.03 U		
Trans-1,2-Dichloroethene		0.02 U	0.02 U	0.02 U	0.02 U		
1,1-Dichloroethane	16,000	0.02 U	**0.0346**	0.02 U	0.02 U		
2,2-Dichloropropane		0.05 U	0.05 U	0.05 U	0.05 U		
Cis-1,2-Dichloroethene		0.02 U	0.02 U	0.02 U	0.02 U		
Chloroform		0.02 U	0.02 U	0.02 U	0.02 U		
1,1-Dichloropropene		0.02 U	0.02 U	0.02 U	0.02 U		
Carbon tetrachloride		0.02 U	0.02 U	0.02 U	0.02 U		
1,1,1-Trichloroethane (TCA)	3,400	0.02 U	0.02 U	0.02 U	0.02 U		
Benzene	0.29	0.02 U	0.02 U	0.02 U	0.02 U		
1,2-Dichloroethane (EDC)		0.03 U	0.03 U	0.03 U	0.03 U		
Trichloroethene (TCE)	0.04	0.03 U	**0.0408**	0.03 U	0.03 U		
1,2-Dichloropropane		0.02 U	0.02 U	0.02 U	0.02 U		
Dibromomethane		0.04 U	0.04 U	0.04 U	0.04 U		
Bromodichloromethane		0.02 U	0.02 U	0.02 U	0.02 U		
cis-1,3-Dichloropropene		0.02 U	0.02 U	0.02 U	0.02 U		
Toluene	110	0.02 U	0.02 U	0.02 U	0.02 U		
Trans-1,3-Dichloropropene		0.03 U	0.03 U	0.03 U	0.03 U		
1,1,2-Trichloroethane		0.03 U	0.03 U	0.03 U	0.03 U		
Tetrachloroethene (PCE)	1.9	0.02 U	0.02 U	0.02 U	0.02 U		
1,3-Dichloropropane		0.05 U	0.05 U	0.05 U	0.05 U		
Dibromochloromethane		0.03 U	0.03 U	0.03 U	0.03 U		
1,2-Dibromoethane (EDB)		0.005 U	0.005 U	0.005 U	0.005 U		
Chlorobenzene		0.02 U	0.02 U	0.02 U	0.02 U		
1,1,1,2-Tetrachloroethane		0.03 U	0.03 U	0.03 U	0.03 U		
Ethylbenzene	18	0.03 U	0.03 U	0.03 U	0.03 U		
Total Xylenes	15	0.03 U	0.03 U	0.03 U	0.03 U		
Styrenes		0.02 U	0.02 U	0.02 U	0.02 U		
Bromoform		0.02 U	0.02 U	0.02 U	0.02 U		
Isopropylbenzene	8,000	0.08 U	0.08 U	0.08 U	0.08 U		
1,2,3-Trichloropropane		0.02 U	0.02 U	0.02 U	0.02 U		
Bromobenzene		0.03 U	0.03 U	0.03 U	0.03 U		
1,1,2,2-Tetrachloroethane		0.02 U	0.02 U	0.02 U	0.02 U		
n-Propylbenzene		0.02 U	0.02 U	0.02 U	0.02 U		
2-Chlorotoluene		0.02 U	0.02 U	0.02 U	0.02 U		
4-Chlorotoluene		0.02 U	0.02 U	0.02 U	0.02 U		
1,3,5-Trimethylbenzene	4,000	**0.0836** J	0.02 U	0.02 U	0.02 U		
tert-Butylbenzene		0.02 U	0.02 U	0.02 U	0.02 U		
1,2,4-Trimethylbenzene	4,000	**0.359** J	0.02 U	**0.0456**	0.02 U		
Sec-Butylbenzene		**0.0323**	0.02 U	0.02 U	0.02 U		
1,3-Dichlorobenzene		0.02 U	0.02 U	0.02 U	0.02 U		
4-Isopropyltoluene		0.02 U	0.02 U	0.02 U	0.02 U		

TABLE 11
VOC/DIOXINS - SOIL ANALYTICAL RESULTS
AMERON/HULBERT RI/FS
PORT OF EVERETT

	Depth (Ft bgs) Preliminary Screening Level	G-FA-103 (5.5-6.5) 5.5-6.5 CHM101201-1 11/30/2010	N-FA-102 (2-3) 2-3 CHM101202-16 12/1/2010	N-FA-103B (6-7) 6.3-7.3 CHM101202-16 12/1/2010	Dup of N-FA-103B (6-7) N-FA-203B (6-7) 6.3-7.3 CHM101202-16 12/1/2010	J-FA-101 (27-28) 28-29 CHM101201-1/ L15821-1 11/29/2010	Dup of J-FA-101 (27-28) J-FA-201 (27-28) 28-29 L15821-2 11/29/2010
1,4-Dichlorobenzene		0.02 U	0.02 U	0.02 U	0.02 U		
1,2-Dichlorobenzene		0.02 U	0.02 U	0.02 U	0.02 U		
n-Butylbenzene		**0.0969** J	0.02 U	0.02 U	0.02 U		
1,2-Dibromo-3-Chloropropane		0.03 U	0.03 U	0.03 U	0.03 U		
1,2,4-Trichlorobenzene		0.05 U	0.05 U	0.05 U	0.05 U		
Hexachloro-1,3-butadiene		0.10 U	0.10 U	0.10 U	0.10 U		
Naphthalene	140	**0.520** J	0.03 U	**0.0634**	**0.0498**		
1,2,3-Trichlorobenzene		1.0 U	1.0 U	1.0 U	1.0 U		
DIOXIN/FURANS (pg/g)							
Method 1613							
2,3,7,8-TCDD						0.36 U	0.424 U
1,2,3,7,8-PECDD						0.36 U	0.424 U
1,2,3,4,7,8-HXCDD						0.36 U	0.424 U
1,2,3,6,7,8-HXCDD						0.36 U	0.424 U
1,2,3,7,8,9-HXCDD						0.36 U	0.424 U
1,2,3,4,6,7,8-HPCDD						0.654 U	0.883 U
OCDD						**8.07**	**10.9**
2,3,7,8-TCDF						0.36 U	0.424 U
1,2,3,7,8-PECDF						0.36 U	0.424 U
2,3,4,7,8-PECDF						0.36 U	0.424 U
1,2,3,4,7,8-HXCDF						0.36 U	0.424 U
1,2,3,6,7,8-HXCDF						0.36 U	0.424 U
1,2,3,7,8,9-HXCDF						0.36 U	0.424 U
2,3,4,6,7,8-HXCDF						0.36 U	0.424 U
1,2,3,4,6,7,8-HPCDF						0.36 U	0.424 U
1,2,3,4,7,8,9-HPCDF						0.36 U	0.424 U
OCDF						0.36 U	0.424 U
TOTAL TETRA-DIOXINS						0.36 UJ	**1.50** J
TOTAL PENTA-DIOXINS						0.36 U	0.424 U
TOTAL HEXA-DIOXINS						0.36 U	0.424 U
TOTAL HEPTA-DIOXINS						**1.23** J	**2.43** J
TOTAL TETRA-FURANS						0.36 U	0.424 U
TOTAL PENTA-FURANS						0.36 U	0.424 U
TOTAL HEXA-FURANS						0.36 U	0.424 U
TOTAL HEPTA-FURANS						0.36 U	0.424 U
TOTAL (TEQ ND=0)	5.2					**0.00242**	**0.00327**
TOTAL (TEQ ND=1/2 DL)	5.2					**0.571**	**0.673**

U = Indicates the compound was undetected at the reported concentration.
UJ = The analyte was not detected in the sample; the reported sample reporting limit is an estimate.
J = Indicates the analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
Bold = Detected compound.
Boxed value indicates exceedance of preliminary screening level.

TABLE 12
SEDIMENT ANALYTICAL RESULTS - CARBON NORMALIZED
AMERON/HULBERT RI/FS
PORT OF EVERETT

	SMS Criteria										
	Sediment Quality Standard (a)	Cleanup Screening Level (b)	A/H-SED-1 (0-10 CM) CHM101210-10 12/10/2010	Dup of A/H-SED-1 (0-10 CM) A/H-SED-10 (0-10 CM) CHM101210-10 12/10/2010	A/H-SED-2 (0-10 CM) CHM101210-10 12/10/2010	A/H-SED-3 (0-10 CM) CHM101210-10 12/10/2010	A/H-SED-4 (0-10 CM) CHM101210-10 12/10/2010	A/H-SED-5 (0-10 CM) CHM101210-10 12/10/2010	A/H-SED-6 (0-10 CM) CHM101210-10 12/10/2010	A/H-SED-7 (0-10 CM) CHM101210-10 12/10/2010	A/H-SED-8 (0-10 CM) CHM101210-10 12/10/2010
TOTAL METALS (mg/kg)											
Method SW6020											
Arsenic	57	93	**8.54**	**8.69**	**8.92**	**7.71**	**7.91**	**11.2**	**6.95** J	**10.5**	**8.79**
Cadmium	5.1	6.7	**0.332**	**0.411**	**0.390**	**0.367**	**0.337**	**0.430**	**0.174** J	**0.599**	**0.353**
Chromium	260	270	**35.5**	**39.9**	**39.5**	**36.4**	**33.9**	**43.6**	**23.2** J	**46.7**	**38.2**
Copper	390	390	**36.5**	**38.9**	**38.2**	**31.6**	**32.2**	**43.1**	**24.2** J	**44.1**	**37.0**
Lead	450	530	**9.64**	**10.6**	**10.2**	**9.30**	**8.94**	**11.4**	**6.24** J	**12.1**	**9.50**
Mercury	0.41	0.59	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Zinc	410	960	**80.0**	**113**	**89.8**	**85.3**	**89.0**	**107**	**36.8** J	**130**	**96.0**
SEMIVOLATILES											
Method SW8270											
PAHs (mg/kg OC) (c)											
Naphthalene	99	170	5.2 U	4.7 U	4.9 U	5.6 U	5.7 U	4.1 U	4.1 U	4.5 U	4.4 U
Acenaphthylene	66	66	5.2 U	4.7 U	4.9 U	5.6 U	5.7 U	4.1 U	4.1 U	4.5 U	4.4 U
Acenaphthene	16	57	5.2 U	4.7 U	4.9 U	5.6 U	5.7 U	4.1 U	4.1 U	4.5 U	4.4 U
Fluorene	23	79	5.2 U	4.7 U	4.9 U	5.6 U	5.7 U	4.1 U	4.1 U	4.5 U	4.4 U
Phenanthrene	100	480	5.2 U	4.7 U	4.9 U	5.6 U	5.7 U	4.1 U	4.1 U	4.5 U	4.4 U
Anthracene	220	1200	5.2 U	4.7 U	4.9 U	5.6 U	5.7 U	4.1 U	4.1 U	4.5 U	4.4 U
2-Methylnaphthalene	38	64	5.2 U	4.7 U	4.9 U	5.6 U	5.7 U	4.1 U	4.1 U	4.5 U	4.4 U
LPAH (d, e)	370	780	5.2 U	4.7 U	4.9 U	5.6 U	5.7 U	4.1 U	4.1 U	4.5 U	4.4 U
Fluoranthene	160	1200	5.2 U	4.7 U	4.9 U	5.6 U	5.7 U	4.1 U	4.1 U	4.5 U	4.4 U
Pyrene	1000	1400	5.2 U	4.7 U	4.9 U	5.6 U	5.7 U	4.1 U	4.1 U	4.5 U	4.4 U
Benzo(a)anthracene	110	270	4.2 U	3.8 U	3.9 U	4.4 U	4.5 U	3.3 U	3.3 U	3.6 U	3.5 U
Chrysene	110	460	4.2 U	3.8 U	3.9 U	4.4 U	4.5 U	3.3 U	3.3 U	3.6 U	3.5 U
Benzo(b)fluoranthene	None	None	4.2 U	3.8 U	3.9 U	4.4 U	4.5 U	3.3 U	3.3 U	3.6 U	3.5 U
Benzo(k)fluoranthene	None	None	4.2 U	3.8 U	3.9 U	4.4 U	4.5 U	3.3 U	3.3 U	3.6 U	3.5 U
Total Benzofluoranthenes (d, f)	230	450	4.2 U	3.8 U	3.9 U	4.4 U	4.5 U	3.3 U	3.3 U	3.6 U	3.5 U
Benzo(a)pyrene	99	210	4.2 U	3.8 U	3.9 U	4.4 U	4.5 U	3.3 U	3.3 U	3.6 U	3.5 U
Indeno(1,2,3-cd)pyrene	34	88	4.2 U	3.8 U	3.9 U	4.4 U	4.5 U	3.3 U	3.3 U	3.6 U	3.5 U
Dibenz(a,h)anthracene	12	33	4.2 U	3.8 U	3.9 U	4.4 U	4.5 U	3.3 U	3.3 U	3.6 U	3.5 U
Benzo(g,h,i)perylene	31	78	4.2 U	3.8 U	3.9 U	4.4 U	4.5 U	3.3 U	3.3 U	3.6 U	3.5 U
HPAH (d, g)	960	5300	4.2 U	3.8 U	3.9 U	4.4 U	4.5 U	3.3 U	3.3 U	3.6 U	3.5 U
SVOCs (mg/kg OC) (c)											
1,2-Dichlorobenzene	2.3	2.3	5.2 U	4.7 U	4.9 U	5.6 U	5.7 U	4.1 U	4.1 U	4.5 U	4.4 U
1,3-Dichlorobenzene	None	None	5.2 U	4.7 U	4.9 U	5.6 U	5.7 U	4.1 U	4.1 U	4.5 U	4.4 U
1,4-Dichlorobenzene	3.1	9	5.2 U	4.7 U	4.9 U	5.6 U	5.7 U	4.1 U	4.1 U	4.5 U	4.4 U
1,2,4-Trichlorobenzene	0.81	1.8	5.2 U	4.7 U	4.9 U	5.6 U	5.7 U	4.1 U	4.1 U	4.5 U	4.4 U
Hexachlorobenzene	0.38	2.3	5.2 U	4.7 U	4.9 U	5.6 U	5.7 U	4.1 U	4.1 U	4.5 U	4.4 U
Dimethylphthalate	53	53	5.2 U	4.7 U	4.9 U	5.6 U	5.7 U	4.1 U	4.1 U	4.5 U	4.4 U
Diethylphthalate	61	110	5.2 U	4.7 U	4.9 U	5.6 U	5.7 U	4.1 U	4.1 U	4.5 U	4.4 U
Di-n-butylphthalate	220	1700	5.2 UJ	**27.0**	4.9 U	5.6 U	5.7 U	4.1 U	4.1 U	4.5 U	**52.4**
Benzyl Butyl phthalate	4.9	64	5.2 U	4.7 U	4.9 U	5.6 U	5.7 U	4.1 U	4.1 U	4.5 U	4.4 U
bis (2-Ethylhexyl) phthalate	47	78	5.2 U	**10.8**	4.9 U	5.6 U	5.7 U	4.1 U	4.1 U	4.5 U	**10.0**
Di-n-octyl phthalate	58	4500	5.2 U	4.7 U	4.9 U	5.6 U	5.7 U	4.1 U	4.1 U	4.5 U	4.4 U
Dibenzofuran	15	58	5.2 U	4.7 U	4.9 U	5.6 U	5.7 U	4.1 U	4.1 U	4.5 U	4.4 U
Hexachlorobutadiene	3.9	6.2	5.2 U	4.7 U	4.9 U	5.6 U	5.7 U	4.1 U	4.1 U	4.5 U	4.4 U
N-Nitrosodiphenylamine	11	11	26.0 U	23.7 U	24.6 U	27.8 U	28.4 U	20.6 U	20.6 U	22.7 U	22.0 U
SVOCs (mg/kg)											
Phenol	420	1200	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
2-Methylphenol (o-cresol)	63	63	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
4-Methylphenol (p-cresol)	670	670	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
2,4-Dimethylphenol	29	29	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Pentachlorophenol	360	690	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Benzyl Alcohol	57	73	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Benzoic Acid	650	650	0.2 U	0.2 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
PCBs (d) (mg/kg OC) (c)											
Method SW8082											
Aroclor 1016	--	--	5.2 U	4.7 U	4.9 U	5.6 U	5.7 U	4.1 U	4.1 U	4.5 U	4.4 U
Aroclor 1221	--	--	5.2 U	4.7 U	4.9 U	5.6 U	5.7 U	4.1 U	4.1 U	4.5 U	4.4 U
Aroclor 1232	--	--	5.2 U	4.7 U	4.9 U	5.6 U	5.7 U	4.1 U	4.1 U	4.5 U	4.4 U
Aroclor 1242	--	--	5.2 U	4.7 U	4.9 U	5.6 U	5.7 U	4.1 U	4.1 U	4.5 U	4.4 U
Aroclor 1248	--	--	5.2 U	4.7 U	4.9 U	5.6 U	5.7 U	4.1 U	4.1 U	4.5 U	4.4 U
Aroclor 1254	--	--	5.2 U	4.7 U	4.9 U	5.6 U	5.7 U	4.1 U	4.1 U	4.5 U	4.4 U
Aroclor 1260	--	--	5.2 U	4.7 U	4.9 U	5.6 U	5.7 U	4.1 U	4.1 U	4.5 U	4.4 U
Total PCBs	12	65	5.2 U	4.7 U	4.9 U	5.6 U	5.7 U	4.1 U	4.1 U	4.5 U	4.4 U

TABLE 12
SEDIMENT ANALYTICAL RESULTS - CARBON NORMALIZED
AMERON/HULBERT RI/FS
PORT OF EVERETT

	SMS Criteria										
	Sediment Quality Standard (a)	Cleanup Screening Level (b)	A/H-SED-1 (0-10 CM) CHM101210-10 12/10/2010	Dup of A/H-SED-1 (0-10 CM) A/H-SED-10 (0-10 CM) CHM101210-10 12/10/2010	A/H-SED-2 (0-10 CM) CHM101210-10 12/10/2010	A/H-SED-3 (0-10 CM) CHM101210-10 12/10/2010	A/H-SED-4 (0-10 CM) CHM101210-10 12/10/2010	A/H-SED-5 (0-10 CM) CHM101210-10 12/10/2010	A/H-SED-6 (0-10 CM) CHM101210-10 12/10/2010	A/H-SED-7 (0-10 CM) CHM101210-10 12/10/2010	A/H-SED-8 (0-10 CM) CHM101210-10 12/10/2010
CONVENTIONALS											
Total Organic Carbon (%) (SW9060A)	10 (h)	10 (h)	1.92	2.11	2.03	1.80	1.76	2.43	2.43	2.20	2.27
Total Solids (%) (EPA160.3)	--	--	45.43	44.60	47.30	52.77	51.45	43.92	45.53	44.88	46.86
Total Volatile Solids (%) (EPA1684)	25 (h)	25 (h)	5.56	7.16	5.43	5.54	7.22	5.77	6.85	7.40	7.67
Ammonia (mg/kg)	--	--	**10.1**	**8.72**	**8.67**	**8.76**	**5.24**	**10.8**	**8.09**	**11.0**	**8.62**
Sulfide (mg/kg)	--	--	2.5 U	2.5 U	**1.51** J	2.5 U	**1.96** J	2.5 U	**0.973** J	**2.53**	2.5 U

U = Indicates the compound was undetected at the reported concentration.
UJ = The analyte was not detected in the sample; the reported sample reporting limit is an estimate.
J = Indicates the analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
Bold = Detected compound.

(a) SMS Sediment Quality Standard (Chapter 173-204 WAC).
(b) SMS Cleanup Screening Level (Chapter 173-204 WAC).
(c) All organic data (except phenols, benzyl alcohol, and benzoic acid) are normalized to total organic carbon; this involves dividing the dry weight concentration of the constituent by the fraction of total organic carbon present.
(d) Where chemical criteria in this table represent the sum of individual compounds or isomers, the following methods shall be applied:
  (i) Where chemical analyses identify an undetected value for every individual compound/isomer, then the single highest detection limit shall represent the sum of the respective compounds/isomers.
  (ii) Where chemical analyses detect one or more individual compounds/isomers, only the detected concentrations will be added to represent the group sum.
(e) The LPAH criterion represents the sum of the following "low molecular weight polynuclear aromatic hydrocarbon" compounds: naphthalene, acenaphthylene, acenaphthene, fluorene, phenanthrene, and anthracene. The LPAH criterion is not the sum of the criteria values for the individual LPAH compounds listed.
(f) The total benzofluoranthenes criterion represents the sum of the concentrations of the "B," "J," and "K" isomers.
(g) The HPAH criterion represents the sum of the following "high molecular weight polynuclear aromatic hydrocarbon" compounds: fluoranthene, pyrene, benzo(a)anthracene, chrysene, total benzofluoranthenes, benzo(a)pyrene, indeno(1,2,3-c,d)pyrene, dibenz(a,h)anthracene, and benzo(g,h,i)perylene. The HPAH criterion is not the sum of the criteria values for the individual HPAH compounds as listed.
(h) DMMP clarification paper and SMS technichal information memorandum: Management of Wood Waste Under Dredged Material Management Program and the SMS Cleanup Program.

TABLE 13
SEDIMENT ANALYTICAL RESULTS - DRY WEIGHT
AMERON/HULBERT RI/FS
PORT OF EVERETT

	SQS Dry Weight Equivalent	CSL Dry Weight Equivalent	A/H-SED-1 (0-10 CM) CHM101210-10/L15869-2 12/10/2010	Dup of A/H-SED-1 (0-10 CM) A/H-SED-10 (0-10 CM) CHM101210-10/L15869-4 12/10/2010	A/H-SED-2 (0-10 CM) CHM101210-10 12/10/2010	A/H-SED-3 (0-10 CM) CHM101210-10 12/10/2010	A/H-SED-4 (0-10 CM) CHM101210-10/L15869-1 12/10/2010	A/H-SED-5 (0-10 CM) CHM101210-10 12/10/2010	A/H-SED-6 (0-10 CM) CHM101210-10 12/10/2010	A/H-SED-7 (0-10 CM) CHM101210-10 12/10/2010	A/H-SED-8 (0-10 CM) CHM101210-10 12/10/2010
TOTAL METALS (mg/kg)											
Method SW6020											
Antimony			0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Arsenic	57	93	**8.54**	**8.69**	**8.92**	**7.71**	**7.91**	**11.2**	**6.95** J	**10.5**	**8.79**
Cadmium	5.1	6.7	**0.332**	**0.411**	**0.390**	**0.367**	**0.337**	**0.430**	**0.174** J	**0.599**	**0.353**
Chromium	260	270	**35.5**	**39.9**	**39.5**	**36.4**	**33.9**	**43.6**	**23.2** J	**46.7**	**38.2**
Copper	390	390	**36.5**	**38.9**	**38.2**	**31.6**	**32.2**	**43.1**	**24.2** J	**44.1**	**37.0**
Lead	450	530	**9.64**	**10.6**	**10.2**	**9.30**	**8.94**	**11.4**	**6.24** J	**12.1**	**9.50**
Mercury	0.41	0.59	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Zinc	410	960	**80.0**	**113**	**89.8**	**85.3**	**89.0**	**107**	**36.8** J	**130**	**96.0**
PCBs (mg/kg)											
Method SW8082											
Aroclor 1016			0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Aroclor 1221			0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Aroclor 1232			0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Aroclor 1242			0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Aroclor 1248			0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Aroclor 1254			0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Aroclor 1260			0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Total PCBs	0.13	1.0	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
SEMIVOLATILES (mg/kg)											
Method SW8270											
Aniline			0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Phenol	0.42	1.2	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Bis(2-chloroethyl)ether			0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
2-Chlorophenol			0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
1,3-Dichlorobenzene			0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
1,4-Dichlorobenzene	0.11	0.11	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
1,2-Dichlorobenzene	0.035	0.05	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Benzyl Alcohol	0.057	0.073	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Bis(2-chloroisopropyl)ether			0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
2-Methylphenol (o-cresol)	0.063	0.063	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Hexachloroethane			0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
N-Nitroso-di-n-propylamine			0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
4-Methylphenol (p-cresol)	0.67	0.67	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
3-Methylphenol (m-cresol)			0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Nitrobenzene			0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Isophorone			0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
2-Nitrophenol			0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
2,4-Dimethylphenol	0.029	0.029	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Bis(2-chloroethoxy)methane			0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
2,4-Dichlorophenol			0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,2,4-Trichlorobenzene	0.031	0.051	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Naphthalene	2.1	2.1	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
4-Chloroaniline			0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Hexachlorobutadiene	0.011	0.12	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
4-Chloro-3-methylphenol			0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
2-Methylnaphthalene	0.67	0.67	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
1-Methylnaphthalene			0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Hexachlorocyclopentadiene			0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
2,4,6-Trichlorophenol			0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
2,4,5-Trichlorophenol			0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
2-Chloronaphthalene			0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
2-Nitroaniline			0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,4-Dinitrobenzene			0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Acenaphthylene	1.3	1.3	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
1,3-Dinitrobenzene			0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Dimethylphthalate	0.071	0.16	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
2,6-Dinitrotoluene			0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
1,2-Dinitrobenzene			0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Acenaphthene	0.5	0.5	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
3-Nitroaniline			0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
2,4-Dinitrophenol			0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Dibenzofuran	0.54	0.54	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
2,4-Dinitrotoluene			0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U

TABLE 13
SEDIMENT ANALYTICAL RESULTS - DRY WEIGHT
AMERON/HULBERT RI/FS
PORT OF EVERETT

	SQS Dry Weight Equivalent	CSL Dry Weight Equivalent	A/H-SED-1 (0-10 CM) CHM101210-10/L15869-2 12/10/2010	Dup of A/H-SED-1 (0-10 CM) A/H-SED-10 (0-10 CM) CHM101210-10/L15869-4 12/10/2010	A/H-SED-2 (0-10 CM) CHM101210-10 12/10/2010	A/H-SED-3 (0-10 CM) CHM101210-10 12/10/2010	A/H-SED-4 (0-10 CM) CHM101210-10/L15869-1 12/10/2010	A/H-SED-5 (0-10 CM) CHM101210-10 12/10/2010	A/H-SED-6 (0-10 CM) CHM101210-10 12/10/2010	A/H-SED-7 (0-10 CM) CHM101210-10 12/10/2010	A/H-SED-8 (0-10 CM) CHM101210-10 12/10/2010
4-Nitrophenol			0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
2,3,4,6-Tetrachlorophenol			0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
2,3,5,6-Tetrachlorophenol			0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Fluorene	0.54	0.54	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
4-Chlorophenyl phenyl ether			0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Diethylphthalate	0.2	1.2	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
4,6-Dinitro-2-methylphenol			0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
N-Nitrosodiphenylamine	0.028	0.04	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Azobenzene			0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
4-Bromo phenyl phenyl ether			0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Hexachlorobenzene	0.022	0.07	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Pentachlorophenol	0.36	0.69	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Phenanthrene	1.5	1.5	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Anthracene	0.96	0.96	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Carbazole			0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Di-n-butylphthalate	1.4	5.1	0.1 UJ	**0.569**	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	**1.19**
Fluoranthene	1.7	2.5	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Pyrene	2.6	3.3	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Benzyl Butyl phthalate	0.063	0.9	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
bis (2-Ethylhexyl) adipate			0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Benzo(a)anthracene	1.3	1.6	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U
Chrysene	1.4	2.8	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U
bis (2-Ethylhexyl) phthalate	1.3	3.1	0.1 U	**0.227**	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	**0.228**
Di-n-octyl phthalate	6.2	6.2	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Benzo(b)fluoranthene			0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U
Benzo(k)fluoranthene			0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U
Benzo(a)pyrene	1.6	1.6	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U
Indeno(1,2,3-cd)pyrene	0.6	0.69	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U
Dibenz(a,h)anthracene	0.23	0.23	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U
Benzo(g,h,i)perylene	0.67	0.72	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U
Benzoic Acid	0.65	0.65	0.2 U	0.2 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
CPAH TEQ			0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U
CONVENTIONALS											
Total Organic Carbon (%) (SW9060A)			1.92	2.11	2.03	1.80	1.76	2.43	2.43	2.20	2.27
Total Solids (%) (EPA160.3)			45.43	44.60	47.30	52.77	51.45	43.92	45.53	44.88	46.86
Total Volatile Solids (%) (EPA1684)			5.56	7.16	5.43	5.54	7.22	5.77	6.85	7.40	7.67
Ammonia (mg/kg)			**10.1**	**8.72**	**8.67**	**8.76**	**5.24**	**10.8**	**8.09**	**11.0**	**8.62**
Sulfide (mg/kg)			2.5 U	2.5 U	**1.51** J	2.5 U	**1.96** J	2.5 U	**0.973** J	**2.53**	2.5 U
GRAIN SIZE (ASTM D422)											
Percent Finer (Passing)											
Sieve Size / Particle Size (microns)											
3/4" / 19000			100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
1/2" / 12500			100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
3/8" / 9500			100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
#4 / 4750			100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
#20 / 850			83.48	87.51	90.60	92.44	91.80	93.55	88.73	86.77	93.16
#40 / 425			70.77	73.18	76.12	81.13	82.07	78.97	73.33	72.39	76.91
#60 / 250			62.42	64.40	68.00	72.55	74.48	70.04	65.59	63.93	68.31
#100 / 150			50.07	54.35	61.53	62.71	55.90	61.59	58.96	57.94	59.35
#200 / 75			22.73	21.48	38.18	34.33	26.40	36.94	36.29	46.93	33.47
#325 / 45			6.56	4.14	10.21	8.15	5.08	9.37	9.70	19.95	8.02
#450 / 34			3.74	1.57	3.93	2.95	2.48	2.75	4.32	9.52	2.62
Percent Retained											
Sieve Size / Particle Size (microns)											
3/4" / 19000			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1/2" / 12500			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3/8" / 9500			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
#4 / 4750			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
#20 / 850			16.52	12.49	9.40	7.56	8.20	6.45	11.27	13.23	6.84
#40 / 425			12.71	14.33	14.48	11.31	9.73	14.58	15.40	14.38	16.25
#60 / 250			8.35	8.77	8.12	8.58	7.59	8.93	7.74	8.46	8.60
#100 / 150			12.35	10.05	6.48	9.85	18.57	8.45	6.63	5.99	8.96
#200 / 75			27.34	32.87	23.35	28.37	29.50	24.65	22.68	11.01	25.88
#325 / 45			16.16	17.34	27.97	26.19	21.32	27.57	26.59	26.98	25.45
#450 / 34			2.82	2.57	6.28	5.21	2.60	6.62	5.38	10.43	5.40
>#450 / <34			0.65	0.27	2.35	0.99	1.60	1.13	2.28	7.31	1.04

TABLE 13
SEDIMENT ANALYTICAL RESULTS - DRY WEIGHT
AMERON/HULBERT RI/FS
PORT OF EVERETT

	SQS Dry Weight Equivalent	CSL Dry Weight Equivalent	A/H-SED-1 (0-10 CM) CHM101210-10/L15869-2 12/10/2010	Dup of A/H-SED-1 (0-10 CM) A/H-SED-10 (0-10 CM) CHM101210-10/L15869-4 12/10/2010	A/H-SED-2 (0-10 CM) CHM101210-10 12/10/2010	A/H-SED-3 (0-10 CM) CHM101210-10 12/10/2010	A/H-SED-4 (0-10 CM) CHM101210-10/L15869-1 12/10/2010	A/H-SED-5 (0-10 CM) CHM101210-10 12/10/2010	A/H-SED-6 (0-10 CM) CHM101210-10 12/10/2010	A/H-SED-7 (0-10 CM) CHM101210-10 12/10/2010	A/H-SED-8 (0-10 CM) CHM101210-10 12/10/2010
DIOXIN/FURANS (pg/g)											
Method 1613											
2,3,7,8-TCDD			0.493 U	0.535 U			0.49 U				
1,2,3,7,8-PECDD			**0.598**	**0.493**			**0.394**				
1,2,3,4,7,8-HXCDD			0.881 U	**0.938**			**0.724**				
1,2,3,6,7,8-HXCDD			2.57 U	**2.83**			**2.29**				
1,2,3,7,8,9-HXCDD			**2.81**	**3.04**			2.26 U				
1,2,3,4,6,7,8-HPCDD			**49.4**	**50.5**			**41.6**				
OCDD			**504**	**528**			**433**				
2,3,7,8-TCDF			**1.61**	**1.49**			**2.42**				
1,2,3,7,8-PECDF			0.459 U	0.355 U			0.394 U				
2,3,4,7,8-PECDF			**0.536**	0.426 U			0.589 U				
1,2,3,4,7,8-HXCDF			0.615 U	**0.627**			0.573 U				
1,2,3,6,7,8-HXCDF			0.459 U	**0.455**			0.394 U				
1,2,3,7,8,9-HXCDF			0.459 U	0.355 U			0.394 U				
2,3,4,6,7,8-HXCDF			0.459 U	**0.532**			0.394 U				
1,2,3,4,6,7,8-HPCDF			**7.72**	**8.03**			**5.68**				
1,2,3,4,7,8,9-HPCDF			**0.485**	**0.648**			0.394 U				
OCDF			**20.4**	**21.4**			**16.6**				
TOTAL TETRA-DIOXINS			**9.46**	**9.27**			**7.84**				
TOTAL PENTA-DIOXINS			**1.61** J	**5.04** J			**2.44**				
TOTAL HEXA-DIOXINS			**26.5**	**33.3**			**23.7**				
TOTAL HEPTA-DIOXINS			**143**	**145**			**116**				
TOTAL TETRA-FURANS			**5.96**	**6.82**			**4.66**				
TOTAL PENTA-FURANS			**3.91**	**4.82**			**2.8**				
TOTAL HEXA-FURANS			**4.80** J	**10.2** J			**5.73**				
TOTAL HEPTA-FURANS			**21.4**	**22.6**			**15.6**				
TOTAL (TEQ ND=0)			**1.77**	**2.15**			**1.41**				
TOTAL (TEQ ND=1/2 DL)			**2.17**	**2.41**			**1.77**				

U = Indicates the compound was undetected at the reported concentration.
UJ = The analyte was not detected in the sample; the reported sample reporting limit is an estimate.
J = Indicates the analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
Bold = Detected compound.

TABLE 14
GROUNDWATER PRELIMINARY SCREENING LEVELS FOR DETECTED CONSTITUENTS (1)
RI/FS WORK PLAN - AMERON/HULBERT SITE
PORT OF EVERETT, WASHINGTON

			State and Federal ARARs (2)										MTCA B Equation (2)					
			Federal		Federal		State		Federal	Federal								
			Marine Chronic		Marine		Marine Chronic		Human Health	Human Health			Human Health					
			Aquatic Life		Chronic		Aquatic Life		Consumption	Consumption			MTCA Method B					
	Potable		Clean Water		Aquatic Life		Washington		of Organisms	of Organisms			Surface Water		Practical	Preliminary		
	Groundwater		Act		NTR		WQS		Clean Water Act	NTR			Equation		Quantitation	Screening		
Analyte	Levels (2, 3)		Section 304		40 CFR 131		Ch. 173-201A		Section 304	40 CFR 131			173-340-730		Limit (4)	Level (5)		
VOLATILES (µg/L)																		
1,1,1-Trichloroethane	---		NA		NA		NA		NA	NA	420,000	nc			1	420,000		
cis-1,2-Dichoroethene	70		NA		NA		NA		NA	NA	NA				1	70		
1,2-Dichloroethane	---		NA		NA		NA		37	99	59	c			1	37		
Benzene	---		NA		NA		NA		51	71	23	c			1	51	(a)	
Ethylbenzene	---		NA		NA		NA		2,100	29000	6,900	nc			1	2,100		
m,p-Xylene	1600		NA		NA		NA		NA	NA	NA				1	1600		
o-Xylene	16000		NA		NA		NA		NA	NA	NA				1	16000		
Total Xylenes	1600		NA		NA		NA		NA	NA	NA				1	1600		
Toluene	---		NA		NA		NA		15,000	200000	19,000	nc			1	15,000		
Vinyl Chloride	---		NA		NA		NA		2.4	530	3.7	c			1	2.4		
1,2,4-Trimethylbenzene	400		NA		NA		NA		NA	NA	NA				1	400		
1,3,5-Trimethylbenzene	400		NA		NA		NA		NA	NA	NA				1	400		
Acetone	800		NA		NA		NA		NA	NA	NA				1	800		
Chloroform	--		NA		NA		NA		470	470	280	c			0.35	470	(a)	
Methylene Chloride	--		NA		NA		NA		590	1600	960	c			1.5	590		
SEMIVOLATILES (µg/L)																		
bis(2-Ethylhexyl)phthalate	--		NA		NA		NA		2.2	5.9	3.6	c			1	2.2		
Di-n-butylphthalate	--		NA		NA		NA		4,500	12,000	2,900	nc			2	2,900		
Diethylphthalate	--		NA		NA		NA		44,000	120,000	28,000	nc			2	28,000		
1-Methylnaphthalene	--		NA		NA		NA		NA	NA	NA				1	--		
2-Methylnaphthalene	--		NA		NA		NA		NA	NA	NA				1	--		
TOTAL PETROLEUM HYDROCARBONS (mg/L)																		
Gasoline range	0.8	(b)	NA		NA		NA		NA	NA	NA				0.1	0.8		
Diesel range	0.5	(b)	NA		NA		NA		NA	NA	NA				0.1	0.5		
Oil range	0.5	(b)	NA		NA		NA		NA	NA	NA				0.25	0.5		
METALS (µg/L)																		
Antimony	--		NA		NA		NA		640	4,300	1,037				1	640		
Arsenic	5	(c)	36	(d)	36	(d)	36	(d)	0.14	0.14	0.098	c			0.2	5	(c)	
Beryillium	--		NA		NA		NA		NA	NA	273				1	273		
Cadmium	---		8.8	(d)	9.3	(d)	9.3	(d)	NA	NA	20	nc			0.2	8.8		
Total Chromium (e)	--		NA		NA		NA		NA	NA	240,000	nc			1	240,000		
Chromium VI	--		50		50		50		NA	NA	490	nc			4	50		
Copper	---		3.1	(d)	2.4		3.1	(d)	NA	NA	2,700	nc			1	3.1		
Lead	---		8.1	(d)	8.1	(d)	8.1	(d)	NA	NA	NA				1	8.1		
Mercury	---		0.94	(d)	0.025		0.025		0.3	0.15	NA				0.1	0.1	(f)	
Nickel	---		8.2		8.2		8.2		4600	4600	1100	nc			2	8.2		
Silver	---		NA		NA		NA		NA	NA	26000	nc			5.4	26000		
Selenium	---		71		71		71		4200	NA	2700	nc			0.5	71		
Thallium	---		NA		NA		NA		0.5	6.3	1.6	nc			0.5	0.5		
Zinc	---		81	(d)	81	(d)	81	(d)	26,000	NA	17,000	nc			1	81		

TABLE 14
GROUNDWATER PRELIMINARY SCREENING LEVELS FOR DETECTED CONSTITUENTS (1)
RI/FS WORK PLAN - AMERON/HULBERT SITE
PORT OF EVERETT, WASHINGTON

		State and Federal ARARs (2)					MTCA B Equation (2)				
Analyte	Potable Groundwater Levels (2, 3)	Federal Marine Chronic Aquatic Life Clean Water Act Section 304	Federal Marine Chronic Aquatic Life NTR 40 CFR 131	State Marine Chronic Aquatic Life Washington WQS Ch. 173-201A	Federal Human Health Consumption of Organisms Clean Water Act Section 304	Federal Human Health Consumption of Organisms NTR 40 CFR 131	Human Health MTCA Method B Surface Water Equation 173-340-730		Practical Quantitation Limit (4)	Preliminary Screening Level (5)	
PAHs (µg/L)											
Acenapthene	---	NA	NA	NA	990	NA	640	nc	5	640	
Benzo(a)anthracene	---	NA	NA	NA	0.018	0.031	NA		0.1	0.1	(f)
Benzo(a)pyrene	---	NA	NA	NA	0.018	0.031	0.03	c	0.1	0.1	(f)
Benzo(b)fluoranthene	---	NA	NA	NA	0.018	0.031	NA		0.1	0.1	(f)
Benzo(k)fluoranthene	---	NA	NA	NA	0.018	0.031	NA		0.1	0.1	(f)
Chrysene	---	NA	NA	NA	0.018	0.031	NA		0.1	0.1	(f)
Dibenz(a,h)anthracene	---	NA	NA	NA	0.018	0.031	NA		0.1	0.1	(f)
Indeno(1,2,3-cd)pyrene	---	NA	NA	NA	0.018	0.031	NA		0.1	0.1	(f)
Naphthalene	---	NA	NA	NA	NA	NA	4,900	nc	0.1	4,900	
cPAH TEQ	---	NA	NA	NA	NA	NA	NA		--	0.1	(f)
PCBs (µg/L)											
Aroclor - 1248	---	NA	NA	NA	NA	NA	NA		0.01	--	(f)
Aroclor - 1254	---	NA	0.03	NA	NA	NA	0.0017		0.01	0.01	(f)
Aroclor - 1260	---	NA	0.03	NA	NA	NA	NA		0.01	0.03	(f)
Total PCBs	---	0.03	0.03	0.03	0.000064	0.00017	0.00017		0.01	0.01	(f)

Shaded value = Basis for proposed Preliminary Screening Level.

"---" = A potable groundwater Preliminary Screening Level was not provided because an applicable surface water Cleanup Screening Level was identified.

NA = Preliminary Screening Level not available.

NTR = National Toxics Rule

WQS = Water Quality Standard

ARAR = Applicable or Relevant and Appropriate Requirements

CLARC = Cleanup Screening Levels and Risk Calculation

MTCA = Model Toxics Control Act

"c" = Cleanup Screening Level based on a 1E-06 cancer risk level.

"nc" = Cleanup Screening Level based on a hazard quotient of 1.

PQL = Practical Quantitation Limits.

(a) Cleanup Screening Level deferred to federal ARAR because it is considered sufficiently protective of human health for carcinogens as described in WAC 173-340-730(3) and in Figure 3 of Ecology's Focus on Developing Surface Water Cleanup Standards Under MTCA (rev. April 2005).

(b) Due to the absence of published ARARs or a MTCA B Cleanup Screening Level, the MTCA A potable groundwater Cleanup Screening Level was selected.

(c) Ecology's potable groundwater Method A Cleanup Screening Level for arsenic is based on background concentrations of this metal in groundwater (WAC 173-340-900; Table 720-1). As such, the proposed Cleanup Screening Level for arsenic of 5 µg/L is based on the MTCA Method A level for potable groundwater.

(d) The surface water Cleanup Screening Level is based on the dissolved fraction.

(e) Cleanup Screening Level for total chromium is defered to chromium (III) Cleanup Screening Levels because no metal plating or other activities associated with chromium (VI) occurred at the Site.

(f) The proposed Cleanup Screening Levels is based on the PQL.

Notes:

1. Where available, groundwater Cleanup Screening Levels are based on protection of marine surface water. Groundwater at the site discharges into Port Gardner and is non-potable.
2. Unless otherwise noted, all federal and state ARARs and MTCA B Cleanup Screening Levels for surface water were identified from Ecology's online CLARC database (https://fortress.wa.gov/ecy/clarc/CLARCHome.aspx).
3. Potable groundwater levels were used for screening purposes in absence of applicable surface water levels. Unless other wise noted, the minimum level between state and federal ARARs and MTCA Method B was selected.
4. PQLs based on analytical method reporting limits.
5. Cleanup Screening Level based on lowest water quality standard or PQL or background, indicated by shading, except as noted otherwise.

TABLE 15
TPH - GROUNDWATER ANALYTICAL RESULTS
AMERON/HULBERT RI/FS
PORT OF EVERETT

	Preliminary Screening Level	G-FA-113 CHM101122-2 11/22/2010	G-GC-100 CHM101220-07 12/20/2010	J-FA-100 CHM101201-1 CHM101213-7 11/29/2010	J-FA-102 CHM101201-1 11/29/2010	M-FA-100 CHM101122-2 11/22/2010	M-FA-102 CHM101202-16 12/1/2010	M-FA-103 CHM101202-16 12/2/2010	M-FA-104 CHM101122-2 11/22/2010	Dup of M-FA-104 M-FA-204 CHM101122-2 11/22/2010	M-FA-107 CHM110131-4 1/28/2011	Dup of M-FA-107 M-FA-10702 CHM110131-4 1/28/2011	M-FA-108 CHM110131-4 1/28/2011	M-GC-100 CHM101201-1 11/30/2010
NWTPH-HCID (µg/L)														
Gasoline	800	400 U		400 U	400 U	400 U	400 U	400 U	400 U	400 U	400 U	400 U	400 U	400 U
Mineral Spirits	500	500 U		500 U	500 U	500 U	500 U	500 U	500 U	500 U	500 U	500 U	500 U	500 U
Kerosene	500	500 U		500 U	500 U	500 U	500 U	500 U	500 U	500 U	500 U	500 U	500 U	500 U
Diesel Range Organics (DRO)	500			**D**	500 U						500 U	500 U	500 U	500 U
Diesel (Fuel Oil)	500	500 U		500 U	500 U	500 U	500 U	500 U	500 U	500 U	500 U	500 U	500 U	500 U
Mineral Oil	500	500 U		500 U	500 U	500 U	500 U	500 U	500 U	500 U	500 U	500 U	500 U	500 U
Heavy Oil	500	500 U		**D**	500 U	500 U	500 U	500 U	500 U	500 U	500 U	500 U	500 U	500 U
Heavy Oil Range Organics	500										500 U	500 U	500 U	
NWTPH-Dx (µg/L)														
Diesel Range Organics (DRO)	500			**881**										
Diesel (Fuel Oil)	500		50 UJ	50 U										
Mineral Oil	500		50 UJ	50 U										
Heavy Oil	500		100 UJ	**2240**										
NWTPH-Gx (µg/L)														
Gasoline Range Organics	800		50 U											
Gasoline	800		50 U											

TABLE 15
TPH - GROUNDWATER ANALYTICAL RESULTS
AMERON/HULBERT RI/FS
PORT OF EVERETT

	Preliminary Screening Level	M-GC-105 CHM110131-4/CHM110202-5 1/28/2011	N-FA-102 CHM101202-16 12/1/2010	RI-MW-4 CHM101230-5 CHM101216-1 12/15/2010	Dup of RI-MW-4 RI-MW-402 CHM101230-5 CHM101216-1 12/15/2010	RI-MW-4 SK38D 02/22/2011	RI-MW-5 CHM101216-1 12/15/2010	SUMP CHM101220-07 CHM110104-5 12/20/2010
NWTPH-HCID (µg/L)								
Gasoline	800	400 U	400 U	400 U	400 U		400 U	400 UJ
Mineral Spirits	500	500 U	500 U	500 U	500 U		500 U	500 UJ
Kerosene	500	500 U	500 U	500 U	500 U		500 U	500 UJ
Diesel Range Organics (DRO)	500	500 U						
Diesel (Fuel Oil)	500	500 U	500 U	500 U	500 U		500 U	500 UJ
Mineral Oil	500	500 U	500 U	500 U	500 U		500 U	500 UJ
Heavy Oil	500	500 U	500 U	500 U	**D**		500 U	**D** J
Heavy Oil Range Organics	500	**D**						
NWTPH-Dx (µg/L)								
Diesel Range Organics (DRO)	500					100 U		
Diesel (Fuel Oil)	500	50 U		**50** J	50 UJ			50 UJ
Mineral Oil	500	50 U		**50** J	50 UJ			50 UJ
Heavy Oil	500	**150**		**1390** J	**1100** J	200 U		**268** J
NWTPH-Gx (µg/L)								
Gasoline Range Organics	800							
Gasoline	800							

D = Indicates detection at or above the listed reporting limit
U = Indicates the compound was undetected at the reported concentration.
J = Indicates the analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
UJ = The analyte was not detected in the sample; the reported sample detection limit is an estimate.
Bold = Detected compound.
Boxed value indicates exceedance of preliminary screening level.

TABLE 16
PCB/SVOC/cPAH - GROUNDWATER ANALYTICAL RESULTS
AMERON/HULBERT RI/FS
PORT OF EVERETT

	Preliminary Screening Level	ECI-MW-3 CHM101216-1 12/15/2010	Dup of ECI-MW-3 ECI-MW-302 CHM101216-1 12/15/2010	ECI-MW-3 SK38F 2/22/2011	J-FA-100 CHM101201-1 CHM101213-7 11/29/2010	M-FA-102 CHM101202-16 12/1/2010	M-GC-100 CHM101201-1 11/30/2010	N-FA-102 CHM101202-16 12/1/2010	RI-MW-1 CHM101216-1 12/15/2010	RI-MW-1 SK38F 2/22/2011	RI-MW-2 CHM101216-1 12/15/2010	RI-MW-3 CHM101216-1 12/15/2010	RI-MW-3 SK38F 2/22/2011	RI-MW-4 CHM101230-5 CHM101216-1 12/15/2010
SEMIVOLATILES (µg/L)														
Method SW8270/SW8270D														
Aniline		2.0 U	2.0 U		4.0 U	2.0 U	4.0 U	2.0 U	2.0 U		2.0 U	2.0 U		2.0 U
Phenol		2.0 U	2.0 U		4.0 U	2.0 U	4.0 U	2.0 U	2.0 U		2.0 U	2.0 U		2.0 U
Bis(2-chloroethyl)ether		2.0 U	2.0 U		4.0 U	2.0 U	4.0 U	2.0 U	2.0 U		2.0 U	2.0 U		2.0 U
2-Chlorophenol		1.0 U	1.0 U		2.0 U	1.0 U	2.0 U	1.0 U	1.0 U		1.0 U	1.0 U		1.0 U
1,3-Dichlorobenzene		1.0 U	1.0 U		2.0 U	1.0 U	2.0 U	1.0 U	1.0 U		1.0 U	1.0 U		1.0 U
1,4-Dichlorobenzene		1.0 U	1.0 U		2.0 U	1.0 U	2.0 U	1.0 U	1.0 U		1.0 U	1.0 U		1.0 U
1,2-Dichlorobenzene		1.0 U	1.0 U		2.0 U	1.0 U	2.0 U	1.0 U	1.0 U		1.0 U	1.0 U		1.0 U
Benzyl Alcohol		1.0 U	1.0 U		2.0 U	1.0 U	2.0 U	1.0 U	1.0 U		1.0 U	1.0 U		1.0 U
Bis(2-chloroisopropyl)ether		1.0 U	1.0 U		2.0 U	1.0 U	2.0 U	1.0 U	1.0 U		1.0 U	1.0 U		1.0 U
2-Methylphenol (o-cresol)		1.0 U	1.0 U		2.0 U	1.0 U	2.0 U	1.0 U	1.0 U		1.0 U	1.0 U		1.0 U
Hexachloroethane		1.0 U	1.0 U		2.0 U	1.0 U	2.0 U	1.0 U	1.0 U		1.0 U	1.0 U		1.0 U
N-Nitroso-di-n-propylamine		1.0 U	1.0 U		2.0 U	1.0 U	2.0 U	1.0 U	1.0 U		1.0 U	1.0 U		1.0 U
4-Methylphenol (p-cresol)		1.0 U	1.0 U		2.0 U	1.0 U	2.0 U	1.0 U	1.0 U		1.0 U	1.0 U		1.0 U
3-Methylphenol (m-cresol)		1.0 U	1.0 U		2.0 U	1.0 U	2.0 U	1.0 U	1.0 U		1.0 U	1.0 U		1.0 U
Nitrobenzene		2.0 U	2.0 U		4.0 U	2.0 U	4.0 U	2.0 U	2.0 U		2.0 U	2.0 U		2.0 U
Isophorone		1.0 U	1.0 U		2.0 U	1.0 U	2.0 U	1.0 U	1.0 U		1.0 U	1.0 U		1.0 U
2-Nitrophenol		2.0 U	2.0 U		4.0 U	2.0 U	4.0 U	2.0 U	2.0 U		2.0 U	2.0 U		2.0 U
2,4-Dimethylphenol		1.0 U	1.0 U		2.0 U	1.0 U	2.0 U	1.0 U	1.0 U		1.0 U	1.0 U		1.0 U
Bis(2-chloroethoxy)methane		1.0 U	1.0 U		2.0 U	1.0 U	2.0 U	1.0 U	1.0 U		1.0 U	1.0 U		1.0 U
2,4-Dichlorophenol		2.0 U	2.0 U		4.0 U	2.0 U	4.0 U	2.0 U	2.0 U		2.0 U	2.0 U		2.0 U
1,2,4-Trichlorobenzene		1.0 U	1.0 U		2.0 U	1.0 U	2.0 U	1.0 U	1.0 U		1.0 U	1.0 U		1.0 U
Naphthalene	4,900	0.5 U	0.5 U		1.0 U	0.5 U	1.0 U	0.5 U	0.5 U		0.5 U	0.5 U		0.5 U
4-Chloroaniline		5.0 U	5.0 U		10 U	5.0 U	10 U	5.0 U	5.0 U		5.0 U	5.0 U		5.0 U
Hexachlorobutadiene		4.0 U	4.0 U		8.0 U	4.0 U	8.0 U	4.0 U	4.0 U		4.0 U	4.0 U		4.0 U
4-Chloro-3-methylphenol		5.0 U	5.0 U		10 U	5.0 U	10 U	5.0 U	5.0 U		5.0 U	5.0 U		5.0 U
2-Methylnaphthalene		0.5 U	0.5 U		1.0 U	0.5 U	1.0 U	0.5 U	0.5 U		0.5 U	0.5 U		0.5 U
1-Methylnaphthalene		0.5 U	0.5 U		1.0 U	0.5 U	1.0 U	0.5 U	0.5 U		0.5 U	0.5 U		0.5 U
Hexachlorocyclopentadiene		1.0 U	1.0 U		2.0 U	1.0 U	2.0 U	1.0 U	1.0 U		1.0 U	1.0 U		1.0 U
2,4,6-Trichlorophenol		2.0 U	2.0 U		4.0 U	2.0 U	4.0 U	2.0 U	2.0 U		2.0 U	2.0 U		2.0 U
2,4,5-Trichlorophenol		2.0 U	2.0 U		4.0 U	2.0 U	4.0 U	2.0 U	2.0 U		2.0 U	2.0 U		2.0 U
2-Chloronaphthalene		1.0 U	1.0 U		2.0 U	1.0 U	2.0 U	1.0 U	1.0 U		1.0 U	1.0 U		1.0 U
2-Nitroaniline		5.0 U	5.0 U		10 U	5.0 U	10 U	5.0 U	5.0 U		5.0 U	5.0 U		5.0 U
1,4-Dinitrobenzene		5.0 U	5.0 U		10 U	5.0 U	10 U	5.0 U	5.0 U		5.0 U	5.0 U		5.0 U
Acenaphthylene		0.5 U	0.5 U		1.0 U	0.5 U	1.0 U	0.5 U	0.5 U		0.5 U	0.5 U		0.5 U
1,3-Dinitrobenzene		5.0 U	5.0 U		10 U	5.0 U	10 U	5.0 U	5.0 U		5.0 U	5.0 U		5.0 U
Dimethylphthalate		1.0 U	1.0 U		2.0 U	1.0 U	2.0 U	1.0 U	1.0 U		1.0 U	1.0 U		1.0 U
2,6-Dinitrotoluene		1.0 U	1.0 U		2.0 U	1.0 U	2.0 U	1.0 U	1.0 U		1.0 U	1.0 U		1.0 U
1,2-Dinitrobenzene		1.0 U	1.0 U		2.0 U	1.0 U	2.0 U	1.0 U	1.0 U		1.0 U	1.0 U		1.0 U
Acenaphthene	640	0.5 U	0.5 U		1.0 U	0.5 U	1.0 U	0.5 U	0.5 U		0.5 U	0.5 U		0.5 U
3-Nitroaniline		5.0 U	5.0 U		10 U	5.0 U	10 U	5.0 U	5.0 U		5.0 U	5.0 U		5.0 U
2,4-Dinitrophenol		2.0 U	2.0 U		4.0 U	2.0 U	4.0 U	2.0 U	2.0 U		2.0 U	2.0 U		2.0 U
Dibenzofuran		1.0 U	1.0 U		2.0 U	1.0 U	2.0 U	1.0 U	1.0 U		1.0 U	1.0 U		1.0 U
2,4-Dinitrotoluene		1.0 U	1.0 U		2.0 U	1.0 U	2.0 U	1.0 U	1.0 U		1.0 U	1.0 U		1.0 U
4-Nitrophenol		5.0 U	5.0 U		10 U	5.0 U	10 U	5.0 UJ	5.0 U		5.0 U	5.0 U		5.0 U
2,3,4,6-Tetrachlorophenol		1.0 U	1.0 U		2.0 U	1.0 U	2.0 U	1.0 U	1.0 U		1.0 U	1.0 U		1.0 U
2,3,5,6-Tetrachlorophenol		1.0 U	1.0 U		2.0 U	1.0 U	2.0 U	1.0 U	1.0 U		1.0 U	1.0 U		1.0 U
Fluorene		0.5 U	0.5 U		1.0 U	0.5 U	1.0 U	0.5 U	0.5 U		0.5 U	0.5 U		0.5 U
4-Chlorophenyl phenyl ether		1.0 U	1.0 U		2.0 U	1.0 U	2.0 U	1.0 U	1.0 U		1.0 U	1.0 U		1.0 U
Diethylphthalate	28000	1.0 U	1.0 U		**5.52**	1.0 U	2.0 U	1.0 U	1.0 U		1.0 U	1.0 U		1.0 U
4,6-Dinitro-2-methylphenol		2.0 U	2.0 U		4.0 U	2.0 U	4.0 U	2.0 U	2.0 U		2.0 U	2.0 U		2.0 U
Diphenylamine		5.0 U	5.0 U		10 U	5.0 U	10 U	5.0 U	5.0 U		5.0 U	5.0 U		5.0 U
Azobenzene		1.0 U	1.0 U		2.0 U	1.0 U	2.0 U	1.0 U	1.0 U		1.0 U	1.0 U		1.0 U
4-Bromo phenyl phenyl ether		1.0 U	1.0 U		2.0 U	1.0 U	2.0 U	1.0 U	1.0 U		1.0 U	1.0 U		1.0 U
Hexachlorobenzene		1.0 U	1.0 U		2.0 U	1.0 U	2.0 U	1.0 U	1.0 U		1.0 U	1.0 U		1.0 U
Pentachlorophenol		2.0 U	2.0 U		4.0 U	2.0 U	4.0 U	2.0 U	2.0 U		2.0 U	2.0 U		2.0 U
Phenanthrene		0.5 U	0.5 U		1.0 U	0.5 U	1.0 U	0.5 U	0.5 U		0.5 U	0.5 U		0.5 U

TABLE 16
PCB/SVOC/cPAH - GROUNDWATER ANALYTICAL RESULTS
AMERON/HULBERT RI/FS
PORT OF EVERETT

	Preliminary Screening Level	ECI-MW-3 CHM101216-1 12/15/2010	Dup of ECI-MW-3 ECI-MW-302 CHM101216-1 12/15/2010	ECI-MW-3 SK38F 2/22/2011	J-FA-100 CHM101201-1 CHM101213-7 11/29/2010	M-FA-102 CHM101202-16 12/1/2010	M-GC-100 CHM101201-1 11/30/2010	N-FA-102 CHM101202-16 12/1/2010	RI-MW-1 CHM101216-1 12/15/2010	RI-MW-1 SK38F 2/22/2011	RI-MW-2 CHM101216-1 12/15/2010	RI-MW-3 CHM101216-1 12/15/2010	RI-MW-3 SK38F 2/22/2011	RI-MW-4 CHM101230-5 CHM101216-1 12/15/2010
Anthracene		0.5 U	0.5 U		1.0 U	0.5 U	1.0 U	0.5 U	0.5 U		0.5 U	0.5 U		0.5 U
Carbazole		5.0 U	5.0 U		10 U	5.0 U	10 U	5.0 U	5.0 U		5.0 U	5.0 U		5.0 U
Di-n-butylphthalate	2900	0.360 UJ	0.440 UJ		**3.92**	1.0 U	2.0 U	**1.84** J	1.04 U		0.520 UJ	1.12 U		0.480 UJ
Fluoranthene		0.5 U	0.5 U		1.0 U	0.5 U	1.0 U	0.5 U	0.5 U		0.5 U	0.5 U		0.5 U
Pyrene		0.5 U	0.5 U		1.0 U	0.5 U	1.0 U	0.5 U	0.5 U		0.5 U	0.5 U		0.5 U
Benzyl Butyl phthalate		1.0 U	1.0 U		2.0 U	1.0 U	2.0 U	1.0 U	1.0 U		1.0 U	1.0 U		1.0 U
bis (2-Ethylhexyl) adipate		1.0 U	1.0 U		2.0 U	1.0 U	2.0 U	1.0 U	1.0 U		1.0 U	1.0 U		1.0 U
Benzo(a)anthracene	TEQ	0.5 U	0.5 U		1.0 U	0.5 U	1.0 U	0.5 U	0.5 U		0.5 U	0.5 U		0.5 U
Chrysene	TEQ	0.5 U	0.5 U		1.0 U	0.5 U	1.0 U	0.5 U	0.5 U		0.5 U	0.5 U		0.5 U
bis (2-Ethylhexyl) phthalate	2.2	0.5 UJ	0.5 UJ	1.0 U	1.0 U	0.5 U	1.0 U	**1.60**	0.5 UJ	1.0 U	0.5 UJ	0.5 UJ	**6.8**	0.5 UJ
Di-n-octyl phthalate		1.0 U	1.0 U		2.0 U	1.0 U	2.0 U	1.0 U	1.0 U		1.0 U	1.0 U		1.0 U
Benzo(b)fluoranthene	TEQ	0.5 U	0.5 U		1.0 U	0.5 U	1.0 U	0.5 U	0.5 U		0.5 U	0.5 U		0.5 U
Benzo(k)fluoranthene	TEQ	0.5 U	0.5 U		1.0 U	0.5 U	1.0 U	0.5 U	0.5 U		0.5 U	0.5 U		0.5 U
Benzo(a)pyrene	TEQ	0.5 U	0.5 U		1.0 U	0.5 U	1.0 U	0.5 U	0.5 U		0.5 U	0.5 U		0.5 U
Indeno(1,2,3-cd)pyrene	TEQ	0.5 U	0.5 U		1.0 U	0.5 U	1.0 U	0.5 U	0.5 U		0.5 U	0.5 U		0.5 U
Dibenz(a,h)anthracene	TEQ	0.5 U	0.5 U		1.0 U	0.5 U	1.0 U	0.5 U	0.5 U		0.5 U	0.5 U		0.5 U
Benzo(g,h,i)perylene		0.5 U	0.5 U		1.0 U	0.5 U	1.0 U	0.5 U	0.5 U		0.5 U	0.5 U		0.5 U
Benzoic Acid		2.0 U	2.0 U		4.0 U	2.0 U	4.0 U	2.0 U	2.0 U		2.0 U	2.0 U		2.0 U
cPAH TEQ	0.1	0.5 U	0.5 U		1.0 U	0.5 U	1.0 U	0.5 U	0.5 U		0.5 U	0.5 U		0.5 U
cPAHs (µg/L)														
Method SW8270SIM														
Benzo(a)anthracene	TEQ	0.10 U	0.10 U		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U		0.10 U	0.10 U		0.10 U
Chrysene	TEQ	0.10 U	0.10 U		**0.160**	0.10 U	0.10 U	0.10 U	0.10 U		0.10 U	0.10 U		0.10 U
Benzo(b)fluoranthene	TEQ	0.10 U	0.10 U		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U		0.10 U	0.10 U		0.10 U
Benzo(k)fluoranthene	TEQ	0.10 U	0.10 U		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U		0.10 U	0.10 U		0.10 U
Benzo(a)pyrene	TEQ	0.10 U	0.10 U		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U		0.10 U	0.10 U		0.10 U
Indeno(1,2,3-cd)pyrene	TEQ	0.10 U	0.10 U		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U		0.10 U	0.10 U		0.10 U
Dibenzo(a,h)anthracene	TEQ	0.10 U	0.10 U		0.10 U	0.10 U	0.10 U	0.10 U	0.10 U		0.10 U	0.10 U		0.10 U
cPAH TEQ	0.1	0.10 U	0.10 U		**0.0016**	0.10 U	0.10 U	0.10 U	0.10 U		0.10 U	0.10 U		0.10 U
PCBs (µg/L)														
Method SW8082														
Aroclor 1016					0.1 U	0.01 U		0.01 U						
Aroclor 1221					0.1 U	0.01 U		0.01 U						
Aroclor 1232					0.1 U	0.01 U		0.01 U						
Aroclor 1242					0.1 U	0.01 U		0.01 U						
Aroclor 1248					0.1 U	0.01 U		0.01 U						
Aroclor 1254					0.1 U	0.01 U		0.01 U						
Aroclor 1260					0.1 U	0.01 U		0.01 U						
Total PCBs	0.01				0.1 U	0.01 U		0.01 U						

TABLE 16
PCB/SVOC/cPAH - GROUNDWATER ANALYTICAL RESULTS
AMERON/HULBERT RI/FS
PORT OF EVERETT

	Preliminary Screening Level	RI-MW-5 CHM101216-1 12/15/2010	RI-MW-5 SK38F 2/22/2011	SUMP CHM101220-07 CHM110104-5 12/20/2010
SEMIVOLATILES (µg/L)				
Method SW8270/SW8270D				
Aniline		2.0 U		2.0 UJ
Phenol		2.0 U		2.0 UJ
Bis(2-chloroethyl)ether		2.0 U		2.0 UJ
2-Chlorophenol		1.0 U		1.0 UJ
1,3-Dichlorobenzene		1.0 U		1.0 UJ
1,4-Dichlorobenzene		1.0 U		1.0 UJ
1,2-Dichlorobenzene		1.0 U		1.0 UJ
Benzyl Alcohol		1.0 U		1.0 UJ
Bis(2-chloroisopropyl)ether		1.0 U		1.0 UJ
2-Methylphenol (o-cresol)		1.0 U		1.0 UJ
Hexachloroethane		1.0 U		1.0 UJ
N-Nitroso-di-n-propylamine		1.0 U		1.0 UJ
4-Methylphenol (p-cresol)		1.0 U		1.0 UJ
3-Methylphenol (m-cresol)		1.0 U		1.0 UJ
Nitrobenzene		2.0 U		2.0 UJ
Isophorone		1.0 U		1.0 UJ
2-Nitrophenol		2.0 U		2.0 UJ
2,4-Dimethylphenol		1.0 U		1.0 UJ
Bis(2-chloroethoxy)methane		1.0 U		1.0 UJ
2,4-Dichlorophenol		2.0 U		2.0 UJ
1,2,4-Trichlorobenzene		1.0 U		1.0 UJ
Naphthalene	4,900	0.5 U		0.5 UJ
4-Chloroaniline		5.0 U		5.0 UJ
Hexachlorobutadiene		4.0 U		4.0 UJ
4-Chloro-3-methylphenol		5.0 U		5.0 UJ
2-Methylnaphthalene		0.5 U		0.5 UJ
1-Methylnaphthalene		**0.620** J		0.5 UJ
Hexachlorocyclopentadiene		1.0 U		1.0 UJ
2,4,6-Trichlorophenol		2.0 U		2.0 UJ
2,4,5-Trichlorophenol		2.0 U		2.0 UJ
2-Chloronaphthalene		1.0 U		1.0 UJ
2-Nitroaniline		5.0 U		5.0 UJ
1,4-Dinitrobenzene		5.0 U		5.0 UJ
Acenaphthylene		0.5 U		0.5 UJ
1,3-Dinitrobenzene		5.0 U		5.0 UJ
Dimethylphthalate		1.0 U		1.0 UJ
2,6-Dinitrotoluene		1.0 U		1.0 UJ
1,2-Dinitrobenzene		1.0 U		1.0 UJ
Acenaphthene	640	**6.44** J		**3.88** J
3-Nitroaniline		5.0 U		5.0 UJ
2,4-Dinitrophenol		2.0 U		2.0 UJ
Dibenzofuran		1.0 U		1.0 UJ
2,4-Dinitrotoluene		1.0 U		1.0 UJ
4-Nitrophenol		5.0 U		5.0 UJ
2,3,4,6-Tetrachlorophenol		1.0 U		1.0 UJ
2,3,5,6-Tetrachlorophenol		1.0 U		1.0 UJ
Fluorene		**0.384** J		0.5 UJ
4-Chlorophenyl phenyl ether		1.0 U		1.0 UJ
Diethylphthalate	28000	1.0 U		1.0 UJ
4,6-Dinitro-2-methylphenol		2.0 U		2.0 UJ
Diphenylamine		5.0 U		5.0 UJ
Azobenzene		1.0 U		1.0 UJ
4-Bromo phenyl phenyl ether		1.0 U		1.0 UJ
Hexachlorobenzene		1.0 U		1.0 UJ
Pentachlorophenol		2.0 U		2.0 UJ
Phenanthrene		0.5 U		0.5 UJ

TABLE 16
PCB/SVOC/cPAH - GROUNDWATER ANALYTICAL RESULTS
AMERON/HULBERT RI/FS
PORT OF EVERETT

	Preliminary Screening Level	RI-MW-5 CHM101216-1 12/15/2010	RI-MW-5 SK38F 2/22/2011	SUMP CHM101220-07 CHM110104-5 12/20/2010
Anthracene		0.5 U		0.5 UJ
Carbazole		5.0 U		5.0 UJ
Di-n-butylphthalate	2900	0.400 UJ		**1.60** J
Fluoranthene		0.5 U		0.5 UJ
Pyrene		0.5 U		0.5 UJ
Benzyl Butyl phthalate		1.0 U		1.0 UJ
bis (2-Ethylhexyl) adipate		1.0 U		1.0 UJ
Benzo(a)anthracene	TEQ	0.5 U		0.5 UJ
Chrysene	TEQ	0.5 U		0.5 UJ
bis (2-Ethylhexyl) phthalate	2.2	0.5 U	1.0 U	0.5 UJ
Di-n-octyl phthalate		1.0 U		1.0 UJ
Benzo(b)fluoranthene	TEQ	0.5 U		0.5 UJ
Benzo(k)fluoranthene	TEQ	0.5 U		0.5 UJ
Benzo(a)pyrene	TEQ	0.5 U		0.5 UJ
Indeno(1,2,3-cd)pyrene	TEQ	0.5 U		0.5 UJ
Dibenz(a,h)anthracene	TEQ	0.5 U		0.5 UJ
Benzo(g,h,i)perylene		0.5 U		0.5 UJ
Benzoic Acid		2.0 U		2.0 UJ
cPAH TEQ	0.1	0.5 U		0.5 UJ
cPAHs (µg/L)				
Method SW8270SIM				
Benzo(a)anthracene	TEQ	0.10 U		0.10 UJ
Chrysene	TEQ	0.10 U		0.10 UJ
Benzo(b)fluoranthene	TEQ	0.10 U		0.10 UJ
Benzo(k)fluoranthene	TEQ	0.10 U		0.10 UJ
Benzo(a)pyrene	TEQ	0.10 U		0.10 UJ
Indeno(1,2,3-cd)pyrene	TEQ	0.10 U		0.10 UJ
Dibenzo(a,h)anthracene	TEQ	0.10 U		0.10 UJ
cPAH TEQ	0.1	0.10 U		0.10 UJ
PCBs (µg/L)				
Method SW8082				
Aroclor 1016				
Aroclor 1221				
Aroclor 1232				
Aroclor 1242				
Aroclor 1248				
Aroclor 1254				
Aroclor 1260				
Total PCBs	0.01			

U = Indicates the compound was undetected at the reported concentration.
J = Indicates the analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
UJ = The analyte was not detected in the sample; the reported sample detection limit is an estimate.
Bold = Detected compound.
Boxed value indicates exceedance of preliminary screening level.

TABLE 17
VOCs - GROUNDWATER ANALYTICAL RESULTS
AMERON/HULBERT RI/FS
PORT OF EVERETT

	Preliminary Screening Level	ECI-MW-3 CHM101216-1 12/15/2010	G-FA-113 CHM101122-2 11/22/2010	G-GC-100 CHM101220-07 12/20/2010	I-FA-100 CHM101217-8 12/17/2010	I-FA-101 CHM101217-8 12/17/2010	J-FA-100 CHM101201-1 CHM101213-7 11/29/2010	J-FA-102 CHM101201-1 11/29/2010	J-GC-100 CHM101201-1 11/29/2010	M-FA-100 CHM101122-2 11/22/2010	M-FA-102 CHM101202-16 12/1/2010	M-FA-103 CHM101202-16 12/2/2010	M-FA-104 CHM101122-2 11/22/2010	Dup of M-FA-104 M-FA-204 CHM101122-2 11/22/2010	M-FA-107 CHM110131-4 1/28/2011
VOLATILES (µg/L)															
Method SW8260B															
Dichlorodifluoromethane (CFC-12)		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloromethane		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Vinyl Chloride	2.4	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Bromomethane		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloroethane		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichlorofluoromethane (CFC-11)		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene		**12.3**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Methylene Chloride	590	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trans-1,2-Dichloroethene		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethane		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
2,2-Dichloropropane		2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Cis-1,2-Dichloroethene	70	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloroform	470	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloropropene		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbon tetrachloride		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,1-Trichloroethane (TCA)	420,000	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Benzene	51	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichloroethane (EDC)	37	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene (TCE)		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichloropropane		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Dibromomethane		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromodichloromethane		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
cis-1,3-Dichloropropene		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Toluene	15,000	1.0 U	**1.65**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trans-1,3-Dichloropropene		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2-Trichloroethane		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Tetrachloroethene (PCE)		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,3-Dichloropropane		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Dibromochloromethane		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dibromoethane (EDB)		0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Chlorobenzene		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,1,2-Tetrachloroethane		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Ethylbenzene	2,100	1.0 U	**6.22**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Total Xylenes	1,600	1.0 U	**17.7**	1.0 U	**1.55**	**1.35**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Styrene		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromoform		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Isopropylbenzene		2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
1,2,3-Trichloropropane		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromobenzene		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2,2-Tetrachloroethane		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
n-Propylbenzene		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
2-Chlorotoluene		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
4-Chlorotoluene		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,3,5-Trimethylbenzene	400	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
tert-Butylbenzene		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2,4-Trimethylbenzene	400	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Sec-Butylbenzene		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,3-Dichlorobenzene		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
4-Isopropyltoluene		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,4-Dichlorobenzene		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichlorobenzene		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
n-Butylbenzene		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dibromo-3-Chloropropane		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2,4-Trichlorobenzene		2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Hexachloro-1,3-butadiene		4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U
Naphthalene	4,900	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U
1,2,3-Trichlorobenzene		4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U

TABLE 17
VOCs - GROUNDWATER ANALYTICAL RESULTS
AMERON/HULBERT RI/FS
PORT OF EVERETT

	Preliminary Screening Level	Dup of M-FA-107 M-FA-10702 CHM110131-4 1/28/2011	M-FA-108 CHM110131-4 1/28/2011	M-GC-100 CHM101201-1 11/30/2010	M-GC-103 CHM101217-8 12/17/2010	M-GC-105 CHM110131-4/CHM110202-5 1/28/2011	N-FA-100 CHM101202-16 12/1/2010	N-FA-102 CHM101202-16 12/1/2010	P10 (G-2) CHM101216-1 12/15/2010	RI-MW-1 CHM101216-1 12/15/2010	RI-MW-2 CHM101216-1 12/15/2010	RI-MW-3 CHM101216-1 12/15/2010	RI-MW-4 CHM101230-5 CHM101216-1 12/15/2010	Dup of RI-MW-4 RI-MW-402 CHM101230-5 CHM101216-1 12/15/2010
VOLATILES (µg/L)														
Method SW8260B														
Dichlorodifluoromethane (CFC-12)		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloromethane		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Vinyl Chloride	2.4	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Bromomethane		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloroethane		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichlorofluoromethane (CFC-11)		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Methylene Chloride	590	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trans-1,2-Dichloroethene		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethane		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
2,2-Dichloropropane		2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Cis-1,2-Dichloroethene	70	1.0 U	1.0 U	1.0 U	**1.03**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloroform	470	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloropropene		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbon tetrachloride		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,1-Trichloroethane (TCA)	420,000	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Benzene	51	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichloroethane (EDC)	37	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene (TCE)		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichloropropane		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Dibromomethane		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromodichloromethane		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
cis-1,3-Dichloropropene		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Toluene	15,000	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trans-1,3-Dichloropropene		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2-Trichloroethane		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Tetrachloroethene (PCE)		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,3-Dichloropropane		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Dibromochloromethane		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dibromoethane (EDB)		0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Chlorobenzene		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,1,2-Tetrachloroethane		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Ethylbenzene	2,100	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Total Xylenes	1,600	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Styrene		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromoform		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Isopropylbenzene		2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
1,2,3-Trichloropropane		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromobenzene		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2,2-Tetrachloroethane		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
n-Propylbenzene		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
2-Chlorotoluene		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
4-Chlorotoluene		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,3,5-Trimethylbenzene	400	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
tert-Butylbenzene		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2,4-Trimethylbenzene	400	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Sec-Butylbenzene		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,3-Dichlorobenzene		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
4-Isopropyltoluene		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,4-Dichlorobenzene		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichlorobenzene		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
n-Butylbenzene		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dibromo-3-Chloropropane		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2,4-Trichlorobenzene		2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Hexachloro-1,3-butadiene		4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U
Naphthalene	4,900	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	**1.52** J	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U
1,2,3-Trichlorobenzene		4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U

TABLE 17
VOCs - GROUNDWATER ANALYTICAL RESULTS
AMERON/HULBERT RI/FS
PORT OF EVERETT

	Preliminary Screening Level	RI-MW-5 CHM101216-1 12/15/2010	SEE-EC-3 CHM101216-1 12/15/2010	SUMP CHM101220-07 CHM110104-5 12/20/2010
VOLATILES (µg/L)				
Method SW8260B				
Dichlorodifluoromethane (CFC-12)		1.0 U	1.0 U	1.0 U
Chloromethane		1.0 U	1.0 U	1.0 U
Vinyl Chloride	2.4	0.2 U	0.2 U	0.2 U
Bromomethane		1.0 U	1.0 U	1.0 U
Chloroethane		1.0 U	1.0 U	1.0 U
Trichlorofluoromethane (CFC-11)		1.0 U	1.0 U	1.0 U
1,1-Dichloroethene		1.0 U	1.0 U	1.0 U
Methylene Chloride	590	1.0 U	1.0 U	1.0 U
Trans-1,2-Dichloroethene		1.0 U	1.0 U	1.0 U
1,1-Dichloroethane		1.0 U	1.0 U	1.0 U
2,2-Dichloropropane		2.0 U	2.0 U	2.0 U
Cis-1,2-Dichloroethene	70	1.0 U	1.0 U	1.0 U
Chloroform	470	1.0 U	1.0 U	1.0 U
1,1-Dichloropropene		1.0 U	1.0 U	1.0 U
Carbon tetrachloride		1.0 U	1.0 U	1.0 U
1,1,1-Trichloroethane (TCA)	420,000	1.0 U	1.0 U	1.0 U
Benzene	51	1.0 U	1.0 U	1.0 U
1,2-Dichloroethane (EDC)	37	1.0 U	1.0 U	1.0 U
Trichloroethene (TCE)		1.0 U	1.0 U	1.0 U
1,2-Dichloropropane		1.0 U	1.0 U	1.0 U
Dibromomethane		1.0 U	1.0 U	1.0 U
Bromodichloromethane		1.0 U	1.0 U	1.0 U
cis-1,3-Dichloropropene		1.0 U	1.0 U	1.0 U
Toluene	15,000	1.0 U	1.0 U	1.0 U
Trans-1,3-Dichloropropene		1.0 U	1.0 U	1.0 U
1,1,2-Trichloroethane		1.0 U	1.0 U	1.0 U
Tetrachloroethene (PCE)		1.0 U	1.0 U	1.0 U
1,3-Dichloropropane		1.0 U	1.0 U	1.0 U
Dibromochloromethane		1.0 U	1.0 U	1.0 U
1,2-Dibromoethane (EDB)		0.01 U	0.01 U	0.01 U
Chlorobenzene		1.0 U	1.0 U	1.0 U
1,1,1,2-Tetrachloroethane		1.0 U	1.0 U	1.0 U
Ethylbenzene	2,100	1.0 U	1.0 U	1.0 U
Total Xylenes	1,600	1.0 U	1.0 U	1.0 U
Styrene		1.0 U	1.0 U	1.0 U
Bromoform		1.0 U	1.0 U	1.0 U
Isopropylbenzene		2.0 U	2.0 U	2.0 U
1,2,3-Trichloropropane		1.0 U	1.0 U	1.0 U
Bromobenzene		1.0 U	1.0 U	1.0 U
1,1,2,2-Tetrachloroethane		1.0 U	1.0 U	1.0 U
n-Propylbenzene		1.0 U	1.0 U	1.0 U
2-Chlorotoluene		1.0 U	1.0 U	1.0 U
4-Chlorotoluene		1.0 U	1.0 U	1.0 U
1,3,5-Trimethylbenzene	400	1.0 U	1.0 U	1.0 U
tert-Butylbenzene		1.0 U	1.0 U	1.0 U
1,2,4-Trimethylbenzene	400	1.0 U	1.0 U	1.0 U
Sec-Butylbenzene		1.0 U	1.0 U	1.0 U
1,3-Dichlorobenzene		1.0 U	1.0 U	1.0 U
4-Isopropyltoluene		1.0 U	1.0 U	1.0 U
1,4-Dichlorobenzene		1.0 U	1.0 U	1.0 U
1,2-Dichlorobenzene		1.0 U	1.0 U	1.0 U
n-Butylbenzene		1.0 U	1.0 U	1.0 U
1,2-Dibromo-3-Chloropropane		1.0 U	1.0 U	1.0 U
1,2,4-Trichlorobenzene		2.0 U	2.0 U	2.0 U
Hexachloro-1,3-butadiene		4.0 U	4.0 U	4.0 U
Naphthalene	4,900	4.0 U	4.0 U	4.0 U
1,2,3-Trichlorobenzene		4.0 U	4.0 U	4.0 U

U = Indicates the compound was undetected at the reported concentration.
J = Indicates the analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
Bold = Detected compound.

TABLE 18
DISSOLVED METALS/HEXAVALENT CHROMIUM - GROUNDWATER ANALYTICAL RESULTS
AMERON/HULBERT RI/FS
PORT OF EVERETT

DISSOLVED METALS (µg/L)
Method EPA 200.8 / SW7196A

		Antimony	Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Zinc	Hexavalent Chromium
Preliminary Screening Level:		**640**	**5**	**8.8**	**240,000**	**3.1**	**8.1**	**0.1**	**81**	**50**
ECI-MW-3	12/15/2010	0.20 U	**18.2**	0.20 U	**40.2**	**0.642**	1.0 U	0.10 U	1.5 U	50 U
ECI-MW-302 - Dup of ECI-MW-3	12/15/2010									50 U
G-FA-113	11/22/2010	0.2 U	**4.10**	0.2 U	**19.9**	0.5 U	1.0 U	0.10 U	1.5 U	
G-GC-100	12/20/2010	**0.300**	**3.35**	0.20 U	**22.1**	**61.5**	1.0 U	0.10 U	**24.0**	
I-FA-100	12/17/2010	0.20 U	**0.984**	0.20 U	**15.0**	**5.75**	1.0 U	**0.470**	**14.0**	
I-FA-101	12/17/2010	**0.515**	1.0 U	**0.270**	**97.5**	**7.15**	1.0 U	**0.385**	**14.6**	
J-FA-100	11/29/2010	**13.5**	**7.35**	0.20 U	**25.8**	**127**	**143**	0.10 U	**21.2**	
J-FA-102	11/29/2010	**2.45**	**3.90**	0.20 U	**0.424**	**27.5**	1.0 U	0.10 U	1.5 U	
J-GC-100	11/29/2010	0.20 U	1.0 U	0.20 U	**4.55**	**8.45**	1.0 U	0.10 U	**4.85**	
M-FA-100	11/22/2010	0.2 U	**5.40**	0.2 U	**62.4**	0.5 U	1.0 U	0.10 U	**4.35**	
M-FA-102	12/1/2010	**1.05**	1.0 U	0.2 U	**57.7**	0.5 U	1.0 U	0.10 U	1.5 U	
M-FA-103	12/2/2010	0.2 U	1.0 U	0.2 U	**11.9**	**3.20**	1.0 U	0.10 U	1.5 U	
M-FA-104	11/22/2010	0.2 U	**6.00**	0.2 U	**35.8**	0.5 U	1.0 U	0.10 U	1.5 U	
M-FA-204 - Dup of M-FA-104	11/22/2010	0.2 U	**5.55**	0.2 U	**40.4**	0.5 U	1.0 U	0.10 U	1.5 U	
M-FA-107	1/28/2011	**0.176** J	1.0 U	0.2 U	**13.6** J	0.50 U	1.0 U	0.10 U	**2.89**	
M-FA-10702 - Dup of M-FA-107	1/28/2011	**0.138** J	1.0 U	0.20 U	**8.97** J	0.50 U	1.0 U	0.10 U	**2.65**	
M-GC-100	11/30/2010	**0.250**	**9.80**	0.20 U	**14.7**	**2.10**	1.0 U	0.10 U	1.5 U	
M-GC-103	12/17/2010	0.20 U	1.0 U	0.20 U	**7.32**	**2.91**	1.0 U	**1.09**	**14.1**	
M-GC-105	1/28/2011	**0.857**	1.0 U	0.20 U	**17.3**	**1.34**	1.0 U	0.10 U	**13.9**	
N-FA-100	12/1/2010	0.2 U	1.0 U	0.2 U	**100**	**18.3**	1.0 U	0.10 U	1.5 U	
N-FA-102	12/1/2010	**2.25**	**2.90**	0.2 U	**39.5**	**3.60**	1.0 U	0.10 U	1.5 U	
P10 (G-2)	12/15/2010	0.20 U	**16.7**	0.20 U	**27.4**	**5.23**	**1.07**	0.10 U	**2.29**	
RI-MW-1	12/15/2010	0.20 U	1.0 U	0.20 U	**36.2**	**4.35**	**1.19**	**0.296**	**4.99** J	
RI-MW-1	02/22/2011							0.02 U		
RI-MW-2	12/15/2010	0.20 U	**1.64**	0.20 U	**23.4**	0.50 U	**0.946** J	**0.480**	**2.93**	
RI-MW-2	02/22/2011							0.02 U		
RI-MW-3	12/15/2010	**0.295**	**0.679**	0.20 U	**31.1**	0.50 U	**0.886** J	**0.133**	**1.29**	
RI-MW-3	02/22/2011							0.02 U		
RI-MW-4	12/15/2010	0.20 U	**1.97** J	0.20 U	**10.2** J	**2.68** J	1.0 U	**0.337** J	**3.22** J	
RI-MW-402 - Dup of RI-MW-4	12/15/2010	0.20 U	**2.98** J	0.20 U	**14.3** J	0.50 UJ	**1.01**	**0.141** J	1.5 UJ	
RI-MW-4	02/22/2011							0.02 U		
RI-MW-5	12/15/2010	0.20 U	**1.32**	**0.20**	**24.2**	0.50 U	1.0 U	**0.125** J	1.5 U	
RI-MW-5	02/22/2011							0.02 U		
SEE-EC-3	12/15/2010	**0.617**	**256**	0.20 U	**46.1**	0.50 U	**0.940** J	0.10 U	**4.86**	
SEE-EC-3	02/22/2011		**35.6**							
SUMP	12/20/2010	0.20 U	1.0 U	**0.167**	**14.0**	0.50 U	1.0 U	0.10 U	**16.1**	

U = Indicates the compound was undetected at the reported concentration.
UJ = The analyte was not detected in the sample; the reported sample reporting limit is an estimate.
J = Indicates the analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
Bold = Detected compound.
Boxed value indicates exceedance of preliminary screening level.
Shaded box indicates a detection is greater than 3 times the preliminary screening level

TABLE 19
CATCH BASIN ANALYTICAL RESULTS - CARBON NORMALIZED
AMERON/HULBERT RI/FS
PORT OF EVERETT

	SMS Criteria		CB101	CB111	Dup of CB111 CB011	SD-3	SD-4	SD-7
	Sediment Quality Standard (a)	Cleanup Screening Level (b)	CHM101124-5 CHM101202-4 11/24/2010	CHM101124-5 11/24/2010	CHM101124-5 11/24/2010	CHM101124-5 11/24/2010	CHM101124-5 11/24/2010	CHM101124-5 11/24/2010
TOTAL METALS (mg/kg)								
Method SW6020								
Arsenic	57	93	**8.37**	**568**	**550**	**19.2**	**28.1**	**25.2**
Cadmium	5.1	6.7	**0.638**	**3.00**	**3.20**	**2.74**	**3.35**	**1.53**
Chromium	260	270	**31.9**	**193**	**227**	**113**	**215**	**96.9**
Copper	390	390	**65.3**	**734** J	**477** J	**147**	**161**	**85.5**
Lead	450	530	**7.93**	**321**	**308**	**264**	**239**	**42.7**
Mercury	0.41	0.59	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Zinc	410	960	**5210**	**3180**	**2960**	**1760**	**1960**	**869**
SEMIVOLATILES								
Method SW8270C								
PAHs (mg/kg OC) (c)								
Naphthalene	99	170	2.4 U	21.3 U	21.9 U	**21**	3.3 U	1.6 U
Acenaphthylene	66	66	2.4 U	21.3 U	21.9 U	**3.0**	**6.3**	1.6 U
Acenaphthene	16	57	2.4 U	21.3 U	21.9 U	**4.9**	3.3 U	1.6 U
Fluorene	23	79	2.4 U	21.3 U	21.9 U	**41**	3.3 U	1.6 U
Phenanthrene	100	480	2.4 U	21.3 U	21.9 U	**207**	**13.0**	**3.6**
Anthracene	220	1200	2.4 U	21.3 U	21.9 U	**14.2**	**4.2**	1.6 U
2-Methylnaphthalene	38	64	2.4 U	21.3 U	21.9 U	**6.3**	3.3 U	1.6 U
LPAH (d, e)	370	780	2.4 U	21.3 U	21.9 U	**291**	**23.5**	**3.6**
Fluoranthene	160	1200	2.4 U	21.3 U	21.9 U	**208**	**18.9**	**4.0**
Pyrene	1000	1400	2.4 U	21.3 U	21.9 U	**125**	**18.0**	**4.4**
Benzo(a)anthracene	110	270	1.9 U	17.1 U	17.5 U	**11.7**	**8.8**	1.3 U
Chrysene	110	460	1.9 U	17.1 U	17.5 U	**53.2**	**9.2**	1.3 U
Total Benzofluoranthenes (d, f)	230	450	1.9 U	17.1 U	17.5 U	**51.4**	**10.5**	1.3 U
Benzo(a)pyrene	99	210	1.9 U	17.1 U	17.5 U	**11.7**	**8.0**	1.3 U
Indeno(1,2,3-cd)pyrene	34	88	1.9 U	17.1 U	17.5 U	**11.8**	2.7 U	1.3 U
Dibenz(a,h)anthracene	12	33	1.9 U	17.1 U	17.5 U	0.6 U	2.7 U	1.3 U
Benzo(g,h,i)perylene	31	78	1.9 U	17.1 U	17.5 U	**9.1**	2.7 U	1.3 U
HPAH (d, g)	960	5300	1.9 U	17.1 U	17.5 U	**481**	**73.4**	**8.3**

TABLE 19
CATCH BASIN ANALYTICAL RESULTS - CARBON NORMALIZED
AMERON/HULBERT RI/FS
PORT OF EVERETT

	SMS Criteria		CB101	CB111	Dup of CB111 CB011	SD-3	SD-4	SD-7
	Sediment Quality Standard (a)	Cleanup Screening Level (b)	CHM101124-5 CHM101202-4 11/24/2010	CHM101124-5 11/24/2010	CHM101124-5 11/24/2010	CHM101124-5 11/24/2010	CHM101124-5 11/24/2010	CHM101124-5 11/24/2010
SVOCs (mg/kg OC) (c)								
1,2-Dichlorobenzene	2.3	2.3	2.4 U	21.3 U	21.9 U	0.8 U	3.3 U	1.6 U
1,3-Dichlorobenzene	None	None	2.4 U	21.3 U	21.9 U	0.8 U	3.3 U	1.6 U
1,4-Dichlorobenzene	3.1	9	2.4 U	21.3 U	21.9 U	0.8 U	3.3 U	1.6 U
1,2,4-Trichlorobenzene	0.81	1.8	2.4 U	21.3 U	21.9 U	0.8 U	3.3 U	1.6 U
Hexachlorobenzene	0.38	2.3	2.4 U	21.3 U	21.9 U	0.8 U	3.3 U	1.6 U
Dimethylphthalate	53	53	2.4 U	21.3 U	21.9 U	**7.0**	3.3 U	1.6 U
Diethylphthalate	61	110	2.4 U	21.3 U	21.9 U	0.8 U	3.3 U	1.6 U
Di-n-butylphthalate	220	1700	79.0 U	465.0 U	376.4 U	**60.8**	80.7 U	1.6 U
Benzyl Butyl phthalate	4.9	64	2.4 U	21.3 U	21.9 U	**36.0**	3.3 U	**4.0**
bis (2-Ethylhexyl) phthalate	47	78	**157**	**49.1**	**52.5**	**354**	**148**	**36.2**
Di-n-octyl phthalate	58	4500	**166**	21.3 U	21.9 U	**40.3**	**9.7**	1.6 U
Dibenzofuran	15	58	2.4 U	21.3 U	21.9 U	0.8 U	3.3 U	1.6 U
Hexachlorobutadiene	3.9	6.2	2.4 U	21.3 U	21.9 U	0.8 U	3.3 U	1.6 U
N-Nitrosodiphenylamine	11	11	11.9 U	106.7 U	109.4 U	3.8 U	16.7 U	7.8 U
SVOCs (mg/kg)								
Phenol	420	1200	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
2-Methylphenol (o-cresol)	63	63	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
4-Methylphenol (p-cresol)	670	670	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
2,4-Dimethylphenol	29	29	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Pentachlorophenol	360	690	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Benzyl Alcohol	57	73	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Benzoic Acid	650	650	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
PCBs (d) (mg/kg OC) (c)								
Method SW8082								
Aroclor 1016	--	--	2.4 U	21.3 U	21.9 U	0.8 U	3.3 U	1.6 U
Aroclor 1221	--	--	2.4 U	21.3 U	21.9 U	0.8 U	3.3 U	1.6 U
Aroclor 1232	--	--	2.4 U	21.3 U	21.9 U	0.8 U	3.3 U	1.6 U
Aroclor 1242	--	--	2.4 U	21.3 U	21.9 U	0.8 U	3.3 U	1.6 U
Aroclor 1248	--	--	2.4 U	21.3 U	21.9 U	0.8 U	3.3 U	1.6 U
Aroclor 1254	--	--	2.4 U	21.3 U	21.9 U	**12.7**	3.3 U	1.6 U
Aroclor 1260	--	--	2.4 U	21.3 U	21.9 U	0.8 U	3.3 U	1.6 U
Total PCBs	12	65	2.4 U	21.3 U	21.9 U	**12.7**	3.3 U	1.6 U
CONVENTIONALS (%)								
Total Solids (EPA160.3)	--	--	64.63	79.03	79.34	40.86	60.72	33.55
Total Organic Carbon (SW9060A)			4.19	0.469	0.457	13.200	3.00	6.39

TABLE 19
CATCH BASIN ANALYTICAL RESULTS - CARBON NORMALIZED
AMERON/HULBERT RI/FS
PORT OF EVERETT

	SMS Criteria		CB101	CB111	Dup of CB111 CB011	SD-3	SD-4	SD-7
	Sediment Quality Standard (a)	Cleanup Screening Level (b)	CHM101124-5 CHM101202-4 11/24/2010	CHM101124-5 11/24/2010	CHM101124-5 11/24/2010	CHM101124-5 11/24/2010	CHM101124-5 11/24/2010	CHM101124-5 11/24/2010

U = Indicates the compound was undetected at the reported concentration.
J = Indicates the analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
Bold = Detected compound.
Boxed value indicates exceedance of SQS critieria.
Shaded value indicates exceedance of CSL critieria.

(a) SMS Sediment Quality Standard (Chapter 173-204 WAC).
(b) SMS Cleanup Screening Level (Chapter 173-204 WAC).
(c) All organic data (except phenols, benzyl alcohol, and benzoic acid) are normalized to total organic carbon; this involves dividing the dry weight concentration of the constituent by the fraction of total organic carbon present.
(d) Where chemical criteria in this table represent the sum of individual compounds or isomers, the following methods shall be applied:
  (i) Where chemical analyses identify an undetected value for every individual compound/isomer, then the single highest detection limit shall represent the sum of the respective compounds/isomers.
  (ii) Where chemical analyses detect one or more individual compounds/isomers, only the detected concentrations will be added to represent the group sum.
(e) The LPAH criterion represents the sum of the following "low molecular weight polynuclear aromatic hydrocarbon" compounds: naphthalene, acenaphthylene, acenaphthene, fluorene, phenanthrene, and anthracene. The LPAH criterion is not the sum of the criteria values for the individual LPAH compounds listed.
(f) The total benzofluoranthenes criterion represents the sum of the concentrations of the "B," "J," and "K" isomers.
(g) The HPAH criterion represents the sum of the following "high molecular weight polynuclear aromatic hydrocarbon" compounds: fluoranthene, pyrene, benzo(a)anthracene, chrysene, total benzofluoranthenes, benzo(a)pyrene, indeno(1,2,3-c,d)pyrene, dibenz(a,h)anthracene, and benzo(g,h,i)perylene. The HPAH criterion is not the sum of the criteria values for the individual HPAH compounds as listed.

TABLE 20
CATCH BASIN ANALYTICAL RESULTS - DRY WEIGHT
AMERON/HULBERT RI/FS
PORT OF EVERETT

	SQS Dry Weight Equivalent	CSL Dry Weight Equivalent	CB101 CHM101124-5 CHM101202-4 11/24/2010	CB111 CHM101124-5 11/24/2010	Dup of CB111 CB011 CHM101124-5 11/24/2010	SD-3 CHM101124-5 11/24/2010	SD-4 CHM101124-5 11/24/2010	SD-7 CHM101124-5 11/24/2010
NWTPH-DX (mg/kg)								
Diesel Range Organics				20 U	20 U	**226**	**136**	20 U
Diesel (Fuel Oil)			20 U	20 U	20 U	20 U	20 U	**723**
Mineral Oil			40 U	40 U	40 U	40 U	40 U	40 U
Heavy Oil			50 U	50 U	50 U	**951**	**521**	50 U
TOTAL METALS (mg/kg)								
Method SW6020								
Antimony			**0.776**	**70.4**	**64.6**	**2.67**	**3.51**	**5.46**
Arsenic	57	93	**8.37**	**568**	**550**	**19.2**	**28.1**	**25.2**
Cadmium	5.1	6.7	**0.638**	**3.00**	**3.20**	**2.74**	**3.35**	**1.53**
Chromium	260	270	**31.9**	**193**	**227**	**113**	**215**	**96.9**
Copper	390	390	**65.3**	**734** J	**477** J	**147**	**161**	**85.5**
Lead	450	530	**7.93**	**321**	**308**	**264**	**239**	**42.7**
Mercury	0.41	0.59	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Zinc	410	960	**5210**	**3180**	**2960**	**1760**	**1960**	**869**
Chromium, Hexavalent (mg/kg)								
Method SW7196				1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
PCBs (mg/kg)								
Method SW8082								
Aroclor 1016			0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Aroclor 1221			0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Aroclor 1232			0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Aroclor 1242			0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Aroclor 1248			0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Aroclor 1254			0.1 U	0.1 U	0.1 U	**1.67**	0.1 U	0.1 U
Aroclor 1260			0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Total PCBs	0.13	1.0	0.1 U	0.1 U	0.1 U	**1.67**	0.1 U	0.1 U
SEMIVOLATILES (mg/kg)								
Method SW8270C								
Aniline			0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Phenol	0.42	1.2	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Bis(2-chloroethyl)ether			0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
2-Chlorophenol			0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
1,3-Dichlorobenzene			0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
1,4-Dichlorobenzene	0.11	0.11	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
1,2-Dichlorobenzene	0.035	0.05	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Benzyl Alcohol	0.057	0.073	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Bis(2-chloroisopropyl)ether			0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U

TABLE 20
CATCH BASIN ANALYTICAL RESULTS - DRY WEIGHT
AMERON/HULBERT RI/FS
PORT OF EVERETT

	SQS Dry Weight Equivalent	CSL Dry Weight Equivalent	CB101 CHM101124-5 CHM101202-4 11/24/2010	CB111 CHM101124-5 11/24/2010	Dup of CB111 CB011 CHM101124-5 11/24/2010	SD-3 CHM101124-5 11/24/2010	SD-4 CHM101124-5 11/24/2010	SD-7 CHM101124-5 11/24/2010
2-Methylphenol (o-cresol)	0.063	0.063	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Hexachloroethane			0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
N-Nitroso-di-n-propylamine			0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
4-Methylphenol (p-cresol)	0.67	0.67	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
3-Methylphenol (m-cresol)			0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Nitrobenzene			0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Isophorone			0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
2-Nitrophenol			0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
2,4-Dimethylphenol	0.029	0.029	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Bis(2-chloroethoxy)methane			0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
2,4-Dichlorophenol			0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,2,4-Trichlorobenzene	0.031	0.051	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Naphthalene	2.1	2.1	0.1 U	0.1 U	0.1 U	**2.76**	0.1 U	0.1 U
4-Chloroaniline			0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Hexachlorobutadiene	0.011	0.12	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
4-Chloro-3-methylphenol			0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
2-Methylnaphthalene	0.67	0.67	0.1 U	0.1 U	0.1 U	**0.832**	0.1 U	0.1 U
1-Methylnaphthalene			0.1 U	0.1 U	0.1 U	**0.503**	0.1 U	0.1 U
Hexachlorocyclopentadiene			0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
2,4,6-Trichlorophenol			0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
2,4,5-Trichlorophenol			0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
2-Chloronaphthalene			0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
2-Nitroaniline			0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,4-Dinitrobenzene			0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Acenaphthylene	1.3	1.3	0.1 U	0.1 U	0.1 U	**0.399**	**0.189**	0.1 U
1,3-Dinitrobenzene			0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Dimethylphthalate	0.071	0.16	0.1 U	0.1 U	0.1 U	**0.919**	0.1 U	0.1 U
2,6-Dinitrotoluene			0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
1,2-Dinitrobenzene			0.1 U	0.1 U	0.1 U	**1.47**	0.1 U	0.1 U
Acenaphthene	0.5	0.5	0.1 U	0.1 U	0.1 U	**0.641**	0.1 U	0.1 U
3-Nitroaniline			0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
2,4-Dinitrophenol			0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Dibenzofuran	0.54	0.54	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
2,4-Dinitrotoluene			0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
4-Nitrophenol			0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
2,3,4,6-Tetrachlorophenol			0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
2,3,5,6-Tetrachlorophenol			0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Fluorene	0.54	0.54	0.1 U	0.1 U	0.1 U	**5.39**	0.1 U	0.1 U
4-Chlorophenyl phenyl ether			0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Diethylphthalate	0.2	1.2	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
4,6-Dinitro-2-methylphenol			0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Diphenylamine	0.028	0.04	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U

TABLE 20
CATCH BASIN ANALYTICAL RESULTS - DRY WEIGHT
AMERON/HULBERT RI/FS
PORT OF EVERETT

	SQS Dry Weight Equivalent	CSL Dry Weight Equivalent	CB101 CHM101124-5 CHM101202-4 11/24/2010	CB111 CHM101124-5 11/24/2010	Dup of CB111 CB011 CHM101124-5 11/24/2010	SD-3 CHM101124-5 11/24/2010	SD-4 CHM101124-5 11/24/2010	SD-7 CHM101124-5 11/24/2010
Azobenzene			0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
4-Bromo phenyl phenyl ether			0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Hexachlorobenzene	0.022	0.07	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Pentachlorophenol	0.36	0.69	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Phenanthrene	1.5	1.5	0.1 U	0.1 U	0.1 U	**27.3**	**0.390**	**0.231**
Anthracene	0.96	0.96	0.1 U	0.1 U	0.1 U	**1.87**	**0.126**	0.1 U
Carbazole			0.5 U	0.5 U	0.5 U	**2.05**	0.5 U	0.5 U
Di-n-butylphthalate	1.4	5.1	3.31 U	2.18 U	1.72 U	**8.03**	2.42 U	0.1 U
Fluoranthene	1.7	2.5	0.1 U	0.1 U	0.1 U	**27.4**	**0.567**	**0.255**
Pyrene	2.6	3.3	0.1 U	0.1 U	0.1 U	**16.5**	**0.541**	**0.278**
Benzyl Butyl phthalate	0.063	0.9	0.1 U	0.1 U	0.1 U	**4.75**	0.1 U	**0.255**
bis (2-Ethylhexyl) adipate			0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Benzo(a)anthracene	1.3	1.6	0.08 U	0.08 U	0.08 U	**1.54**	**0.264**	0.08 U
Chrysene	1.4	2.8	0.08 U	0.08 U	0.08 U	**7.02**	**0.277**	0.08 U
bis (2-Ethylhexyl) phthalate	1.3	3.1	**6.57**	**0.230**	**0.240**	**46.7**	**4.43**	**2.31**
Di-n-octyl phthalate	6.2	6.2	**6.96**	0.1 U	0.1 U	**5.32**	**0.290**	0.1 U
Benzo(b)fluoranthene			0.08 U	0.08 U	0.08 U	**4.80**	**0.315**	0.08 U
Benzo(k)fluoranthene			0.08 U	0.08 U	0.08 U	**1.99**	0.08 U	0.08 U
Benzo(a)pyrene	1.6	1.6	0.08 U	0.08 U	0.08 U	**1.54**	**0.239**	0.08 U
Indeno(1,2,3-cd)pyrene	0.6	0.69	0.08 U	0.08 U	0.08 U	**1.56**	0.08 U	0.08 U
Dibenz(a,h)anthracene	0.23	0.23	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U
Benzo(g,h,i)perylene	0.67	0.72	0.08 U	0.08 U	0.08 U	**1.20**	0.08 U	0.08 U
Benzoic Acid	0.65	0.65	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
cPAH TEQ			0.08 U	0.08 U	0.08 U	**2.60**	**0.30**	0.08 U
CONVENTIONALS (%)								
Total Solids (EPA160.3)			64.63	79.03	79.34	40.86	60.72	33.55
Total Organic Carbon (SW9060A)			4.19	0.469	0.457	13.2	3.00	6.39

U = Indicates the compound was undetected at the reported concentration.
J = Indicates the analyte was positively identified; the associated numerical value is the approximate
Bold = Detected compound.
Boxed value indicates exceedance of SQS critieria.
Shaded value indicates exceedance of CSL critieria.

APPENDIX A

Logs of Exploration

Boring Logs

G-FA-100

SAMPLE DATA				SOIL PROFILE			GROUNDWATER
Depth (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	PID (ppm)	Graphic Symbol	USCS Symbol	Drilling Method: GeoprobeTM Ground Elevation (ft):	
0						SM	Black, silty, medium SAND with organics (roots), trace black, sand-size, granular material (apparent sandblast grit) (no odor, no sheen) (loose, moist) [Fill] Analytical sample G-FA-100 (0-1) collected at 13:33 from 0-1 ft. bgs	Groundwater not encountered.
						SP/ SM	Gray, fine to medium SAND with silt, trace mottling (no odor, no sheen) (medium dense, moist) [Fill] Analytical sample G-FA-100 (1-2) collected at 13:35 from 1-2 ft. bgs	
2	1	d3		0.0				
						SP	Gray, fine to medium SAND, with trace fine organics (no odor, no sheen) (medium dense, moist) [Hydrualic Fill]	
4								

Boring Completed 11/30/10
Total Depth of Boring = 4.0 ft.

6

8

Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

0147029.500.610 6/17/11 N:\PROJECTS\147029.500.610.GPJ SOIL BORING LOG

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Everett, Washington

Log of Boring G-FA-100

Figure
A-1

G-FA-101

SAMPLE DATA				SOIL PROFILE			GROUNDWATER
Depth (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	PID (ppm)	Graphic Symbol	USCS Symbol	Drilling Method: GeoprobeTM Ground Elevation (ft):	Water Level
0						AC	Asphalt	
						SP	Gray, fine to medium SAND with gravel (no odor, no sheen) (medium dense, moist) (base coarse) [Fill]	
2	1	d3		0.0		DB	White, soft, silt-like material with gravel (concrete-like odor, no sheen) (dense, damp) [Fill]	
4							Analytical sample G-FA-101 (4-5) collected at 12:45 and duplicate analytical sample G-FA-201 (4-5) collected at 12:49 from 4.5-5.5 ft. bgs	
6								▽ ATD
8	2			14.2				
10						SP/ SM	Dark gray, fine SAND with silt and wood/organic fragments (no odor, no sheen) (medium dense, wet) [Hydraulic Fill]	
12	3	d3		5.5			Analytical sample G-FA-101 (10.5-11.5) at 12:47 collected from 10.5-11.5 ft. bgs	

Boring Completed 11/30/10
Total Depth of Boring = 12.0 ft.

14
16
18
20

Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

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Log of Boring G-FA-101

Figure
A-2

G-FA-102

SAMPLE DATA				SOIL PROFILE			GROUNDWATER
Depth (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	PID (ppm)	Graphic Symbol	USCS Symbol	Drilling Method: GeoprobeTM Ground Elevation (ft):	Water Level
0						AC	Asphalt	
						SP	Brown, gravelly, medium to coarse SAND (no odor, no sheen) (loose, damp) [Base Coarse Fill]	
						SP	Brown, fine SAND with trace silt (no odor, no sheen) (medium dense, moist to wet) [Fill] -Piece of white, hard, odorless, concrete-like material at 3 ft. bgs Collected soil sample G-FA-102 (2-3) at 12:14 from 3-4 ft. bgs Collected soil sample G-FA-102 (3-4) at 12:16 from 4-5 ft. bgs	
2	1	d3		0.0				
4								
6								ATD
8	2	d3		0.0		SM	Gray, silty, fine SAND, dispersed wood fragments (no odor, no sheen) (medium dense, wet) [Hydraulic Fill]	
10								
12	3	d3		0.0				
14								
16								
18								
20								

Boring Completed 11/30/10
Total Depth of Boring = 12.0 ft.

Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

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Log of Boring G-FA-102

Figure
A-3

G-FA-103

SAMPLE DATA				SOIL PROFILE			GROUNDWATER
Depth (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	PID (ppm)	Graphic Symbol	USCS Symbol	Drilling Method: GeoprobeTM Ground Elevation (ft):	Water Level
0						SP	Brown, gravelly, medium to coarse SAND (no odor, no sheen) (loose, damp) [Fill]	
						DB	White, soft, silt-like material with gravel (mild hydrocarbon odor, no sheen) (dense, moist to wet) [Fill]	
2	1	d3		0.0			Analytical sample G-FA-103 (1-2) collected at 11:10 from 1-2 ft. bgs	
4								ATD
6							Analytical sample G-FA-103 (5.5-6.5) collected at 11:20 from 5.5-6.5 ft. bgs	
						SP/ SM	Dark gray, fine SAND with silt and wood/organic fragments (no odor, no sheen) (medium dense, wet) [Hydraulic Fill]	
8	2	d3		31.2			Analytical sample G-FA-103 (8-9) collected at 11:35 from 8-9 ft. bgs	
10								
12	3	d3		0.0				

Boring Completed 11/30/10
Total Depth of Boring = 12.0 ft.

14
16
18
20

Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

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Log of Boring G-FA-103

Figure
A-4

G-FA-110

SAMPLE DATA				SOIL PROFILE			GROUNDWATER
Depth (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	PID (ppm)	Graphic Symbol	USCS Symbol	Drilling Method: GeoprobeTM Ground Elevation (ft):	Water Level
0						SP/ SM	Grayish tan, with red layers, fine to medium SAND with silt (mild concrete-like odor, no sheen) (dense, moist to wet) [Fill]	
								ATD
2	1	d3		0.0				
							Analytical sample G-FA-110 (3.5-4.5) collected at 14:15 from 3.5-4.5 ft. bgs	
							-Dark red, medium sized, spherical grains at 4 ft. bgs	
4						DB		
	2	d3		0.0			Gray, silt-like material (mild concrete-like odor, no sheen) (dense, moist) [Fill]	
							-Refusal at 4.5 ft. bgs due to concrete at base of settling basin	
6								
8								

Boring Completed 12/20/10
Total Depth of Boring = 4.5 ft.

Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

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Log of Boring G-FA-110

Figure
A-5

G-FA-111

SAMPLE DATA				SOIL PROFILE			GROUNDWATER
Depth (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	PID (ppm)	Graphic Symbol	USCS Symbol	Drilling Method: GeoprobeTM Ground Elevation (ft):	
0						SP/SM	Grayish red, fine to medium SAND with silt and trace gravel (no odor, no sheen) (medium dense, damp) [Fill]	Groundwater not encountered.
2	1	d3		0.0		DB	Grayish red, silt-like material with sand (concrete-like odor, no sheen) (medium dense, damp) [Fill] Analytical sample G-FA-111 (2-3) collected at 14:00 from 2-3 ft. bgs	
4	2	d3		0.0		SP/SM	Grayish tan, fine to medium SAND with silt (concrete-like odor, no sheen) (medium dense, damp to moist) [Fill]	
6							-Refusal at 5 ft. bgs due to hard concrete base of settling basin	
8								

Boring Completed 12/20/10
Total Depth of Boring = 5.0 ft.

Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

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Log of Boring G-FA-111

Figure A-6

G-FA-112

SAMPLE DATA				SOIL PROFILE			GROUNDWATER
Depth (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	PID (ppm)	Graphic Symbol	USCS Symbol	Drilling Method: GeoprobeTM Ground Elevation (ft):	
0						SP/ SM	Red and tan layers of fine to medium SAND with silt (no odor, no sheen) (dense, damp) [Fill]	Groundwater not encountered.
						DB	Gray, tan, and orange layers of silt-like material (concrete-like odor, no sheen) (dense, moist) [Fill]	
2	1	d3		0.0				
							Analytical sample G-FA-112 (3-4) collected at 13:45 from 3-4 ft. bgs	
4	2	d3		0.0			-with medium sand at 4.5-5 ft.	
							-Refusal at 5 ft. bgs due to concrete base of settling basin	
6								
8								

Boring Completed 12/20/10
Total Depth of Boring = 5.0 ft.

Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

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Log of Boring G-FA-112

Figure A-7

G-FA-113

SAMPLE DATA				SOIL PROFILE			GROUNDWATER
Depth (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	PID (ppm)	Graphic Symbol	USCS Symbol	Drilling Method: GeoprobeTM Ground Elevation (ft):	Water Level
0						AC	Asphalt	
						SP SM	Gray, gravelly, medium to coarse SAND (no odor, no sheen) (loose, damp) [Base Coarse Fill]	
2	1	d3		0.0			Brown, silty, fine to medium SAND (mild hydrocarbon odor, no sheen) (medium dense, damp to wet) [Fill]	
							Analytical sample G-FA-113 (0-1) collected at 09:50 from 1.0-2.0 ft. bgs	
4							Analytical sample G-FA-113 (1-2) collected at 09:52 from 2.0-3.0 ft. bgs	▽ ATD
							Analytical sample G-FA-113 (2-3) collected at 09:54 from 3.0-4.0 ft. bgs	
6						SM	Gray, silty, fine SAND with dispersed wood fragments (no odor, no sheen) (medium dense, wet) [Fill]	
	2	d3		0.0				
8								
10								
	3	d3		0.0				
12								

Boring Completed 11/22/10
Total Depth of Boring = 12.0 ft.

14
16
18
20

Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

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Ameron-Hulbert Upland Investigation Everett, Washington	Log of Boring G-FA-113	Figure A-8

G-GC-100

SAMPLE DATA				SOIL PROFILE			GROUNDWATER
Depth (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	PID (ppm)	Graphic Symbol	USCS Symbol	Drilling Method: GeoprobeTM Ground Elevation (ft):	Water Level
0						AC	Asphalt	
						SP	Gray, medium to coarse SAND with gravel and trace silt (no odor, no sheen) (medium dense, damp) [Base Coarse Fill]	
2	1	d3		0.0		SP	Gray, fine to medium SAND with trace silt and trace wood fragments (no odor, no sheen) (medium dense, damp to wet) [Hydraulic Fill]	
							Analytical sample G-GC-100 (0-1) collected at 09:55 from 1.5-2.5 ft. bgs	
4							Analytical sample G-GC-100 (1-2) collected at 09:57 from 2.5-3.5 ft. bgs	
							Analycial sample G-GC-100 (2-3) collected at 09:59 from 3.5-4.5 ft. bgs	ATD
6	2	d3		0.0			-Lenses of silt and wood fragments from 5-12 ft. bgs	
8								
10	3	d3		0.0				
12								

Boring Completed 12/20/10
Total Depth of Boring = 12.0 ft.

14
16
18
20

Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

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Everett, Washington

Log of Boring G-GC-100

Figure
A-9

G-GC-101

SAMPLE DATA | **SOIL PROFILE** | **GROUNDWATER**

Drilling Method: GeoprobeTM

Ground Elevation (ft):

Depth (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	PID (ppm)	Graphic Symbol	USCS Symbol	Water Level
0						AC	Asphalt
						SP	Brown, fine to medium SAND with trace gravel (no odor, no sheen) (medium dense, damp) [Fill]
2	1	d3		0.0			Analytical sample G-GC-101 (0-1) collected at 10:55 from 0.2-1.2 ft. bgs
							Analycial sample G-GC-101 (1-2) collectedat 10:57 from 1.2-2.2 ft. bgs
						SP/ SM	Analycial sample G-GC-101 (2-3) collected at 10:59 from 2.2-3.2 ft. bgs
4						SP	Gray, fine to medium SAND with silt and trace black wood, red oxidation line at 3.5 ft. (no odor, no sheen) (medium dense, damp) [Fill]
							ATD
6	2	d3		0.0			Brown, fine to medium SAND with trace silt (no odor, no sheen) (medium dense, damp) [Hydraulic Fill]
						SM	Gray, silty, fine to medium SAND with alternating layers of wood fragments (no odor, no sheen) (medium dense, wet) [Fill]
8							-No recovery 8 - 11 ft. bgs
10	3	d3		0.0			
						SP	Gray, fine to medium SAND with trace silt and trace wood fragments, flakes of mica (no odor, no sheen) (medium dense, wet) [Hydraulic Fill]
12							
14							
16							
18							
20							

Boring Completed 12/20/10
Total Depth of Boring = 12.0 ft.

Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

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Everett, Washington

Log of Boring G-GC-101

Figure
A-10

G-GC-102

SAMPLE DATA					SOIL PROFILE			GROUNDWATER
Depth (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	PID (ppm)	Graphic Symbol	USCS Symbol	Drilling Method: GeoprobeTM Ground Elevation (ft):	Water Level
0						AC	Asphalt	
						SP	Gray, medium to coarse SAND with gravel and trace silt (no odor, no sheen) (medium dense, damp) [Base Coarse Fill]	
						SP	Gray, fine to medium SAND with trace silt and trace wood fragments (no odor, no sheen) (medium dense, damp to wet) [Hydraulic Fill]	
2	1	d3		0.0			Analycial sample G-GC-102 (0-1) collected at 09:15 from 1.5-2.5 ft. bgs	
4							Analycial sample G-GC-102 (1-2) collected at 09:17 from 2.5-3.5 ft. bgs	
							Analycial sample G-GC-102 (2-3) collected at 09:19 from 3.5-4.5 ft. bgs	ATD
6	2	d3		0.0			-Lenses of silt from 5.5 to 6.5 ft. bgs	
8								
10	3	d3		0.0			-Gray, medium SAND with trace gravel (loose to medium dense) from 9.5-11 ft. bgs	
						WD	Solid wood log	
12						SM/ ML	Gray SILT with sand (no odor, no sheen) (medium stiff, moist)	
14								
16								
18								
20								

Boring Completed 12/20/10
Total Depth of Boring = 12.0 ft.

Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

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Log of Boring G-GC-102

Figure
A-11

G-GC-103

SAMPLE DATA				SOIL PROFILE			GROUNDWATER
Depth (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	PID (ppm)	Graphic Symbol	USCS Symbol	Drilling Method: GeoprobeTM Ground Elevation (ft):	Water Level
0						AC	Asphalt	
						SP	Brown, fine to medium SAND with trace silt and gravel (no odor, no sheen) (medium dense, damp) [Fill]	
2	1	d3		0.0			Analycial sample G-GC-103 (0-1) collected at 11:25 from 0.2-1.2 ft. bgs Analycial sample G-GC-103 (1-2) collected at 11:27 from 1.2-2.2 ft. bgs	
						SP	Analycial sample G-GC-103 (2-3) collected at 11:29 from 2.2-3.2 ft. bgs	
4							Gray, fine to medium SAND with trace silt and lenses of wood debris and silt (no odor, no sheen) (medium dense, damp to wet) [Hydraulic Fill]	▽ ATD
6	2	d3		0.0				
8							Analytical sample G-GC-103 (7-8) collected at 11:31 from 7.2-8.2 ft. bgs	
10	3	d3		0.0				
12								
14								
16								
18								
20								

Boring Completed 12/20/10
Total Depth of Boring = 12.0 ft.

Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

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Log of Boring G-GC-103

Figure
A-12

G-GC-104

SAMPLE DATA				SOIL PROFILE			GROUNDWATER
Depth (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	PID (ppm)	Graphic Symbol	USCS Symbol	Drilling Method: GeoprobeTM Ground Elevation (ft):	Water Level
0						AC	Asphalt	
						SP		
						SP/ SM	Brown, fine to medium SAND with gravel and trace silt (no odor, no sheen) (loose, damp) [Base Coarse Fill]	
2	1	d3		0.0			Gray, fine to medium SAND with silt and trace wood (no odor, no sheen) (medium dense, damp) [Fill]	
						SP	Analytical sample G-GC-104 (0-1) collected at 12:00 from 0.2-1.2 ft. bgs	
4							Analytical sample G-GC-104 (1-2) collected at 12:02 from 1.2-2.2 ft. bgs	
							Analytical sample G-GC-104 (2-3) collected at 12:04 from 2.2-3.2 ft. bgs	▽ ATD
6	2	d3		0.0			Gray, fine to medium SAND with trace silt (no odor, no sheen) (medium dense, damp to wet) [Hydraulic Fill]	
8								
10	3	d3		0.0		SM	Gray, silty, fine to medium SAND with wood fragments (no odor, no sheen) (medium dense, wet) [Hydrualic Fill]	
12								
14								
16								
18								
20								

Boring Completed 12/20/10
Total Depth of Boring = 12.0 ft.

Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

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Log of Boring G-GC-104

Figure
A-13

G-GC-105

SAMPLE DATA				SOIL PROFILE			GROUNDWATER
Depth (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	PID (ppm)	Graphic Symbol	USCS Symbol	Drilling Method: GeoprobeTM Ground Elevation (ft):	Water Level
0						AC	Asphalt	
						SP	Brown, gravelly, medium to coarse SAND (no odor, no sheen) (loose, damp) [Base Coarse Fill]	
						SP	Gray, fine to medium SAND with trace silt and wood fragments (no odor, no sheen) (medium dense, damp to wet) [Hydraulic fill]	
2	1	d3		0.0			Analytical sample G-GC-105 (0-1) collected at 11:15 from 1.0-2.0 ft. bgs	
4							Analytical sample G-GC-105 (1-2) collected at 11:17 from 2.0-3.0 ft. bgs	▽ ATD
6							Analytical sample G-GC-105 (2-3) collected at 11:19 from 3.0-4.0 ft. bgs	
8	2	d3		0.0				
10						SM	Brown, silty, fine SAND with occasional wood fragments (no odor, no sheen) (medium dense, wet) [Hydraulic Fill]	
12	3	d3		0.0				
14								
16								
18								
20								

Boring Completed 11/22/10
Total Depth of Boring = 12.0 ft.

Notes:
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3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

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Log of Boring G-GC-105

Figure
A-14

G-GC-106

SAMPLE DATA				SOIL PROFILE			GROUNDWATER
Depth (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	PID (ppm)	Graphic Symbol	USCS Symbol	Water Level

Drilling Method: GeoprobeTM

Ground Elevation (ft):

Depth (ft)	Sample Number & Interval	Sampler Type	PID (ppm)	USCS Symbol	Description
0				AC	Asphalt
				SP	Brown, gravelly, medium to coarse SAND (no odor, no sheen) (loose, damp) [Base Coarse Fill]
				SM	Greenish gray, silty, fine SAND (no odor, no sheen) (dense, damp to moist) [Fill]
2	1	d3	0.0		Analytical sample G-GC-106 (0-1) collected at 13:15 from 1.0-2.0 ft. bgs
					Analytical sample G-GC-106 (1-2) collected at 13:17 from 2.0-3.0 ft. bgs
4					-Trace gravel from 3 to 4 ft. bgs
					Collected soil sample G-GC-106 (2-3) at 13:19 from 3.0-4.0 ft. bgs
6				SP	-Lens of dark brown of gravelly, coarse sand
	2	d3	0.0		Gray, fine to medium SAND with trace silt, shell and wood fragments (no odor, no sheen) (medium dense, damp to wet) [Hydraulic Fill]
8					
10					
12	3	d3	0.0		
14					
16					
18	4	d3	0.0		
20					

Water Level: ATD

Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

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Log of Boring G-GC-106

Figure
A-15
(1 of 2)

G-GC-106

SAMPLE DATA				SOIL PROFILE			GROUNDWATER
Depth (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	PID (ppm)	Graphic Symbol	USCS Symbol	Drilling Method: GeoprobeTM Ground Elevation (ft):	Water Level
20						SP	Gray, fine to medium SAND with trace silt, shell and wood fragments (no odor, no sheen) (medium dense, damp to wet) [Hydraulic Fill]	
22	5	d3		0.0				
24								
26						SP	Gray to brown, fine to medium SAND with trace silt (no odor, no sheen) (medium dense, wet) [Native Soil]	
28	6	d3		0.0				
30								
32								
34								
36								
38								
40								

Boring Completed 11/22/10
Total Depth of Boring = 30.0 ft.

Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

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Everett, Washington

Log of Boring G-GC-106

Figure
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(2 of 2)

G-GC-107

SAMPLE DATA				SOIL PROFILE			GROUNDWATER
Depth (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	PID (ppm)	Graphic Symbol	USCS Symbol	Drilling Method: GeoprobeTM Ground Elevation (ft):	Water Level
0						AC	Asphalt	
						SP	Brown, gravelly, medium to coarse SAND (no odor, no sheen) (loose, damp) [Base Coarse Fill]	
2	1	d3		0.0		SP	Gray, fine to medium SAND with trace silt, trace roots and wood fragments (no odor, no sheen) (medium dense, damp to wet) [Hyrdaulic Fill]	
							Analytical sample G-GC-107 (0-1) collected at 12:40 from 1.0-2.0 ft. bgs	
4							Analycial sample G-GC-107 (1-2) collected at 12:42 from 2.0-3.0 ft. bgs	ATD
							Analytical sample G-GC-107 (2-3) collected at 12:44 from 3.0-4.0 ft. bgs	
6								
	2	d3		0.0			-White shell fragments from 7 to 11 ft	
8								
10								
	3	d3		0.0				
12						SM	Dark brown, organic rich, silty, fine SAND (no odor, no sheen) (loose, wet) [Fill]	
14								
16								
18								
20								

Boring Completed 11/22/10
Total Depth of Boring = 12.0 ft.

Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

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Ameron-Hulbert Upland Investigation Everett, Washington	Log of Boring G-GC-107	Figure A-16

G-GC-108

SAMPLE DATA				SOIL PROFILE			GROUNDWATER
Depth (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	PID (ppm)	Graphic Symbol	USCS Symbol	Drilling Method: GeoprobeTM Ground Elevation (ft):	Water Level
0						AC	Asphalt	
						SM	Brown, silty, fine SAND with trace gravel (no odor, no sheen) (medium dense, damp) [Fill]	
2	1	d3		0.0		SM	Analycial sample G-GC-108 (0-1) collected at 13:10 from 0.2-1.2 ft. bgs	ATD
							Gray, silty, fine to medium SAND with trace gravel and trace organics (no odor, no sheen) (dense, damp to wet) [Fill]	
4							Analycial sample G-GC-108 (1-2) collected at 13:12 from 1.2-2.2 ft. bgs	
							Analycial sample G-GC-108 (2-3) collected at 13:14 from 2.2-3.2 ft. bgs	
6	2	d3		0.0		ML	Gray, sandy, SILT (no odor, no sheen) (stiff, damp)	
						SP/ SM	-3 inches of black gravel and burned wood/charcoal fragments at 6.5 ft. bgs	
8							-2 inches of wood at 6.7 ft. bgs	
							Gray, fine to medium SAND with silt and shell fragments (no odor, no sheen) (medium dense, wet) [Hydraulic Fill]	
							-No recovery from 8-10 ft. bgs	
10	3	d3		0.0		SP/ SM		
12								
14								
16								
18								
20								

Boring Completed 12/20/10
Total Depth of Boring = 12.0 ft.

Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

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Log of Boring G-GC-108

Figure
A-17

G-GC-109

SAMPLE DATA				SOIL PROFILE			GROUNDWATER
Depth (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	PID (ppm)	Graphic Symbol	USCS Symbol	Drilling Method: GeoprobeTM Ground Elevation (ft):	Water Level
0						AC	Asphalt	
						SP	Brown, gravelly, medium to coarse SAND (no odor, no sheen) (loose, damp) [Base Coarse Fill]	
2						GP	Brown, sandy, 0.5 inch diameter GRAVEL with silt (no odor, no sheen) (medium dense, damp) [Fill]	
	1	d3		0.0		SP	Analytical sample G-FA-109 (0-1) collected at 15:25 from 1-2 ft. bgs Analytical sample G-FA-109 (1-2) collected at 15:27 from 2-3 ft. bgs	
4								ATD
							Brown, fine to medium SAND with trace silt (no odor, no sheen) (medium dense, moist to wet) [Fill]	
6							Analytical sample G-FA-109 (2-3) collected at 15:29 from 3-4 ft. bgs	
	2	d3		0.0		SP/ SM	Gray, fine to medium SAND with silt shell fragments organics and wood fragments (no odor, no sheen) (medium dense, wet) [Hydraulic Fill]	
8								
10								
	3	d3		0.0				
12								
14								
16								
18								
20								

Boring Completed 11/29/10
Total Depth of Boring = 12.0 ft.

Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

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Log of Boring G-GC-109

Figure
A-18

I-FA-100

SAMPLE DATA				SOIL PROFILE			GROUNDWATER
Depth (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	PID (ppm)	Graphic Symbol	USCS Symbol	Drilling Method: GeoprobeTM Ground Elevation (ft):	Water Level
0						AC	Asphalt	
						SP/ SM	Brown, gravelly, medium to coarse SAND with silt (no odor, no sheen) (medium dense, moist) [Base Coarse Fill]	
						SP		
2	1	d3		0.0			Gray, fine to medium SAND, with silt, trace wood fragment, and shell fragments (no odor, no sheen) (medium dense to dense, moist to wet) [Hydrudalic Fill]	
4							Analytical sample I-FA-100 (2-3) collected at 11:45 from 3-4 ft. bgs	
6	2	d3		0.0				▽ ATD
8						SM	Gray, silty fine SAND with trace wood fragments (no odor, no sheen) (medium dense, wet) [Fill]	
10	3	d3		0.0				
12								
14								
16								
18								
20								

Boring Completed 12/17/10
Total Depth of Boring = 12.0 ft.

Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

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Log of Boring I-FA-100

Figure
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I-FA-101

Depth (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	PID (ppm)	Graphic Symbol	USCS Symbol	Drilling Method: GeoprobeTM Ground Elevation (ft):	Water Level
0						AC	Asphalt	
						SP/ SM	Gray, gravelly, medium to coarse SAND with silt (no odor, no sheen) (loose, damp) [Base Coarse Fill]	
2	1	d3		0.0		SM	Gray, silty, fine SAND with trace roots organics and wood fragments (no odor, no sheen) (medium dense, wet) [Fill]	
4							-Geotextile fabric layer at 3.5 ft.	▽ ATD
6	2	d3		0.0		SP/ SM	Gray, fine to medium SAND with silt, trace shell fragments, and trace wood fragments (no odor, no sheen) (medium dense, wet) [Hydraulic Fill]	
8								
10	3	d3		0.0		SM	Gray, silty, fine SAND with trace wood fragments (no odor no sheen) (medium dense, wet) [Fill]	
12						WD	Wood, wood fragments, and sawdust [Fill]	
14	4	d3		0.0				
16								
18	5	d3		0.0		SM	Gray, silty, fine SAND (no odor, no sheen) (dense, wet) [Fill]	
20								

Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

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Log of Boring I-FA-101

Figure
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(1 of 2)

I-FA-101

SAMPLE DATA				SOIL PROFILE			GROUNDWATER
Depth (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	PID (ppm)	Graphic Symbol	USCS Symbol	Drilling Method: GeoprobeTM Ground Elevation (ft):	Water Level
20						SM	Gray, silty, fine SAND (no odor, no sheen) (dense, wet) [Fill]	
22	6	d3		0.0				
24								
26	7	d3		0.0				
28								
						SP	Gray, fine to medium SAND with trace silt (no odor, no sheen) (medium dense, wet) [Native Soil]	
30	8	d3		0.0				
32								

Boring Completed 12/17/10
Total Depth of Boring = 32.0 ft.

34
36
38
40

Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

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Log of Boring I-FA-101

Figure
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J-FA-100

SAMPLE DATA				SOIL PROFILE			GROUNDWATER
Depth (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	PID (ppm)	Graphic Symbol	USCS Symbol	Drilling Method: GeoprobeTM Ground Elevation (ft):	Water Level
0						AC	Asphalt	
						SP	Brown, gravelly, medium to coarse SAND (no odor, no sheen) (loose, damp) [Base Coarse Fill]	
						GP	Brown, sandy, 0.5 in diameter GRAVEL with silt (no odor, no sheen) (medium dense, damp) [Fill]	
2	1	d3		0.0				
4						SM	Gray, silty, fine SAND with wood and shell fragments (no odor, no sheen) (medium dense, moist to wet) [Hydualic Fill]	▽ ATD
6							Analycial sample J-FA-100 (4-5) collected at 14:00 from 5-6 ft. bgs	
8	2	d3		0.0				
10						SM/ ML	Gray, sandy, SILT with trace organics (no odor, no sheen) (medium stiff, wet) [Fill]	
12	3	d3		0.0		WD	-Black, sandy, gravelly, organic/decaying wood material [Fill]	
14								
16								
18								
20								

Boring Completed 11/29/10
Total Depth of Boring = 12.0 ft.

Notes:
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3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

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Log of Boring J-FA-100

Figure
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J-FA-101

SAMPLE DATA				SOIL PROFILE			GROUNDWATER
Depth (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	PID (ppm)	Graphic Symbol	USCS Symbol	Drilling Method: GeoprobeTM Ground Elevation (ft):	Water Level
0						AC	Asphalt	
						SP	Brown, gravelly, medium to coarse SAND (no odor, no sheen) (loose, damp) [Base Coarse Fill]	
						SP/ SM	Brown, gravelly, fine to medium SAND with silt (no odor, no sheen) (medium dense, damp) [Fill]	
2	1	d3		0.0				
						SP/ SM	Gray, fine to medium SAND with silt and shell fragments (no odor, no sheen) (medium dense, damp to moist) [Hydraulic Fill]	
4						SM	Dark gray, silty, fine to medium SAND with reddish brick-like fragments [Fill]	
							-No recovery from 5-8 ft bgs	
6								ATD
	2	d3		0.0				
8						SP	Brownish gray, medium to coarse SAND with shell fragments, trace silt, and red to orange brick-like fragments (no odor, no sheen) (medium dense, wet) [Fill]	
10							-No recovery from 10 to 13 ft. bgs	
12	3	d3		0.0				
						SP	Brown, medium to coarse SAND with trace silt and red and white brick-like fragments (no odor, no sheen) (medium dense, wet) [Fill]	
14								
16								
	4	d3		0.0				
18						SM	Black, organic material rich, silty, fine to medium SAND (no odor, no sheen) (medium dense, wet) [Native Soil]	
						SM	Gray, silty, fine SAND (no odor, no sheen)	
20								

Notes:
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2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

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Log of Boring J-FA-101

Figure
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(1 of 2)

J-FA-101

SAMPLE DATA				SOIL PROFILE			GROUNDWATER
Depth (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	PID (ppm)	Graphic Symbol	USCS Symbol	Drilling Method: GeoprobeTM Ground Elevation (ft):	Water Level
20							(medium dense, wet) [Native Soil] -No recovery from 20-25 ft. bgs during first attempt, moved boring 1 foot and collected sample	
22	5	d3		0.0				
24						SM	-Trace shell fragments from 25-28 ft. bgs	
26								
28	6	d3		0.0		SP/ SM	Gray, fine to medium SAND with silt and trace shell fragments (no odor, no sheen) (medium dense, wet) [Native Soil] Analytical sample J-FA-101 (27-28) collected at 11:10 from 28-29 ft. bgs	
30								

Boring Completed 11/29/10
Total Depth of Boring = 30.0 ft.

32
34
36
38
40

Notes:
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3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

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Log of Boring J-FA-101

Figure
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(2 of 2)

J-FA-102

SAMPLE DATA				SOIL PROFILE			GROUNDWATER
Depth (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	PID (ppm)	Graphic Symbol	USCS Symbol	Drilling Method: GeoprobeTM Ground Elevation (ft):	Water Level
0						AC	Asphalt	
						SP	Brown, gravelly, medium to coarse SAND (no odor, no sheen) (loose, damp) [Base Coarse Fill]	
2	1	d3		0.0		SM/ML	Brown, gravely, medium SAND with trace silt (no odor, no sheen) (medium dense, damp) [Fill]	
						SP/SM	Gray, sandy SILT (no odor, no sheen) (medium stiff, damp) [Fill]	
4							Gray, fine to medium SAND with silt and silty lenses (no odor, no sheen) (medium dense, damp to wet) [Fill]	
6								ATD
	2	d3		0.0		SM	Black, organic rich material, gravelly, fine SAND with silt (no odor, no sheen) (loose, wet) [Fill]	
8								
10							-No recovery from 10 to 14 ft.	
12	3			0.0				
14						GP	Gray, sandy, 0.5 inch diameter GRAVEL with gravel-sized pieces of hard, white to yellow concrete-like material (no odor, no sheen) (loose, wet) [Fill] Analycial sample J-FA-102 (13-14) collected at 11:50 from 14-15 ft. bgs	
16								
	4	d3		0.0				
18						SP	Black, medium to coarse SAND with organics and wood fragments (no odor, no sheen) (medium dense, wet) [Native Soil]	
						SP/SM		
20							Analytical sample J-FA-102 (18-19)	

Notes:
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3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

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Log of Boring J-FA-102

Figure
A-23
(1 of 2)

J-FA-102

SAMPLE DATA				SOIL PROFILE			GROUNDWATER
Depth (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	PID (ppm)	Graphic Symbol	USCS Symbol	Drilling Method: GeoprobeTM Ground Elevation (ft):	Water Level
20						SP/SM	collected at 11:52 from 19-20 ft. bgs Gray, fine to medium SAND with silt and shell fragments (no odor, no sheen) (medium dense, wet) [Native Soil]	
22	5	d3		0.0				
24								
26								
28	6	d3		0.0		SP/SM	Gray, fine to medium SAND with silt and trace shell fragments (no odor, no sheen) (medium dense, wet) [Native Soil]	
30								
32								
34								
36								
38								
40								

Boring Completed 11/29/10
Total Depth of Boring = 30.0 ft.

Notes:
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2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

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Log of Boring J-FA-102

Figure
A-23
(2 of 2)

J-GC-100

SAMPLE DATA				SOIL PROFILE			GROUNDWATER
Depth (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	PID (ppm)	Graphic Symbol	USCS Symbol	Drilling Method: GeoprobeTM Ground Elevation (ft):	Water Level
0						AC	Asphalt	
						SP	Brown, gravelly, medium to coarse SAND with geo-textile material at 1 ft (no odor, no sheen) (loose, damp) [Base Coarse Fill]	
2						SP/SM		
	1	d3		0.0		SP	Brown, fine to medium SAND with silt and gravel (no odor, no sheen) (medium dense, damp) [Fill] Analytical sample J-GC-100 (0-1) collected at 09:10 from 1-2 ft. bgs	
4							Brownish gray, fine to medium SAND with lenses of silt, trace gravel and shell fragments (no odor, no sheen) (medium dense, moist to wet) [Hydraulic Fill]	ATD
6							Analytical sample J-GC-100 (1-2) collected at 09:12 from 2-3 ft. bgs Analytical sample J-GC-100 (2-3) collected at 09:14 from 3-4 ft. bgs	
	2	d3		0.2		SP/SM	-Wood fragments at 7 ft. bgs	
8							Dark gray, fine to medium SAND with silt and shell fragments, lenses of silty sand with wood fragments (no odor, no sheen) (medium dense, wet) [Hydraulic Fill]	
10								
	3	d3		0.5				
12								

Boring Completed 11/29/10
Total Depth of Boring = 12.0 ft.

14
16
18
20

Notes:
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2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

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Log of Boring J-GC-100

Figure
A-24

J-GC-101

SAMPLE DATA				SOIL PROFILE			GROUNDWATER
Depth (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	PID (ppm)	Graphic Symbol	USCS Symbol	Drilling Method: GeoprobeTM Ground Elevation (ft):	Water Level
0						AC	Asphalt	
						SP	Brown, gravelly, medium to coarse SAND (no odor, no sheen) (loose, damp) [Base Coarse Fill]	
2	1	d3		0.0		SP	Brown, medium to coarse SAND with trace silt and gravel (no odor, no sheen) (medium dense, damp) [Fill] Analytical sample J-GC-101 (0-1) collected at 08:38 from 1-2 ft. bgs	
4							Light gray, medium to fine SAND with shell fragments (no odor, no sheen) (medium dense, damp) [Hydraulic Fill]	ATD
						SP	Analytical sample J-GC-101 (1-2) collected at 08:40 from 2-3 ft. bgs	
6							Analytical sample J-GC-101 (2-3) collected at 08:42 from 3-4 ft. bgs	
						SP/ SM	Gray, fine to medium SAND (no odor, no sheen) (medium dense, moist to wet) [Hydraulic Fill]	
8	2	d3		0.0			Gray, fine to medium SAND with silt and trace shell fragments (no odor, no sheen) (medium dense, wet) [Hydraulic Fill] -Wood fragments at 6.5 ft. bgs	
10								
	3	d3		0.0				
12								
14								
16								
18								
20								

Boring Completed 11/29/10
Total Depth of Boring = 12.0 ft.

Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

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Log of Boring J-GC-101

Figure
A-25

M-FA-100

SAMPLE DATA				SOIL PROFILE			GROUNDWATER
Depth (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	PID (ppm)	Graphic Symbol	USCS Symbol	Drilling Method: GeoprobeTM Ground Elevation (ft):	Water Level
0						AC	Asphalt	
						SP/SM	Gray, fine to medium SAND with silt and gravel; no odor, no sheen (medium dense, damp) [Base Coarse Fill]	
						SP/SM	Gray, fine to medium SAND with silt (no odor, no sheen) (medium dense, damp to wet) [Fill]	
2	1	d3		0.0			Analytical sample M-FA-100 (0-1) collected at 0836 from 1.0-2.0 ft. bgs	
							-Brown, trace gravel from 2-5 ft. bgs	
4							Analytical sample M-FA-100 (1-2) collected at 0838 from 2.0-3.0 ft. bgs	▽ ATD
							Analytical sample M-FA-100 (2-3) collected at 0840 from 3.0-4.0 ft. bgs	
6							-Grayish Brown from 5-7 ft. bgs	
							-Gray from 7-10 ft. bgs	
8	2	d3		0.0			-Wood fragments at 7 ft. bgs	
10						SP/SM	Brownish gray, fine to medium SAND with silt and trace shell fragments and wood fragments (no odor, no sheen) (medium dense, wet) [Hydraulic Fill]	
							-Wood fragments at 10 ft. bgs	
12	3	d3		0.0				
14						SM	Gray, silty fine SAND with trace wood fragments (no odor, no sheen) (medium dense, wet) [Fill]	
16							Boring Completed 11/22/10 Total Depth of Boring = 15.0 ft.	
18								
20								

Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

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Log of Boring M-FA-100

Figure
A-26

M-FA-101

SAMPLE DATA				SOIL PROFILE			GROUNDWATER
Depth (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	PID (ppm)	Graphic Symbol	USCS Symbol	Drilling Method: GeoprobeTM Ground Elevation (ft):	Water Level
0						SP	Brown, medium SAND with trace gravel (no odor, no sheen) (loose, wet) [Fill]	
							Analytical sample M-FA-101 (0-1) collected at 14:50 from 0-1 ft. bgs	
2	1	d3		0.0			Analytical sample M-FA-101 (1-2) collected at 14:52 from 1-2 ft. bgs	
						SM	Analytical sample M-FA-101 (2-3) collected at 14:54 from 2-3 ft. bgs	ATD
4						SP	Brown, silty, fine SAND with organics [roots] (no odor, no sheen) (medium dense, moist) [Fill]	
							Gray, fine to medium SAND with trace silt and shell fragments (no odor, no sheen) (medium dense, wet) [Hydraulic Fill]	
6	2	d3		0.0				
8								
10	3	d3		0.0		SM	Gray, silty, fine to medium SAND (no odor, no sheen) (medium dense, wet) [Fill]	
12								

Boring Completed 12/17/10
Total Depth of Boring = 12.0 ft.

14
16
18
20

Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

0147029.500.610 6/17/11 N:\PROJECTS\147029.500.610.GPJ SOIL BORING LOG

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Everett, Washington

Log of Boring M-FA-101

Figure
A-27

M-FA-102

SAMPLE DATA				SOIL PROFILE			GROUNDWATER
Depth (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	PID (ppm)	Graphic Symbol	USCS Symbol	Drilling Method: GeoprobeTM Ground Elevation (ft):	Water Level
0						SM	Brown, silty, fine SAND with organics, wood fragments, and roots (no odor, no sheen) (medium dense, damp) [Fill]	
						SM		
2	1	d3		0.0			Brown, silty, fine to medium SAND with gravel (no odor, no sheen) (dense, moist to wet) [Fill]	
4						GP/ GM	Gray, sandy 0.5 inch diameter GRAVEL with silt (no odor, no sheen) (dense, damp) [Fill]	ATD
						SM		
6							Brown, silty fine to medium SAND with gravel (no odor, no sheen) (dense, wet) [Fill]	
						SP	Dark brown to black, fine to medium SAND with silt and blueish black, sand-size, granular material (apparent sandblast grit), trace gravel (no odor, no sheen) (medium dense, wet) [Fill]	
8	2	d3		0.0		SP		
						SP/ SM	Analytical sample M-FA-102 (7-7.5) collected at 14:45 from 7-7.5 ft. bgs -Red brick debris at 7.5 ft. bgs	
10							Black, organic rich, fine SAND (no odor, no sheen) (medium dense, wet) [Fill]	
	3	d3		0.0			Gray, fine to medium SAND with silt, shell fragments, and trace wood fragments (no odor, no sheen) (medium dense, wet) [Hydraulic Fill]	
12							Analytical sample M-FA-102 (9-10) collected at 14:48 from 9-10 ft. bgs	
							Boring Completed 12/01/10 Total Depth of Boring = 12.0 ft.	
14								
16								
18								
20								

Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

0147029.500.610 6/17/11 N:\PROJECTS\147029.500.610.GPJ SOIL BORING LOG

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Everett, Washington

Log of Boring M-FA-102

Figure
A-28

M-FA-103

SAMPLE DATA				SOIL PROFILE			GROUNDWATER
Depth (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	PID (ppm)	Graphic Symbol	USCS Symbol	Drilling Method: GeoprobeTM Ground Elevation (ft):	Water Level
0						SP/ SM	Brown, gravelly, medium SAND with silt and organics (roots) (no odor, no sheen) (loose, moist) [Fill]	
						SP	Analytical sample M-FA-103 (0-1) collected at 11:10 from 1-2 ft. bgs	
2	1	d3		0.3			Brown, fine to medium SAND with trace silt (no odor, no sheen) (medium dense, moist) [Fill]	ATD
						SM	Analytical sample M-FA-103 (1-2) collected at 11:12 from 2-3 ft. bgs	
4							Analytical sample M-FA-103 (2-3) collected at 11:14 from 3-4 ft. bgs	
6							Brown, silty fine to medium SAND with trace wood and shell fragments (no odor, no sheen) (medium dense, wet) [Hydraulic Fill]	
8	2	d3		0.1				
10								
12	3	d3		0.1				
14								
16								
18								
20								

Boring Completed 12/02/10
Total Depth of Boring = 12.0 ft.

Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

0147029.500.610 6/17/11 N:\PROJECTS\147029.500.610.GPJ SOIL BORING LOG

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Log of Boring M-FA-103

Figure
A-29

M-FA-104

SAMPLE DATA				SOIL PROFILE			GROUNDWATER
Depth (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	PID (ppm)	Graphic Symbol	USCS Symbol	Drilling Method: GeoprobeTM Ground Elevation (ft):	Water Level
0						AC	Asphalt	
						SP	Grey, fine to medium SAND with trace silt, white shell fragments, and wood fragments (no odor, no sheen) (medium dense, moist to wet) [Hydraulic Fill]	
2	1	d3		0.0			Analytical sample M-FA-104 (0-1) collected at 11:40 from 0.5-1.5 ft. bgs Analytical sample M-FA-104 (1-2) collected at 11:42 from 1.5-2.5 ft. bgs Analytical sample M-FA-104 (2-3) collected at 11:44 from 2.5-3.5 ft. bgs	
4								▽ ATD
6								
8	2	d3		0.0				
10								
12	3	d3		0.0				

Boring Completed 11/22/10
Total Depth of Boring = 12.0 ft.

14
16
18
20

Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

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Log of Boring M-FA-104

Figure
A-30

M-FA-105

SAMPLE DATA				SOIL PROFILE			GROUNDWATER
Depth (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	PID (ppm)	Graphic Symbol	USCS Symbol	Drilling Method: GeoprobeTM Ground Elevation (ft):	Water Level
0						SP/ SM	Gray, fine to medium SAND with silt, shell fragments, organics, and dispersed wood fragments (no odor, no sheen) (medium dense, wet) [Hydraulic fill]	ATD
							Analytical sample M-FA-105 (0-1) collected at 11:00 from 0-1 ft. bgs	
2	1	d3		0.0				
4							Analytical sample M-FA-105 (4-5) collected at 11:10 from 4-5 ft. bgs	
6								
8	2	d3		0.0				
10								
12	3	d3		0.0				
14							-No Recovery from 15-20 ft. bgs	
16								
18		d3		N/A				
20								

Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

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Log of Boring M-FA-105

Figure
A-31
(1 of 2)

M-FA-105

SAMPLE DATA				SOIL PROFILE			GROUNDWATER
Depth (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	PID (ppm)	Graphic Symbol	USCS Symbol	Drilling Method: GeoprobeTM Ground Elevation (ft):	Water Level
20						SP	Gray, coarse SAND with occasional silt and gravel (no odor, no sheen) (medium dense, wet) [Native Soil]	
22		d3		0.0				
24								
26								
28								
30								
32								
34								
36								
38								
40								

Boring Completed 01/28/11
Total Depth of Boring = 25.0 ft.

Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

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Log of Boring M-FA-105

Figure
A-31
(2 of 2)

M-FA-106

SAMPLE DATA				SOIL PROFILE			GROUNDWATER
Depth (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	PID (ppm)	Graphic Symbol	USCS Symbol	Drilling Method: GeoprobeTM Ground Elevation (ft):	Water Level
0						SP/ SM	Gray, fine to medium SAND with shellf fragments and silt, silt lenses (mild organic odor, no sheen) (medium dense, wet) [Hydraulic Fill]	ATD
2	1	d3		0.0			Analytical sample M-FA-106 (0-1) collected at 9:50 from 0-1 ft. bgs	
4							Analytical sample M-FA-106 (4-5) collected at 10:00 from 4-5 ft. bgs	
6								
8	2	d3		0.0				
10								
12	3	d3		0.0				
14								
16								
18	4	d3		0.0				
20								

Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

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Log of Boring M-FA-106

Figure
A-32
(1 of 2)

M-FA-106

SAMPLE DATA				SOIL PROFILE			GROUNDWATER
Depth (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	PID (ppm)	Graphic Symbol	USCS Symbol	Drilling Method: GeoprobeTM Ground Elevation (ft):	Water Level
20	5	d3		0.0		SP	Brown, medium to coarse SAND with trace silt (no odor, no sheen) (medium dense, wet) [Native Soil]	

Boring Completed 01/28/11
Total Depth of Boring = 21.0 ft.

22
24
26
28
30
32
34
36
38
40

Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

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Log of Boring M-FA-106

Figure
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(2 of 2)

M-FA-107

SAMPLE DATA				SOIL PROFILE			GROUNDWATER
Depth (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	PID (ppm)	Graphic Symbol	USCS Symbol	Drilling Method: GeoprobeTM Ground Elevation (ft):	Water Level
0						SP/ SM	Gray, fine to medium SAND with silt, shell fragments, and dispursed wood fragments (no odor, no sheen) (medium dense, wet) [Hydraulic fill]	ATD
2	1	d3		0.0			Analytical sample M-FA-107 (0-1) collected at 12:00 from 0-1 ft. bgs	
4							Analytical sample M-FA-107 (4-5) collected at 12:10 from 4-5 ft. bgs	
6								
8	2	d3		0.0				
10								
12						ML	Gray, sandy SILT (no odor, no sheen) (medium stiff, wet) [Hydraulic fill]	
14	3	d3		0.0		SM	Gray, silty, fine to medium SAND with dispursed wood fragments and trace shell fragments (no odor, no sheen) (medium dense, wet) [Hydraulic fill]	
16								
18	4	d3		0.0				
20								

Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

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Log of Boring M-FA-107

Figure
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(1 of 2)

M-FA-107

SAMPLE DATA				SOIL PROFILE			GROUNDWATER
Depth (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	PID (ppm)	Graphic Symbol	USCS Symbol	Drilling Method: GeoprobeTM Ground Elevation (ft):	Water Level
20						SM	Gray, silty, fine to medium SAND with dispursed wood fragments and trace shell fragments (no odor, no sheen) (medium dense, wet) [Hydraulic fill]	
22	5	d3		0.0		SP	Gray, medium to coarse SAND with trace gravel and silt (no odor, no sheen) (medium dense, wet) [Native Soil]	
24								

Boring Completed 01/28/11
Total Depth of Boring = 25.0 ft.

26
28
30
32
34
36
38
40

Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

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Log of Boring M-FA-107

Figure
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(2 of 2)

M-FA-108

SAMPLE DATA				SOIL PROFILE			GROUNDWATER
Depth (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	PID (ppm)	Graphic Symbol	USCS Symbol	Drilling Method: GeoprobeTM Ground Elevation (ft):	Water Level
0						SP/ SM	Gray, fine to medium SAND with silt, shell fragments, and disursed wood fragments (no odor, no sheen) (medium dense, wet) [Hydraulic fill]	ATD
2	1	d3		0.0			Analytical sample M-FA-108 (0-1) collected at 13:50 from 0-1 ft. bgs	
4							Analytical sample M-FA-108 (4-5) collected at 14:00 from 4-5 ft. bgs	
6								
8	2	d3		0.0				
10						ML	Gray, sandy SILT with trace organics (no odor, no sheen) (medium stiff, wet) [Hydraulic fill]	
12	3	d3		0.0				
14								
16								
18								
20								

Boring Completed 01/28/11
Total Depth of Boring = 12.0 ft.

Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

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Log of Boring M-FA-108

Figure
A-34

M-GC-100

SAMPLE DATA				SOIL PROFILE			GROUNDWATER
Depth (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	PID (ppm)	Graphic Symbol	USCS Symbol	Drilling Method: GeoprobeTM Ground Elevation (ft):	Water Level
0						AC	Asphalt	
						SP	Brown, gravelly, medium to coarse SAND (no odor, no sheen) (loose, damp) [Base Coarse Fill]	
2	1	d3		0.0		SP	Brown, gravelly, medium SAND with trace silt (no odor, no sheen) (medium dense, damp to wet) [Fill] Analytical sample M-GC-100 (0-1) collected at 10:00 from 1-2 ft. bgs Analytical sample M-GC-100 (1-2) collected at 10:02 from 2-3 ft. bgs Analytical sample M-GC-100 (2-3) collected at 10:04 from 3-4 ft. bgs	▽ ATD
6	2	d3		0.0		SP/ SM	Gray, fine to medium SAND with silt and shell fragments (no odor, no sheen) (medium dense, wet) [Hydraulic Fill]	
10	3	d3		0.0				
12								

Boring Completed 11/30/10
Total Depth of Boring = 12.0 ft.

Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

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Everett, Washington

Log of Boring M-GC-100

Figure
A-35

M-GC-101

SAMPLE DATA				SOIL PROFILE			GROUNDWATER
Depth (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	PID (ppm)	Graphic Symbol	USCS Symbol	Drilling Method: GeoprobeTM Ground Elevation (ft):	Water Level
0						AC	Asphalt	
						SP	Brown, gravelly, medium to coarse SAND (no odor, no sheen) (loose, damp) [Base Coarse Fill]	
						SM		
2						SP	Brown, silty fine SAND with trace gravel (no odor, no sheen) (dense, damp) [Fill]	
	1	d3		0.0			Analytical sample M-GC-101 (0-1) collected at 0930 from 1-2 ft. bgs	
4							Brown, fine to medium SAND with trace silt (no odor, no sheen) (medium dense, moist to wet) [Fill]	▽ ATD
							Analytical sample M-GC-101 (1-2) collected at 09:32 from 2-3 ft. bgs	
6							Analytical sample M-GC-101 (2-3) collected at 09:34 from 3-4 ft. bgs	
						SP	Gray, fine to medium SAND with trace silt (no odor, no sheen) (medium dense, wet) [Hydraulic Fill]	
	2	d3		0.0				
8								
10						SP/ SM	Gray, fine to medium SAND with silt and shell fragments (no odor, no sheen) (medium dense, wet) [Hydraulic Fill]	
	3	d3		0.0				
12								

Boring Completed 11/30/10
Total Depth of Boring = 12.0 ft.

Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

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Ameron-Hulbert Upland Investigation Everett, Washington	Log of Boring M-GC-101	Figure A-36

M-GC-102

SAMPLE DATA				SOIL PROFILE			GROUNDWATER
Depth (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	PID (ppm)	Graphic Symbol	USCS Symbol	Drilling Method: GeoprobeTM Ground Elevation (ft):	Water Level
0						AC	Asphalt	
						SP	Brown, gravelly, medium to coarse SAND (no odor, no sheen) (loose, damp) [Base Coarse Fill]	
						SP	Brown, fine to medium SAND with gravel and trace silt (no odor, no sheen) (medium dense, damp) [Fill]	
2	1	d3		0.0			Analytical sample M-GC-102 (0-1) collected at 08:10 from 1-2 ft. bgs	
						SP	Analytical sample M-GC-102 (1-2) collected at 08:12 from 2-3 ft. bgs	
4							Analytical sample M-GC-102 (2-3) collected at 08:14 from 3-4 ft. bgs	ATD
6							Brown, fine to medium SAND with shell fragments and trace silt (no odor, no sheen) (medium dense, moist to wet) [Hydraulic Fill]	
8	2	d3		0.0			Analytical sample M-GC-102 (6-7) collected at 08:16 from 7-8 ft. bgs -Decreasing shell fragments from 8-13 ft. bgs	
10								
12	3	d3		0.0				
14						ML	Gray, sandy SILT with trace organics (no odor, no sheen) (medium stiff, moist) [Hydraulic Fill]	
16						SM	Gray, silty, fine SAND with trace shell fragments and organics (no odor, no sheen) (medium dense, wet) [Hydraulic Fill]	
18	4	d3		0.0				
20						SP		

Notes:
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3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

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Everett, Washington

Log of Boring M-GC-102

Figure
A-37
(1 of 2)

M-GC-102

SAMPLE DATA				SOIL PROFILE			GROUNDWATER
Depth (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	PID (ppm)	Graphic Symbol	USCS Symbol	Drilling Method: GeoprobeTM Ground Elevation (ft):	Water Level
20						SP	Gray, fine to medium SAND with trace silt and gravel (no odor, no sheen) (medium dense, wet) [Native Soil]	
						SP	Brown, fine to medium SAND (no odor, no sheen) (dense, wet) [Native Soil]	
22	5	d3		0.0				
24								

Boring Completed 11/30/10
Total Depth of Boring = 25.0 ft.

26
28
30
32
34
36
38
40

Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

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Everett, Washington

Log of Boring M-GC-102

Figure
A-37
(2 of 2)

M-GC-103

SAMPLE DATA					SOIL PROFILE			GROUNDWATER
Depth (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	PID (ppm)	Graphic Symbol	USCS Symbol	Drilling Method: GeoprobeTM Ground Elevation (ft):	Water Level
0						AC	Asphalt	
						SP	Brown, gravelly, medium to coarse SAND (no odor, no sheen) (loose, moist) [Base Coarse Fill]	
						SP		
2	1	d3		0.0			Brown, fine to medium SAND with trace silt (no odor, no sheen) (medium dense, moist to wet) [Fill]	▽ ATD
							Analytical sample M-GC-103 (0-1) collected at 13:35 from 1-2 ft. bgs	
4							Analytical sample M-GC-103 (1-2) collected at 13:37 from 2-3 ft. bgs	
						SP	Analytical sample M-GC-103 (2-3) collected at 13:37 from 3-4 ft. bgs	
6	2	d3		0.0			Gray, fine to medium SAND with shell fragments and trace silt (no odor, no sheen) (medium dense, wet) [Hydraulic Fill]	
8								
10	3	d3		0.0				
12								
14								
16								
18								
20								

Boring Completed 12/17/10
Total Depth of Boring = 12.0 ft.

Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

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Log of Boring M-GC-103

Figure
A-38

M-GC-104

SAMPLE DATA				SOIL PROFILE			GROUNDWATER
Depth (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	PID (ppm)	Graphic Symbol	USCS Symbol	Drilling Method: GeoprobeTM Ground Elevation (ft):	Water Level
0						AC	Asphalt	
						GP	Brown, sandy, 0.5 inch diameter GRAVEL (no odor, no sheen) (medium dense, damp) [Base Coarse Fill]	
2						SP/ SM		
	1	d3		0.0		SP	Brown, fine to medium SAND with silt and gravel (no odor, no sheen) (medium dense, damp) [Fill]	
							Analytical sample M-GC-104 (0-1) collected at 08:15 from 1.5-2.5 ft. bgs	
4							Brown, fine to medium SAND with trace silt and shell fragments (no odor, no sheen) (medium dense, damp to wet) [Hydraulic Fill]	
6							Analytical sample M-GC-104 (1-2) collected at 08:17 from 2.5-3.5 ft. bgs	▽ ATD
							Analytical sample M-GC-104 (2-3) collected at 08:19 from 3.5-4.5 ft. bgs	
	2	d3		0.0		SP/ SM	Gray, fine SAND with silt and shell fragments, and trace wood fragments (no odor, no sheen) (medium dense, wet) (Hydraulic Fill]	
8								
10							-Increased shell fragments from 10-12 ft.	
	3	d3		0.0				
12								

Boring Completed 12/02/10
Total Depth of Boring = 12.0 ft.

14
16
18
20

Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

0147029.500.610 6/17/11 N:\PROJECTS\147029.500.610.GPJ SOIL BORING LOG

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Everett, Washington

Log of Boring M-GC-104

Figure
A-39

M-GC-105

SAMPLE DATA				SOIL PROFILE			GROUNDWATER
Depth (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	PID (ppm)	Graphic Symbol	USCS Symbol	Drilling Method: GeoprobeTM Ground Elevation (ft):	Water Level
0						SP/SM / SP/SM	Reddish Brown, fine to medium SAND with wood debris and silt (organic ordor, no sheen) (loose, wet) [Fill] Analytical sample M-GC-105 (0-0.2) collected at 14:05 from 0-0.2 ft. bgs	ATD
2	1	d3		0.0			Brown, fine to medium SAND with silt (no odor, no sheen) (medium dense, wet) [Fill] Analytical sample M-GC-105 (0.5-1.5) collected at 14:50 from 0.5-1.5 ft. bgs	
4						SP/SM	Gray, fine to medium SAND with silt, shell fragments, and dispursed wood fragments (no odor, no sheen) (medium dense, wet) [Fill] Analytical sample M-GC-105 (4-5) collected at 14:55 from 4-5 ft. bgs	
6								
8	2	d3		0.0				
10								
12	3	d3		0.0				
14						ML	Gray, sandy, SILT with trace oragnics (no odor, no sheen) (medium stiff, wet) [Hydraulic fill]	
16								
18								
20								

Boring Completed 01/28/11
Total Depth of Boring = 15.0 ft.

Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

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Log of Boring M-GC-105

Figure
A-40

M-GC-106

SAMPLE DATA				SOIL PROFILE			GROUNDWATER
Depth (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	PID (ppm)	Graphic Symbol	USCS Symbol	Drilling Method: GeoprobeTM Ground Elevation (ft):	Water Level
0						SP/SM	Brown, gravelly, fine to medium SAND with silt (no odor, no sheen) (medium dense, damp) [Fill]	
							Analytical sample M-GC-106 (0-1) collected at 09:05 from 0-1 ft. bgs	
2							Analytical sample M-GC-106 (1-2) collected at 09:07 from 1-2 ft. bgs	
	1	d3		0.0			Analytical sample M-GC-106 (2-3) collected at 09:09 from 2-3 ft. bgs	
4						SP/SM	Brown, fine to medium SAND with silt and trace gravel and shell fragments (no odor, no sheen) (medium dense, damp) [Hydraulic Fill]	
6						SP/SM	Dark gray, fine to medium SAND with silt and trace gravel (slight organic odor, no sheen) (medium dense, damp to moist) [Hydraulic Fill]	
						SP	Gray, fine to medium SAND with trace silt and shell fragments (no odor, no sheen) (medium dense, wet) [Hydraulic Fill]	▽ ATD
	2	d3		0.0				
8								
10								
12								
	3	d3		0.0				
14								
16								
	4	d3		0.0			-With wood fragments, increasing shell fragments from 17-18 ft.	
18						ML	Gray, sandy, SILT with decaying wood fragments (no odor, no sheen) (medium stiff, wet) [Native Soil]	
20								

Notes:
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2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

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Log of Boring M-GC-106

Figure
A-41
(1 of 2)

M-GC-106

SAMPLE DATA				SOIL PROFILE			GROUNDWATER
Depth (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	PID (ppm)	Graphic Symbol	USCS Symbol	Drilling Method: GeoprobeTM Ground Elevation (ft):	Water Level
20						ML	Gray, sandy, SILT with decaying wood fragments (no odor, no sheen) (medium stiff, wet) [Native Soil]	
22	5	d3		0.0				
24						SP/ SM	Gray, fine SAND with silt and shell fragments and trace wood fragments and shell fragments (no odor, no sheen) (medium dense, wet) [Native Soil]	
26							-No recovery, moved boring 1 ft. east, advanced boring M-GC-106B	
28	6	d3		0.0				
30								

Boring Completed 12/02/10
Total Depth of Boring = 30.0 ft.

32
34
36
38
40

Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

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Everett, Washington

Log of Boring M-GC-106

Figure
A-41
(2 of 2)

M-GC-106B

SAMPLE DATA				SOIL PROFILE			GROUNDWATER
Depth (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	PID (ppm)	Graphic Symbol	USCS Symbol	Drilling Method: GeoprobeTM Ground Elevation (ft):	Water Level
0							-See boring log M-GC-106 for subsurface conditions from 0-25 ft.	
2								
4								
6								▽ ATD
8								
10								
12								
14								
16								
18								
20								

Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

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Log of Boring M-GC-106B

Figure
A-42
(1 of 2)

M-GC-106B

SAMPLE DATA				SOIL PROFILE			GROUNDWATER
Depth (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	PID (ppm)	Graphic Symbol	USCS Symbol	Drilling Method: GeoprobeTM Ground Elevation (ft):	Water Level
20							-See boring log M-GC-106 for subsurface conditions from 0-25 ft.	
22								
24								
26							-No recovery	
28	4	d3		0.0				
30						SP	Gray, medium SAND with trace silt (no odor, no sheen) (medium dense, wet) [Native Soil]	
32	5	d3		0.0				
34								
36								
38								
40								

Boring Completed 12/02/10
Total Depth of Boring = 35.0 ft.

Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

0147029.500.610 6/17/11 N:\PROJECTS\147029.500.610.GPJ SOIL BORING LOG

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Log of Boring M-GC-106B

Figure
A-42
(2 of 2)

N-FA-100

SAMPLE DATA				SOIL PROFILE			GROUNDWATER
Depth (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	PID (ppm)	Graphic Symbol	USCS Symbol	Drilling Method: GeoprobeTM Ground Elevation (ft):	Water Level
0						AC	Asphalt	
						SM	Gray, silty, fine SAND with wood fragments (no odor, no sheen) (medium dense, wet) [Fill]	
2	1	d3		0.0			Analytical sample N-FA-100 (0-1) collected at 08:30 from 0.3-1.3 ft. bgs Analytical sample N-FA-100 (1-2) collected at 08:32 from 1.3-2.3 ft. bgs Analytical sample N-FA-100 (2-3) collected at 08:34 from 2.3-3.3 ft. bgs	
4						SM/ ML	Gray, sandy, SILT (no odor, no sheen) (medium stiff, moist) [Fill]	ATD
						SM	Gray, silty, fine SAND with shell fragments (no odor, no sheen) (medium dense, moist to wet) [Hydraulic Fill]	
6								
8	2	d3		0.0				
10						SM	Dark brown, organic rich, silty, fine SAND and wood fragments (no odor, no sheen) (loose, wet) [Hydraulic Fill]	
12								
14								
16								
18								
20								

Boring Completed 12/01/10
Total Depth of Boring = 10.0 ft.

Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

0147029.500.610 6/17/11 N:\PROJECTS\147029.500.610.GPJ SOIL BORING LOG

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Log of Boring N-FA-100

Figure
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N-FA-101

SAMPLE DATA				SOIL PROFILE			GROUNDWATER
Depth (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	PID (ppm)	Graphic Symbol	USCS Symbol	Drilling Method: GeoprobeTM Ground Elevation (ft):	Water Level
0						AC	Asphalt	
						SP/ SM	Gray, fine to medium SAND with silt, trace shell fragments, and trace organics (no odor, no sheen) (medium dense, damp) [Hydraulic Fill]	
2	1	d3		0.0		SM	Brown, silty, fine to medium SAND with organics and trace gravel (no odor, no sheen) (medium dense, damp to moist) [Hydraulic Fill] -Hard, tan, concrete-like material fragment at 3 ft.	
4						SP	Analytical sample N-FA-101 (3-4) collected at 09:10 from 3-4 ft. bgs	
6							Gray, fine to medium SAND with shell fragments and trace silt (no odor, no sheen) (medium dense, damp to wet) [Hydraulic Fill] Analytical sample N-FA-101 (4-5) collected at 09:12 from 4-5 ft. bgs	ATD
8	2	d3		0.0		WD	Brown, fine decomposed WOOD and roots (no odor, no sheen) (medium dense, damp) [Fill]	
10							-Brown solid WOOD from 9.5-10 ft.	

Boring Completed 12/01/10
Total Depth of Boring = 10.0 ft.

Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

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Everett, Washington

Log of Boring N-FA-101

Figure
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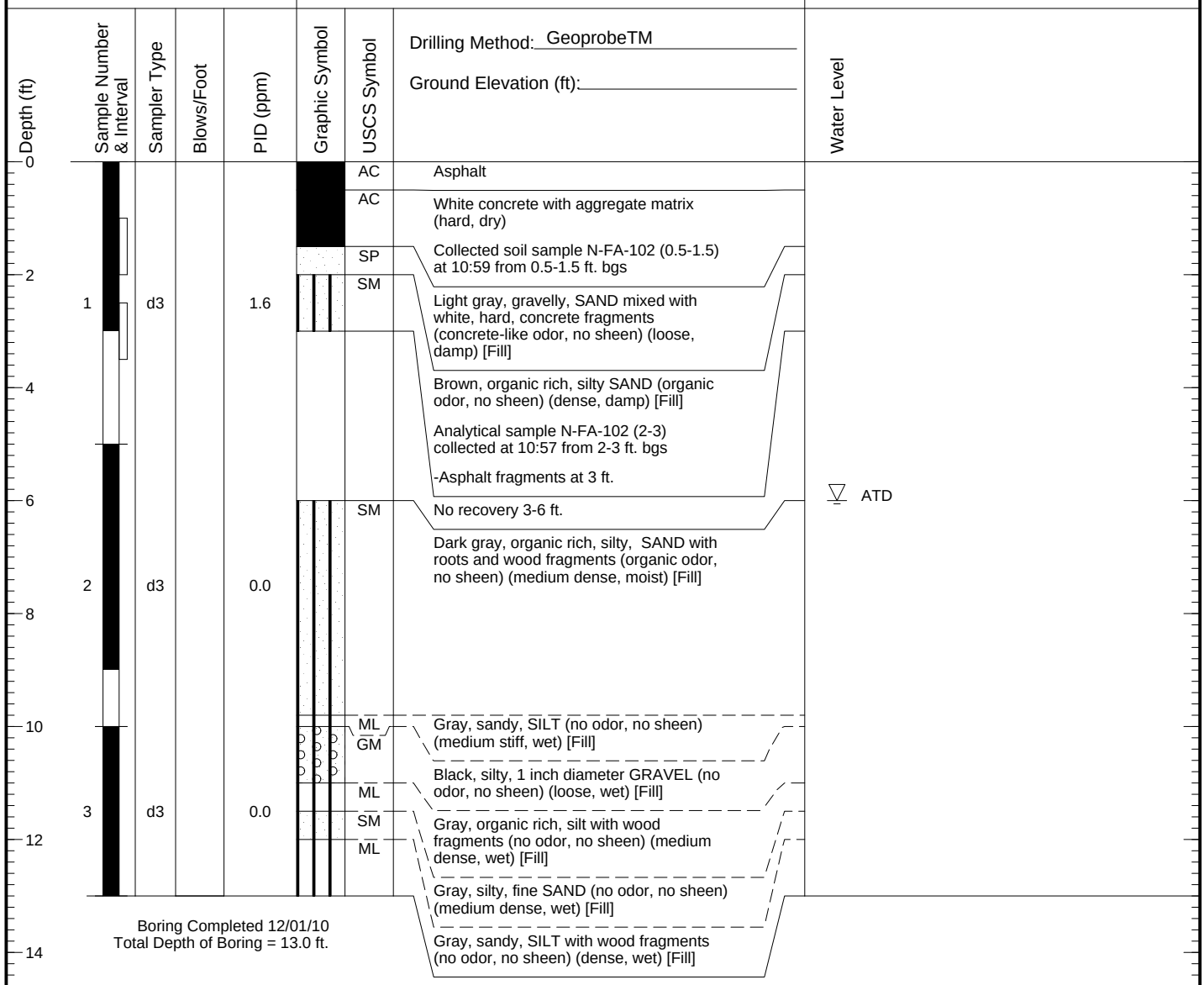
N-FA-102



Notes:
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3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

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Ameron-Hulbert Upland Investigation Everett, Washington	Log of Boring N-FA-102	Figure A-45

N-FA-103

SAMPLE DATA				SOIL PROFILE			GROUNDWATER
Depth (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	PID (ppm)	Graphic Symbol	USCS Symbol	Drilling Method: GeoprobeTM Ground Elevation (ft):	Water Level
0						AC	Asphalt	
						AC	White concrete with aggregate matrix (concrete-like odor) (hard, dry)	
2							Analytical sample N-FA-103 (1-2) collected at 09:55 from 1.3-2.3 ft. bgs	
	1	d3		0.0				
						SM	Black, silty, fine SAND with decomposing wood (mild decomposition odor, no sheen) (medium dense, damp to moist) [Fill]	
4						SM		
							Gray, silty, fine SAND with trace organics (no odor, no sheen) (medium dense, moist) [Fill]	
						WD	Analytical sample N-FA-103 (4-5) collected at 09:57 from 4.3-5.3 ft. bgs	
6							Decomposing WOOD and wood fragments [Fill]	ATD
	2	d3		0.0			Analytical sample N-FA-103 (6-7) collected at 10:01 from 6.3-7.3 ft. bgs	
8							-Sheen on sampler and organic odor from 7-8.3 ft. bgs	
							Analytical sample N-FA-103 (7-8) collected at 09:59 from 7.3-8.3 ft. bgs	
10							No recovery 8.3-12 ft.	
	3	d3		0.0				
12								

Boring Completed 12/01/10
Total Depth of Boring = 12.0 ft.

14
16
18
20

Notes:
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Everett, Washington

Log of Boring N-FA-103

Figure
A-46

N-FA-103B

SAMPLE DATA | **SOIL PROFILE** | **GROUNDWATER**

Drilling Method: GeoprobeTM

Ground Elevation (ft):

Depth (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	PID (ppm)	Graphic Symbol	USCS Symbol	Soil Description	Water Level
0						AC	Asphalt	
						AC	White concrete with aggregate matrix (hard, dry)	
						SM	Black, organic rich, silty SAND (organic odor, no sheen) (medium dense, damp) [Fill]	
2	1	d3		0.0		AC		
						WD	White, concrete with aggregate matrix (hard, dry)	
4							Black, decomposing WOOD and wood fragments (organic odor, no sheen) (medium dense, damp to wet) [Fill]	
6								ATD
	2	d3		0.0			Analytical sample N-FA-103B (6-7) collected at 12:30 and N-FA-203B (6-7) at 12:34 from 6.3-7.3 ft. bgs	
8							No recovery from 8.5-10 ft. bgs	
10						SP	Gray, fine SAND with silt (no odor, no sheen) (medium dense, wet) [Fill]	
	3	d3		0.0		WD	Analytical sample N-FA-103B (10-11) collected at 12:32 from 10.3-11.3 ft. bgs	
12						ML	Brown, fine WOOD fragments with silt [Fill]	
							Gray, SILT with sand and wood fragments (organic odor, organic sheen on sampler) (medium stiff, damp) [Fill]	
14								
16								
18								
20								

Boring Completed 12/01/10
Total Depth of Boring = 12.0 ft.

Notes:
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2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

0147029.500.610 6/17/11 N:\PROJECTS\147029.500.610.GPJ SOIL BORING LOG

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Everett, Washington

Log of Boring N-FA-103B

Figure
A-47

RI-MW-4 (Boring)

SAMPLE DATA				SOIL PROFILE			GROUNDWATER
Depth (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	PID (ppm)	Graphic Symbol	USCS Symbol	Drilling Method: GeoprobeTM Ground Elevation (ft):	Water Level
0						AC	Asphalt	
						SP/ SM	Brown, silty, fine to medium SAND with gravel (no odor, no sheen) (dense, damp) [Fill]	
2	1	d3		0.0				
4								
6								ATD
						SP/ SM	Brown, fine to medium SAND with silt, trace gravel, and trace shell fragments (no odor, no sheen) (medium dense, wet) [Hydraulic Fill]	
8		d3		0.0			Gray from 7-12 ft. bgs	
10								
12						SM	-Gray, silty, fine SAND with trace shell fragments, and trace wood fragments (no odor, no sheen) (medium dense, wet) [Hydraulic Fill]	
14		d3		0.0				
16								
18		d3		0.0		SM	Gray, sandy, SILT with trace shell fragments and trace wood fragments (no odor, no sheen) (dense to medium dense, moist) [Hydraulic Fill]	
20								

Notes:
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3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

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Log of Boring RI-MW-4 (Boring)

Figure
A-48
(1 of 2)

RI-MW-4 (Boring)

SAMPLE DATA				SOIL PROFILE			GROUNDWATER
Depth (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	PID (ppm)	Graphic Symbol	USCS Symbol	Drilling Method: GeoprobeTM Ground Elevation (ft):	Water Level
20						SP/SM	Gray, fine to medium SAND with Silt and trace wood fragments (no odor, no sheen) (medium dense, wet) [Hydraulic Fill]	
22		d3		0.0				
24						SM	Gray, silty, fine SAND, trace shell fragments and wood fragments (no odor, no sheen) (medium dense, wet) [Hydraulic Fill]	
26								
28		d3		0.0		SP/SM	Gray, fine to medium SAND, with silt, trace shell fragments and organics (no odor, no sheen) (medium dense, wet) [Native Soil]	
30								

Boring Completed 12/01/10
Total Depth of Boring = 30.0 ft.

32
34
36
38
40

Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

0147029.500.610 6/17/11 N:\PROJECTS\147029.500.610.GPJ SOIL BORING LOG

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Log of Boring RI-MW-4 (Boring)

Figure
A-48
(2 of 2)

Test Pit Logs

G-FA-104

SAMPLE DATA					SOIL PROFILE			GROUNDWATER
Depth (ft)	Elevation (ft)	Sample Number & Interval	Sampler Type	PID (ppm)	Graphic Symbol	USCS Symbol	Excavation Method: Rubber-tired Backhoe Ground Elevation (ft): Logged By: PRR	
0						SP/SM	Brown, organic rich, fine SAND with gravel and silt (no odor, no sheen) (loose, damp) [Fill]	Groundwater not encountered.
						SP/SM	Brown, fine to medium SAND with silt and pockets of black, sand-size, granular material (apparent sandblast grit) (no odor, no sheen) (medium dense, moist) [Fill]	
				0.0		SP/SM	Analytical sample G-FA-104 (0-1) collected at 14:10 from 0-1 ft. bgs	
				0.0			Brown to gray, fine to medium SAND with silt (no odor, no sheen) (medium dense, moist) [Hydraulic Fill]	
2			d5	0.0			Analytical sample G-FA-104 (1-2) collected at 14:12 from 1-2 ft. bgs	
							Analytical sample G-FA-104 (2-3) collected at 14:14 from 2-3 ft. bgs	
				0.0				
						WD	Brown, decomposing fragments of WOOD with sand (organic odor, no sheen) (loose, moist) [Fill]	
4								

Test Pit Completed 12/06/10
Total Depth of Test Pit = 4.0 ft.

6

8

Notes:
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3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

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Log of Test Pit G-FA-104

Figure
A-49

G-FA-105

SAMPLE DATA				SOIL PROFILE			GROUNDWATER
Depth (ft)	Elevation (ft)	Sample Number & Interval	Sampler Type	PID (ppm)	Graphic Symbol	USCS Symbol	

Excavation Method: Rubber-tired Backhoe

Ground Elevation (ft): _____

Logged By: PRR

Depth (ft)	Sample Number & Interval	Sampler Type	PID (ppm)	USCS Symbol	
0					Brown, organic rich, fine to medium SAND (no odor, no sheen) (loose, damp) [Fill]
				SP/ SM	Black, sand size, granular material (apparent sandblast grit) (no odor, no sheen) (loose, damp) [Fill]
				SP/ SM	Analytical sample G-FA-105 (0.3-0.8) collected at 13:20 from 0.3-0.8 ft. bgs
	1				Brown, fine to medium SAND with silt and trace wood fragments (no odor, no sheen) (medium dense, damp) [Fill]
					Analytical sample G-FA-105 (1-2) collected at 13:22 from 1-2 ft. bgs
2		d5	0.0	SM	Gray, silty, fine SAND (no odor, no sheen) (medium dense, damp) [Fill]
				OL	Black, organic SILT (no odor, no sheen) (soeft to medium stiff, slightly moist)
				SP	Gray, fine to medium SAND with trace silt (no odor, no sheen) (medium dense, moist to wet) [Hydraulic Fill]
4					▽ ATD
6					
8					

Test Pit Completed 12/06/10
Total Depth of Test Pit = 4.5 ft.

Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

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Log of Test Pit G-FA-105

Figure
A-50

G-FA-106

SAMPLE DATA					SOIL PROFILE			GROUNDWATER
Depth (ft)	Elevation (ft)	Sample Number & Interval	Sampler Type	PID (ppm)	Graphic Symbol	USCS Symbol	Excavation Method: Rubber-tired Backhoe Ground Elevation (ft): Logged By: PRR	
0						SP	Black, sand-size, granular material (apparent sandblast grit) with gravel and organics (no odor, no sheen) (loose, damp) [Fill]	
				0.0			Analytical sample G-FA-106 (1-1.2) collected at 09:36 from 1-1.2 ft. bgs	
				0.0			Analytical sample G-FA-106 (1-1.5) collected at 09:32 from 1-1.5 ft. bgs	
2						SP	Brown, fine to medium SAND with wood fragments and tan and orange colored, layered, hard, angular, concrete-like fragments, areas of black, sand-sized, granular material (apparent sandblast grit) (no odor, no sheen) (medium dense, damp to moist) [Fill]	
			d5					
				0.0			Analytical sample G-FA-106 (3-3.5) collected at 09:34 from 3-3.5 ft. bgs	
4								
						SP	Gray, fine to medium SAND; no odor, no sheen (medium dense, moist to wet) [Hydraulic Fill]	▽ ATD
				0.0			Analytical sample G-FA-106 (5-5.5) at 09:30 from 5-5.5 ft. bgs	
							Test Pit Completed 12/06/10 Total Depth of Test Pit = 5.5 ft.	
6								
8								

Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

0147029.500.610 6/17/11 N:\PROJECTS\147029.500.610.GPJ SINGLE TEST PIT LOG

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Log of Test Pit G-FA-106

Figure
A-51

G-FA-107

SAMPLE DATA					SOIL PROFILE			GROUNDWATER
Depth (ft)	Elevation (ft)	Sample Number & Interval	Sampler Type	PID (ppm)	Graphic Symbol	USCS Symbol	Excavation Method: Rubber-tired Backhoe Ground Elevation (ft): Logged By: PRR	
0						GP	Brown, gravelly, organic rich, fine to medium SAND with silt, trace black, sand-size, granular material (apparent sandblast grit) (no odor, no sheen) (loose, damp) [Fill]	Groundwater not encountered.
						SP/ SM	Analytical sample G-FA-107 (0-1) collected at 10:40 from 0-1 ft. bgs	
				0.0			Brown, fine to medium SAND with silt and trace gravel (no odor, no sheen) (loose to medium dense, damp to moist) [Hydrualic Fill]	
							Analytical sample G-FA-107 (1-2) collected at 10:42 from 1-2 ft. bgs	
2			d5	0.0				
							Analytical sample G-FA-107 (2-1) collected at 10:44 from 2-3 ft. bgs	
				0.0				
						SP	Gray, fine to medium SAND with trace silt (no odor, no sheen) (medium dense, moist) [Hydraulic Fill]	
4								

Test Pit Completed 12/06/10
Total Depth of Test Pit = 4.0 ft.

6

8

Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

0147029.500.610 6/17/11 N:\PROJECTS\147029.500.610.GPJ SINGLE TEST PIT LOG

LANDAU ASSOCIATES

Ameron-Hulbert Upland Investigation
Everett, Washington

Log of Test Pit G-FA-107

Figure
A-52

G-FA-108

SAMPLE DATA				SOIL PROFILE			GROUNDWATER
Depth (ft)	Elevation (ft)	Sample Number & Interval	Sampler Type	PID (ppm)	Graphic Symbol	USCS Symbol	Excavation Method: Rubber-tired Backhoe Ground Elevation (ft): Logged By: PRR	
0						SP/SM	Brown, organic rich, gravelly, fine to medium SAND with silt, roots (no odor, no sheen) (medium dense, damp) [Fill]	Groundwater not encountered.
						SP/SM	Analytical sample G-FA-108 (0-1)A collected at 11:30 from 0-1 ft. bgs, Analytical sample G-FA-108 (0-1)B collected at 1132 from 0-1 ft. bgs	
				0.0			Brown, fine to medium SAND with silt, trace gravel and wood fragment; no odor, no sheen (medium dense, moist) [Fill]	
			d5			SP	Collected soil sample G-FA-108 (1-2) at 11:34 from 1-2 ft. bgs	
2				0.0			Brown to gray, fine to medium SAND, trace silt; no odor, no sheen (medium dense, moist) [Hydraulic fill]	
				0.0			Collected soil sample G-FA-108 (2-3) at 11:36 from 2-3 ft. bgs	

Test Pit Completed 12/06/10
Total Depth of Test Pit = 3.0 ft.

4

6

8

Notes:
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3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

0147029.500.610 6/17/11 N:\PROJECTS\147029.500.610.GPJ SINGLE TEST PIT LOG

LANDAU ASSOCIATES

Ameron-Hulbert Upland Investigation
Everett, Washington

Log of Test Pit G-FA-108

Figure
A-53

G-FA-109

SAMPLE DATA				SOIL PROFILE			GROUNDWATER
Depth (ft)	Elevation (ft)	Sample Number & Interval	Sampler Type	PID (ppm)	Graphic Symbol	USCS Symbol	Excavation Method: Rubber-tired Backhoe Ground Elevation (ft): Logged By: PRR	
0						SP/SM	Brown, organic rich, gravelly, fine to medium SAND with silt (no odor, no sheen) (medium dense, damp) [Fill]	Groundwater not encountered.
				0.0		SP	Black, sand-size, granular material (apparent sandblast grit) with brown medium sand and trace silt (no odor, no sheen) (loose, damp) [Fill]	
						SP/SM	Analytical sample G-FA-109 (0.5-1) collected at 12:15 from 0.5-1 ft. bgs	
				0.0			Brown, fine to medium SAND with silt, trace gravel, and trace organics (no odor, no sheen) (medium dense, damp) [Fill]	
2			d5				Analytical sample G-FA-109 (1-2) collected at 12:17 from 1-2 ft. bgs	
						ML	Gray, sandy SILT with trace shell fragments and trace wood fragments (no odor, no sheen) (medium stiff, moist) [Hydraulic Fill]	

Test Pit Completed 12/06/10
Total Depth of Test Pit = 3.5 ft.

4

6

8

Notes:
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3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

0147029.500.610 6/17/11 N:\PROJECTS\147029.500.610.GPJ SINGLE TEST PIT LOG

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Ameron-Hulbert Upland Investigation
Everett, Washington

Log of Test Pit G-FA-109

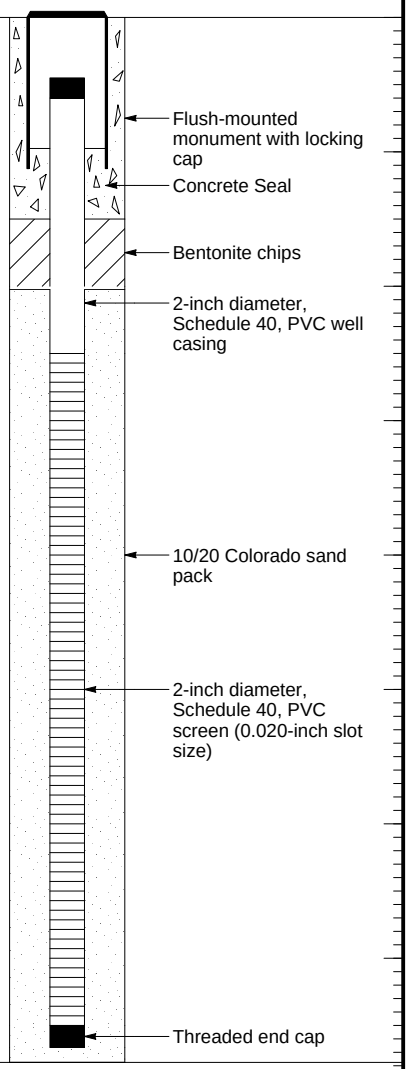
Figure
A-54

Monitoring Well Logs

RI-MW-1

Depth (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	PID (ppm)	Graphic Symbol	USCS Symbol	Drilling Method: Hollow-stem Auger Ground Elevation (ft):	Water Level
0						SP/ SM	Brown, fine to medium SAND with silt and gravel, roots (no odor, no sheen) (medium dense, damp) [Fill]	
6	1	a1	12	0.0		SM	Brown, silty, fine to medium SAND with trace gravel, shell fragments, and root fragments (no odor, no sheen) (loose, moist to wet) [Hydraulic Fill]	ATD
10	2	a1	23	0.0		SP/ SM	Gray, fine to medium SAND with silt and trace shell fragments (no odor, no sheen) (medium dense, wet) [Hydraulic Fill]	
14	3	a1	7	0.0		SM	Gray, sandy, SILT with wood fragments at 15 ft. (no odor, no sheen) (medium stiff, damp) [Hydraulic Fill]	

Boring Completed 12/08/10
Total Depth of Boring = 15.6 ft.



Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

0147029.500.610 6/17/11 N:\PROJECTS\147029.500.610.GPJ WELL LOG

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Ameron-Hulbert Upland Investigation
Everett, Washington

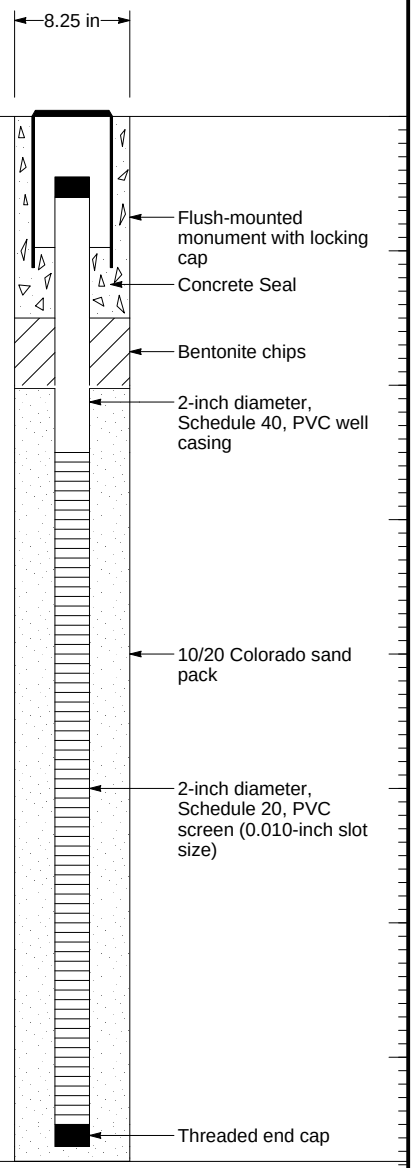
Log of Monitoring Well RI-MW-1

Figure
A-55

RI-MW-2

Depth (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	PID (ppm)	Graphic Symbol	USCS Symbol	Drilling Method: Hollow-stem Auger Ground Elevation (ft):	Water Level
0						AC	Asphalt	
2						SP/ SM	Brown, fine to medium SAND with silt and gravel, roots (no odor, no sheen) (loose to medium dense, damp) [Fill]	
4								
6	1	a1	13	0.0		SP/ SM	Gray, fine to medium SAND with silt, trace wood fragments and trace shell fragments (no odor, no sheen) (medium dense, moist) [Hydraulic Fill]	ATD
8								
10	2	a1	21	0.0			Analytical sample RI-MW-2 (10-11) collected at 14:55 from 10-11 ft. bgs	
12								
14	3	a1	20	0.0				
16								
18								
20								

Monitoring Well Detail
(DOE#: BCM-805)



Boring Completed 12/08/10
Total Depth of Boring = 15.6 ft.

Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

0147029.500.610 6/17/11 N:\PROJECTS\147029.500.610.GPJ WELL LOG

LANDAU ASSOCIATES

Ameron-Hulbert Upland Investigation
Everett, Washington

Log of Monitoring Well RI-MW-2

Figure
A-56

RI-MW-3

SAMPLE DATA | **SOIL PROFILE** | **GROUNDWATER**

Drilling Method: Hollow-stem Auger

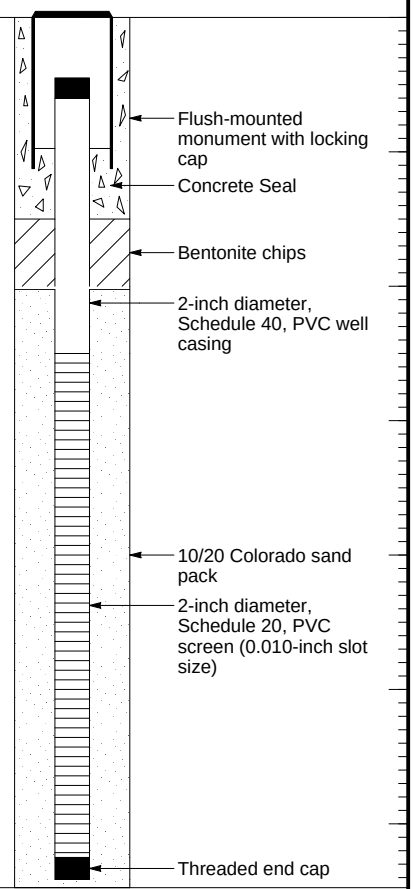
Ground Elevation (ft): _____

Depth (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	PID (ppm)	Graphic Symbol	USCS Symbol	Soil Description
0						SP/ SM	Brown, fine to medium SAND with silt, gravel, trace roots, and trace wood fragments (no odor, no sheen) (loose, moist) [Fill]
6	1	a1	10	0.0			
10	2	a1	4	0.0		SP	Gray, fine to medium SAND with trace silt, shell fragments, and wood fragments (no odor, no sheen) (very loose, wet) [Hydraulic Fill]
13							-Refusal at 13 ft bgs due to boulder

Boring Completed 12/08/10
Total Depth of Boring = 13.0 ft.

Water Level: ATD

Monitoring Well Detail
(DOE#: BCM-803)



Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

0147029.500.610 6/17/11 N:\PROJECTS\147029.500.610.GPJ WELL LOG

LANDAU ASSOCIATES

Ameron-Hulbert Upland Investigation Everett, Washington	Log of Monitoring Well RI-MW-3	Figure A-57

RI-MW-4 Well

SAMPLE DATA | **SOIL PROFILE** | **GROUNDWATER**

Drilling Method: Hollow-Stem Auger

Ground Elevation (ft):

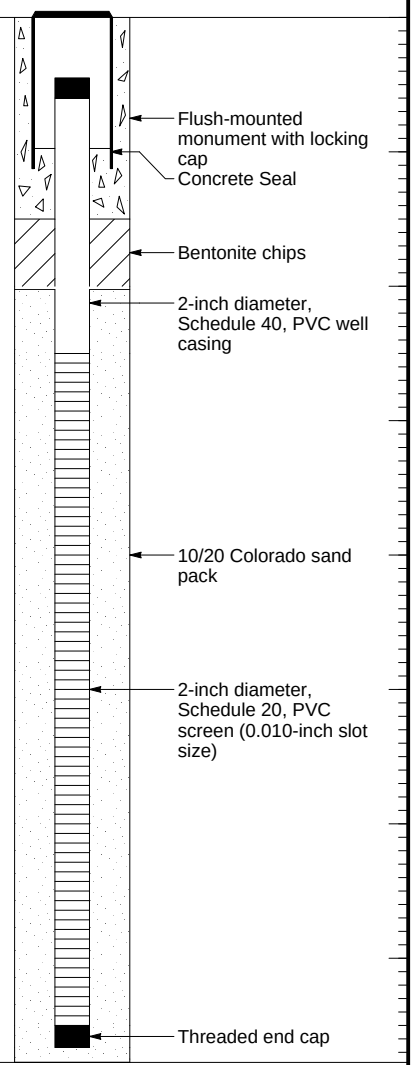
Depth (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	PID (ppm)	Graphic Symbol	USCS Symbol	Water Level
0						AC	
						SP	
8	1	a1	7	0.0			ATD

Asphalt

See RI-MW-4 boring log for soil descrptions from 0-15 ft.

Monitoring Well Detail
(DOE#: BCM-801)

8.25 in



Boring Completed 12/01/10
Total Depth of Boring = 15.6 ft.

Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

0147029.500.610 6/17/11 N:\PROJECTS\147029.500.610.GPJ WELL LOG

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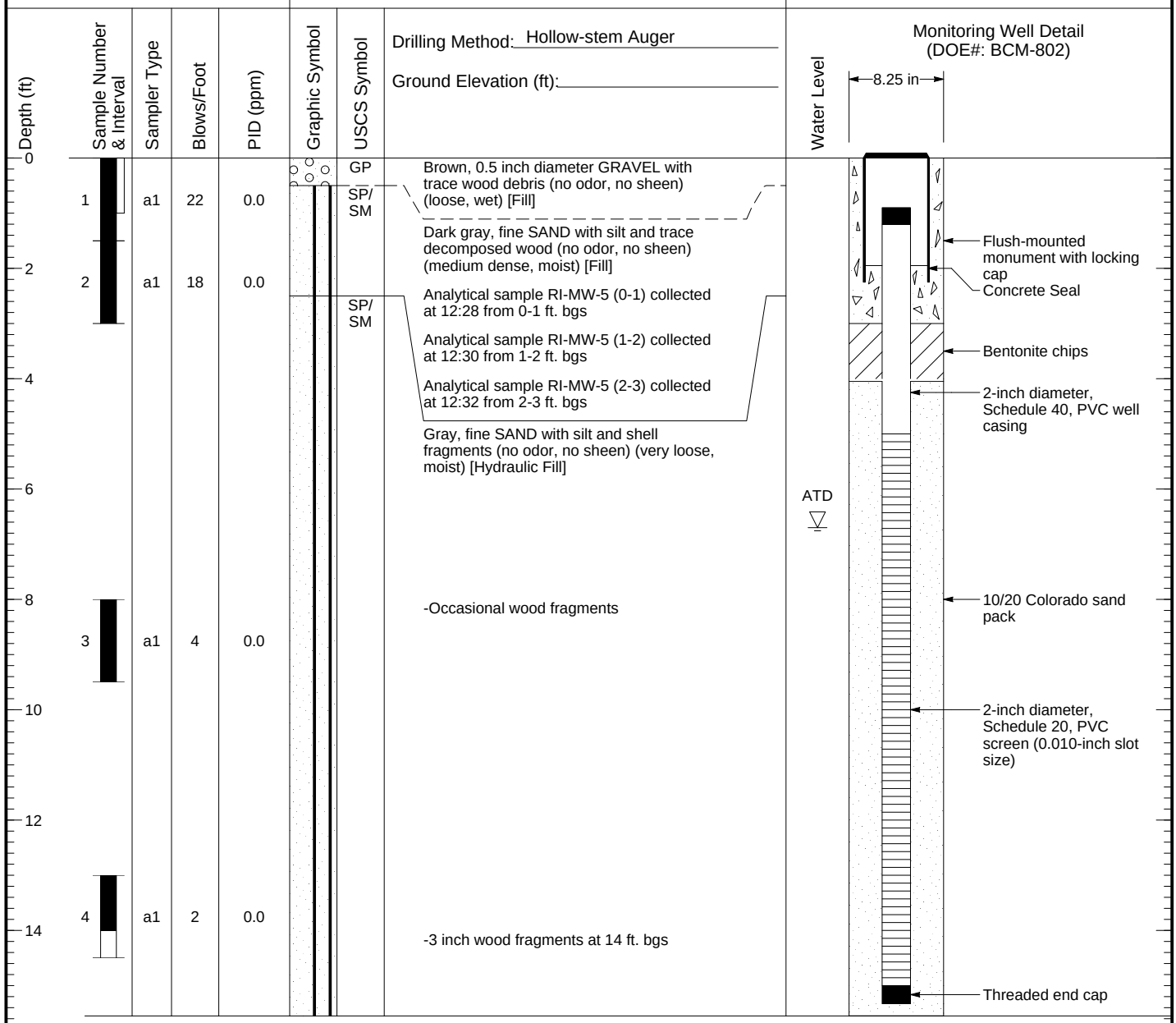
Ameron-Hulbert Upland Investigation Everett, Washington	Log of Monitoring Well RI-MW-4 Well	Figure A-58

RI-MW-5



Boring Completed 12/08/10
Total Depth of Boring = 15.6 ft.

Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

0147029.500.610 6/17/11 N:\PROJECTS\147029.500.610.GPJ WELL LOG

LANDAU ASSOCIATES

Ameron-Hulbert Upland Investigation Everett, Washington	Log of Monitoring Well RI-MW-5	Figure A-59

APPENDIX B

Grain Size Analyses Results

2930 Westlake Ave. N., Suite 100
Seattle, WA 98109
Tel: 206-352-3790
Fax: 206-352-7178
Email: info@fremontanalytical.com

Grain Size by ASTM D422

Project: Ameron/Hulbert RIFS
Client: Landau Associates
Client Project #: 147029.500.610
Lab Project #: CHM101217-8

Percent Retained in each Size Fraction

UOM = percent

Sieve Size (microns)	>19000	19000-12500	12500-9500	9500-4750	4750-850	850-425	425-250	250-150	150-75	75-45	45-34	<34
RI-MW-5 (2-4)	0.00	0.00	0.00	2.90	2.64	2.78	25.41	32.56	22.26	8.87	1.71	0.58

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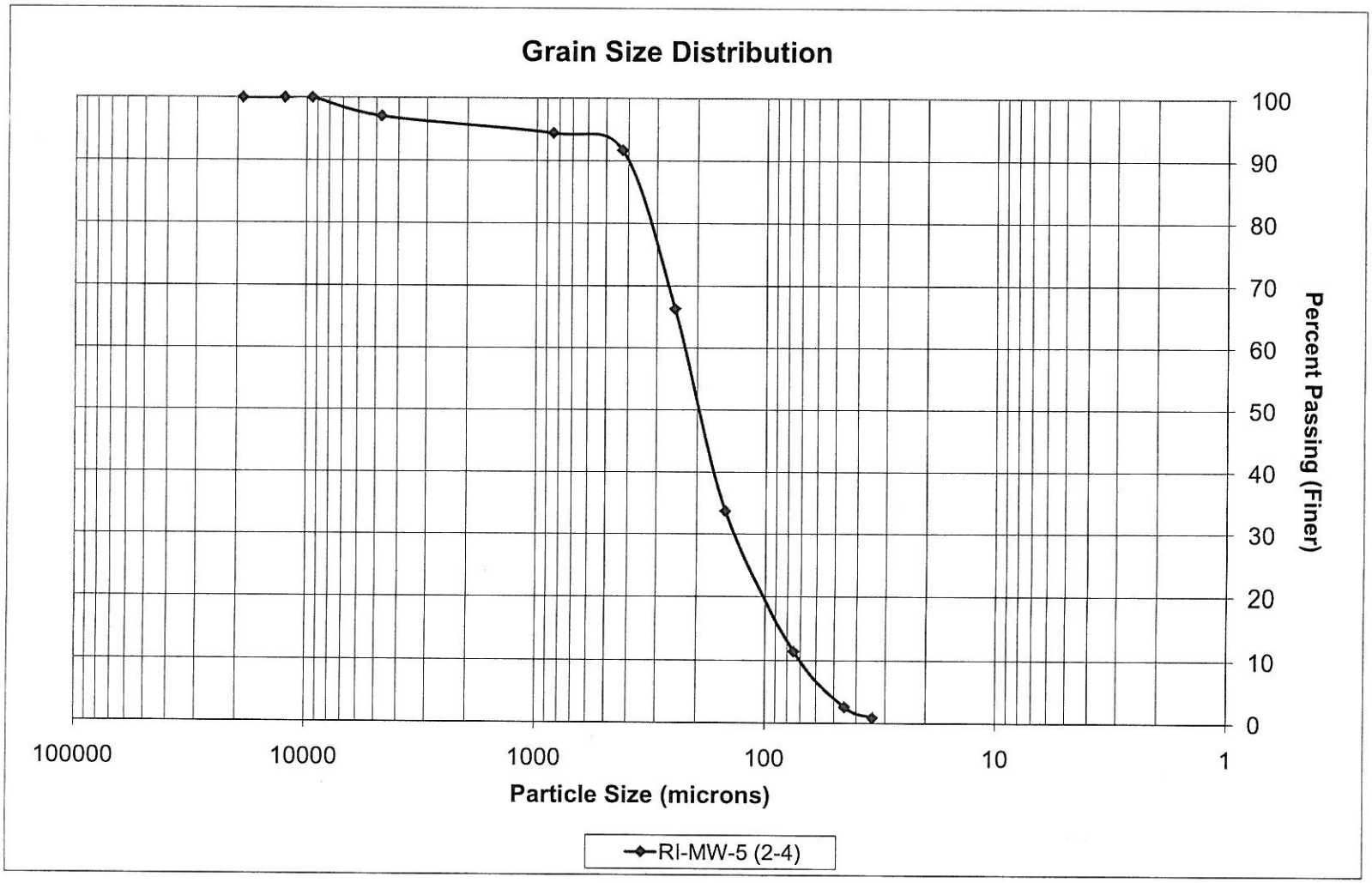

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Email: info@fremontanalytical.com

Grain Size by ASTM D422

Project: Ameron/Hulbert RIFS
Client: Landau Associates
Client Project #: 147029.500.610
Lab Project #: CHM101208-9

Percent Finer (Passing) Than the Indicated Size

UOM = Percent

Sieve Size	3/4"	1/2"	3/8"	#4	#20	#40	#60	#100	#200	#325	#450
Particle Size (microns)	19000	12500	9500	4750	850	425	250	150	75	45	34
RI-MW-4 (7-7.5)	100.00	98.82	98.44	97.21	91.60	83.25	66.38	35.47	13.65	4.19	1.92
RI-MW-2 (10-11)	94.45	81.30	73.19	59.81	26.05	18.08	12.07	7.76	-	-	-

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UOM = Percent

Sieve Size	3/4"	1/2"	3/8"	#4	#20	#40	#60	#100	>#100	#200	#325	#450	>#450
Particle Size (microns)	19000	12500	9500	4750	850	425	250	150	<150	75	45	34	<34
RI-MW-4 (7-7.5)	0.00	1.18	0.38	1.23	5.61	8.35	16.87	30.91	-	21.81	9.47	2.26	0.71
RI-MW-2 (10-11)	5.55	13.15	8.11	13.38	33.76	7.98	6.00	4.32	7.41	-	-	-	-

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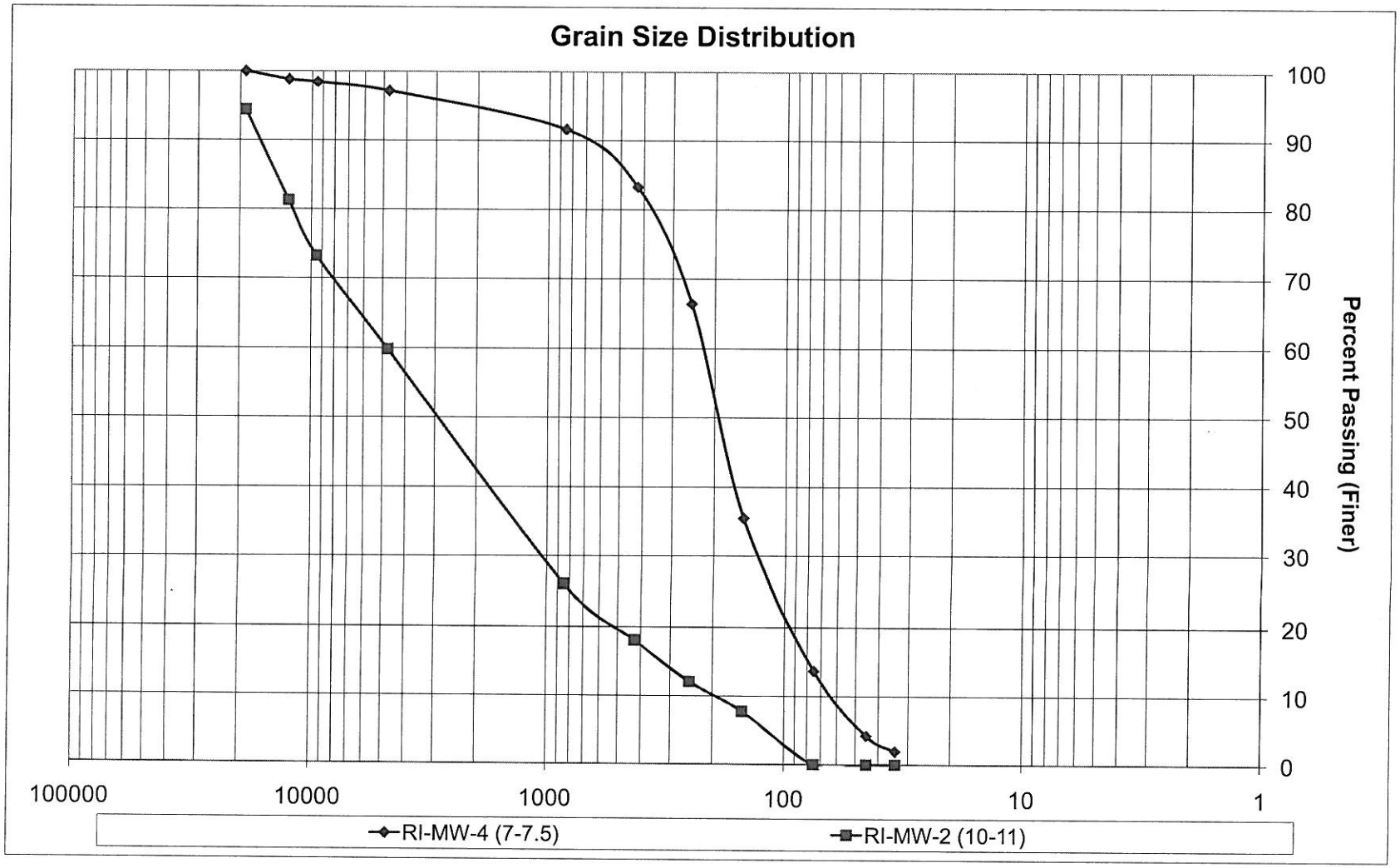

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Client: Landau Associates
Client Project #: 147029.500.610
Lab Project #: CHM101217-8

Percent Finer (Passing) Than the Indicated Size

UOM = percent

Sieve Size	3/4"	1/2"	3/8"	#4	#20	#40	#60	#100	#200	#325	#450
particle size (microns)	19000	12500	9500	4750	850	425	250	150	75	45	34
RI-MW-5 (2-4)	100	100	100	97.10	94.45	91.68	66.26	33.70	11.44	2.57	0.86