Interim Action Report
North Marina Ameron/Hulbert Site
Everett, WA

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Prepared for

Port of Everett, Washington

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LIST OF ABBREVIATIONS AND ACRONYMS

1,1,1-TCA	1,1,1-Trichloroethane
1,2-DCA	1,2-Dichloroethane
ACM	Asbestos Containing Material
AO	Agreed Order
ARARs	Applicable or Relevant and Appropriate Requirements
AST	Aboveground Storage Tank
BEHP	bis(2-ethylhexyl) phthalate
BGS	Below Ground Surface
BTEX	Benzene, Toluene, Ethylbenzene, Xylenes
CAOs	Cleanup Action Objectives
CAP	Cleanup Action Plan
CCP	Contamination Contingency Plan
CLARC	Cleanup Levels and Risk Calculations
CMPs	Compliance Monitoring Plans
COCs	Constituents of Concern
cPAH	Carcinogenic Polycyclic Aromatic Hydrocarbons
CSL	Cleanup Screening Level
DGI	Data Gaps Investigation
DMMUs	Dredged Material Management Units
ECI	Earth Consultants, Inc.
Ecology	Washington State Department of Ecology
EOX	Extractable Organic Halides
EPA	U.S. Environmental Protection Agency
ESA	Environmental Site Assessment
FA	Focus Area
FS	Feasibility Study
ft	Feet
GC	General Characterization
HCID	Hydrocarbon Identification
IHS	Indicator Hazardous Substances
LSI	Layton and Sell, Inc.,P.S.
MCL	Maximum Contaminant Level
MCLG	Maximum Contaminant Level Goals
mg/kg	Milligrams per Kilogram
MLLW	Mean Lower Low Water
MS/MSD	Matrix Spike/Matrix Spike Duplicate
MSRC	Marine Spill Response Corporation
MTCA	Model Toxics Control Act
NWTPH-Dx	Total Petroleum Hydrocarbon-Diesel/Oil Ranges
NWTPH-Gx	Total Petroleum Hydrocarbon-Gasoline Range
OVM	Organic Vapor Meter
PCBs	Polychlorinated Biphenyls
PLPs	Potentially Responsible Parties
Port	Port of Everett
ppm	Parts per Million
PQL	Practical Quantitation Limits
PSDDA	Puget Sound Dredge Disposal Analysis
PSI	Puget Sound Initiative
RCW	Revised Code of Washington
RI	Remedial Investigation

LIST OF ABBREVIATIONS AND ACRONYMS (Continued)

RZA	Rittenhouse-Zeman Associates
SAPs	Sampling and Analysis Plans
SMA	Shoreline Management Act
SOW	Scope of Work
SPLP	Synthetic Precipitation Leaching Procedure
SQS	Sediment Quality Standards
SVOCs	Semivolatile Organic Compounds
TBT	Tributyl Tin
TCLP	Toxicity Characteristic Leaching Procedure
TEF	Toxicity Equivalency Factors
TEQ	Toxicity Equivalency Quotient
TPH	Total Petroleum Hydrocarbons
TSCA	Toxic Substances Cleanup Act
U.S.	United States
UST	Underground Storage Tank
VCP	Voluntary Cleanup Program
VOCs	Volatile Organic Compounds
WAC	Washington Administrative Code
WISHA	Washington Industrial Safety and Health Act
yd^3	Cubic Yards
μg/L	Micrograms per Liter

1.0 INTRODUCTION

This report documents the interim actions completed for the North Marina Ameron/ Hulbert Site (Site), located within the Port of Everett (Port) North Marina Redevelopment project boundary in Everett, Washington, and represents the initial submittal required under Agreed Order DE 6677 (AO) between the Port, Ameron International and the Hulberts (the PLPs), and the Washington State Department of Ecology (Ecology). This report provides information on Site background (Section 2.0), presents the results of previous Site characterization activities (Section 3.0), describes the bases for and development of the interim action (Section 4.0), presents the results of the interim action (Section 5.0), and provides conclusions regarding the effectiveness of the interim action (Section 6.0). Although this report discusses the adequacy of the interim actions, the evaluation of the adequacy of previous investigations and the interim action in addressing the release, or potential release, of hazardous substances under the Model Toxics Control Act (MTCA; WAC 173-340) will be addressed in the remedial investigation/feasibility study (RI/FS) work plan, which is the second submittal required under the AO.

The Site was formerly part of the North Marina Redevelopment site, for which cleanup was being conducted under Ecology's Voluntary Cleanup Program (VCP; VCP No. 1249). However, at Ecology's request, the cleanup for the North Marina Redevelopment project was transitioned to be conducted as part of the Puget Sound Initiative (PSI). Due to this, and a number of other considerations, the North Marina Redevelopment site was eliminated from the VCP on November 14, 2007 and was reclassified into six separate sites. This Site is one of three sites that are being addressed under formal cleanup agreements with Ecology as part of the PSI. The other three sites within the former North Marina Redevelopment site are being addressed as separate sites under the VCP. The location of the Site as currently defined in the AO is shown on Figure 1. The former North Marina Redevelopment site will be referred to as the North Marina Area in this document; the approximate boundaries of the North Marina Area and the Site are shown on Figure 2.

Because the work described in this report was performed under the VCP, some of the terminology used in previous reports does not conform to the terminology used in the MTCA formal process. For instance, active remediation under the interim actions was described as "cleanup action", even though under the formal process the cleanup action is not performed until after the RI/FS and cleanup action plan (CAP) have been approved. Another example is the reference to "cleanup action areas," which would normally be referred to as "interim action areas" if the Site had been processed under the formal program from the beginning.

Interim actions for the Site were conducted in 1991, 1993, and between October 2005 and October 2007. The 1991 and 1993 interim actions were conducted with less rigorous documentation of the interim action design (A-1 Pump Service 1991; Kleinfelder 1993a), but were generally consistent with the standard of practice at that time. The 2005-2008 interim action was conducted for cleanup of the North Marina Area, in accordance with a CAP and subsequent CAP addendum developed for the North Marina Area under the VCP (Landau Associates 2006a and 2006b). The CAP was developed for the cleanup of contaminated soil located across a majority of the North Marina Area (Landau Associates 2006a). The CAP addendum (Landau Associates 2006b) was developed for cleanup of soil in cleanup area G-1, in the northwest corner of the current Ameron leasehold.

It should be noted that a Contamination Contingency Plan (CCP) was developed for the North Marina Area (Landau Associates 2008a). Any unanticipated soil or groundwater contamination encountered at the Site during future redevelopment activities will be managed using the general approach and procedures outlined in the CCP.

2.0 SITE BACKGROUND

This section presents background information related to the Site, including a description of the Site (Section 2.1), a summary of Site development history (Section 2.2), and a discussion of Site usage history (Section 2.3).

2.1 SITE DESCRIPTION

The Site is located in Everett, WA, between 11th and 13th Streets off West Marine View Drive, in the northeastern portion of the North Marina Area, and includes a large part of the 12th Street Yacht Basin to the west. The Site is owned by the Port and includes approximately 30 acres of upland and adjacent in-water property. Figure 2 presents the location of the Site with respect to the North Marina Area; the final Site boundary will be determined based on the results of the upcoming RI/FS for the Site. Figure 3 presents a site plan showing relevant historical Site features, and Figure 4 presents current Site features.

Because of its large size, the North Marina Area was divided into 13 sub-areas (Investigation Areas A though M) for investigation and data management purposes during the environmental investigation and cleanup activities conducted for the North Marina redevelopment. Only four of these Investigation Areas (G, I, J, and M) fall within the Site boundary. The others are part of other Port MTCA sites. The investigation areas have been defined based on tenant lease areas or other common characteristics.

The investigation areas used in this report are based on the 2004 Phase II environmental site assessment (ESA; Landau Associates 2004). The investigation areas defined for the 2004 Phase II ESA were expanded for the Data Gaps Investigation (DGI; Landau Associates 2005a) to encompass areas not characterized during the Phase II ESA. Investigation Areas I, G, M, and most of Area J are located within the Site uplands. The northern portion of the 12th Street Yacht Basin is located within the aquatic portion of the Site. The investigation areas are shown on Figure 4 and will be referenced in this report when discussing Site features and environmental conditions.

2.2 SITE DEVELOPMENT HISTORY

The first saw milling operations on the Site reportedly started when Fred K. Baker purchased a portion of the Site in 1913. The William Hulbert Mill Company owned the Site and began operations in the early 1920's. At that time, the entire mill was constructed on piles over Port Gardner Bay. According to Hart Crowser's historical research (Hart Crowser 1991):

- In 1947, a sheetpile wall was constructed to form the fill area south of the mill.
- Subsequent filling proceeded rapidly; by 1964, the southern portion of the Site was filled.

- The Hulbert Mill operated until the early 1960s, until the sawmill was removed and the land was unoccupied (other information sources indicate that the Hulbert mill was partly destroyed in a fire in 1956).
- During the 1970s, additional fill was added to the western portion of the Site.
- In the mid-1970s, Centrecon, a concrete pole and piling manufacturer, constructed a factory in the northeastern portion of the Site over the area formerly occupied by the sawmill drying kilns.

The Hulberts leased various portions of the Site to a number of commercial and industrial entities beginning in the early 1970s until they sold it to the Port in March of 1991. The Port has remained the owner of the Site since its purchase in 1991. The Site boundary does not precisely coincide with the parcels formerly owned by the Hulbert Mill Company.

Although tenants have changed over time, the type of operations conducted at the Site did not change substantially under Port ownership until the Port initiated plans for redevelopment of the North Marina Area. In anticipation of redevelopment, starting in about 2004, the Port began relocating tenants within the North Marina Area, and not renewing leases as lease terms ended. Several businesses located in the southern portion of the Site vacated the premises and the buildings were demolished in 2006. The Ameron leasehold was modified in scope and extends to at least 2012.

The western portion of the Site is currently being redeveloped by the Port into its Craftsman District to support marine-based businesses and recreational boaters. Recently developed facilities at the Site include the Bayside Marine dry stack storage and marine retail business in the northwest corner, a new Port Marine Operations Center in the west-center area, and a new travel lift in the southwest corner of the Site. Additionally, the former Marine Spill Response Corporation (MSRC) building constructed in 1993 in the southwest portion of the Site is currently being redeveloped into new Port offices and small business bays for marine services providers. Approximately the southwestern half of the upland portion of the Site has been paved with asphalt as part of the Craftsman District development. Figure 4 shows current upland Site features.

In addition to uplands redevelopment, the aquatic portion of the Site, the northern two-thirds of the 12th Street Channel, was redeveloped in 2005/2006 into the 12th Street Yacht Basin. Development of the Yacht Basin included dredging Site aquatic lands to about elevation -16 ft mean lower low water (MLLW) to create the necessary draft for its new use as a marina. A riparian area and intertidal habitat bench was created along the north shoreline of the Yacht Basin as compensation for the marina development-related impacts, as shown on Figure 4. The mitigation area consists of about a 12-ft wide (plan view) strip of upland and intertidal habitat located between the pedestrian esplanade and the subtidal zone that was planted with native vegetation and is being monitored and maintained by the Port along the entire north shore of the 12th Street Yacht Basin. Figure 4 shows current conditions for the aquatic portion of the Site, and Figure 3 shows the area over which Site sediment was dredged for construction of the yacht basin.

Current and historical Site uses are discussed generally in the following sections based on existing environmental reports for the Site. A more thorough Site history investigation is being developed and will be conducted as part of the RI/FS work plan.

2.3 CURRENT AND HISTORICAL SITE USE

This section identifies and describes the current and historical uses for properties and leaseholds located within the Site, subdivided into the investigation areas identified in Section 2.1. The Site usage history is based on aerial photos and the following documents, which should be reviewed for a more thorough description of Site historical uses and recognized environmental conditions:

- *Preliminary Environmental Audit, Jensen Reynolds Property* [Earth Consultants, Inc. (ECI) 1987]
- *Supplemental Site Investigation, Jensen Reynolds Property* (ECI 1988)
- *Report on Investigations Conducted at Ameron (Centrecon) Plant in Everett, Washington* (PSM International, Inc. 1989)
- *Supplemental Environmental Review, Hulbert Mill Property* (ECI 1990)
- *Phase I ESA and Phase I Environmental Audit, Business on Thirty Acres* (Kleinfelder 1991)
- *Environmental Engineering Services, Proposed MSRC Facility* (Hart Crowser 1991)
- *Independent Cleanup Action Report, Area West of MSRC* (Kleinfelder 1993b)
- *Phase I Environmental Site Assessment, North Marina Redevelopment Project* (Landau Associates 2001).

A number of areas within the Site were leased by the Hulberts or the Port to various tenants. Many of the former buildings and tenants are shown on Figure 3, and current tenants and buildings are shown on Figure 4.

In addition to specific building leases identified on Figures 3 and 4, areas of the Site were used by the property owners for various activities, including storage of materials, treatment of petroleum-contaminated soil, and parking. Investigation Area I, the area that has undergone the most extensive interim action to date at the Site, was a large area without a single long-term leaseholder or permanent building, but an area within which a significant amount of soil contamination was present. About the western half of Area I was aquatic land until 1973 when the Port and the Hulbert Mill Company jointly contracted to fill the area with dredge materials from creation of the barge channel on the south side of the 12th Street Channel. Subsequent filling, which has apparently occurred within this parcel, will be further investigated during the site history evaluation planned as part of the RI/FS work plan.

The current and former tenants utilized the leaseholds for a variety of businesses, primarily related to marine repair; concrete products manufacturing; and other marine, commercial, and light industrial activities. The following is a partial list, based on available information, of current and former tenants and activities for each investigation area located within the Site boundary:

- Investigation Area G:
  - Ameron International (current tenant): Concrete manufacturing, including piling and decorative poles
  - Utility Vault (former tenant): Concrete manufacturing, including piling, piers, and decorative poles
  - Centrecon (former tenant and predecessor of Utility Vault): Concrete manufacturing, including piling, piers, and decorative poles
  - Hulbert Mill (former property owner; operations in multiple areas): Saw and Shingle milling, log rafting, related wood products activities
- Investigation Area I:
  - Commercial Steel Fabricators (former tenant): Construction of prefabricated buildings, including painting operations
  - Jensen Reynolds (former tenant): manufacturing and storage of prefabricated waterfront buildings
  - Hulbert Mill (former owner): See uses above.
  - Port of Everett: petroleum-contaminated soil landfarming, disposal of landscape clippings and debris, boat impoundment, and storage of materials and equipment
- Investigation Area J:
  - MSRC (former tenant): Storage of marine spill response supplies
  - Veco, Inc. (former tenant): subleased warehouse areas from Jensen-Reynolds Construction; specific uses unknown
  - Port of Everett: storage and parking
  - Hulbert Mill (former owner): See uses above.
- Investigation Area M:
  - Ameron International Office (current tenant); Centrecon and Utility Vault (former tenants); partially subleased portions of building to:
    - Dunlap Wire Rope, Inc. and Dunlap Industrial Hardware (current tenant): Marine hardware supplier and fabricator
    - Tri-Coatings, Inc. (former tenant): Metal Finishing/Commercial coatings applications
    - BESCO, Inc.(former tenant): Vehicle and machinery parts supplier
    - Churchill Brothers Marine Canvas and Upholstery (current tenant): Fabrication of marine canvas and boat interiors
    - Sunset Body Works (former tenant) and North Central Collision (current tenant): Auto body repair

- Hulbert Mill (former owner): Former mill office (commonly referred to as the Collins Building), smoke shack, and numerous mill operations buildings demolished or burned in the 1960s
- Collins Casket Manufacturing (former tenant): Manufactured wood caskets; occupied multiple buildings, including former Hulbert Mill office (Collins Building), and smoke shack, and a covered storage building. Collins Casket sublet portions of the Collins Building to:
  - Michael's Woodcraft (former tenant; occupied 2nd floor of Collins Building: Manufactured wood products
  - RL Enterprises (former tenant; occupied 2nd and 3rd floors of Collins Building: Manufactured wood cabinetry
- Nalley's (former tenant): Operated a food warehouse
- Sandy's Boathouse (current tenant): Sells and services boat equipment and motors
- Washington Belt and Drive Systems (current tenant): Retail sales of machinery parts
- American Boiler Works (former tenant): Administration offices for manufacturing operations elsewhere on Port property
- Jensen Reynolds Company (former tenant): construction of pre-fabricated waterfront buildings including manufacturing and storage of materials.
- Port of Everett Marina Maintenance Facility: Offices and vehicle maintenance shop for Port marina maintenance staff
- Veco, Inc. (former tenant): Subleased warehouse area from Jensen-Reynolds Construction; storage of vehicles, welding equipment, construction equipment and shipping container boxes.

- 12th Street Channel aquatic lands (current 12th Street Yacht Basin): Historically used for log rafting. Some saw milling operations appeared to extend over the eastern end of the 12th Street Channel based on historic aerial photographs (See Appendix A, Figure A-1).

The following subsections provide a description of each investigation area, including a description of environmental concerns identified to date [e.g., underground storage tanks (UST)] associated with current and former tenant and owner activities based on available environmental reports. In addition to observed environmental concerns, any building constructed prior to 1975 should be considered for the potential to contain asbestos containing materials (ACMs) or lead-based paints. Later sections of this report describe the characterization and intrusive remedial actions (e.g., excavation) performed as part of the interim action. The investigation areas are labeled on Figure 4.

2.3.1 INVESTIGATION AREA G

Investigation Area G roughly consists of the Ameron leasehold property prior to the leasehold boundary being revised in mid 2007. There are four buildings and one covered work area on the current leasehold. The largest building is the main manufacturing building used for making concrete poles.

Three auxiliary buildings located along the west edge of Area G include a laboratory and storage building, a pole polishing building, and a pole finishing and dry storage building. Along with the four buildings, there is a covered work area located over the loading and unloading area between the manufacturing building, pole polishing building, and pole finishing and dry storage area. Based on review of available aerial photographs, the manufacturing building, lab/storage building, and pole polishing building were built sometime in the early 1970s. The pole finishing/warehouse building was added in the late 1980s, and the covered area was added in the early 2000s. All of these structures are still present and used as part of Ameron operations. The following sections discuss environmental conditions observed in and around these buildings during previous environmental investigations.

2.3.1.1 Main Manufacturing Building

The concrete manufacturing building houses the main production facilities. Within the building is a basin used in the construction of the long concrete poles produced at the facility. The basin extends below the groundwater table and previously collected and discharged both groundwater and floor wash water that drained into the basin. The basin discharged to an outside settling pond for infiltration. In 1992, the basin was reconfigured so that the groundwater is collected in a separate enclosed drainage system and pumped directly into the storm drain.

There is a compressor room in the northwest corner where oil, diesel, and concrete-release agent drums were stored. Concrete settling basins are located to the east of the Manufacturing building and are used to settle concrete solids from the batch operations process water. The process water is either recycled or discharged to the sanitary sewer system.

Several environmental issues were noted during the Kleinfelder 1991 Phase I ESA in and around the main manufacturing building. These included:

- Drum storage outside the east side of the building with soil staining
- Accumulated brown, rust, and green sandblasting waste on the northwest side (outside) of the building.
- Numerous reportedly empty, rusted, dented hazardous waste drums stored along the west side of the building.
- Noticeable spills of petroleum product on the compressor room floor
- Open containers of flammable liquids that did not have secondary containment.

At the time of the 1992 ECI Phase 2 investigation, the drums had been removed and there were no signs of soil or pavement staining remaining. Ameron indicated that the stained soil (characterized as petroleum staining in the Phase 2 investigation) had been excavated and drummed for offsite disposal.

2.3.1.2 Laboratory and Storage Building Area

A 12,000-gallon diesel UST was removed in 1988 from the west side of the storage/laboratory building. The removal and a soil and groundwater investigation conducted by Sweet-Edwards/Emcon was reported in an Environmental Audit Report by PSM International, Inc. (PSM 1989). The environmental investigation indicated no reportable concentrations of petroleum hydrocarbons or free product in the soil or groundwater. The testing is discussed further in Section 3.1.1.2. The UST is listed on Ecology's UST database as removed. The approximate former location of the UST is shown on Figure 3.

At the same time as the UST investigation, PSM also investigated an unlined settling pond located north of the laboratory building, near the fenceline west of the main manufacturing building. The pond reportedly collected water, pumped through an underground pipe, from a settling basin adjacent to the pole-polishing building. The pond basin was created by an earth berm that extended approximately 5 ft above ground surface.

2.3.1.3 Pole Polishing and Pole Finishing and Dry Storage Buildings

Kleinfelder (1991) noted 55-gallon drums and evidence of sandblasting and concrete pole polishing in the area of the pole polishing building. Air pollution equipment (baghouse) was observed although the air was noted to be very dusty inside the pole polishing building during the site reconnaissance. Three concrete settling ponds were reportedly located on the east side of the pole polishing building, but two had been filled with onsite backfill prior to the 1991 Kleinfelder site reconnaissance, and the third was collecting rainwater. West of the pole finishing and dry storage building sandblasting debris and a storm drain were observed (Kleinfelder 1991). No floor drains were identified inside the building.

A very limited oil-stained surface soil area, estimated to be 2.5 ft in diameter and 1 ft in depth, adjacent to the drum storage area, was observed at the northwest corner of the pole polishing building (ECI 1992). The stained soil was removed by Ameron and a soil sample collected following removal exhibited a total petroleum hydrocarbon (TPH) concentration of 1,400 milligrams per kilogram (mg/kg) using U.S. Environmental Protection Agency (EPA) Method 418.1 (ECI 1992).

2.3.2 Investigation Area I

Investigation Area I comprises the property between the 12th Street Channel Waterway (now the 12th Street Yacht Basin) and Investigation Area G to the east, the property line that separates Port property from Norton Industries property to the north, and Investigation Area J to the south. This portion of the Site has been recently redeveloped as part of the Craftsman District as described in Section 2.2, and currently contains a large Bayside Marine building at the north end, the Port Marina Operations Center near the center, a concrete esplanade along the shoreline, and asphalt pavement covering on the rest of the area.

Prior to the recent redevelopment, no permanent structures existed in Area I except for structures associated with the Hulbert Mill that were demolished in the 1960s. However, several lessees and operations were identified during site reconnaissance and historical Phase I ESA reviews conducted by ECI (1987, 1988, and 1992), Kleinfelder (1991), and Hart Crowser (1991). The environmental conditions and concerns observed in this Area by these investigations are discussed below.

2.3.2.1 Jenson Reynolds Lease Area

Between 1987 and 1990, ECI conducted several environmental investigations of the Jenson Reynolds leasehold (see approximate leasehold boundary depicted in orange on Figure 3) for the Hulbert Mill Company (the property owner at that time). Hart Crowser conducted a preliminary environmental assessment of the former lease area in 1991 for HNTB (parent company of MSRC) prior to MSRC leasing a portion of the former lease area for a new warehouse. According to maps in their reports, the Jenson Reynolds lease included portions of Areas I, J, and M.

Jensen Reynolds was a waterfront construction concern and used the property as an administrative base of operations (Building on Area M) as well as a lay-down and fabrication yard for numerous projects (ECI 1987). According to ECI, they sub-leased the property from Centrecon in 1982. According to Hart Crowser (1991), Jensen Reynolds leased the site until 1991 when it was bought by the Port. Hart Crowser also indicates that Jensen Reynolds constructed prefabricated waterfront buildings and used the leasehold for manufacturing and storage of materials.

The 1987 and 1988 ECI reports on the Jensen Reynolds lease identified numerous environmental issues including drums of varying contents and condition scattered throughout the entire site, leaking drums, areas of paint chips and discolored soil, black sand-blasting waste deposited on soil, and demolished building debris. Within Area I, the following were noted:

- Large areas of discolored soil on the ground in the northern half of the leasehold that appeared to be surficial overspray from the painting of large components fabricated in the yard (ECI 1987)
- An assortment of full, partially full, and empty drums scattered throughout the property, including fifteen 55-gallon drums that showed clear evidence of minor spills and leaks onto unprotected ground along the north property boundary
- Black sand blasting abrasive in small piles adjacent the eastern fence line (Centrecon fence line)
- An accumulation of metal paint chips up to 2 ft high over a 20 ft by 20 ft area southeast quadrant of Area I
- An area about 200 ft square was covered with blasting sand about 4 inches thick in the north-central portion of Area I

- An area of building demolition and household debris immediately north of the blasting sand
- Piles of miscellaneous wood scraps and insulation foam scattered over the entire area
- Piles of gray/black sludge-like material spread randomly around the northern portion of the property (Hart Crowser 1991).

The 1988 ECI report noted that the surficial evidence of spray paint, blasting sand, numerous barrels, and spillage of barrel contents noted in the 1987 ECI audit were no longer apparent.

2.3.2.2 Commercial Steel Fabricators

When Kleinfelder conducted their Phase I ESA in 1991, the property was being used by Commercial Steel Fabricators to manufacture prefabricated buildings. Several environmental conditions were noted by Kleinfelder (1991) in the area used by Commercial Steel Fabricators including:

- An open hazardous materials shed with drums of diesel and gasoline stored inside
- Soil staining in and to the west of the shed
- Areas of paint chips and sandblast grit deposited on soil
- Soil at the storm drain discharge to the 12th Street Channel in the northwest corner of the area noted to be darker than the surrounding soil.

By June of 1992, AGI (1992) indicated that the structures and features associated with Commercial Steel Fabricators had been removed from the site and the site freshly graded with new base rock.

2.3.2.3 Port Operations

The Port conducted limited operations in Investigation Area I subsequent to purchase of the Site in 1991 and prior to the start of recent redevelopment in 2006. These operations consisted of conducting petroleum hydrocarbon treatment (landfarming) as described below, the disposal of brush and landscape trimmings in the northeast portion of the area, boat impound storage, and the storage of a small number of creosote-treated piles in the central-eastern portion of the area. Additionally, an alumina crane from the Port's Pier 1 was relocated for storage purposes to the southwestern portion of the area and a submarine was hauled upland from the barge channel and dismantled, and several of its fiberglass panels were stored in the southeast corner of the property.

Soil landfarming for remediation of petroleum hydrocarbon-contaminated soil was conducted in the northeast corner of Investigation Area I (AGI 1992). Although documentation is limited, available information indicates that the landfarming was related to a number of UST closures conducted by the Port throughout the North Marina Area in the early 1990s. The apparent landfarming area was reportedly lined with plastic sheeting and contained within straw bales (AGI 1992). The former landfarming area is visible in a 1992 aerial photograph of the Site (Appendix A, Figure A-3). Much of the area was reportedly cleared of the remnants of the Commercial Steel Fabricators operations and freshly graded with new base rock surfacing by 1992 (AGI 1992), which is also evident in the 1992 aerial photograph.

In addition to these operations, the Port leased a portion of the area along the shoreline to Shaughnessey Co., an industrial moving company, who stored moving containers using the 12th Street Channel barge wharf. They also used steel plates on the ground to support their operations, and stored articulating moving rigs at the property.

On Figure 3, the former boat impound storage is visible in the eastern portion, and former Shaughnessey Co. operations are visible in the western portion of Investigation Area I. The approximate location of the former landfarming area is also shown on Figure 3.

The northern portion of Area I is currently occupied by the Bayside Marine dry stack storage and marine retail business that was constructed in 2007. The new Port Marine Operations Center was constructed in the west-center area concurrent with the Bayside Marine facility, and the remainder of Area I was paved. A new travel lift was constructed in the southwest corner of Area I in 2005, but will not be fully operational until redevelopment of the MSRC building is complete. Figure 4 shows these current upland Area I features.

2.3.3 INVESTIGATION AREA J

Most of Investigation Area J was also formerly part of the Jensen Reynolds lease area until the Port bought the property in 1991 (Hart Crowser 1991). The area includes a former open-sided warehouse, two historical subgrade concrete vault structures of unknown purpose that were discovered and removed during construction activities subsequent to Port purchase of the property, and the former MSRC leasehold whose building currently remains.

In 1993, a buried concrete structure was discovered during the construction of a drainage swale associated with the partially built MSRC building. The buried concrete structure, located outside the west wall of the southern half of the MSRC building, was filled with wood debris, soil, and what appeared to have been drums containing oil (Kleinfelder 1993a). Investigation and cleanup of the historical structure and surrounding soil are discussed in Sections 3.1.1.7, 4.2, and 5.2.

Environmental conditions observed in this area during the numerous environmental assessments conducted on the property between 1987 and 1993 are discussed below. In 1993, the MSRC building shown on Figure 3 was constructed. Much of the area around the building was paved when the building was constructed, although portions of the area to the west are unpaved near the fenceline. The MSRC building remains and is being remodeled as part of the Craftsman District development plan, as discussed in Section 2.2.

2.3.3.1 Former Open-sided Warehouse

Before the MSRC building was constructed, a warehouse approximately one third of the size of the MSRC building was located slightly to the east of, and overlapping, the area where the MSRC building now stands (Figure 3). In 1991, the southern half of the warehouse was being used by Veco Inc. to store welding and construction supplies, and the Port was using the northern half to store old electric meters and light posts removed from marinas, waste oil containers, drums, and wood piles (Hart Crowser 1991). The warehouse and surrounding area were assessed as part of the Phase 1 ESAs conducted between 1987 and 1991. The areas of environmental concern noted in and around the open-sided warehouse included:

- Numerous leaking drums of various contents, some of which include gasoline, diesel, and lubricant
- An aboveground storage tank (AST)
- A flooded area with an oily sheen north of the former warehouse and free-standing product on the asphalt in the warehouse
- Piles of blasting sand on the floor inside the warehouse.

ECI made housekeeping recommendations based on their observations (ECI 1988) and a subsequent site reconnaissance in 1989 indicated that the recommended housekeeping measures appeared to have been implemented.

In 1991, Hart Crowser noted waste oil tanks, waste oil in drums, open-topped buckets, and empty drums in very poor condition stored adjacent the Ameron fenceline and the north side of the open-ended warehouse. They also observed green sand believed to be sandblasting sand west of the open-ended warehouse.

During the Kleinfelder Phase I (Kleinfelder 1991), the former warehouse was being leased by Veco, Inc, but was vacant at that time. No environmental concerns were observed; however, they noted that some of the area was covered by storage lockers and containers.

2.3.3.2 Former UST

An approximately 10,000-gallon UST used for fueling Port vehicles, and later for waste oil storage, was reportedly removed in the late 1980s from the southwest corner of the Site, at the location shown on Figure 3. No documentation regarding the presence or decommissioning of this UST is available. The existence of the former tank was not known during Site environmental investigations until it was identified by Port personnel during Landau Associates' 2004 Phase II ESA. Soil and groundwater were characterized in the former UST vicinity during the 2004 Phase II ESA and subsequent DGI.

2.3.3.3 Former MSRC Building

The former MSRC building and the attached open-sided work area on its north end have been the only structures present in Area J since their construction in 1993. The MSRC facility was used for the storage of marine spill response supplies and no environmental issues were identified related to MSRC operations during previous Site investigations. The building is currently unoccupied, but is being redeveloped into new Port offices and small business bays for marine services providers. The area to the east of the MSRC building will be used for boatyard activities by the marine service providers occupying the MSRC building, and boatyard activities will extend into Area M to the east, possibly including the area currently occupied by the Collins Building. The marine service providers' operations will be supported by the new travel lift located in the southeast corner of the 12th Street Yacht Basin to the west.

2.3.4 INVESTIGATION AREA M

Investigation Area M borders West Marine View Drive. The northern section of Area M is narrow and consists of a long building leased by Ameron and subleased to various businesses. The southern section of Area M stretches farther to the West, and historically consisted of several buildings, including the Hulbert Mill company office, Sandy's Boathouse, Washington Belt and Drive Systems, the Collins Building, the Collins warehouses and "smoke shack", a warehouse occupied by Nalley Foods, the Port Marina Maintenance Facility, a warehouse occupied by the Port and Veco, Inc., and two office buildings facing 13th street. The number and locations of some buildings have changed over the operational history of this area. Environmental conditions observed in and around each building are described below.

Area M will likely be redeveloped in the future into an extension of the Port's Craftsman District, currently located to the west, as described in the previous section.

2.3.4.1 Ameron and Subleases Building

The northern portion of Area M has a long building oriented north to south, which is leased by Ameron and subleased to various businesses. The building was constructed in the late 1970s and is still in use. At the time of the 1991 Kleinfelder Phase I ESA, the subleases were (from North to South) Tri-Coatings, Inc., Besco, Inc., Churchill Brothers Sail Loft, and Sunset Body Works, Inc. (Kleinfelder 1991). Several of these subleases have changed since that time. For example, Tri-Coatings, which operated a maintenance and mechanics shop in Area M to support their main facility located on the adjacent property to the north (see Figure 3), changed their name to TC Systems, Inc. in the early 1990s. Dunlap Industrial Hardware has taken over a portion of the northern buildings, and North Central Collision has taken the place of Sunset Body Works.

2.3.4.2 Historical Hulbert Mill Company Office

The southern part of Area M has changed more substantially over time. Just south of the Ameron subleased building was a house, built sometime while the former Hulbert Mill was operating. Historically, the house was used as the Hulbert Mill Company Office, but was vacant by the time of Kleinfelder's site reconnaissance in 1991. No noticeable environmental concerns were noted on inspection of the exterior of the building during the Kleinfelder reconnaissance. The building was demolished in the late 1990s. A paved parking lot now covers the area where the house once stood. The former location of the house is shown on Figure 3.

2.3.4.3 Sandy's Boathouse

South of this area along West Marine View Drive are two current buildings built in the early 1970s. The northern building is Sandy's boathouse, where a parts degreaser, waste oil accumulations, and an engine test tank were noted during the 1991 Phase I ESA (Kleinfelder 1991). The degreaser oil and solvent waste were reportedly being disposed of offsite. Oil and grease associated with the test tank were reportedly being cleaned with oil-absorbent pads and associated wastewater was discharged to the sanitary sewer. An AST storing petroleum hydrocarbons with no visible staining was observed here during the Landau Associates Phase I ESA site reconnaissance in 2000 (Landau Associates 2001).

2.3.4.4 Washington Belt and Drive Systems Building

The building just south of Sandy's Boathouse is occupied by Washington Belt and Drive Systems, a machinery parts retailer. The building has a sanitary sewer drain in the storage area. No recognized environmental conditions were observed at this location during either the 1991 (Kleinfelder 1991) or the 2000 (Landau Associates 2001) Phase 1 ESA Site reconnaissances, although unopened containers of 1,1,1-trichloroethane (1,1,1-TCA) were observed during the 1991 Site reconnaissance.

2.3.4.5 Collins Building

West of these buildings is the Collins Building (formerly North Coast Casket Company), built in 1926 and still present. An abandoned fuel oil boiler system exists at the Collins Building, and small surface stains were observed during the Landau Associates Phase I ESA Site reconnaissance in 2000 (Landau Associates 2001).

2.3.4.7 Former Collins "Smoke Shack" and Covered Storage Shed

The former Collins "smoke shack" and covered storage shed, built in the 1960s, were located to the west of the Collins Building and were associated with Collins Casket Company operations. The building, located off the northwest corner of the Collins Building, was used as a break room for employees (dubbed the "smoke shack"), and also reportedly stored building materials. During the 1991 Phase I ESA Site reconnaissance (Kleinfelder 1991), waste paint containers and stained soil were observed outside in an area northwest of this building. The covered storage shed, located south of the smoke shack and west of the Collins Building, was made up of two connected open warehouses and was reportedly used as open storage for metal parts, wood scraps, and old machinery; no environmental concerns were noted related to this building. The smoke shack and the northern half of the warehouse were demolished in the early 1990's and the southern half of the open warehouse was demolished in 2001 or 2002, and the location is currently paved with asphalt.

2.3.4.6 Warehouse (Nalley Foods)

From before 1965 until 2005, a warehouse was located adjacent to the east side of the Collins Building, which for a period of time was being used for food storage by Nalley Foods. No recognized environmental conditions were identified for this building, although former tenants (Collins Casket Company, Michael's Woodcraft, and RL Enterprises) all used glues and wood finishing chemicals during the manufacture of wood products.

2.3.4.8 Port of Everett Marina Maintenance Facility

The former Port Marina Maintenance Facility was built over the northern portion of the smoke shack/warehouse area in the early 1990's. During Landau Associates' 2000 Phase I ESA Site reconnaissance, an AST containing petroleum hydrocarbons with no visible surface stains was observed in the paved yard to the south of the maintenance building (Landau Associates 2001). No recognized environmental conditions were identified during the 2000 reconnaissance, although the interior of the building was not observed. The Port Marine Maintenance Facility was demolished in 2007 in conjunction with development of the Craftsman District and construction of the new Marina Operations Center.

2.3.4.9 Covered/Open-Sided Warehouse (Veco, Inc and Port of Everett)

The southwestern part of Area M was the location of an additional warehouse. The warehouse was built in 1983, and in 1991 was being leased by Veco, Inc. from Jensen-Reynolds Construction for storage and occasional use on large jobs. In 1991, the northern portion of the warehouse was being used by the Port of Everett as a maintenance garage prior to construction of its new maintenance facility (Kleinfelder 1991 and Hart Crowser 1991). Several environmental issues were identified at this location by Kleinfelder (1991) and Hart Crowser (1991):

- Dark staining on the surface grating of a storm drain in the building floor, and chemical drums stored onsite and nearby (Kleinfelder 1991).

- Storage of waste oil in cans and drums that showed leakage and spillage outside of the maintenance garage, and small piles of oil absorbent material was observed adjacent to lube, motor and hydraulic oil drums inside the building (Hart Crowser 1991)

- Green sand was observed at multiple locations, including behind the maintenance garage, and was assumed to be related to sandblasting activities (Hart Crowser 1991).

2.3.4.10 Office buildings

Two buildings bordering 13th street in Area M served as office buildings. The westernmost building was present to the south of the Veco/Port warehouse. The eastern half of the office building was constructed in 1982 and a western expansion was added in the early 1990s. The building was demolished in 2007 during construction of the Craftsman District. Two gasoline USTs and one diesel UST were located within the expanded building footprint, which was reportedly the reason for their removal prior to construction of the building addition. These USTs, erroneously listed in Ecology records as having been removed from Bayside Marine (1100 13th Street), were determined to be incorrectly located; the correct location was identified with the assistance of Port personnel and historic aerial photographs. The correct location for these former USTs are shown on Figure 3 and are addressed further in Section 4.1.

The other building, a modular home unit used as an office building, briefly existed in Area M between 2002 and 2006, just south of the Collins building, facing 13th Street. No recognized environmental conditions were identified associated with this structure.

2.3.5 THE 12TH STREET YACHT BASIN

The 12th Street Yacht Basin is located in the 12th Street Channel, and constitutes the aquatic portion of the Site. The currently estimated Site boundary extends from the western shoreline of Area I to the point where the channel intersects the Snohomish River, and from the north shoreline of the channel to the estimated north boundary of the North Marina West End site (about 200 ft north of the Channel's south shoreline). Based on review of historic aerial photos, the Yacht Basin was heavily used for log rafting and other saw milling activities until the Hulbert Mill ceased operations in the 1960s. In addition to log rafting activities, saw mill structures reportedly used for saw and shingle mill operations extended westward from the shoreline into the current channel area. The primary environmental concerns for the aquatic portion of the Site related to former wood products operations is the accumulation of wood waste, which is a common issue associated with historic saw milling operations.

Based on the aerial photos and other information, a navigation channel was dredged along the south side of the channel in the early 1970s to provide adequate vessel draft for both Port and Hulbert operations. The entire Site aquatic area was dredged to about elevation -16 ft MLLW in 2005 as part of the Yacht Basin development, and the Yacht Basin floats and upland infrastructure was built between

2005 and 2007. Sediment investigation studies prior to the construction of the Yacht Basin construction are discussed in Section 3.1.1.7.

A stormwater outfall present in the northeast corner of the Yacht Basin receives stormwater from a stormwater trunk line that runs easterly from the outfall. The age of the trunk line is uncertain, but it pre-dates the Port's ownership of the property. Numerous laterals drain into the main trunk line, including laterals from the northern half of the Ameron leasehold and the Norton Industries property to the north of the Site (including the TC Systems, Dunlap Industrial Hardware, and O&W Glass businesses). Stormwater conveyance from the northern portion of the Bayside Marine leasehold and the access roadway to the west of the Bayside building were recently added to the trunk line during the development of the Craftsman District. Due to its age and the limited documentation of its construction, there could be additional, undocumented laterals connected to the trunk line.

The stormwater trunk line appears to be in poor condition. Replacement of failed sections of the main trunk line was conducted by Ameron in 2005 and the Port in 2008. In addition, recent camera surveys in 2008 and 2009 could not be completed because of sediment accumulation in the trunk line. It is also noted that marine surface water backs up into the main trunk line during high tide due to the lack of a properly functioning tidal gate.

Stormwater was collected and tested from the outfall, and marine sediment was collected and tested from the immediate outfall vicinity during previous Site investigations, as discussed in Section 3.4.

2.3.6 HULBERT MILL

As previously discussed in Section 2.2, the Hulbert Saw and Shingle Mill operated at the Site from the 1920s to the 1960s, and was partially destroyed in a 1956 fire. The Hulbert Mill operated throughout much, if not all, of Areas G, I, J, and M. The majority of the mill structures were razed prior to 1965 in advance of redevelopment of the Site by the Hulbert Mill Company for other industrial and commercial purposes.

A number of environmental concerns are often associated with historic saw/shingle milling operations. However, none of the available environmental investigations have evaluated potential releases associated with historic saw milling activities, and, with the possible exception of affected construction debris encountered in Area J, no releases related to former saw mill activities have been identified. The potential for releases related to former saw milling activities will be further evaluated during scoping for the Site RI/FS work plan.

3.0 SITE CHARACTERIZATION

This section presents Site characterization activities that were conducted to delineate the nature and extent of contamination prior to implementation of the interim actions. The following sections present a description of the investigation activities (Section 3.1), the physical and hydrogeologic setting (Section 3.2), the development of interim action cleanup standards (Section 3.3), and the environmental conditions which led to interim actions (Section 3.4).

3.1 ENVIRONMENTAL INVESTIGATIONS

Prior to the Site's entry into the MTCA formal process, a number of environmental investigations were conducted to determine the nature and extent of contamination within the North Marina Area, including the Site. Up until 2000, investigations were performed by a number of different parties, as listed below. From 2000 onward, Landau Associates performed all environmental investigations, starting with a Phase I ESA (Landau Associates 2001), except for Pentec's DMMP characterization associated with the 12th Street Yacht Basin development and the marine sediment sample collected at the Site in 2009 by SAIC for Ecology in a study covering sediment quality for the entirety of Port Gardner Bay (SAIC 2009).

It should be noted that data from most of the environmental investigations conducted prior to 2000 were not available to Landau Associates during scoping for its environmental investigations and interim actions conducted between 2000 and 2007. As a result, data from these earlier investigations were not used in scoping Landau Associates' environmental investigations or interim actions. However, documentation from the earlier investigations has since been obtained and the investigation results are summarized in this report to provide a more complete understanding of known Site environmental conditions.

This section presents the available data from investigations performed by parties other than Landau Associates, followed by a description of investigations performed by Landau Associates. Investigations performed by parties other than Landau Associates discussed in this section include:

- *Supplemental Site Investigation, Jensen Reynolds Property, conducted for the Hulbert Mill Company* (ECI 1988)
- *Report on Investigations Conducted At Ameron (Centrecon) Plant* (PSM International 1989)
- *Preliminary Environmental Assessment, Proposed MSRC Facility* (Hart Crowser 1991)
- *Additional Site Observations and Testing, Hulbert Mill Property* (AGI 1992)
- *Groundwater Sampling and Analysis, Former Hulbert Mill Company* (Kleinfelder 1992)
- *Phase 2 ESA, Hulbert Mill Property* (ECI 1992)

- *Test Pit Exploration, MSRC Property* (Kleinfelder 1993c)
- *Independent Cleanup Action Report, Area West of MSRC Warehouse Building* (Kleinfelder 1993b).
- Marine Sediment Investigations:
  - *Subsurface Exploration and Engineering Report, William Hulbert Marina Site* (RZA 1988)
  - *Sampling and Analysis Report for Characterization, Proposed 12th Street Marina, for the Hulbert Mill Company* (RZA 1991).
  - *Puget Sound Dredged Disposal Analysis, Full Characterization for the 12th Street Marina* (Pentec Environmental 2001)
  - *Sediment Characterization Study, Port Gardner and Lower Snohomish Estuary, for the Department of Ecology* (SAIC 2009).

Investigations generating environmental data performed by Landau Associates include:

- *Phase II ESA, North Marina Redevelopment Project* (Landau Associates 2004)
- *Data Gaps Investigation (DGI), North Marina Redevelopment Project* (Landau Associates 2005a)
- *Ameron International Leasehold Environmental Investigation of Oil-Affected Area,* (Landau Associates 2005b).
- *Supplemental DGI, North Marina Redevelopment Project* (Landau Associates 2006c)
- *Cleanup Action Plan Addendum,*(Area G-1), (Landau Associates 2006b)
- Early Action Design Characterization
- Additional soil characterization conducted between February and July 2006 during interim action design to better delineate the extent of contamination for interim action design in a number of areas located across the North Marina Area (not previously reported).
- Additional characterization between June 2006 and October 2007 during interim action implementation to characterize materials that were encountered during removal activities that exhibited a unique appearance or other indications that the material may be contaminated (partially reported; Landau Associates 2008b.
- Characterization of soil and groundwater encountered during excavation for the Craftsman District sanitary sewer system in May 2007.

These investigations are described in the following sections and the analytical results are presented in Section 3.4. Both total and dissolved metals were analyzed for most Site groundwater samples. However, metals concentrations are elevated in most of the samples, which appears to be the result of particulates entrained in the water samples. Consequently, only dissolved metals results are discussed in the following sections of this report, although total metals results are also presented in the tables. Concentrations identified as elevated in the sections below exceed site interim action cleanup and/or screening levels identified in Section 3.3.

3.1.1 INVESTIGATIONS BY PARTIES OTHER THAN LANDAU ASSOCIATES

This section summarizes investigations done by others on the Site, organized chronologically starting with the upland investigations and followed by the marine sediment characterizations. The individual investigation reports should be reviewed for a more complete description of investigation activities.

3.1.1.1 *Preliminary Environmental Audit and Supplemental Site Investigation, Jensen Reynolds Property* (ECI 1987 and 1988)

Investigation of the former Jenson Reynolds leasehold was performed by ECI in 1987 and 1988 for the Hulbert Mill Company. During these investigations, ECI noted numerous areas of drum storage with evidence of spills and leaks onto the ground, outdoor metal paint chip accumulations, and an area in Investigation Area I covered with discolored soil potentially caused by paint overspray and blasting sand.

Two samples of the discolored soil in Area I were collected and tested during the 1987 investigation. Sample ECI-G-1 was collected from an area exhibiting reported petroleum hydrocarbon spillage from drums in the western portion of leasehold, and was tested for polychlorinated biphenyls (PCBs) and selected metals, but not petroleum hydrocarbons. The sample did not exhibit detectable concentrations of PCBs and copper was the only sample exhibiting an elevated concentration (111 mg/kg). Sample ECI-G-2 was collected from an area along the eastern leasehold boundary exhibiting the presence of black sand blast grit. This material was tested for lead, arsenic, and petroleum hydrocarbons (oil and grease), and exhibited elevated concentrations of 1,300 mg/kg, 3,000 mg/kg and 17,700 mg/kg, respectively.

During the 1988 Supplemental Investigation, some of the previously identified issues had been cleaned up, but new potential issues were identified including additional piles of blasting sand, piles of paint chips and discolored soil, and construction debris. ECI sampled and tested the blasting sand for E.P. Toxicity for a number of metals (arsenic, barium, cadmium, copper, chromium, lead, mercury, nickel, selenium, silver, and zinc) and the dangerous waste criteria were not exceeded for any of the analytes. The blasting sand was not tested for total metals. The metal paint chips were sampled and analyzed for total lead, arsenic, and zinc, and were found to have a lead concentration above state background levels, although the concentration is well below current MTCA cleanup levels. Based on the results, ECI recommended testing for lead leaching and disposing of the chips at an appropriate offsite facility. The location of the samples, labeled ECI-3448-A (blasting sand) and ECI-3448-B (paint chips), are shown on Figure 5, and the results are presented in Table 1.

3.1.1.2 *Report on Investigations Conducted at Ameron (Centrecon) Plant* (PSM International 1989)

In 1989, as part of Ameron's due diligence in purchasing the assets of the current operator in Area G of the Site, Ameron hired PSM International to conduct an environmental audit. The PSM work identified and evaluated the soil and groundwater conditions associated with the removal of a diesel tank and the sediment and surface water quality associated with process wastewater ponds. The UST was located on the west side of the Ameron storage/laboratory building, as shown on Figure 3, and was removed in December 1988. In January 1989, PSM, in conjunction with its subconsultant Sweet Edwards/EMCON, conducted an investigation of soil and groundwater in the former UST vicinity to evaluate whether residual contamination associated with the former UST was present.

One boring was advanced at the center of the UST excavation area (SEE-EC-1) to a total depth of 9 ft, to test soil down into the water table. Three other borings were completed around the former tank location and monitoring wells were installed in these borings. One well was installed as close as possible to the filling area of the tank (SEE-EC-2), one downgradient (west) of the tank to evaluate potential migration of contaminants (SEE-EC-3), and one upgradient to establish background conditions (SEE-EC-4). Soil samples were taken at multiple depths from each boring and groundwater samples were taken from wells screened from 2 to 12 ft below ground surface (BGS). Sample locations are shown on Figure 5.

A total of 19 soil samples and 3 groundwater samples were tested for TPH by EPA Method 418.1 and benzene, ethylbenzene, toluene and xylene (BTEX) by EPA Method 8020 and 8015-modified. The results for all samples were either below reporting limits or below applicable regulatory criteria, indicating no apparent impacts from the UST. There was also no indication of contamination observed during the field activities. Soil and groundwater results for these analyses are presented in Tables 2 and 3, respectively.

At the same time as the UST investigation, PSM also investigated environmental conditions associated with an unlined settling pond located north of the laboratory building, near the fenceline west of the main manufacturing building. The pond was made of bermed earth and reportedly collected water from a settling basin adjacent to the pole-polishing building. The pond water was observed to be in an overflow condition, with a light to medium emerald green color, and no odor. Two surface water samples and one sediment sample were collected. Both a filtered (PS-1/2) and an unfiltered (PS-3) water sample were collected from the pond. The sediment sample (PS-1/PS-2) was collected at a depth of 0 to 0.2 ft below the bottom. The locations of the samples are shown on Figure 5.

The water samples were tested for total and dissolved metals (arsenic, barium, cadmium, chromium, lead, mercury, silver, thallium, and zinc). The sediment sample was tested for metals (arsenic, barium, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, thallium, and zinc); EP

Toxicity metals, and what appeared to be similar to the Synthetic Precipitation Leaching Procedure (SPLP) test (24-hour acetic acid leach test). Pond sediment results (Table 1) indicate that none of the metals concentrations were elevated, and pond surface water quality results (Table 4) were not elevated except for copper at 10 micrograms per liter (μg/L). However, a high water pH of 11.5 was present in the water sample.

3.1.1.3 Environmental Engineering Services, Proposed MSRC Facility (Hart Crowser 1991)

Hart Crowser performed a preliminary environmental assessment and conducted a limited testing program to identify significant environmental issues that might affect a property transfer. The historical assessment they conducted was discussed previously (Section 2.2). The report indicated that unresolved issues following Hart Crowser's environmental assessment were limited to follow up groundwater quality testing based on elevated total metals concentrations, soil staining near drum storage areas, and sandblasting sand and sludge spread randomly around the leasehold.

Hart Crowser installed four monitoring wells and one soil boring: two wells were installed in Area I (HC-MW02 and HC-MW03) and two in Area J (HC-MW01 and HC-MW04), as shown on Figures 5 and 6, respectively. The additional soil boring was drilled in the southwest corner of Area I. Soil samples were taken during boring advancement and water samples were taken after the wells were developed

Hart Crowser interpreted the soil to be hydraulic fill. Their chemical laboratory analyses indicated identifiable concentrations of fuel and oil-related compounds in soil from HC-MW-2 and tetrachloroethylene was detected in one sample from HC-MW-4. However, all detections are below the cleanup screening levels (Tables 1, 2, and 8).

Soil and groundwater samples were analyzed by Hart Crowser's FAST laboratory using screening techniques and laboratory methods and quality assurance procedures that were not well documented in the report. These analytical results are presented in the tables, but should be considered estimates. Soil samples were tested for some analytes that are not commonly analyzed for environmental characterization purposes, such as aluminum, iron, and sulfur. Analytes that are not typical environmental parameters, and were not tested for during other environmental Site investigations, are not reported in the data tables. However, any constituent for which applicable cleanup criteria are available were evaluated during the identification of indicator hazardous substances (Section 3.3.6).

The groundwater samples were tested for total metals, petroleum hydrocarbons, and volatile organic carbons (VOCs), but the only complete results for VOCs were contained in the copy of the Hart Crowser report available during preparation of this report. Results for VOCs were all below the laboratory detection limit (Table 5). The report text indicates that the highest metals concentrations were in the water sample taken from HC-MW03, where total chromium and lead were at concentrations of 200 µg/L and 100 µg/L, respectively. However, these were screening level analyses and because the samples were analyzed for total metals, the concentrations were likely affected by particulates entrained in the samples. Hart Crowser recommended that additional sampling and analyses for groundwater be conducted, which was performed by Kleinfelder for the Port in 1992, as described in Section 3.1.1.4, below.

3.1.1.4 Groundwater Sampling and Analysis, Former Hulbert Mill Company (Kleinfelder 1991, 1992

In 1991 Kleinfelder was hired by the Port to perform a Phase 1 ESA, to conduct report reviews of the Phase 1 ESAs being completed by others, and to conduct follow-up sampling of groundwater wells installed by Hart Crowser. The groundwater sampling was conducted in 1992 for total and dissolved metals, total fuel hydrocarbons, and purgable chlorinated solvents. No fuel hydrocarbons or chlorinated solvents were detected, but all samples had elevated concentrations of total arsenic, copper, and lead, which may result from particulates present in the unfiltered samples. Samples from all monitoring wells but HC-MW04 also contained elevated dissolved copper concentrations ranging from 12 to 38 µg/L. Dissolved copper was not detected in the sample from HC-MW04; however, the laboratory reported an elevated reporting limit of 20 µg/L. The analytical results for these samples are presented in Tables 3, 4, and 5 and discussed further in Section 3.4.

3.1.1.5 *Phase 2 ESA, Hulbert Mill Property* (ECI 1992) and *Additional Site Observations and Testing, Hulbert Mill Property* (AGI 1992)

A Phase II ESA was conducted in 1991/1992 to address concerns identified during the Kleinfelder Phase I ESA (discussed in Section 2.3). The initial activities associated with the Phase II ESA were conducted by ECI (1992) and the investigation was completed by AGI (1992). The purpose of the Phase II ESA was to evaluate recognized environmental conditions identified in the 1991 Phase I ESA (Kleinfelder 1991) and included investigation of groundwater, surface water, soil, and marine sediment quality.

The portion of the Phase II ESA conducted by ECI included:

- The collection of five surface soil samples for laboratory analyses
- Excavating 19 test pits at 4 locations identified in the 1991 Kleinfelder Phase I ESA
- The installation of three groundwater monitoring wells (ECI-MW-1, ECI-MW-2, ECI-MW-3)
- The collection and analysis of samples of the stormwater discharge and sediment at the stormwater outfall in the northwest corner of Area I

- The collection and analysis of a sample a sump located in the Ameron manufacturing building.

In 1992, AGI conducted additional sampling, testing, and clarifications of issues identified by ECI in the 1991 Phase II Site Assessment performed at the Hulbert Mill property. Their assessments addressed:

- Site operations at Ameron to evaluate the potential for dichloroethane to occur in groundwater pumped from their manufacturing building basin
- Additional groundwater sampling in ECI well MW-2 (Figure 5) west of the Ameron pole finishing and dry storage building
- Sampling in Area I to address sandblasting material deposits and the soil landfarming stockpile
- Stormwater quality at the 12th Street outfall
- The content and condition of drums located between Ameron's pole polishing and pole finishing buildings.

In AGI's opinion, the drums stored on the Ameron leasehold did not represent an environmental risk. AGI also noted that all structures and features associated with Commercial Steel Fabricators' work had been removed from the site, and that much of the area had been freshly graded and a new base rock layer had been placed. They also noted that a landfarming operation for petroleum-contaminated soil lined with plastic sheeting and bermed with straw bales was located in the northeast corner of the Site. The 1992 photo in Appendix A illustrates the Site at this time, as compared to 1985 (also in Appendix A), when the Site was being used for prefab building manufacturing.

The ECI/AGI Phase II ESA activities and analytical results are presented in the following subsections by media (i.e., groundwater, stormwater, sediment, and soil).

Groundwater Investigation

The ECI 1991 groundwater investigation included the installation and sampling of three monitoring wells (ECI-MW-1 through MW-3). The AGI groundwater investigation included re-sampling ECI-MW-2

Monitoring Well ECI-MW-1 was installed downgradient to the three former USTs removed in 1991 in Area M (discussed in Section 2.3.5) and a groundwater sample was tested for the full suite of TPH analyses and BTEX. ECI-MW-2 was installed just west of the Ameron pole finishing building and a groundwater sample was tested for VOCs. ECI-MW-3 was installed downgradient to a filled-in indoor sump, that was formerly used to collect substances related to the paint stripping being performed in the area, and a groundwater sample was tested for VOCs. Later, AGI collected and tested an additional groundwater sample from ECI-MW-2 (AGI-MW-2; shown on Figure 6) for total and dissolved metals.

Results exhibited a concentration of dissolved arsenic slightly above the cleanup screening level (7.5 µg/L). Although elevated concentrations of other metals (i.e., arsenic, copper, lead, mercury, nickel, and zinc) were detected in the "total metals" analyses, the elevated concentrations are likely the result of particulates entrained in the water samples, as the dissolved metals data from the same well did not detect these other metals.

The groundwater quality data are presented in Tables 3, 4, and 5 for metals, petroleum hydrocarbons, and VOCs, respectively. Groundwater quality results are discussed in Section 3.4.3.

Stormwater and Sediment Investigations

A stormwater discharge sample (ECI-Area-R) was collected by ECI from the outfall in the northeast corner of the 12th Street Channel, as shown on Figure 7. The sample was collected to evaluate stormwater quality based on observations of darkened sediment at the outfall during the 1991 Phase I ESA. The sample was analyzed for VOCs, semivolatile organic compounds (SVOCs); pesticides; PCBs; and priority pollutant metals. Trace levels of chloroform and acetone were detected in the stormwater sample; in a later stormwater sample collected by AGI (Sample R), chloroform was still detected, but not acetone. Although cleanup levels were not developed for either compound, AGI concluded that concentrations were low enough not to be considered an environmental threat, based on drinking water standards.

ECI collected a sediment sample below the outfall from the intertidal zone at the same time as the stormwater outfall sample was collected (also labeled ECI-Area-R), as shown on Figure 8. The sample had elevated concentrations of arsenic and zinc, as indicated in Table 7. Also, total recoverable petroleum hydrocarbons (TRPH) were measured at 2,100 mg/kg (dry weight), which may be a concern in sediment. These sediment quality results are discussed in Section 3.4 in the context of the Sediment Management Standards (SMS; WAC 173-204).

A water sample was collected from the sump located in the Ameron manufacturing building (ECI-D-1), as shown on Figure 5. The sample was taken directly from the discharge pipe that leads from the sump into the northern settling basin, and was tested for VOCs and total metals. Another water sample was collected 2 days later (ECI-Area-D) and analyzed for dissolved metals. The total copper concentration in Sample ECI-D-1 was elevated (14 µg/L), although this may be due to particulates entrained on the water sample. Dissolved copper was not detected (Area D), although the reporting limit (10 µg/L) was relatively high. No VOCs were detected at high concentrations, although a trace amount (1 µg/L) of 1,2-dichloroethane (1,2-DCA) was detected in Sample ECI-D-1. A follow up sample collected by AGI (AGI-D-1) did not contain 1,2-DCA or other VOCs above the laboratory reporting limits. The analytical results for these water samples are provided in Tables 4 and 5 for metals and VOC analyses, respectively.

Soil Investigations

The 1991 ECI Phase II ESA conducted for the Hulbert Mill Company included the collection of 5 surface soil samples and the excavation of 19 test pits. The investigation resulted in analytical data for Investigation Areas G, I, J, and M. Eight test pits (ECI-TP-1 through ECI-TP-8) were excavated in the northwest corner of Area G to determine the extent and nature of the fill material. A 3-ft high wall of 12-inch by 12-inch treated timbers was found at ECI-TP-6. Blasting sand, ranging from 6 inches to 2-ft thick, was found at the surface at three of the test pits (ECI-TP-2, ECI-TP-7, and ECI-TP-8). Samples were collected from test pits TP-2 (ECI-TP-2), TP-3 (ECI-TP-3), and TP-5 (ECI-TP-5), as well as a surface sample of the blasting sand (ECI-Area F). The test pit and sandblast grit samples were tested for metals; the concentrations for all metals were below the cleanup screening levels, except for the copper concentration in ECI-Area-F, which slightly exceeded the copper cleanup screening level protective of groundwater. The analytical results are presented in Table 1 and the test pit locations are shown on Figure 5.

A soil sample (ECI-B-1) was collected to the east of the Ameron manufacturing building where a drum storage area with soil staining was observed during the Kleinfelder Phase I ESA. The sample was tested for TPH by EPA Method 418.1 and the concentration 7,160 mg/kg; Table 2) was significantly above applicable regulatory criteria.

Petroleum oil staining was observed off the northwest corner of the polishing building and was sampled by ECI (ECI-H-I) for TPH by EPA Method 418.1. The sample exhibited an elevated TPH concentration (1,400 mg/kg; Table 2) that exceeded the cleanup level applicable at that time (200 mg.kg), but is below the current TPH cleanup level (2,000 mg/kg).

A surface soil sample was taken under a discharge pipe for the secondary containment of a discharge tank located between the Collins Building and the adjacent warehouse to the east in Area M. The sample (ECI-M-1; Figure 6; Table 2) was analyzed for petroleum hydrocarbons; concentrations were well below the cleanup screening levels.

An area north of the former smoke shack, in the western portion of Area M, was investigated to evaluate possible contamination from waste paint and stained soil previously observed during the Kleinfelder Phase I ESA. Two surface samples (ECI-N-1 and ECI-N-2) were collected and analyzed for VOCs, BTEX and TPH. VOCs (Table 8) and BTEX (Table 2) were not detected in either sample and, although the petroleum hydrocarbon concentration in ECI-N-1 (310 mg/kg; Table 2) slightly exceeded the cleanup levels used at the time of the report (200 mg/kg), the concentration is well below the current cleanup screening levels for petroleum hydrocarbons, as presented in Section 3.3.

The quality of soil used to fill three former concrete settling basins, located on the southwest side of the main Ameron building, was investigated with two test pits (J-1 and J-2). The fill was found to be comprised of mostly silty sand, although some blasting sand, concrete dust, and possible steel shot indicated by iron staining were observed in test pit J-2. A sample (ECI-J-2) was taken from J-2, which included the blasting sand and tested for total metals and TCLP metals. Analytical results, shown in Table 1 and Table 9, indicated concentrations above cleanup screening levels for arsenic (40 mg/kg) and copper (514 mg/kg).

Several test pits were excavated in Area I (then referred to as Area Q) to evaluate the soil staining, paint chips, and blasting sand observed during the Kleinfelder Phase I ESA. Three test pits (ECI-Q-5, ECI-Q-7, ECI-Q-8) exhibited a fragmented, soft, brick-like material of various colors within the top foot of soil. Two of the test pits (ECI-Q-6 and ECI-Q-7) revealed a 6-inch layer of black blasting sand within the top foot; a sample of the blasting sand was collected from test pit ECI-Q-6. Samples from 1 to 2 ft BGS were taken from test pits ECI-Q-1 and ECI-Q-5, and a sample from 5 ft BGS was taken from ECI-Q-8. All samples were tested for metals, TPH (EPA Methods 3550/8015 modified), and VOCs. VOCs were not detected in any samples, as presented in Table 8. Although ECI-Q-1 slightly exceeded the cleanup level for petroleum hydrocarbons applicable at the time of the report, none of the samples exceeded current petroleum hydrocarbon cleanup levels, as indicated in Table 2. The sample of blasting sand (ECI-Q-6) exhibited highly elevated concentrations of copper (1,410 mg/kg) and lead (1,350 mg/kg), as presented in Table 1. In addition, a concentration of antimony (58 mg/kg) from sample ECI-Q-6 was moderately elevated.

A test pit (ECI-K-1) was excavated on the west side of the Ameron spray booth to evaluate the sandblast grit that was observed in this area during the Kleinfelder Phase I ESA. A mixture of fill material and blasting sand was observed to a depth of 4 ft BGS, and a soil sample (Area K was collected from about 4 ft depth and tested for metals and TCLP. Although the TCLP results showed the metals do not readily leach from the soil, the sample exhibited elevated concentrations of antimony (106 mg/kg), arsenic (144 mg/kg), copper (398 mg/kg), and lead (304 mg/kg), as presented in Table 1.

A 96-hour bioassay test was conducted using the black blasting sand from Area I and all of the fish survived the test.

3.1.1.6 *Test Pit Exploration, MSRC Property* (Kleinfelder 1993c)

In May 1993, Kleinfelder performed an investigation of the MSRC area to provide information regarding the nature and extent of possible sand-blast waste materials in an area potentially affected by the adjacent Ameron sandblast waste disposal practices. Four test pits and two surface samples were collected in the north part of Area J. Three of the test pits (TP03, TP01, and TP02) were excavated along the east side of the MSRC fenceline, in an area bordering the Ameron leasehold. These test pits encountered a heterogeneous fill consisting of brick, wood fragments, and concrete rubble, but did not identify any sandblast waste materials.

A fourth test pit (TP05) was located along the western border of the MSRC property. That test pit encountered a 2- to 3-inch layer of green sand, described as sandblast waste, which they indicated to be of an unknown origin (Kleinfelder 1993c). Soil samples collected from TP03 and TP05 had slightly elevated copper concentrations of 55 mg/kg and 65 mg/kg, respectively.

In addition, two surface samples were collected (SS01 and SS02) along the Ameron fenceline. One of the two samples indicated highly elevated concentrations of antimony (580 mg/kg), arsenic (1,600 mg/kg), copper (1,800 mg/kg), and lead (1,400 mg/kg), as indicated in Table 1. The other surface soil sample did not exceed any of the cleanup criteria.

3.1.1.7 *Independent Cleanup Action Report, Area West of MSRC* (Kleinfelder 1993b)

In 1993, a buried concrete structure was discovered during the construction of a drainage swale associated with the partially built MSRC building. The buried concrete structure, located outside the west wall of the southern half of the MSRC building, was filled with wood waste, soil, and what appeared to have been drums containing oil. Free product was found inside the structure. Representative samples of the contaminated soil were collected for laboratory analysis and later used for waste profiling (KFI-WP01 through KFI-WP04 and KFI-WP-COMP). The composite sample, KF-WP-COMP, was tested for diesel-range petroleum hydrocarbons, PCBs, TCLP Metals, SVOCs, and VOCs. PCBs, TCLP metals, SVOCs, and VOCs were either not detected or were present at concentrations well below the cleanup levels. All of the waste profile samples exhibited elevated concentrations of diesel-range petroleum hydrocarbons, and two of the samples collected from the excavation (KFI-SS11 and KFI-SS17) also had elevated concentrations of oil-range petroleum hydrocarbons, as discussed further in Section 3.4.1.3. Diesel-range petroleum hydrocarbon exceedance of the cleanup screening level ranged from 3,700 to 63,000 mg/kg, and oil-range organics exceedances ranged from 10,060 to 52,000 mg/kg. Free product and the highest petroleum-contaminated soil concentrations were found inside the concrete structure, while outside the structure concentrations were several orders-of-magnitude lower. The interim action conducted to address the petroleum hydrocarbon contamination in this area is discussed further in Sections 4.2 and 5.2.

3.1.1.8 Marine Sediment Investigations

Three sediment quality investigations were conducted in the 12th Street Channel in advance of it being redeveloped into the 12th Street Yacht Basin to evaluate the sediment quality for open water disposal under the Puget Sound Dredge Disposal Analysis (PSDDA) program. These investigations were:

- *Subsurface Exploration and Engineering Report, William Hulbert Marina Site. Everett, Washington.* RZA for William Hulbert (February 1988)
- *Sampling and Analysis Report for Characterization, Proposed 12th Street Marina, Everett, Washington*. Prepared by Rittenhouse-Zeman & Associates (RZA) for the Hulbert Mill Company (March 1991)
- *Puget Sound Dredged Disposal Analysis, Full Characterization for the 12th Street Marina.* Prepared by Pentec Environmental for the Port of Everett (February 1, 2001).

Additionally, a sediment quality sample was collected in the 12th Street Yacht Basin to evaluate sediment quality as part of the evaluation of Port Gardner Bay under the Puget Sound Initiative (PSI; SAIC 2009).

With the exception of the recent sample collected under the PSI, the sediment quality data were not collected using the methods and procedures specified under the SMS. However, the data are still of value in assessing general sediment quality and are summarized below, discussed in the context of the PSDDA evaluation. Because PSDDA chemical criteria are not directly applicable to SMS/MTCA evaluations, the data associated with these investigations are presented and discussed in Section 3.4 relative to SMS cleanup standards.

In preparation for the planning and construction of the 12th Street Yacht Basin, several characterization studies of the tidelands were performed. In 1988, Layton and Sell, Inc., P.S. (LSI) collected 15 surface core samples to evaluate the top 2 ft of sediment over the area that was being considered for development of a new marina by the Hulbert Mill Company (LSI 1988). From the most visually affected cores, two composite samples (LS-Comp-A and LS-Comp-B) were prepared and analyzed according to the PSDDA testing procedures at that the time. The shallow core locations (LS-1 through LS-15) and the composite samples are shown on Figure 9. The nickel concentrations in sample LS-COMP-A and sample LS-COMP-B slightly exceeded the PSDDA screening level for nickel. The lead concentration in sample LS-COMP-B also slightly exceeded the PSDDA screening level for lead. No other analytes exceeded the PSDDA screening levels.

The PSDDA characterization was continued by RZA in 1990. Eight composite samples were collected from 13 borings: four composites derivedfrom the top 4 ft of the sediment cores, and four derived from the interval from 4 ft to the bottom of the planned dredge prisms. Eight discrete samples were selected for sampling to account for volatile loss in the composite samples. The discrete samples yielded no detections for VOCs. In the composite samples, some PSDDA screening level exceedances occurred for cadmium, mercury, silver, and phthalates, and, because of these exceedances, bioassay testing was also performed. Several samples had high mortality rates for the amphipod bioassay test. The 13 boring locations (RZA-B-1 through RZA-B-13) and the locations from which the composite samples were derived (RZA-C-1 through RZA-C-8) are shown on Figures 10 and 11.

In 2001, Pentec Environmental completed a full characterization of the dredge footprint for the planned 12th Street Yacht Basin (Pentec 2001). For the study, Pentec subdivided the sediment in the 12th Street Channel into eight Dredged Material Management Units (DMMUs). Fourteen sediment cores were taken over the area, and the core subsections were composited into eight samples, one to represent each DMMU. Three of the composite samples (CM-1, CM-2, and CM-3) derived from the upper portions of the cores represent the surface DMMUs, while the other five (CM-4 through CM-8) derived from the deeper portions of the cores represent the subsurface DMMUs. According to the Pentec report for the 12th Street Marina, there were no exceedances of the PSDDA screening levels, bioaccumulation triggers, or maximum levels for sediments collected from the proposed Port 12th Street marina dredging project. The sediment core locations and the composite sample origins are illustrated on Figure 12. Analytical results for the composite samples are presented in Table 10.

One surface sediment sample (A2-13) was collected from near the center of the 12th Street Yacht Basin during the Port Gardner Bay bay-wide study conducted under the PSI (SAIC 2009). The sample was tested for a number of chemical parameters, consisting of SMS parameters (SVOCs, metals, and PCBs); tributyl tin (TBT); and conventional parameters. The sample was also submitted for bioassay analysis. None of chemical parameters exceeded applicable criteria. The sample passed three of the four bioassay analyses, but failed the larval development bioassay. However, a number of problems occurred during the performance of the failed bioassay test, and the data do not appear to be indicative of a sediment quality issue.

3.1.2 INVESTIGATIONS BY LANDAU ASSOCIATES

Landau Associates conducted a number of environmental investigations in support of redevelopment of the North Marina Area, which includes the Site. Because of its large size (65 acres), the North Marina Area was subdivided into investigation areas A through M, as described in Section 1.1 and shown on Figure 4. The Site includes Investigation Areas G, I, and M, and most of Area J.

The site investigation work began with a Phase 1 ESA for the North Marina Redevelopment Project (Landau Associates 2001). That work identified high, moderate, and low risk issues associated with the parcels comprising the entire North Marina Redevelopment Project. This Site represents only a portion (approximately one-third) of the entire redevelopment project area addressed for the North Marina project.

The only high risk issues, those which indicated a confirmed environmental impact, identified for the Site included the potential for impact to groundwater in the vicinity of removed USTs including the Ameron and MSRC USTs; the 1989 PSM report presenting soil and groundwater quality data related to the Ameron UST removal was not available at the time of Landau Associates' investigations). Moderate risk issues identified included:

- Incomplete records for the final disposition of soil excavated during UST removal being treated on the Port Property (Area I)
- Assessment of groundwater in the area adjacent the MSRC where the 1993 independent cleanup action, the removal of the buried concrete structure, had been completed
- Small areas of surface staining.

All other identified risks were considered low.

Following the Phase I ESA, Landau Associates conducted a number of investigations to characterize environmental conditions within the North Marina Area, including the Site, to evaluate the nature and extent of contamination, develop the interim action design, and to document the nature of contaminated media encountered during the interim action. The following sections summarize the sampling nomenclature and procedures, and summarize the results for these investigation and characterization activities, presented in chronological order. The analytical results are presented compared to the interim action cleanup levels and the Site screening levels in Section 3.4. The referenced documents should be reviewed for a more comprehensive presentation of the investigation results.

3.1.2.1 Sampling Nomenclature and Procedures

In general, sampling locations conducted as part of the Landau Associates investigations were assigned prefixes that matched the investigation area in which they were located. For the Phase II ESA, sample locations were labeled sequentially within each area; for example, location G-3 was the third exploration completed in Investigation Area G. Exploration locations completed as part of the subsequent DGI were labeled with additional modifiers to indicate whether the exploration was conducted for general characterization purposes (GC) or as part of a focus area investigation (FA) associated with a release identified during the Phase II ESA. For instance, the 3rd general characterization boring completed in Investigation Area I was labeled I-GC-3. Soil samples collected from DGI borings were labeled with the boring designation followed by the depth interval in parentheses, for instance, I-FA-1 (0.5-1.5) for a soil sample collected from 0.5 to 1.5 ft BGS from boring I-FA-1. Sample designations were further refined during additional characterization conducted during interim action design, as described in applicable sections below.

Monitoring wells were labeled sequentially starting with P-1. Monitoring Wells P-10, P-11 and P-12 are the only monitoring wells installed within the Site boundary as part of Landau Associates investigation activities.

All investigations were conducted under sampling and analysis plans (SAPs). All SAPs prepared subsequent to completion of the Phase II ESA were reviewed by Ecology under its VCP, beginning with the DGI Work Plan (Landau Associates 2005c). Site soil and groundwater sampling locations are shown on Figures 5 and 6. Note that some sampling locations that lie outside of the Site boundary are included because they help bound Site environmental conditions.

Selected laboratory analytical testing was conducted on Site soil and groundwater samples. Samples were tested using one or more of the following laboratory analytical methods:

- **Soil:** EPA Method Series 6000/7000 and Method 200.8 for total metals; EPA Method 6010B for TCLP metals; EPA Method 8270 for 9 carcinogenic polycyclic aromatic hydrocarbons (cPAHs) and SVOCs; EPA Method 8082 for PCBs; Method Krone 1988 SIM for TBT; petroleum hydrocarbons by NWHCID, NWTPH-Dx, and NWTPH-Gx, and; EPA Method 8260 for VOCs.
- **Groundwater:** EPA Method Series 6000/7000 and Method 200.8 for total and dissolved metals; EPA Method 8270-SIM for cPAHs; EPA Method 8270 for SVOCs; method NWHCID for hydrocarbon identification; NWTPH-Dx for diesel- and oil-range petroleum hydrocarbons; NWTPH-Gx for gasoline-range petroleum hydrocarbons; EPA Method 8260/8021 for BTEX; and EPA Method 8260 for VOCs.

Landau Associates determined that analytical results from these investigations were acceptable based on data validation completed for each data set, which consisted of reviewing data for holding times, method blank results, surrogate spike recovery results, matrix spike/matrix spike duplicate (MS/MSD) recoveries and relative percent differences (RPDs), laboratory duplicate sample comparisons, and reporting limits.

A summary of these investigations relevant to the Site are presented in the following sections. A detailed description of sampling methods employed during these investigations is presented in Appendix B and should be reviewed to obtain a more complete understanding of sampling methods.

3.1.2.2 Phase II ESA

The Phase II ESA (Landau Associates 2004) was conducted in 2003 and early 2004 to provide initial characterization of the environmental conditions across the North Marina Area. The intent of the investigation was to evaluate locations where hazardous substances may have been released based on the understanding of present and historical potential sources of contamination. Sample locations and testing parameters were selected to determine whether soil or groundwater contamination had resulted from potential sources and activities identified as "high risk issues" in the Phase I ESA (Landau Associates 2001). A total of 30 soil and 45 groundwater samples were collected and tested during the Phase II ESA. Of these samples, 6 soil and 8 groundwater samples were collected within the Site boundaries.

The soil samples were collected using surface sampling methods and direct-push drilling techniques. Groundwater samples were collected from direct-push borings and newly constructed monitoring wells using low-flow groundwater sampling techniques (see Appendix B for sampling methods). Sampling locations and analyses were selected based on former Site uses and features, and field screening results. Samples were tested for the following parameters:

- **Soil samples**: TPH (NWTPH-Dx, NWTPH-Gx); metals (arsenic, cadmium, chromium, copper, lead, mercury, silver, zinc); PCBs; cPAHs; and/or BTEX.
- **Groundwater Samples**: TPH; dissolved metals (arsenic, cadmium, chromium, copper, lead, mercury, silver, zinc); BTEX; cPAHs; SVOCs and/or VOCs.

Sampling locations and analysis were selected during the Phase II ESA based on locations of high or moderate risk Site uses identified during the Phase I ESA. The areas of concern identified at the Site included:

- Area "g" - comprised on the Ameron leasehold where an UST was reportedly removed and chemical products (some of which include waste oil, diesel, concrete-release agents, flammable liquids, and spray sealant) were used and stored. This area was also the location of a historical fire that destroyed the former Hulbert wood products mill.
- Area "i" - which was the location of soil landfarming for remediation of petroleum-impacted soil removed for Site UST closures conducted in the early 1990s. This area also contained a soil stockpile near the northeast corner, and the area was generally elevated above surrounding grades, indicating that significant filling had occurred in this area..
- Area "j" - which included the MSRC building, where an independent cleanup action had been conducted to address a buried concrete structure containing petroleum wastes. This area also contained a UST previously used by the Port for fueling and waste oil storage that was removed from the approximate location of the buried concrete structure prior to the independent cleanup action conducted at this location.

In general, less investigation activity was focused on Area G and the northern portion of Area M because these areas were under long-term lease and not subject to redevelopment as soon as other portions of the North Marina Area.

The six soil and eight groundwater samples taken at the Site included one sample each from locations G-3 and G-2. The other four soil samples were taken at locations I-3, and composite samples I-X, I-Y, and I-Z. The other six groundwater samples were taken at locations G-1, P-10, P11, P12, J-1, and J-2; note that the monitoring well P-10 was installed in boring G-2. G-3 was sampled to investigate previous mill activities and test for residual cPAHs from the mill fire. Soil sample PZ-10 and water sample G-2 were taken while installing well P10, which was placed to investigate possible releases from a previously removed UST, and from chemical storage and use in the area. The UST location was unknown at the time and the exploration was placed about 250 ft south of the actual UST location. A water sample from boring G-1 was taken for the same purpose.

Sample I-X was a composite sample taken to characterize a discolored (multicolored) material encountered in Area I, and sample I-Y was taken underneath the discolored soil. Nineteen borings were subsequently completed to delineate the extent of the multi-colored material (SS-1 through SS-19), although no samples were collected from these borings for chemical analyses. Samples I-3 and I-Z were taken as composites of the area reportedly used historically for soil stockpiling. The boring locations for each composite sample are shown on Figure 5.

Monitoring Wells P11 and P12 were installed in the west-central portion of Area I to investigate the area used historically for soil stockpiling, petroleum hydrocarbon-contaminated soil landfarming, and filling downgradient of the former saw mill, as shown on Figure 5. Groundwater sampling locations J-1 and J-2 were located to test groundwater downgradient (west) of the former concrete vault encountered during construction of the MSRC building in 1993 and the reported location of a 1980s UST removal, respectively; it was subsequently determined that the former concrete vault was located about 80 ft south of J-1, in the vicinity of J-2. Locations are shown on Figure 6.

For a list of the analyses for each Phase II ESA sample, see Table 6 (soil) and Table 11 (groundwater). Data are presented in Tables 1 through 5, Tables 8 and 9, and Tables 12 through 19 along with analytical data for other Site investigations.

Based on the results of the Phase II ESA and historical Site uses, concentrations of several metals (arsenic, chromium, lead, and zinc); cPAHs; and TPH in soil and/or groundwater were identified as constituents of concern (COCs) for the North Marina Area, including the Site. As such, analytical testing of soil and groundwater during subsequent North Marina Area investigations focused primarily on these analytical parameters. Other data groups such as SVOCs and VOCs were also tested during subsequent investigations, but to a lesser degree. The consolidated results of this and other investigations are presented in Section 3.4.

3.1.2.3 Data Gaps Investigation (DGI)

The DGI was conducted in late 2004 and early 2005 to fill the data gaps in Site characterization data that remained following the Phase II ESA (Landau Associates 2005a). The DGI scope was subdivided into two broad elements: 1) general characterization to provide sufficient data to delineate the extent of contamination throughout Site areas that were not evaluated during the Phase II ESA and did not have identified environmental concerns, and 2) focused investigation to better delineate contamination in affected areas identified during the Phase II ESA. As previously indicated, boring locations were labeled with the investigation area designation first, followed by "GC" or "FA" to designate the boring as a general characterization or focus area location, followed by a unique sequential number (e.g., J-FA-2).

A total of 21 direct-push borings were completed at the Site during the DGI conducted in late 2004 through early 2005, and 25 soil samples and 8 groundwater samples were collected for analysis. The soil samples were collected using direct-push drilling techniques. Groundwater samples were collected from direct-push borings and monitoring wells using low-flow groundwater sampling techniques (see Appendix B for a description of sampling methods).

A total of 13 general characterization soil sample locations were tested within or just outside the Site boundary. The uppermost sample interval from each general characterization location was tested for constituents detected above the interim action cleanup levels during the Phase II ESA, including selected metals (arsenic, cadmium, copper, lead, mercury, and zinc); cPAHs; and petroleum hydrocarbons (i.e., NWTPH-Dx and NWTPH-Gx). Petroleum hydrocarbon testing was conducted by initially analyzing the sample for hydrocarbon identification (HCID) with follow-up testing for specific hydrocarbon ranges detected by the HCID analysis. The vertical extent of soil contamination was evaluated at each location by testing the deeper samples if the uppermost sample exceeded the interim action cleanup screening level established for each constituent.

Two Site locations were subjected to a focused investigation during the DGI; former USTs located in Areas J and M (Figure 3). Two borings (J-FA-1 and J-FA-2) were advanced in the immediate vicinity of the reported location of the former Port used oil UST near the southwest corner of the MSRC building to verify previous investigation results. Two borings (M-FA-1 and M-FA-2) were also advanced in the southwest corner of Area M to evaluate environmental conditions in the vicinity of three former gasoline and diesel USTs removed from this area (see Section 4.1). The borings in both areas were advanced to a total depth of 12 ft BGS and the capillary fringe soil and groundwater samples were tested for TPH-HCID. Field screening and observations during boring advancement did not indicate the presence of petroleum hydrocarbon contamination in any boring samples. Diesel- and oil-range petroleum hydrocarbons were detected in J-FA-1 in the vicinity of the former Port used oil UST at concentrations of 46 mg/kg and 540 mg/kg, respectively. No petroleum detections were indicated in samples from the 1991 UST removal location (Table 2).

Area I was not further characterized during the DGI because it was anticipated to be used as an area to contain contaminated soil from other areas as part of the Craftsman District development (Landau Associates 2005a). Investigation Area G and the northern portion of Area M were not further evaluated due to their long-term lease status, although three borings (G-GC-1, G-GC-2 and G-GC-3) were completed in the southern portion of Area G in anticipation of an Ameron lease boundary modification.

3.1.2.4 Supplemental Data Gaps Investigation

The supplemental DGI was conducted in late 2005 to better delineate the extent of contamination identified during the previous Phase II ESA and DGI. Three specific areas within the Site boundary were investigated as part of the supplemental DGI, as discussed below.

Area I

Investigation Area I had not been fully characterized during the DGI because soil contamination in this area was originally planned for consolidation and containment of contaminated soil as part of the Craftsman District redevelopment. Previous investigations in Area I had been focused on the delineation of 1) a soil stockpile located in the northeast corner of the property containing elevated arsenic and lead, and 2) a discrete layer of discolored, odorous material encountered near the center of the property containing elevated arsenic. When it was determined that planned finished grades within the Craftsman District were too low to allow containment of contaminated soil in this area, a supplemental characterization was conducted to provide a similar level of environmental characterization as that accomplished for other portions of the North Marina Area.

A total of 30 soil explorations (I-GC-1 through I-GC-26 and I-GC-1a through I-GC-1c, were completed in Investigation Area I as part of additional characterization for the Craftsman District redevelopment area (Figures 5 and 6). All soil samples were tested for metals, most samples were tested for cPAHs and petroleum hydrocarbons, and a number of samples were tested for SVOCs. Similar to previous Landau Associates investigations, analytical testing was initiated by testing the surface soil sample (0 to 0.5 ft) and samples were tested progressively deeper if an interim action cleanup level was exceeded. The results of these are reported in Section 3.4 in conjunction with other investigations results.

The additional delineation confirmed the presence of elevated cPAHs, arsenic, and copper concentrations in shallow soil in the eastern and western portions of Area I, and elevated lead along the eastern side. Shallow soil in the central portion of Area I generally did not exhibit elevated concentrations of metals or cPAHs. The maximum concentration of petroleum hydrocarbons detected in any of the Area I samples tested was 1,200 mg/kg and 960 mg/kg for diesel- and oil-range petroleum hydrocarbons, respectively, in the sample collected from I-GC-24 in the northeast corner of Area I.

The elevated arsenic, copper, and cPAHs present in the eastern and western portions of Area I were primarily encountered in the upper 0.5 ft, which generally consisted of a road base trafficking layer. Contamination extended below the trafficking layer, to a depth of up to 2 ft, at about 30 percent of these exceedance locations. The trafficking layer did not exhibit elevated metals or cPAHs concentrations in the 13 surface soil samples collected from the central portion of Area I.

Borings advanced within the central and northeastern portion of Area I encountered the discolored, odiferous material identified during the Phase II ESA. The material was assumed to be contaminated based on the results of the Phase II ESA, so testing during the supplemental DGI was primarily focused on testing the material above and below the discolored material. However, a composite sample of the discolored material was collected from 1.2 ft to 6.0 ft at I-GC-24 and exhibited elevated concentrations of arsenic and lead. The discolored material was described as green, pink, red, orange, gray, and white silt with clay with a strong odor on the I-GC-24 boring log. The boring logs for explorations in the central portion of the site (I-GC-5, I-GC-6, I-GC-8, and I-GC-9) described the material as a sandy silt with gravel, but exhibiting similar colors to those present at I-GC-24.

Area J

During the DGI, motor-oil range petroleum hydrocarbons were detected in J-GC-1 and arsenic was detected in J-GC-4 at elevated concentrations. As with Area I, the area had not been fully characterized because of an earlier plan to consolidate and contain contaminated soil in this area. With the change to commercial development, additional investigation was deemed needed to provide a similar level of characterization as that accomplished for other portions of the site.

Within the northeast portion of Investigation Area J, 10 explorations were conducted: J-GC-5 through J-GC-10 and J-GC -6b through J-GC-6e. The GC-5 through GC-10 series was conducted to evaluate deeper soil conditions and the presence of debris and/or contamination. The J-GC-6 series were installed to better delineate an area of construction debris encountered in J-GC-6. The explorations were used to visually identify the limits of the debris and samples were not collected for chemical analyses. The construction debris was encountered from approximately 2 to 17 ft BGS. The approximately lateral extent of the debris is shown on Figure 5.

Supplemental explorations J-GC-4b and J-GC-4c were conducted to better delineate the extent of elevated arsenic concentrations in the vicinity of location J-GC-4 encountered in the uppermost sample (30 mg/kg) during the DGI. Arsenic was not detected at elevated concentrations in samples collected from either of the supplemental explorations.

The results for these explorations are presented in Section 3.4 in conjunction with other investigations results.

Area M-2

During the DGI, the soil sample collected from the 0 to 0.5 ft depth interval at location M-2 contained a total cPAHs concentration above the interim action cleanup level of 140 μg/kg. Two additional explorations (M-2B and M-2C) were completed to better delineate the extent of elevated cPAHs concentrations in this area. No cPAHs were detected above the laboratory reporting limits in either AC sample. The analytical results for these explorations are reported in Section 3.4 in conjunction with other investigations results.

3.1.2.5 Early Action Design Characterization

Additional characterization was conducted for the uplands at the head of the 12th Street Channel in August 2005 to support the planned development of the 12th Street Yacht Basin (Landau Associates 2005d). Yacht Basin construction was to include an esplanade (a paved walkway) along the shoreline and new travel lift piers at the southwest corner of the channel to support the planned Craftsman District development. Construction was limited to within 50 ft of the shoreline and soil samples were collected from nine locations (I-GC-15 through I-GC-23) to evaluate soil quality within the planned work area and to provide the data needed to design an interim action for any contamination encountered during the investigation. Sampling locations are shown on Figure 5.

Similar to previous investigations, the surface soil sample from each location was initially tested and progressively deeper samples were tested at locations that exhibited concentrations of COCs above the interim action cleanup levels. Initial samples at each location were tested for metals, cPAHs, petroleum hydrocarbons, and SVOCs. Arsenic concentrations exceeded the interim action cleanup levels in shallow soil at six locations and cPAHs exceeded the interim action cleanup level at two locations, all fronting on the head of the channel to the north of the existing pier.

The analytical results for these explorations are reported in Section 3.4 in conjunction with other investigations results.

3.1.2.6 Interim Action Design Characterization

Additional characterization was performed at multiple Site areas in Spring 2006 to provide additional delineation for design of the interim action. A total of 30 soil samples were collected within the Site from affected areas encountered during previous investigations. The additional delineation samples were tested only for the constituent(s) that exceeded their respective interim action cleanup levels (discussed in Section 3.3) within the identified cleanup area. In general, additional delineation samples were labeled to indicate the location being delineated and the direction from the subject locations where the sample was collected. For example, Sample M-2.1S was the first (and only) additional delineation sample collected to the south of Location M-2. Similarly, Sample I-GC-2.3W was the third sample collected to the west of Location I-GC-2. Samples were collected from the following areas:

- **Investigation Area M - M-2 vicinity:** In early March 2006, two borings (M-2.1W and M-2.1S) were sampled and analyzed for cPAHs in the vicinity of M-2. The results showed no detections of cPAHs above the laboratory reporting limits.

- **Investigation Area I, surface samples:** In March 2006, 30 surface soil samples from the locations listed below were collected to further delineate the extent of either arsenic or cPAHs contamination in Investigation Area I. The explorations followed the naming convention described above, and included the following exploration locations:

I-GC-11.1E	I-GC-12.2S	I-GC-1A.1W	I-GC-2.4W
I-GC-11.1N	I-GC-12.3S	I-GC-1B.1S	I-GC-24.1W
I-GC-11.1S	I-GC-12.4S	I-GC-1B.1W	I-GC-24.2W
I-GC-11.1W	I-GC-12.4S.1E	I-GC-2.1N	I-GC-24.3W
I-GC-11.2N	I-GC-12.4S.2E	I-GC-2.1S	I-GC-24.4W
I-GC-12.1E	I-GC-12.5S	I-GC-2.1SW	I-GC-24.2W.1S
I-GC-12.1S	I-GC-12.6S	I-GC-2.1W	I-GC-24.4W
I-GC-12.1W	I-GC-12.6S.1E	I-GC-2.2W	I-GC-24.3W.1S
I-GC-12.2E	I-GC-12.6S.1W	I-GC-2.3W	

  Soil samples were collected and analyzed from most locations for metals, and to a lesser extent for cPAHs and petroleum hydrocarbons. Soil samples were not collected from a number of the explorations in the vicinity of the I-GC-24 because the area was primarily delineated based on the visual observation of multi-colored silt-size material with a strong odor. The analytical results for these explorations are reported in Section 3.4 in conjunction with other investigations results.

- **Investigation Area I, northeast corner:** In late April 2006, a series of eight test pits (I-TP-1 through I-TP-8) were completed within an area previously characterized as a soil stockpile (Landau Associates 2006c) and sampled during the Phase II ESA (composite sample I-Z). Samples collected from these test pits were analyzed for metals and diesel- and oil-range petroleum hydrocarbons. Elevated concentrations of arsenic up to 122 mg/kg were present in samples collected from test pits I-TP-1, I-TP-5, I-TP-6, and I-TP-8. The detected concentrations of petroleum hydrocarbons were all well below the interim action cleanup levels.

- **Investigation Area I, central area:** In early May 2006, another series of borings (I2-1 through I2-10) were completed in the central part of Area I. The samples were analyzed for metals, cPAHs, and petroleum hydrocarbons to further delineate the nature and extent of contamination associated with the discolored material present in this area. The material was characterized in the field as exhibiting multiple colors and a concrete odor was noted in seven of these samples; one sample, I2-2, was characterized as looking like concrete waste. The analytical results showed that none of the samples had levels of cPAHs or petroleum hydrocarbons above the interim action cleanup levels, although petroleum hydrocarbon concentrations as high as 1,800 mg/kg were detected. Arsenic concentrations exceeded the interim action cleanup level in all ten test pits.

- **Investigation Area G, northwest corner:** This area was investigated when it became apparent that the construction of the planned Bayside Marine building immediately to the west would require construction activities in this portion of the Ameron leasehold. In late April 2006, eight test pits were completed within an area of elevated grades in the northwest corner of Area G. One soil sample was collected from each test pit (G1-TP-1 through G1-TP-8) and analyzed for metals and diesel- and motor oil- range petroleum hydrocarbons.

Concentrations in all but one sample (G-TP-3) exceeded the interim action cleanup level for arsenic, and the concentration in the sample from test pit G-TP-5 also exceeded the interim action cleanup level for lead. There were no exceedances of the cleanup screening levels for total petroleum hydrocarbons and extractable organic halides (EOX) were not detected in any sample.

- **Investigation Area J, northeast corner:** Five soil samples from four additional locations in the vicinity of J-GC-6 (J-GC-6f through J-GC-6i) were collected to better characterize soil quality in the area characterized as buried construction debris (Laudau Associates 2006c). The samples were tested for metals and cPAHs. One of the samples (J-GC-6h) exhibited an elevated arsenic concentration (34 mg/kg) and J-GC-6i exhibited an elevated concentration of cPAHs (0.56 mg/kg). Note that documentation of the specific locations for these supplemental explorations is not available, but the general location of these samples is provided on the applicable figures.

The results of these investigations have not previously been reported, but are reported in Section 3.4 in conjunction with other investigation results.

3.1.2.7 Additional Characterization During Interim Action Implementation

Twenty-four soil samples were collected from Areas I-1, I-2, I-3, I-4, I-5, and G-1 during interim action implementation to characterize materials being removed as part of the interim action and to evaluate whether materials observed at the excavation limits that exhibited unusual characteristics (odor, color, and/or consistency) exceeded the interim action cleanup levels (Landau Associates 2008b). Additional characterization (AC) samples collected during interim action implementation were labeled with the interim action cleanup area designation, followed by the ”AC” identifier and a sequential number. For example, sample I5-AC-5 was the 5th AC sample collected during interim action implementation from Area I-5. All AC samples were tested for heavy metals, and most samples were also tested for TBT and pH. A limited number of samples were also tested for cPAHs, petroleum hydrocarbons, VOCs, and/or SVOCs.

In most cases, these AC samples exhibited unusual odors, colors, and/or consistency. Many of the samples exhibited unusual colors (red, green, brown or white) and, in some cases, had a concrete-like odor. Although this multi-colored concrete-like material exhibited cohesive strength markedly greater than soil, it was not as strong as concrete. Three samples (G1-AC-3, G1-AC-4, and G1-AC-5) of a soft, grey clay-type material that exhibited a concrete odor were collected from an area exhibiting desiccation cracks. Some samples consisted of black sand that appeared to be sandblast grit. Because two samples were inadvertently labeled I2-AC-1 in the field, the first of these samples collected was re-labeled I2-AC-1A so that each sample had a unique identifier.

The analytical results for most AC samples, along with observations made during the interim action, were previously reported (Landau Associates 2008b). Almost all “AC” samples exhibited elevated concentrations of arsenic. Samples of the multi-colored concrete waste material and the grey clay-type material exhibited moderately to highly elevated pH. Only one sample (I1-AC-1), a composite sample of the stockpiled material in Area I-1, detected TBT (Table 15). The lack of detectable concentrations of TBT in the remainder of these samples suggests that the concrete-like waste materials and sandblasting waste may not be related to marine maintenance activities. The high pH of the apparent concrete waste material supports the conclusion that it is a concrete-related material.

The analytical results for these characterization samples are presented in Tables 1, 2, 8, 9, 14, 15, and 16 in conjunction with other Site characterization data and a description of each AC sample is provided in Table 20.

3.1.2.8 Craftsman District Sewer System Excavation

On May 23, 2007, petroleum hydrocarbon product was observed floating on the water surface in an excavation trench for the sanitary sewer line being installed as part of the Craftsman District construction. The observed floating product was located to the north of the covered work area at the north end of the MSRC building. Steel cable, concrete, and brick were observed in the excavation, similar to the materials previously observed in the vicinity of exploration J-6 to the east of the MSRC covered work area.

A product sample (J-MSRC) was obtained from the excavation and submitted for analytical testing for TPH-Dx, TPH-HCID, SVOCs, and PCBs on a 24-hour turnaround. Although the product was a liquid collected from the water surface, it is reported in solid units (mg/kg) as is common practice for free product samples and, as a result, the product data are reported with soil data in applicable tables of this report. The product sample exhibited highly elevated concentrations of diesel-range petroleum hydrocarbons (390,000 mg/kg) and oil-range petroleum hydrocarbons (410,000 mg/kg), and a moderate concentration of cPAHs (0.69 mg/kg) (Table 7). No other constituents were reported above the laboratory reporting limits.

Based on the product analytical results, the excavation was continued and excavated material was stockpiled for additional testing. Additional product was observed as the excavation continued, and appeared to emanate from beneath a buried pile cap that presumably supported a historic structure at the Site. All visual evidence of product was removed from the excavation water surface with absorbent pads. A total of eight soil samples (J-MSRC-E, J-MSRC-W, J-MSRC-S, J-MSRC-N, J-MSRC-B, J-MSRC-M052907, J-MSRC-N052907, and J-MSRC-S052907) were collected from various sidewalls and the excavation bottom during excavation over the next 5 days and were tested for TPH-HCID, with follow up testing for TPH-Dx. All samples exhibited concentrations below 1,000 mg/kg for each petroleum hydrocarbon range.

Three samples of the excavated stockpile material (J-MSRC-SP1, J-MSRC-SP2, and J-MSRC-SP3) were also analyzed for NWTPH-HCID and NWTPH-Dx. Similar to the excavation samples, the stockpile samples also exhibited TPH concentrations below 1,000 mg/kg and the material was transported to the Waste Management solid waste landfill in Arlington, Oregon for disposal.

The results of these investigations have not previously been reported, but are reported in Section 3.4 in conjunction with other investigation results.

3.1.2.9 Ameron Oil-Affected Area Investigation

Limited characterization activities were conducted at a location on the north fenceline of the Ameron leasehold after Ameron encountered apparent petroleum hydrocarbon contamination during repair of the storm drain trunk line in 2004 (Landau Associates 2005b). The trunk line conveys stormwater from the Ameron leasehold and the adjacent properties to the north to an outfall in the northeast corner of the 12^{th} Street Yacht Basin.

One soil sample was collected in November 2004 from a soil stockpile created from affected soil excavated during the storm line repair, and was analyzed for NWTPH-HCID with follow-up NWTPH-Dx, VOCs, SVOCs, and PCBs analyses. Eight borings (G-FA-1 through G-FA-8) were completed during a subsequent Geoprobe™ investigation conducted in January 2005 in the vicinity of the excavation to delineate the extent of petroleum-affected soil and groundwater associated with the conditions observed in November 2004. The borings were installed at depths ranging from 8 to 12 ft BGS, and soil samples collected from three of the borings (G-FA-4, G-FA-5, and G-FA-8) were analyzed for metals, VOCs, SVOCs and/or petroleum hydrocarbons. Groundwater samples were collected from borings G-FA-4 and G-FA-7, and were analyzed for VOCs, SVOCs, and dissolved metals.

The soil stockpile sample exhibited concentrations of cPAHs above cleanup screening levels identified as part of the Ameron Oil-Affected Area Investigation, but concentrations of petroleum hydrocarbons in the diesel and oil ranges below cleanup screening levels. Moderate concentrations of copper and zinc exceeded MTCA cleanup levels based on protection of surface water, but metals cleanup levels based on direct contact were not exceeded. The stockpiled soil was used by Ameron to backfill the excavation.

The two groundwater samples had concentrations of dissolved arsenic up to 10 ug/L, in slight exceedance of cleanup screening levels, and one of the groundwater samples (G-FA-7) exhibited a concentration above cleanup screening levels of bis(2-ethylhexyl) phthalate (BEHP), which is a common laboratory contaminant. One soil sample identified as green sand with crushed concrete and a petroleum/concrete odor (G-FA-4) exhibited elevated concentrations of arsenic (80 mg/kg), detectable concentrations of several petroleum hydrocarbon-related VOCs, and trace concentrations of tetrachloroethylene (PCE) and 1,1,1-TCA. The other soil samples analyzed from this location did not contain elevated levels of arsenic, but did contain copper at concentrations of 37 to 47 mg/kg (samples G-FA-4 and G-FA-5, respectively).

The investigation results indicated that the apparent petroleum hydrocarbon contamination was either very localized around the stormwater line break or originated on the property to the north and only extended a short distance onto the Ameron leasehold. It was also noted that the discolored material encountered at a number of locations and characterized as an apparent concrete waste material was not bounded during the investigation.

3.2 PHYSICAL AND HYDROGEOLOGIC SETTING

The ground surface of the Site prior to interim action was relatively flat, although the northern portion of Investigation Area I and the northwest portion of Area G were elevated about 2 to 3 ft higher than adjacent Areas J and G, and the property to the north of the Site. A soil/debris stockpile area exhibiting elevations 3 to 4 ft higher than adjacent grades was present in the northeast sector of Area I overlying this more broadly elevated area. Elevations throughout the majority of the Site ranged from about elevation 15 ft to 18 ft above MLLW. Elevations in the northern portion of Areas I and the northwest corner of Area G extended up to Elevation 20 ft MLLW, indicating that more filling occurred in these areas than elsewhere on the Site. The stockpile near the northeast corner of Area I extended up to about elevation 23 ft MLLW. A 2004 topographic survey of the Site is provided in Appendix C.

Site geologic conditions encountered within the depth range of environmental explorations consisted primarily of a pavement section or a granular fill trafficking layer overlying hydraulic fill. In portions of Area I, a multi-colored concrete-like material and/or layers of black sand material were encountered below the trafficking layer and above the hydraulic fill layer. An area of construction debris that extended to depths greater than the hydraulic fill upper surface was encountered in the northeast portion of Area J.

Hydraulic fill is typically a loose to medium dense, poorly graded fine to medium sand with silt or silty fine to medium sand. Based on available geologic information from geotechnical borings, native marine sediment consisting of about a 10-ft thick layer of soft to loose silt to silty sand directly underlies the hydraulic fill and is first encountered at about 10 ft to 30 ft BGS, with the depth of the contact increasing from east to west. Glacial soil, consisting of dense soil of variable composition, underlies the marine sediment and slopes downward from east to west. An east-west geologic cross section (A-A') through the Site is presented on Figure 13 and the alignment of line A-A' is shown on Figure 3.

The uppermost hydrostratigraphic unit at the Site consists of the fill unit that overlies the finer-grained marine sediment unit. The marine sediment unit appears to form the uppermost aquitard throughout the Site, although the interpretation of geologic conditions below the hydraulic fill unit is based on limited data. The depth to groundwater ranges from about 4 to 6 ft BGS in Site monitoring wells. Although sufficient groundwater data are not available to plot groundwater isopleths and quantitatively determine the direction of groundwater flow, data collected elsewhere in the North Marina Area indicates that shallow groundwater flows toward surface water. Therefore, groundwater is expected to flow generally westward, with a northerly component to groundwater flow in the southern portion of the Site.

3.3 SITE INTERIM ACTION CLEANUP LEVELS AND SCREENING LEVELS

The Agreed Order Scope of Work (SOW) requires that Site data be compared against screening levels developed based on the most protective applicable cleanup levels based on an unrestricted Site use scenario. However, it is also necessary to present the cleanup levels used to develop and implement the interim actions conducted for the Site and, in particular, the interim actions conducted between 2005 and 2007 in support of redevelopment of the North Marina Area. In general, the interim action cleanup levels and the cleanup screening levels specified by the agreed order are consistent because the interim action was based on cleanup to unrestricted site use. However, a difference related to the copper and petroleum hydrocarbon soil cleanup levels exists between these cleanup criteria, which are discussed below in Section 3.3.4.

Site interim action cleanup levels were used to develop the Site interim actions associated with redevelopment of the North Marina Area. However, Site data will be discussed primarily in terms of the Site screening levels, since these will be the criteria used during the RI for evaluation of environmental data. Where applicable and relevant to the information being presented, the data will be discussed in terms of the interim action cleanup levels. Additionally, soil data presented on figures will illustrate the locations where the interim action soil cleanup level for copper was achieved, but the copper soil cleanup screening level was exceeded. Final cleanup levels will be determined by Ecology and presented in the final Site CAP.

As allowed under WAC 173-340-703, proposed indicator hazardous substances (IHS) were also developed to separate those constituents at the Site that contribute the greatest threat to human health and the environment from those that contribute little or no threat. The IHS are described in Section 3.3.7.

3.3.1 CLEANUP SCREENING LEVELS

Cleanup screening levels for Site soil protective of human health and the environment were developed in accordance with MTCA requirements, and are presented in Table 12. Cleanup screening levels for Site groundwater protective of marine surface water were developed in accordance with MTCA requirements and are presented in Table 13. Exposure pathways and receptors based on current and likely future Site uses were identified as part of cleanup screening level development.

3.3.2 CURRENT AND LIKELY FUTURE LAND USE

The Site is currently zoned as waterfront commercial, which allows for commercial, residential, and limited industrial use. Industrial use is limited to research/testing labs (zoning does not allow for mass production or manufacturing of goods). Long-term Site use is anticipated to be commercial and retail, with the majority of the Site either currently or planned for use as the Craftsman District and Port offices. It is unlikely that residential housing will be constructed within the Site boundary, although hospitality services (hotel or restaurant use) could occur within the southern portion of the Site. As a result, cleanup screening levels were developed based on unrestricted use to maintain flexibility for a broad range of potential future Site uses.

3.3.3 EXPOSURE PATHWAYS

Potential exposure pathways were identified for human and environmental impacts based on the planned land use. The potential exposure pathways are presented by medium below.

3.3.3.1 Soil

The potential exposure pathways for Site soil are:

- Human contact (dermal, incidental ingestion, or inhalation) with constituents in Site soil
- Leaching to groundwater and subsequent exposure of humans or aquatic organisms to affected groundwater at the point of discharge to marine surface water
- Uptake of constituents in Site soil by terrestrial plants
- Contact by terrestrial wildlife (dermal, incidental ingestion, or inhalation) with constituents in the soil.

Sites that contain less than 1.5 acres of contiguous undeveloped area are excluded from having to conduct a terrestrial ecological evaluation in accordance with WAC 173-340-7491(1)(c)(i). The Site is currently almost entirely covered with buildings and pavement, and will remain similarly covered under anticipated future Site uses. Most Site landscaping will be contained in planters or otherwise isolated from the underlying existing soil surface. As a result, the Site meets the exclusion for a terrestrial ecological evaluation. Ecology's Terrestrial Ecological Exclusion form is included as Appendix D.

3.3.3.2 Groundwater

Groundwater at, or potentially affected by, the Site is not currently used for drinking water and has an extremely low probability that it will be used as a future source of drinking water due to its proximity to marine surface water and the availability of a municipal water supply. If groundwater were pumped for drinking water use, saltwater intrusion would likely occur due to the proximity of the Site to marine surface water. It should also be noted that the City of Everett requires that all residences and businesses within the city limits connect to city water, so the potential for shallow Site groundwater to be used as a potable supply is extremely low. Based on these considerations, groundwater is considered nonpotable under the provisions of WAC 173-340-720(2)(d).

As observed during investigation activities, groundwater levels in the North Marina Area fluctuate with changing tides, indicating that the groundwater and surface water are connected hydraulically (i.e., shallow groundwater discharges to the adjacent marine surface water at low tide and marine surface water intrudes into the groundwater system during high tide). Exposure pathways associated with marine sediment and surface water are discussed in Sections 3.3.3.3 and 3.3.3.4, respectively. Groundwater cleanup criteria developed based on protection of marine surface water and sediment must be adequately protective of aquatic organisms and of humans that ingest these marine organisms.

3.3.3.3 Sediment

The potential exposure pathways for sediment include:

- Exposure of benthic organisms, which may result in acute or chronic effects, to hazardous substances released from the Site (e.g., groundwater to surface water discharge, storm runoff, etc.) in the biologically active zone of sediment [the upper 10 centimeters (cm) below the mudline]. This may result in the uptake and bioaccumulation of contaminants in these organisms.
- Ingestion of contaminated benthic organisms as prey by higher trophic level organisms in the food chain (e.g., foraging fish, aquatic birds, marine mammals, etc.).
- Human ingestion of marine organisms contaminated by Site hazardous substances that have migrated to sediment.

3.3.3.4 Surface Water

The potential exposure pathways for surface water include:

- Exposure of aquatic organisms, which may result in acute or chronic effects, to hazardous substances released from the Site to surface water. This may result in the uptake and bioaccumulation of contaminants in these organisms.
- Ingestion of contaminated aquatic organisms as prey by higher trophic level organisms in the food chain (e.g., foraging fish, aquatic birds, marine mammals, etc.).

- Human ingestion of contaminated marine organisms contaminated by Site hazardous substances that have migrated to surface water.

3.3.4 Soil Cleanup Screening Levels

Soil cleanup screening levels for unrestricted land use were developed for constituents detected in soil within the Site boundary in accordance with WAC-173-340-740 using the exposure pathways identified above. Under MTCA, Method B soil cleanup levels for unrestricted site use must be as stringent as:

- Concentrations established under applicable state and federal laws
- Concentrations protective of direct human contact with soil
- Concentrations protective of groundwater.

These criteria were considered during development of soil cleanup screening levels.

Other than MTCA cleanup levels, the federal cleanup level for total PCBs under the Toxic Substances Cleanup Act (TSCA; 40 CFR Part 761.61) was the only applicable criteria established under applicable state or federal laws. Standard MTCA Method B soil cleanup levels protective of direct human contact were determined in accordance with WAC 173-340-740(3) using Ecology's on-line Cleanup Levels and Risk Calculations (CLARC) database (https://fortress.wa.gov/ecy/clarc/CLARCHome.aspx). These cleanup levels are shown in Table 12. The Method B cleanup level for benzo(a)pyrene was used for the sum of cPAHs, using toxicity equivalency factors (TEFs) to calculate a toxicity equivalency quotient (TEQ) for total cPAHs in accordance with WAC 173-340-708(8)(e).

Soil cleanup screening levels protective of groundwater were determined using the fixed parameter three-phase partitioning model in accordance with WAC 173-340-747(4). The three-phase model provides a conservative estimate of the concentration of a contaminant in soil that is protective of groundwater. Because groundwater is not a current or likely future source of drinking water, and because it discharges to marine surface water, groundwater cleanup screening levels were developed based on marine surface water cleanup screening levels protective of human health and aquatic organisms in accordance with WAC 173-340-730. However, in accordance with WAC 173-340-720(6)(b)(i) and for the purposes of screening the data, if an applicable marine surface water cleanup level was not identified to calculate a soil cleanup level protective of groundwater, the groundwater cleanup screening level used in the three-phase model was then based on the standard Method B potable water cleanup level [in accordance with WAC 173-340-720(4)(b)]. Soil cleanup screening levels protective of groundwater are shown in Table 12.

For constituents present in soil at concentrations greater than the calculated soil cleanup screening levels protective of groundwater as marine surface water, an empirical demonstration that concentrations present in soil are not causing groundwater cleanup screening levels (based on marine surface water criteria) to be exceeded may be made. The Site may meet the requirements for an empirical demonstration listed in WAC 173-340-747(9)(b) for all hazardous substances tested in soil. Evaluation of whether the Site meets the requirements for an empirical demonstration will be performed as part of the RI/FS. The empirical demonstration requires that:

- Measured groundwater concentrations in proposed point of compliance wells are less than the groundwater cleanup levels
- Any hazardous substances in soil have been present for many years, allowing sufficient time for migration to the shallow groundwater
- Future site use following redevelopment will reduce the potential for leaching from soil to groundwater due to an increase of low-permeability cover resulting from additional buildings and paved areas.

Based on these criteria, cPAHs, PCE, and all heavy metals except for arsenic and copper are considered to meet the empirical demonstration that Site soil concentrations for these constituents were adequately protective of groundwater and that soil cleanup levels for these constituents could be based on direct contact rather than protection of groundwater as discharge to surface water. It is noted that arsenic and copper are the only heavy metals that had dissolved groundwater concentrations in excess of the preliminary groundwater cleanup levels. At the time that the interim actions were conducted in 2006, Landau Associates did not have access to the prior due diligence work conducted on the property or the associated data. These older data indicate that copper was detected in groundwater during a number of these earlier investigations, as well as at one location (J-1) sampled during the 2004 Phase II ESA (Landau Associates 2004). As a result, the soil cleanup screening level for copper (36 mg/kg) is based on protection of groundwater while the copper interim action cleanup level used for 2006 cleanup (2,960 mg/kg) was based on direct contact.

The diesel- and oil-range petroleum hydrocarbon soil cleanup levels used for the 1993 MSRC interim action were the 200 mg/kg MTCA Method A cleanup levels in effect at that time. These cleanup levels are significantly lower than the 2,000 mg/kg MTCA Method A soil cleanup levels currently in effect. The current MTCA Method A cleanup levels for petroleum hydrocarbons are used for both evaluating the effectiveness of the interim actions and as the cleanup screening levels.

3.3.5 GROUNDWATER CLEANUP SCREENING LEVELS

As noted in Section 2.3.3.2, human ingestion of constituents in groundwater is not a potential exposure pathway. Instead, groundwater cleanup screening levels protective of marine surface water were developed because Site groundwater discharges directly to the 12th Street Yacht Basin, which, in turn, discharges to the lower reaches of the Snohomish River that are subject to salt water intrusion. However, in accordance with WAC 173-340-720(6)(b)(i) and for the purposes of screening the data, if an applicable marine surface water cleanup level was not identified, the groundwater cleanup screening level was based on the standard Method B potable water cleanup level [in accordance with WAC 173-340-720(4)(b)]. MTCA Method B groundwater cleanup screening levels protective of marine surface water were developed in accordance with WAC 173-340-730(3) for the detected constituents in groundwater. Cleanup screening levels were adjusted to be no less than the practical quantitation limit (PQL) in accordance with WAC 173-340-730(5)(c). Groundwater cleanup screening levels for those constituents detected in groundwater are shown in Table 13, and these values also represent Site groundwater cleanup screening levels.

3.3.6 SEDIMENT CLEANUP SCREENING LEVELS

Sediment cleanup screening levels were developed according to MTCA and SMS requirements. Two SMS criteria are promulgated by Ecology as follows:

- The marine sediment quality standard (SQS; WAC 173-204-320), the concentration below which effects to biological resources and human health are unlikely.
- The sediment cleanup screening level criteria (CSL; WAC 173-204-520), the concentration above which more than minor adverse biological effects may be expected.

The SQS and CSL values have been developed for a suite of analytes that includes metals, polycyclic aromatic hydrocarbons (PAHs), and other SVOCs, PCBs, and ionizable organic compounds. The SQS are the most stringent SMS numeric criteria and represent the goal for sediment cleanups.

3.3.6 INDICATOR HAZARDOUS SUBSTANCES

As allowed under WAC 173-340-703, IHS were identified to separate those constituents at the Site that contribute the greatest threat to human health from those that contribute little or no threat. IHS were selected by applying the factors identified in WAC 173-340-703(2) and by comparing detected constituent concentrations in soil and groundwater to applicable soil and groundwater quality criteria developed in Tables 12 and 13. Results from the previous Site investigations described in Section 3.0 were used to identify Site soil and groundwater IHS. All characterization data, presented in Tables 1 through 5, Table 8, and Tables 14 through 19, were used to develop the IHS in Tables 21and 22. Compliance monitoring sample results were not used to develop the IHS. IHS were identified based on the cleanup screening levels developed under the agreed order, rather than the cleanup screening levels, to provide a comprehensive evaluation of IHS appropriate for use in subsequent Site investigation activities.

However, some portions of the Site have not been fully characterized, so IHS will be re-evaluated based on additional data collected during the RI.

Tables 21 and 22 summarize the analytical testing and cleanup screening level exceedances for Site soil and groundwater, respectively. The tables include the analytical parameters that were tested, the number of detections, and the number of samples that exceeded the cleanup screening levels. The tables also summarize the constituent frequency of detection, minimum and maximum reporting limits and detected concentrations, and rationale for either including or excluding the constituents as IHS. The bases for identifying IHS are described in the following sections, and the identified IHS and their associated cleanup screening levels are presented in Tables 12 and 13.

3.3.6.1 Soil

As shown in Table 21, 79 of the constituents analyzed for in soil were detected above the laboratory reporting limits. As indicated in Table 21, 7 constituents were reported above their respective cleanup screening levels; note that the exceedance of criteria for individual cPAHs and exceedance of the cPAHs TEQ criteria are not considered separate exceedances.

Constituents that did not exceed the cleanup screening levels do not pose an unacceptable threat to human health or the environment and, as a result, were not identified as IHS. The remaining seven constituents were detected at least once at a concentration exceeding the cleanup screening level. These constituents are antimony, arsenic, copper, lead, total cPAHs, diesel-range petroleum hydrocarbons, and oil-range petroleum hydrocarbons.

Four of these constituents, arsenic, copper, lead, and cPAHs, were detected at concentrations exceeding the cleanup screening levels in more than one area of the Site; their known extent, prior to implementation of any interim actions, in each area of the Site is further explained below. Figures 14 and 15 show which constituents exceed soil cleanup screening levels at each location where a soil sample was collected. As shown on the figures, locations where only copper exceeded the cleanup screening level, and the interim action cleanup level was not exceeded, are shown in green. The distribution of IHS that was detected in multiple areas is summarized as follows:

- **Arsenic** was tested for in 204 samples collected across the Site. Of these 204 samples, 84 of the samples (41 percent) exceeded the soil cleanup screening level for arsenic. The 84 samples that exceeded the cleanup screening level were located throughout much of Area I, in the northern portion of Area J, and in the northeast corner of Area G that was subjected to a significant level of characterization as part of the North Marina interim action. There was also a single exceedance of arsenic located in the west-central portion of Area G.
- **Lead** was tested for in 177 samples collected across the Site. Of these, 24 of the samples (14 percent) exceeded the soil cleanup screening level for lead. Of the 24 samples that exceeded the cleanup screening level, 17 were located in the eastern portion of Area I, 6 were located in the western portion of Area G, and 1 was located in the northeast corner of Area J.

- **Copper** was tested for in 135 samples collected across the Site. Of these, 57 (42 percent) of the samples exceeded the soil cleanup screening level for copper; 3 of these samples also exceeded the interim action cleanup level based on direct contact. The 57 samples that exceeded the cleanup screening level were located throughout much of Site, which is likely the result of the copper soil cleanup screening level being based on State of Washington natural background concentrations for the Puget Sound Region (36 mg/kg). Of the 3 samples that exceeded the interim action soil cleanup level for copper (2,960 mg/kg), 2 were located in northeast corner of Area I and one sample was located in the northwest portion of Area G.
- **cPAHs** were tested for in 115 samples collected across the Site. Of these 115 samples, 15 of the samples (13 percent) exceeded the soil cleanup screening level for cPAHs. Of the 15 samples that exceeded the cleanup screening level, 12 were located in the western and eastern portions of Area I, 2 were located in the northeast portion of Area J, and one exceedance occurred in Area M.

Because of the broader geographic distribution, these constituents are considered to contribute the greatest threat to human health or the environment and, therefore, have been identified as soil IHS throughout the Site.

The remaining constituents that exceeded soil cleanup screening levels were antimony, diesel-range petroleum hydrocarbons, and oil-range petroleum hydrocarbons. The distribution of these constituents was limited to certain areas of the Site and, therefore, they were designated as IHS for those specific areas, and not throughout the Site, as described below.

Antimony was analyzed for in a total of 22 samples. Three of the samples exceeded the soil cleanup screening level. One sample was collected from the surface soil located in the parking area northeast of the MSRC building (SS-01), one sample was located west of the Ameron pole finishing and dry storage building (ECI-K-1), and the third sample was located in the northeast portion of Area I (ECI-Q-6).

Diesel-range petroleum hydrocarbons and oil-range petroleum hydrocarbons were analyzed for in a total of 134 samples. Of these 134 samples, 91 samples (67.9 percent) exhibited concentrations of diesel-range petroleum hydrocarbons above the laboratory reporting limit and seven of those samples exceeded the soil cleanup level for diesel. Five of those samples were from stockpiles associated with the concrete vault excavation southwest of the MSRC building. Another exceedance was a surface soil sample taken by ECI in 1991 from a 2-inch by 3-ft wide strip of stained soil in a former drum storage area in Area M (ECI-B-1). The seventh exceedance was associated with the product sample taken from the groundwater surface during the Craftsman District sewer line excavation north of the MSRC building (See Section 3.1.2.7).

Four of the samples also exceeded the soil cleanup screening level for oil-range petroleum hydrocarbons. Two of those samples were also associated with the concrete vault excavation southwest of the MSRC building, one was limited to a surface soil sample taken by ECI in 1987 (located in the eastern portion of Area I; see Section 3.1.1.1), and the fourth was also from the product sample taken from the Craftsman District sewer line excavation north of the MSRC building (See Section 3.1.2.7).

3.3.6.2 Groundwater

As shown in Table 22, all but three of the constituents analyzed for in groundwater were either not detected or the detected concentrations were below the cleanup screening levels. The constituents that did not exceed the cleanup screening levels do not pose an unacceptable threat to human health or the environment and, as a result, were not identified as IHS. The five constituents that were detected at least once at a concentration exceeding the cleanup screening level are bis(2-ethylhexyl)phthalate, vinyl chloride, arsenic, petroleum hydrocarbons, and copper, as discussed below. Figures 16 and 17 depict their specific location.

- **Dissolved arsenic** was analyzed for in 19 samples. Of these, 5 samples exceeded the cleanup screening level of 5µg/L. Dissolved arsenic groundwater screening level exceedances were present in Areas G (7.5 to 10 µg/L), J (6 µg/L) and M (14 µg/L).
- **Dissolved copper** was analyzed for in 19 groundwater samples. Of these, 5 samples exceeded the groundwater cleanup screening level for copper (2.4 µg/L). The exceedances occurred in Areas I (12 and 38 µg/L), J (4 and12 µg/L), and in a pond surface water sample located in Area G (10 µg/L).
- **Vinyl chloride** was analyzed for in 21 groundwater samples. Only one sample (4.8 percent) exhibited concentrations of vinyl chloride above the laboratory reporting limit, and the same sample exceeded the cleanup screening level. The groundwater sample was located in Area M (M-3). Because the exceedance is limited to cleanup Area M, vinyl chloride was identified as an IHS for this area only.
- **Bis(2-ethylhexyl)phthalate (BEHP)** was analyzed for in seven groundwater samples. Only one sample (14.3 percent) exhibited concentrations of BEHP above the laboratory reporting limit, and the same sample exceeded the cleanup screening level. The groundwater sample was located in Area G (G-FA-7). The source of the BEHP is not known, but BEPH is a common laboratory contaminant so it is not known if its presence is representative of groundwater quality or the result of laboratory contamination. Because the exceedance is limited to cleanup Area G, BEHP was identified as an IHS for this area only and will be further evaluated during preparation of the RI/FS work plan.
- **Petroleum hydrocarbons, as free product** on the water table, were encountered in an excavation trench for the sanitary sewer line being installed as part of the Craftsman District construction in 2007 (Section 3.1.2.7). A sample of the product indicated diesel at 390,000 mg/kg and oil at 410,000 mg/kg. Although the eight soil samples collected from the excavation and the three soil samples collected from the stockpiled material did not exceed the TPH cleanup screening levels, a groundwater quality sample was not collected from the area. As a result, petroleum hydrocarbons in the diesel and oil ranges are retained as an IHS for this area.

It should be noted that evaluation of heavy metals concentrations in Site groundwater was conducted using dissolved metals analytical results. Based on the 5 groundwater samples tested for both total and dissolved metals during the environmental investigations conducted in support of the North Marina redevelopment, total metals concentrations were consistently higher than dissolved metals concentrations (Table 4). Based on these results, it was concluded that groundwater samples tested for total metals were affected by the presence of particulates, even though the monitoring wells were reportedly developed prior to sampling and low flow sampling techniques were used during more recent sampling to minimize the entrainment of particulates in groundwater samples. It is difficult to design, construct, and develop a monitoring well in silty soil given the fine particle size and the well opening size necessary for adequate hydraulic connection with the water-bearing zone. As a result, it is common to entrain fine particles in the water samples from wells screened in silty soil, biasing the results toward higher total metals concentrations due to the metals levels that naturally occur in the soil. Thus, due to the nature of the aquifer, analytical results for total metals are not considered representative of Site groundwater conditions, consistent with WAC 173-340-720(9)(b).

3.4 ENVIRONMENTAL CONDITIONS

In general, environmental conditions were evaluated, and cleanup areas were designated for the interim actions conducted in support of the North Marina Area redevelopment, based on comparison of the analytical results for Site soil and groundwater to the interim action cleanup levels developed in Section 3.3. Several earlier cleanup actions, such as the USTs removals in 1989 and around 1991 and the removal of the concrete structure in the MSRC area in 1993, were developed based on the MTCA cleanup levels applicable at that time. In general, cleanup levels in the early 1990s were consistent with current criteria. However, the cleanup levels for diesel- and oil-range petroleum hydrocarbons were significantly lower (200 mg/kg) than the current cleanup levels (2,000 mg/kg), which may have led to more conservative petroleum hydrocarbon cleanups.

For the purposes of this report, the environmental data collected from the Site are compared to current cleanup screening levels and not the criteria applicable at the time the interim actions were implemented. The following sections present a discussion of the environmental conditions with respect to soil, groundwater, and sediment quality that existed at the Site prior to the implementation of any interim actions.

3.4.1 SOIL QUALITY

Soil sample locations and cleanup screening level exceedances are presented on Figures 14 and 15. Tables 1, 2, 8, 9, 14, 15, 16, and 17 present the laboratory analytical data for the soil characterization samples. Soil quality is discussed by Investigation Area below.

3.4.1.1 Investigation Area G

The primary soil contaminant in investigation Area G is arsenic, which exceeded the cleanup screening level in 13 (56 percent) of the samples tested in this area. The majority of the locations where arsenic exceeds the cleanup screening level are in the northwest corner. There are also some scattered exceedances of copper and lead, primarily in soil samples that exhibited highly elevated concentrations of arsenic. Metals exceedances primarily occurred in samples collected from soil, multi-colored concrete-like material, and black sand (potential sandblast grit). The contaminated media was mostly present in soil elevated above adjacent grades in Area G to the east, although some of the exceedances occurred in samples at or below general Area G grades.

Other than the northwest corner of Area G, contamination is found in isolated locations, recognizing that the remainder of Area G has not been fully characterized. Soil contaminants in these locations include arsenic, lead, and copper. .

3.4.1.2 Investigation Area I

Arsenic exceeded its cleanup screening level throughout Area I and was the primary driver for the interim action conducted in this area. The arsenic cleanup screening level was exceeded in 83 samples, which represents 41 percent of the samples tested. The contaminated soil was generally found within 3 ft of the ground surface, except for a deeper area in the northeast corner of the area and in a soil stockpile present in the northeast corner of the area. Other metals that exceeded the cleanup screening levels were copper, lead and antimony; these exceedances were generally co-located with arsenic, except that, in some instances, copper exceedances were co-located with cPAH exceedances where an arsenic exceedance did not occur. The lead and antimony exceedances within Area I were found in the eastern portion and at locations with highly elevated arsenic concentrations.

Metals exceedances were found in shallow soil that appeared to be the surface trafficking layer for previous operational activities, and multi-colored concrete-like material and black sand (potential sandblast grit) materials encountered below the trafficking layer. Metals exceedances also occurred in the soil stockpile present in the northeast corner of the area.

3.4.1.3 Investigation Area J

Arsenic, lead, copper, cPAHs, and petroleum hydrocarbons were detected above the soil cleanup screening levels in various locations in Investigation Area J. Arsenic was detected above the screening level in four locations, which represents 15 percent of the samples tested. The arsenic exceedances occurred in the northern portion of the area, primarily in the northeast corner (Table 1 and Figures 14 and 15). CPAHs were detected above its cleanup screening level at two locations in the northeast portion of the area, and lead and antimony were found at one location each. Sample location J-GC-6, and follow up samples J-GC-6h and J-GC-6i, exhibited arsenic and/or cPAH exceedances in an area of construction debris containing evidence of burn residue.

The most common contaminant found in Area J was copper. Copper exceeds the screening level of 36 mg/kg in almost half of the samples collected in Area J. At the time of the interim action conducted in support of the North Marina Area redevelopment, the interim action cleanup level for copper was 2,960 mg/kg.

Two soil samples (KFI-SS12 and KFI-SS17) collected from the location of the concrete vault structure that was removed in 1993 (Section 3.1.1.7) exceeded the cleanup screening level for oil-range petroleum hydrocarbon. Only low-level diesel and oil detections were indicated in one of two samples subsequently collected by Landau Associates (2005a) in this area.

A product sample (J-MSRC) collected from the water surface of an excavation for a sewer line constructed in 2007 exhibited concentrations of petroleum hydrocarbons well above the cleanup screening levels, as shown in Table 2. The excavation also contained construction debris similar in appearance to the material encountered in the vicinity of location J-GC-6. As indicated in Section 3, the product was removed from the water surface during excavation. Soil analytical results for both the excavation perimeter and the stockpiled soil exhibited concentrations below the soil cleanup screening levels. No groundwater samples were collected following removal of the product from the excavation or following completion of excavation activities in this area.

3.4.1.4 Investigation Area M

Few exceedances of cleanup screening levels were found in Area M, although sampling has been limited compared to other areas of the site (Figures 14 and 15). An exceedance of cPAHs was found in the middle of the eastern stretch of Area M at location M-2 and, as discussed in Section 2.1.2.4, the surrounding soil was further characterized and no further exceedances were found. An exceedance of diesel-range petroleum hydrocarbons was found in a surface sample taken from a former drum storage area (ECI-B-1). Earth Consultants describes the affected soil as being "limited to a strip two inches wide and about three feet long" (ECI 1991). The only other contaminant found to be present at a level of concern was at M-3, where the copper concentration exceeded the cleanup screening level, but did not exceed the interim action cleanup level.

3.4.2 MARINE SEDIMENT

As previously indicated, Site sediment quality data were primarily collected in support of PSDDA characterization and, as such, are not directly applicable to evaluation of sediment quality under SMS.

The exceptions to this are the sediment sample collected near the outfall in the northeast corner of the 12th Street Channel (Area R) by ECI (1991) and the surface sediment sample collected by SAIC for the Port Gardner Bay bay-wide sediment investigation under the PSI (SAIC 2009). Although PSSDA data are not directly applicable for sediment characterization under SMS, the data are qualitatively indicative of sediment quality when compared to SMS cleanup standards. An exceedance of SMS criteria in a PSDDA sample would typically be indicative of a SMS sediment quality issue because PSDDA samples are generally collected over much greater intervals than commonly used for SMS characterization, and the samples are often composited over multiple locations.

Marine sediment cleanup screening levels were developed based on SMS cleanup standards, except for TBT for which there is no SMS standard. The SMS cleanup standards can range from the sediment quality standard (SQS; the level expected to cause no adverse effects to biological resources and do not pose a significant health threat to humans) to the cleanup screening level (CSL; the level expected to cause only minor adverse effects to biological resources). The SQS concentrations were selected as the cleanup screening levels for Site marine sediment. For TBT, we used the PSDDA evaluation criteria for open water disposal, which identifies a "no effects" TBT marine sediment porewater criteria of 0.05 µg/L, and a potential adverse affects marine sediment porewater criteria of 0.15 µg/L. These PSDDA criteria provide a reasonable basis for assessing the potential affects of TBT on marine biota and, for the purposes of this document, a TBT porewater concentration of 0.05 µg/L is considered analogous to the SQS and a TBT porewater concentration of 0.15 µg/L is considered analogous to the CSL. Ecology has also established a TBT bulk screening level of 73 µg/kg that is conceptually equivalent to the SQS; this value was used for evaluating the available bulk TBT data.

A limited number of SMS exceedances occurred in the available data. The SQS was exceeded for mercury in the composite samples C-2 and C-6, the SQS for benzyl butyl phthalate was exceeded in composite sample C-2, and the SQS for Di-n-butylphthalate was exceeded in composite sample C-7 collected by RZA in 1990, as shown in Table 10 and on Figures 10 and 11 (RZA 1991). Composite sample C-2 was composited from the upper 4 ft of sediment. Composite samples C-6 and C-7 were collected from samples deeper than the upper 4 ft, and included material from as deep as Elevation -15 ft MLLW.

The zinc SQS was exceeded and the arsenic SQS was equaled in sediment surface sample ECI-Area-R collected by ECI in 1991 (ECI 1992). Diesel-range petroleum hydrocarbons were detected in this sample at a concentration of 2,100 mg/kg, although TPH criteria have not been promulgated under the SMS.

Because a sediment interim action was not conducted, these data are not discussed further in this report. However, it should be noted that the 12th Street Channel was dredged during construction of the

12th Street Yacht Basin and most, if not all, of the sediment previously characterized in this area was removed. Sediment quality will be discussed further in the RI/FS work plan.

3.4.3 GROUNDWATER

Figures 16 and 17 present groundwater sampling locations and identify wells that exhibited exceedances of the groundwater cleanup screening levels. Tables 3, 4, 5, 18, and 19 present the analytical data for all the Site groundwater characterization samples. As shown on the figures, exceedances of the groundwater cleanup screening levels were observed in a limited number of locations, and a review of the data in Tables 3, 4, 5, 18, and 19 indicate that groundwater cleanup screening level exceedances are not significantly above the applicable cleanup levels.

Groundwater IHS include heavy metals (arsenic and copper), vinyl chloride, and BEHP. Petroleum hydrocarbons are also considered an IHS in the area where free product was detected during the Craftsman District construction and groundwater was not tested

Groundwater was not addressed during previous interim actions because of the relatively small degree of cleanup level exceedances, and the limited aerial extent of the exceedances. As a result, groundwater is not discussed further in this report, but will be further evaluated during development of the RI/FS work plan.

3.4.4 STORMWATER SYSTEM (WATER AND SEDIMENT)

The stormwater system water and sediment sample locations are shown on Figure 7. The water and sediments data can be found in Tables 7 and 23, respectively. The catch basin sediment analytical results were compared to SMS SQS and CSL cleanup standards as the most applicable criteria for these data because stormwater discharges to Puget Sound. Exceedances of SQS and CSL criteria for heavy metals (arsenic, cadmium, copper, chromium, lead, and zinc) were found in the sediment at CB-3, as shown on Figure 7. It is also noted that diesel-range petroleum hydrocarbons were detected at 1,800 mg/kg and lube oil petroleum hydrocarbons were detected at 3,000 mg/kg in this sample.

The stormwater data were compared to Ecology Industrial Permit general permit criteria. Catch basin stormwater samples exceed only the zinc criterion in the water sampled from CB-1 and CB-3. Dissolved arsenic was present at concentrations up to 11 µg/L, although there are no general permit criteria for arsenic.

4.0 DEVELOPMENT OF THE INTERIM ACTIONS

MTCA distinguishes an interim action from a cleanup action in that an interim action only partially addresses the cleanup of a Site and achieves one of the following purposes [WAC 173-340-430(1)]:

- Reduces the threat to human health and the environment by eliminating or substantially reducing one or more pathways for exposure to a hazardous substance [WAC 173-340-430(1)(a)].
- Corrects a problem that may become substantially worse or cost substantially more to address if the remedial action is delayed [WAC 173-340-430(1)(b)].
- Completes a site hazard assessment, RI/FS, or designs a cleanup action [WAC 173-340-430(1)(c)].

An interim action must also meet one of the following general requirements [WAC 173-340-430(2)]:

- Achieve cleanup standards for a portion of the site
- Provide a partial cleanup (clean up hazardous substances from all or part of the site, but not achieve cleanup standards)
- Provide a partial cleanup and not achieve cleanup standards, but provide information on how to achieve cleanup standards.

Three interim actions were conducted at the Site by the Port of Everett. The most extensive was conducted by the Port between 2005 and 2007 in conjunction with the North Marina Redevelopment project. In 1993, an interim action was conducted in conjunction with construction of the MSRC facility in the southwest portion of the Site, and in 1991 the Port conducted an interim action to address petroleum hydrocarbon contamination encountered during decommissioning of three USTs at the south end of Site. Another UST was decommissioned in Investigation Area G in 1988 during the purchase of the Centrecon assets by Ameron. This 1988 tank removal is not addressed as an interim action in this report because releases from the UST were not observed, and soil and groundwater sampling conducted post-removal did not indicate contamination (PSM 1989 and Sweet/Edwards-EMCON 1989). Figures 18 and 19 present the locations of the interim actions.

The purpose of the three Site interim actions was to reduce the threat to human health and the environment by eliminating one or more pathways for exposure to a hazardous substance. The intent of the interim actions was to achieve the cleanup standards developed under the VCP for large portions of the Site. The development, evaluation, and selection of each interim action are presented in the following sections.

4.1 1991 UST INTERIM ACTION

The 1991 interim action was conducted based on visual evidence of petroleum hydrocarbon contamination observed during decommissioning of three USTs. The Ecology files indicate the tanks consisted of one 300-gallon tank used to store diesel, a 500-gallon tank used to store gasoline, and a 1,000-gallon tank used to store gasoline (Landau Associates 2001). A slight sheen was observed on the water table resulting in an excavation of approximately 50 cubic yards ($yd^{3)}$ of material that was placed in a berm for landfarming. The soil was placed on the north side of Site (Area I) following treatment.

The interim action was conducted at the time of UST decommissioning, and the basis for selecting the interim action is not well documented. As a result, the process for development, evaluation and selection of the interim action cannot be described. However, it was common practice at the time of the UST interim action to excavate petroleum hydrocarbon-contaminated soil encountered during UST removal and either send it offsite for disposal, or treat it onsite through landfarming. Based on the information obtained from Ecology's files, excavation and onsite treatment was apparently selected for the UST interim action. The implementation and results of the 1991 UST interim action are presented in Section 5.0.

4.2 1993 MSRC INTERIM ACTION

As described in Section 3.1.1.6, a buried concrete structure of an unknown original use was discovered during construction of the MSRC building in 1993. The structure was filled with wood waste, soil, and what appeared to be drums containing oil. Some free product was found within the structure (Kleinfelder 1993a). Testing of soil and waste materials within the concrete vault exhibited petroleum hydrocarbon contamination. The Port retained Kleinfelder to develop an independent cleanup action to address the contamination; the development of the cleanup action is documented in the work plan for removal of the contaminated soil (Kleinfelder 1993b) and the results of the interim action are documented in the subsequent independent cleanup action report (Kleinfelder 1993a).

Kleinfelder reviewed a number of cleanup action alternatives, including excavation and offsite disposal, and thermal desorption. Excavation and offsite disposal at a licensed solid waste facility was selected for the interim action because of the small volume of contaminated soil requiring treatment, the presence of wood and metal debris inside the structure, and the oil-range contamination (Kleinfelder 1993a). The locations of the concrete structure and excavation are not sufficiently referenced to other Site features to present their locations in this report. Additional discussion on the implementation and results of the MSRC interim action are presented in Section 5.2.

4.3 NORTH MARINA REDEVELOPMENT INTERIM ACTIONS

An extensive interim action was conducted at the Site between October 2005 and October 2007 as part of an area-wide interim action conducted in support of redevelopment of the North Marina area. The interim action was developed and implemented as a independent cleanup action conducted as part of redevelopment of the North Marina Area, as described in Section 1.0. The interim action was developed in detail in the CAP prepared for the North Marina Redevelopment site under the VCP (Landau Associates 2006a). Subsequent to the CAP development, it was determined that the planned development activities would require construction access through the Ameron leasehold, necessitating environmental characterization and cleanup within the northwest corner of the leasehold. A CAP addendum was prepared for "Area G1", which is located in the northwest corner of the Ameron leasehold (Landau Associates 2006b).

The interim action selected for the Site was based on achieving the interim action cleanup levels in a manner that was compatible with redevelopment plans. Although a focused approach was used to select the interim action, the process was similar to that applied during the FS for a final cleanup action, and included the following steps:

1. Establish cleanup action objectives (CAOs) for the site.
2. Evaluate cleanup action technologies to determine those technologies that are capable of achieving the various CAOs.
3. Assemble the cleanup technologies into interim action alternatives that achieve all CAOs.
4. Compare the interim action alternatives against criteria established under MTCA to select the most practicable interim action for the Site.

The following sections establish the CAOs (Section 3.1); identify applicable or relevant and appropriate requirements (ARARs; Section 3.2); present the response actions, cleanup technologies, and alternatives considered for the interim action (Section 3.3); and compare the selected alternative to MTCA requirements (Section 3.4).

4.3.1 INTERIM ACTION OBJECTIVES

Based on the IHS established for Site soil (Section 3.3.6) as part of the interim action, the interim action cleanup standards, and the additional regulatory requirements, the CAOs for the Site interim action were established as follows:

- Prevent human contact (dermal, incidental ingestion, or inhalation) with Site soil containing IHS above the soil interim action cleanup levels developed in Section 3.3.4.
- Prevent the release from soil to groundwater of soil IHS at levels not adequately protective of groundwater quality. Note that groundwater quality was based on protection of marine surface water.

The CAOs are of primary importance to the evaluation of cleanup action technologies, as discussed in the following section.

4.3.2 APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

In accordance with MTCA, all interim actions shall comply with applicable state and federal laws [WAC 173-340-710(1)] that bear directly on remedial actions being performed. MTCA defines applicable state and federal laws to include legally applicable requirements and those requirements that are relevant and appropriate. Collectively, these requirements are referred to as ARARs. This section provides a brief overview of ARARs identified for the interim action. The primary ARARs that were applicable to the interim action included the following:

- MTCA (Chapter 173.105D RCW), and MTCA Regulation (Chapter 173-340 WAC).
- EPA National Recommended Water Quality Criteria (Section 304 Clean Water Act): These standards were used to develop soil and groundwater interim action cleanup levels for the Site, as discussed in Section 2.3.
- Washington Water Pollution Control Act and the following implementing regulation: Water Quality Standards for Surface Waters (WAC 173-201A). These regulations establish water quality standards for surface waters of the State of Washington consistent with public health and the propagation and protection of fish, shellfish, and wildlife.
- EPA Water Quality Standards (National Toxics Rule; 40 CFR 131).
- Federal and State Maximum Contaminant Levels (MCLs) and Federal Maximum Contaminant Level Goals (MCLGs): these standards were used to establish groundwater interim action cleanup levels in the absence of marine surface water cleanup levels.
- Washington Clean Area Act (Chapter 70.94 WAC).
- Occupational Industrial Safety and Health Act (WISHA).
- Washington Hazardous Waste Management Act (Chapter 70.105 RCW) and the following implementing regulation: Dangerous Waste Regulations (WAC 173-303). These regulations establish a comprehensive statewide framework for the planning, regulation, control, and management of dangerous waste. The regulation designates those solid wastes that are dangerous or extremely hazardous to the public health and environment. The management of excavated contaminated soil from the Site was conducted in accordance with these regulations to the extent that any dangerous wastes were discovered or generated during the cleanup action.
- Washington Solid Waste Management Act (Chapter 70.95 RCW) and the following implementing regulations: Solid Waste Handling Standards (WAC 173-350) and Criteria for Municipal Solid Waste Landfills (WAC173-351). These regulations establish a comprehensive statewide program for solid waste management, including proper handling and disposal. The management of excavated contaminated soil from the Site was conducted in accordance with these regulations to the extent that the soil could be managed as inert or solid waste instead of dangerous waste.
- Shoreline Management Act (SMA; Chapter 90.58 RCW). Establishes permitting and other requirements for substantial development occurring within waters of the U.S. or within 200 ft

of a shoreline, and requires that the activities in coastal zones be consistent with local regulations. MTCA exempts cleanup projects being conducted under an enforceable order or consent decree from the requirement of obtaining the shoreline permit; however, the cleanup must be conducted in accordance with the substantive requirements of the regulation. Site interim cleanup was addressed in the shoreline permit for Site redevelopment, so additional action relative to the SMA was not required.

- Hazardous Waste Operations (WAC 296-843). Establishes safety requirements for workers providing investigation and cleanup operations at sites containing hazardous materials. These requirements are applicable to onsite cleanup activities and were addressed in Site health and safety plans prepared specifically for these activities.

4.3.3 EVALUATION AND SELECTION OF THE INTERIM ACTION

Soil response actions and cleanup technologies were screened for possible use in developing alternatives for interim action of the North Marina site, including the Site. Because groundwater cleanup level exceedances were minor and localized, groundwater was not addressed as part of the interim action, and groundwater response actions and cleanup technologies were not evaluated. Each alternative must be compatible with redevelopment plans and address the CAOs presented in Section 4.3.1. Applicable interim actions and remediation technologies evaluated for potential use as part of the interim action are described below.

Two interim actions were considered for cleanup of contaminated soil within the interim action area: 1) removal and 2) containment. The remediation technology considered for removal of contaminated soil consisted of excavation with offsite disposal. Soil excavated for offsite disposal would either be disposed of at a solid waste landfill or at an inert waste landfill, depending on the nature of contamination and the chemical concentrations. The Snohomish Health District, in consultation with Ecology, established Site-specific criteria for disposal of affected Site soil at the Rinker Materials (Rinker) inert waste landfill in Everett, Washington. Site soil could not be disposed of at the Rinker inert waste landfill if it exhibited any of the following characteristics on a bulk testing basis:

- Both arsenic and lead exceed their respective interim action cleanup levels.
- Arsenic exceeds 65 mg/kg, or 100 mg/kg with acceptable leachability test results.
- TPH exceeds 200 mg/kg.

Soil exceeding these criteria was transported to the Waste Management solid waste transfer station in Seattle, Washington.

The remedial technology considered for containment was consolidation of contaminated soil and onsite capping in one or more areas that integrate satisfactorily with redevelopment (i.e., large parking lots or beneath Port-owned buildings). The contaminated soil would be placed a minimum of 2 ft above maximum groundwater elevations to avoid contact with groundwater and would be capped with low-permeability surfaces to minimize surface water infiltration through affected soil. Capping would consist of asphalt or concrete pavement and/or buildings. Containment through capping would also include institutional controls, such as restrictive covenants (e.g., deed restrictions); cap maintenance; and long-term groundwater monitoring. Containment in-place (without consolidation) was not considered practicable because it would be difficult to ensure the long-term integrity of numerous contaminated soil containment areas that were not aligned with the post-redevelopment site configuration.

Containment was determined to not be a viable Site-wide remedial alternative because of existing Site grades. However, containment was used on a limited basis to address contaminated soil that was not practicable to address using other remedial alternatives (see Section 4.3.4.3, Area J-3) for the Site. The Site is being redeveloped into the Craftsman District as part of the North Marina Redevelopment. The Craftsman District will house a number of businesses that service commercial and recreational marine activities, including the new Port-operated travel lift and boat wash facility. Because of the nature of use, the pavement in the Craftsman District is subjected to heavy wheel loads and, as a result, requires a thicker pavement section than typical parking lots and roadways. The combination of the thicker pavement section, the elevated surface elevations present at the Site at the time of interim action alternatives analysis (particularly in Investigation Area I), and the need to conform finish elevations to the existing grades in the southern and other portions of the Site, precluded consolidation and containment of contaminated soil. As a result, excavation/offsite disposal was the selected interim action for Site soil containing the IHS (i.e., arsenic, copper, lead, and/or cPAHs) above the interim action cleanup levels at that time.

4.3.4 INTERIM ACTION DESIGN

A detailed description of the interim action design for the Site is presented in the CAP developed for the North Marina Redevelopment site under the VCP (Landau Associates 2006a) and construction plans and specifications for the interim action are presented as Appendix E to this report. This section summarizes the design of the interim action, but the North Marina Redevelopment CAP and the construction plans and specifications should be reviewed for a more complete understanding of the basis for design and the design details.

The interim action design was developed based on the environmental data collected during the previously described investigations conducted by Landau Associates. Although a limited number of the reports prepared by others prior to the Landau Associates investigations were available, these reports were primarily used in scoping subsequent investigations conducted by Landau Associates and not to delineate the interim action areas.

The interim action areas were designated using the same area designations used for previous Landau Associates investigations, and were numbered sequentially within each area. A total of 11 interim action areas, I-1 through I-11, were developed for Investigation Area I. Three interim action areas were developed for Investigation Area J, although only two of these areas, J-1 and J-3, fall within the Site boundary. One interim action area, M-1, was identified for Investigation Area M. One interim action area, Area G-1, located immediately east of the northeast portion of Area I, was identified in Investigation Area G following completion of the CAP, and was addressed in a CAP Addendum (Landau Associates 2006b). The interim action areas developed for the Site are shown on Figures 18 and 19 in conjunction with the environmental data that was the basis for their development. Each of these areas is discussed in the following sections.

4.3.4.1 Investigation Area G

Interim Action Area G-1, located on the Ameron leasehold, was added to the cleanup action when it was realized this area would need to be accessed for construction of the new Bayside Marine building in Area I (Figure 2). The boundary between Investigation Areas I and G was based on the western Ameron leasehold fenceline. However, the actual lease boundary was determined to be located about 10 ft east of the fenceline, and the new Bayside Marine building was to extend eastward to the lease line with no setback. As a result, it was necessary to clean up a sufficient portion of Area G in the northwest corner to provide a clean building footprint and about 10 to 20 ft farther east to accommodate associated construction activities and access.

The Area G-1 cleanup action was addressed in a CAP Addendum (Landau Associates 2006b). Detailed design for Area G-1 was integrated into the construction plans and specifications for the interim action (Appendix E).

The area planned for excavation was defined as the stockpiled soil above the adjacent Site grades to the east that contained metals (arsenic and lead) above the interim action cleanup levels. Soil associated with a sample collected during the interim action that exceeded the interim action cleanup level for copper (G1-AC-9) was also removed during the excavation. This area was generally up to about 4 ft above the adjacent grade to the east and was at approximately the same elevation as the ground surface to the west. The interim action design called for the area to be excavated to Elevation 15 ft (MLLW), approximately 1 ft below the elevation of the pavement to the east. The planned excavation limits for Area G-1 are shown on Figure 19. The excavated soil was designated for disposal at a solid waste landfill, the same as that identified in the CAP for interim action Areas I and J.

4.3.4.2 Investigation Area I

A total of 11 interim action cleanup areas, Areas I-1 through I-11, were developed for Investigation Area I. In general, contaminated soil as identified by the previous investigations was limited to shallow soil extending from the surface to no greater than about 3 ft BGS throughout much of the area, with a maximum depth of about 6 ft BGS in the northeast corner. The interim action also included removal of the soil pile located in the northeast portion of the area. The planned interim action areas for Investigation Area I are shown on Figure 19. The following section summarizes the bases for design of each interim action area.

Area I-1

Cleanup Action Area I-1 encompasses a soil stockpile located near the northeast corner of Investigation Area I. Results for a composite sample collected from the soil stockpile, I-Z, during the Phase II ESA (Landau Associates 2004), indicated the presence of arsenic and lead at concentrations exceeding the interim action cleanup level. Subsequent sampling during remedial design (I-TP-1 through I-TP-8) confirmed the presence of arsenic concentrations above the interim action cleanup level, although the cleanup level was only exceeded in four of the eight samples tested. Based on Phase I interviews, aerial photographs, anecdotal information, and observed conditions, Area I-1 appears to have been an area where soil and debris were historically stockpiled.

The entire soil stockpile was designated for removal. To maximize the potential that all contaminated soil was removed during initial excavation, the excavation was designed to extend 0.5 ft below the base of the soil stockpile. The estimated volume to be removed was 200 yd^3. The estimated excavation volume, area, depth of excavation, and waste disposal designation for Area I-1 are presented in Table 24.

Area I-2

Cleanup Action Area I-2 consisted of an unpaved area in the central portion of Investigation Area I where a discrete layer of multi-colored soil was present at a depth of up to 3.0 ft BGS, at a depth of approximately 1 ft below clean overburden soil. Analytical results for a composite sample of this material, I-X, indicated that the material contained arsenic at a concentration exceeding the interim action cleanup level. Subsequent delineation sampling conducted for interim action design in May 2006 (I2-1 through I2-10) confirmed the presence of arsenic above the interim action cleanup level, with arsenic concentrations ranging from 44 to 197 mg/kg. The specific source of contamination in this area was not identified during design. The contaminated material was multi-colored (bright green, red, orange, as well as gray) with a concrete-like odor suggesting that the material might be related to a concrete product. Although the material exhibited cohesive strength markedly greater than soil, it was not as strong as concrete. The layer of the multi-colored concrete-like material and the soil 0.5 ft above and below this material was designated for removal during the interim action. The estimated volume of soil to be removed within Area I-2 was about 3,900 yd^3. The estimated excavation volume, area, depth of excavation, and waste disposal designation for Area I-2 are presented in Table 24.

Areas I-3a, I-3b and I-4

Cleanup Action Areas I-3a, I-3b, and I-4 contained soil contaminated with arsenic, with a more limited number of lead and cPAH exceedances. The area was unpaved and contaminated soil was limited to between 0 to 0.5 and 0 to 2.0 ft BGS. The specific source of contamination in these areas was not identified during design, although sandblast grit was observed during additional characterization activities conducted for remedial design, and surficial evidence of sandblasting waste, paint chips, drum storage, and soil staining were observed in these areas during previous investigations conducted by others (Kleinfelder 1991, ECI 1992). Additionally, multi-colored concrete-like waste material similar in appearance to that described above for Area I-2 was observed in the western portion of Area I-4 during a previous investigation (ECI 1992).

To maximize the potential that all contaminated soil would be removed during initial excavation, the excavation limits were extended to 0.5 ft below the maximum extent of identified contamination (i.e., to between 1.0 and 2.5 ft BGS). The estimated volume to be removed from Area I-3 was 1,200 yd^3, and from I-4 was 300 yd^3. The estimated excavation volumes, area, depths of excavation, and waste disposal designations for Areas I-3a, I-3b, and I-4 are presented in Table 24.

Area I-5

Cleanup Action Area I-5 is located in the northeast corner of Investigation Area I and contained soil contaminated with arsenic, copper, and lead above the interim action cleanup levels. The area was unpaved, and contamination extended to a depth of 6.5 ft BGS. The excavation limits were delineated based on the extent of multi-colored concrete-like waste material present in this area, similar in appearance to that observed in Area I-2. Petroleum hydrocarbon-contaminated soil landfarming also occurred in this area, although petroleum hydrocarbon constituents were not detected above the cleanup screening levels. Area I-5 was bounded on the south by a boring that did not encounter any of the multi-colored material (I-GC-24A) and was bounded on the east by the Ameron leasehold. The area was bounded on the west and southwest by additional delineation borings conducted during design (I-GC-24.2W and I-GC-24.2W.1S), based on visual observation.

The excavation plan for Area I-5 specified that soil be removed to a depth of 7.0 ft BGS, 0.5 ft below the maximum extent of identified contamination, to maximize the potential that all contaminated soil would be removed during initial excavation. The estimated volume to be excavated was 2,500 yd^3. The excavation volume, area, depth of excavation, and waste disposal designation for Area I-5 are presented in Table 24.

Areas I-6 and I-7

Cleanup Action Areas I-6 and I-7 were located in the western portion of Investigation Area I (Figure 19) and were designated based on arsenic and cPAH contamination. The areas were unpaved and the depth of contamination ranged between 0 to 0.5 ft and 0 to 2.0 ft BGS. Although a specific source of contamination in these areas was not identified during design, observations made during Site environmental investigations indicated the presence of sandblast grit throughout Investigation Area I and its former use for steel building fabrication. As shown on Figure 19, the southeast corner of Area I-6 overlaps with the northwest corner of Area I-2. The cPAH contamination associated with Area I-6 overlies the arsenic contamination associated with Area I-2.

To maximize the potential that all contaminated soil would be removed during initial excavation, the excavation limits for both areas were planned to extend to 0.5 ft below the maximum extent of identified contamination (i.e., to between 1.0 and 2.5 ft BGS). The estimated excavation volumes for Areas I-6 and I-7 were 1,050 yd^3 and 300 yd^3, respectively. The estimated volumes, areas, depths of excavation, and waste disposal designations for Areas I-6 and I-7 are presented in Table 24.

Areas I-8 through I-11

Cleanup Action Areas I-8 through I-11 were located along the shoreline on the west side of Investigation Area I (Figure 19). Similar to Areas I-6 and I-7, these areas were unpaved, were designated based on arsenic and cPAH contamination, and the depth of contamination ranged between 0 to 0.5 ft and 0 to 2.0 ft BGS. The interim action for Areas I-8 through I-11 was implemented in October 2005, in advance of the interim action for the remainder of the Site, to support construction of the upland portion of the 12th Street Yacht Basin. As a result, a separate set of plans and specifications (Appendix E) and compliance monitoring plan (Landau Associates 2005d) were developed for these cleanup action areas.

The lateral limits for these areas were defined by the shoreline to the west, the property line to the north, the extent of contamination to the south, and the upland limits of the 12th Street Yacht Basin (50 ft from the shoreline) to the east. Similar to Areas I-6 and I-7, a specific source of contamination in these areas was not identified during design, although the Areas were similarly potentially affected by sandblast grit from the former use of Area I for steel building fabrication.

To maximize the potential that all contaminated soil would be removed during initial excavation, the excavation limits for these areas were planned to extend to 0.5 ft below the maximum extent of identified contamination (i.e., to between 1.0 and 2.5 ft BGS). The estimated excavation volumes for Areas I-8 through I-11 were 250 yd^3, 460 yd^3, 340 yd^3 and 790 yd^3, respectively. The estimated volumes, areas, depths of excavation, and waste disposal designations for Areas I-6 and I-7 are presented in Table 24.

4.3.4.3 Investigation Area J

Cleanup Action Areas J-1, J-2, and J-3 were defined for Investigation Area J (Figure 18). Only Areas J-1 and J-3 were located within the estimated Site boundary. Area J-2 was cleaned up and reported as part of the North Marina Phase I VCP site (Landau Associates 2008c), and Ecology has issued a no further action determination for this site. As a result, only Cleanup Action Area J-1 and J-3 are discussed in this report.

Area J-1

Cleanup Action Area J-1 was located to the west of the MSRC building. Area J-1 encompassed soil sample location J-GC-4, where arsenic was detected in the soil at a concentration exceeding the interim action cleanup level. Cleanup Action Area J-1 was paved and the depth interval for affected soil was 1.5 to 2.0 ft BGS. Soil above this depth interval consisted of clean overburden material (i.e., pavement and crushed gravel). No specific source of contamination for this area was identified during previous environmental investigations.

Analytical results for soil samples collected below this depth interval were well below the arsenic interim action cleanup level. A concrete chamber containing wood and debris was encountered in the southern portion of the planned excavation during interim action implementation, which was also removed during the interim action, as is discussed in Section 5.3.4.6.

To maximize the potential that all contaminated soil was removed as part of initial excavation, the excavation design was extended to 2.5 ft BGS, with the upper 1 ft designated as clean overburden soil. The estimated excavation volume, area, depth of excavation, and waste disposal designation for Area J-1 are presented in Table 24.

Area J-3

Cleanup Action Area J-3 was immediately east of, and partially beneath, a covered work area attached to the north end of the MSRC building. The affected area was defined by the presence of buried construction debris that contained burned materials, possibly from the former Hulbert Mill that burned down in the 1960s. The affected soil area encompasses soil sample location J-GC-6 and additional delineation samples collected during design from four additional locations within the affected material (J-GC-6f through J-GC-6i). Samples from different depths at J-GC-6 exceeded the interim action cleanup levels for arsenic and cPAHs. One of the additional delineation samples (J-GC-6h) exceeded the interim action cleanup level for arsenic, and one of the samples (J-GC-6i) exceeded the interim action cleanup level for cPAHs. Cleanup level exceedances within the affected material, which extends up to 17 ft BGS, were erratic and could not be discerned through visual observation or common field screening techniques.

The affected area was paved, and contaminated soil was first encountered at 1 ft BGS. Soil above this depth interval consisted of a pavement section (i.e., pavement and crushed gravel). Because potentially contaminated soil extended to a depth of 17 ft BGS, and the affected area extends beneath foundations supporting the roof for the covered work area, it was not practicable or safe to remove all potentially contaminated soil as part of the interim action. Instead, the interim action for this area was designed to remove the affected material to the east of the covered work area to a depth of 6 ft BGS, which was a sufficient depth to allow the installation of utilities for Site redevelopment without workers contacting potentially contaminated soil.

The excavation was designed to extend to the target excavation depth and to the limits of the affected material in the north-south direction, but to terminate at the footings of the covered work area to the west to avoid undermining or destabilizing the roof support foundations. The excavation was also designed to terminate to the east at the Ameron fenceline if the limits of the affected material were not reached prior to reaching the fence. Following excavation, a non-woven geotextile fabric was to be placed on the base of the excavation as a marker layer, and the excavation was to be backfilled with clean granular fill. The surface was to be paved with asphalt as part of the redevelopment activities. Additional design details regarding the J-3 excavation and relevant Site features are provided in Appendix E (Drawing CS1.7)

It was intended that institutional controls, in the form of deed restrictions, would be placed on the area as part of final design to ensure that any future contact with affected soil is properly managed. However, the area is heavily transected by utilities (e.g., electric, gas, water, sewer) and it is unlikely that future excavations will extend to the depth of remaining contamination. About 700 yd^3 of contaminated soil and debris remains in Area J-3 based on the extent of construction debris observed during Site characterization activities.

The estimated excavation volume, area, depth of excavation, and waste disposal designation for Area J-1 are presented in Table 24.

4.3.4.4 Investigation Area M

Investigation Area M was not fully characterized during various investigations conducted in support of the North Marina redevelopment because the area is part of the Ameron leasehold that was not anticipated to be vacated until at least 2012. However, an east-west utility corridor from West Marine View Drive to the Craftsman District was planned, which necessitated cleanup of cPAH contamination associated with sample M-2 collected near the entrance to the Ameron facility. AC samples were collected from borings M-2B, M-2C, M-2.1W and M-2.1S to better delineate the extent of contamination in the M-2 area during interim action design. None of the AC samples exhibited cPAH concentrations above the interim action cleanup levels.

Cleanup Action Area M-1 was developed based on the data described above. Area M-1 was paved with about a 1 ft pavement section consisting of asphalt and crushed rock base course. Contaminated soil was present from about 1 to 1.5 ft BGS, and the excavation plan for Area M-1 specified that soil between 0.5 ft and 2 ft BGS be removed as contaminated soil to maximize the potential that all contaminated soil would be removed during initial excavation. The estimated excavation volume, area, depth of excavation, and waste disposal designation for Area M-1 are presented in Table 24.

5.0 INTERIM ACTION IMPLEMENTATION

As previously discussed in Section 3.0, three interim actions were implemented at the Site in 1991, 1993, and between 2005 and 2007. The following sections describe implementation of the interim actions and present the results of interim action compliance monitoring.

5.1 1991 UST INTERIM ACTION

The petroleum hydrocarbon-contaminated soil associated with the three USTs removed to the southeast of the MSRC building was reportedly removed on June 19, 1991. According to the site assessment report filed by A-1 Pump Service, the UST decommissioning contractor, 50 yd^3 of contaminated soil was excavated from the UST excavation based on visual inspection and the presence of a slight sheen on the water table. Groundwater was also reportedly removed from the excavation and disposed of at an offsite facility, although the amount and quality of water removed was not documented.

Four sidewall soil samples (PofE West Wall, PofE North Wall, PofE East Wall, and PofE South Wall) and three bottom soil samples (PofE Center of Tank, PofE Center Bottom, and PofE Bottom of Hole) were collected from the tank excavation. All soil compliance monitoring samples were tested for NWTPH-D and BTEX. The analytical results for all samples were below the laboratory reporting limits (Table 25 and on Figure 20)

The A-1 Pump Service report also indicated that groundwater samples were collected from the excavation and tested, although no water quality data were available for review. However, groundwater samples collected in October 1991 (ECI-MW-1) and in January 2005 (M-FA-1 and M-FA-2) in the vicinity of the UST removal were tested for gasoline-range, diesel-range, and lube oil-range petroleum hydrocarbons, and BTEX; no detections occurred above the laboratory reporting limits for any of these constituents. Post-interim action groundwater quality data for these samples are presented in Table 3 and illustrated on Figure 17.

The excavated soil was reportedly placed in a "berm yard", aerated, and placed on Port property to the north of the UST location following treatment. The exact location of the treatment area and the post-treatment placement location are not documented in available information, although historical evidence indicates Area I as the most likely location.

No specific post-treatment analytical data are available to evaluate the effectiveness of soil treatment associated with the interim action. However, the A-1 Pump Service report indicates that the treated soil was field-screened using an organic vapor meter (OVM) and the highest OVM reading was reported to be 0.025 parts per million (ppm). Residual petroleum hydrocarbon contamination associated with the interim action is not likely present at the Site based on the volume of soil that was removed throughout Investigation Area I, the low OVM readings obtained from the treated soil, the lack of any petroleum hydrocarbon contamination in the Area I analytical data, and because shallow soil was removed throughout Investigation Area I.

Based on the Area I soil compliance monitoring results, the description of interim action activities provided in the A-1 Pump report, and the post-interim action groundwater monitoring results, the 1991 interim action conducted in association with the UST removal was effective and further action at this location is not needed.

5.2 1993 MSRC INTERIM ACTION

As described in Section 3.2, the 1993 interim action was conducted to remediate petroleum hydrocarbon-contaminated soil and associated wood debris and apparent oil-containing drums found in a buried concrete vault encountered during construction of the MSRC building. The implementation of the interim action is summarized in this section, but the independent cleanup action report (Kleinfelder 1993b) should be reviewed for a more detailed discussion.

The interim action consisted of removal and offsite disposal of contaminated soil, as well as the concrete structure. Samples of contaminated soil were submitted for waste characterization, consisting of analysis for VOCs, SVOCs, PCBs, TCLP metals, and petroleum hydrocarbons. However, petroleum hydrocarbons in the diesel and oil ranges were the only constituents that exceeded MTCA soil cleanup levels. The analytical results for waste characterization samples are provided in the soil characterization data tables (Tables 1, 2, 8, 14, 16, and 17).

The contents of the vault were excavated on October 1, 1993 and stockpiled in a plastic-lined containment area constructed using ecology blocks. The concrete structure was demolished and placed in a separate stockpile on October 19, 1993. Contaminated soil was excavated from beneath the vault to a maximum depth of 19 ft BGS. A total of about 600 yd^3 (966 tons) of contaminated soil was removed from the excavation, including the volume that was removed from within the vault. The contaminated soil was transported to the nearby Rabanco transfer station and shipped by rail to its Roosevelt, Washington solid waste landfill.

A total of 17 soil compliance monitoring samples were collected to confirm that cleanup levels were achieved. The compliance monitoring results for MSRC interim action are presented in Table 25 and analytical results are summarized on Figure 20. Of the 17 compliance monitoring samples collected following excavation, the highest residual concentrations of petroleum hydrocarbons were 160 mg/kg and 110 mg/kg for diesel-range petroleum hydrocarbons and oil-range petroleum hydrocarbons, respectively. The MTCA Method A cleanup level for unrestricted site use for diesel- and oil-range petroleum hydrocarbons was 200 mg/kg in 1993, rather than the current 2,000 mg/kg cleanup level, resulting in a lower action level for the 1993 interim action.

No groundwater compliance monitoring was conducted as part of the interim action. However, groundwater samples were collected from the immediate vicinity of the interim action during Landau Associates' 2004 Phase II ESA (J-2) and during the 2005 Data Gaps Investigation (J-FA-1 and J-FA-2). Sample J-2 was tested for VOCs, SVOCs, metals, TPH-G, TPH-Dx, and BTEX, and samples J-FA-1 and J-FA-2 were tested for TPH-HCID. All analytical constituents were either undetected or well below the cleanup screening levels, except that dissolved arsenic was detected at 6 μg/L in sample J-2, which slightly exceeds the arsenic groundwater screening level of 5 μg/L. Post-interim action groundwater quality data for these samples are presented in Tables 3, 4, 5, and 19, and illustrated on Figure 17.

Based on the soil compliance monitoring results and the available groundwater quality data collected from the vicinity of the interim action, the MSRC interim action appears to have been effective and further remedial action at this location does not appear needed.

5.3 NORTH MARINA REDEVELOPMENT INTERIM ACTION

The North Marina Redevelopment interim action was conducted between October 2005 and October 2007. The interim action was conducted consistent with methods, procedures, and standards identified in the North Marina Redevelopment site CAP previously developed for the North Marina Area (Landau Associates 2006a) and the supplemental CAP (Landau Associates 2006b). Although conducted in advance of completing the North Marina Redevelopment CAP (see Section 4.3.4.2), interim action for Areas I-8 through I-11 was integrated into the CAP and was conducted using consistent methods and procedures.

A total of 15 specific interim action areas were identified based on Site characterization activities, and addressed as part of the planned interim action for the Site (Landau Associates 2006a). These included:

- Areas I-1 through I-11
- Areas J-1 and J-3
- Areas G-1
- Area M-1.

In addition to the planned cleanup areas, another interim action area was identified and addressed subsequent to the planned interim action. Area G-1a, which was partly located in Area I, was identified during construction of the Craftsman District following completion of the planned interim action. Area G-1a is discussed is Section 5.3.4.9 below.

A brief description of compliance monitoring procedures, the cleanup actions conducted in these areas, and compliance monitoring results are presented in this section.

5.3.1 COMPLIANCE MONITORING PROCEDURES

This section describes the soil compliance monitoring procedures implemented for the Site interim action. Confirmation soil samples were collected at the base and along the excavation sidewalls within each cleanup action area following excavation and prior to backfilling. Compliance monitoring was conducted in conformance with the two compliance monitoring plans (CMPs) developed for the Site, which were submitted for Ecology review in 2006 (Landau Associates 2005a; Landau Associates 2006b Appendix B). Confirmation soil samples were analyzed for the IHS that exceeded the interim action cleanup levels in each cleanup action area. Soil removal and compliance monitoring were conducted iteratively until residual soil concentrations in all cleanup action areas achieved the soil interim action cleanup levels for all IHS, except as described below for specific interim action areas.

The following sections describe how compliance monitoring samples were located and collected, and present the compliance monitoring results.

5.3.2 SAMPLE LOCATIONS

To collect data representative of the soil remaining at the base of the excavation in each cleanup action area, the base of each excavation was divided into approximately equal-sized grids and one sample was collected from the center of each grid and submitted for laboratory analysis. In general, the base of the excavation in larger cleanup action areas (e.g., Area I-2) was divided into 11 or more grids. By dividing the base of the excavations into 11 or more grids, a sufficient number of samples were collected to support the calculation of an upper confidence interval for the mean contaminant concentrations remaining at the base of the excavation, if necessary. In smaller cleanup action areas, the base of the excavation was divided into fewer than 11 grids, with a maximum grid size of about 500 square feet (ft^2), consistent with the CMPs.

Confirmation soil samples from the base of each excavation were collected as described in Section 5.3.3. If field observations of the soil at the base of an excavation indicated evidence of potential contamination either through visual observation (e.g., soil discoloration, presence of debris, or sheen) or through the use of field instrumentation (e.g., photoionization detector), the confirmation sample within a particular grid was moved from the center of the grid to the area of potential contamination.

At each excavation, one sidewall sample was collected for every 50 linear ft of sidewall with a minimum of one sample per sidewall. However, if the 50-ft spacing would result in more than 10 sidewall samples for a given cleanup action area, the linear spacing was increased to 75 ft. Sidewall samples were collected from the depth interval identified as contaminated for that excavation. If field observations of the soil along an excavation sidewall indicated evidence of contamination either through visual observation or through the use of field instrumentation, additional excavation of the sidewall was performed in this area to remove the potentially contaminated soil, or an additional confirmation sidewall sample was collected within the area of potential contamination to confirm that additional excavation was not required. As discussed in subsequent sections of this report, many of the cleanup action areas in Investigation Area I extended further laterally than estimated during design and the cleanup action areas merged together, resulting in the elimination or reduction of the sidewalls (and associated compliance samples) for many of the cleanup areas.

A consistent sample labeling protocol was used for most compliance monitoring samples. Samples were labeled with the cleanup area, followed by a "B" or an "S" to identify bottom and sidewall samples, followed by a sequential number. For example, Sample I2-B8 was the eighth bottom sample collected within Cleanup Action Area I2. If a compliance monitoring sample exceeded the interim action cleanup levels and the area was re-excavated, the subsequent compliance monitoring sample was given the same label with a lower case letter appended to the end of the label (e.g., D11-B8a); sequential appended letters, starting with "a", were used for locations where multiple iterations of excavation and compliance monitoring were conducted.

Compliance monitoring soil sample locations and the final excavation lateral limits for the northern and southern portions of the Site are shown on Figures 20 and 21, respectively.

5.3.3 SOIL SAMPLE COLLECTION

Compliance monitoring samples representative of the soil remaining at the base of the excavation were collected from the base and sidewalls of the excavation. A shallow hole was hand dug at each base sample location using decontaminated or disposable hand implements, including stainless-steel spoons and steel shovels, picks, and similar equipment. The sidewall surface of the hand-dug hole was scraped to expose a fresh surface for sample collection. In general, the upper 6 inches of the sample location sidewall was sampled using a decontaminated stainless-steel spoon, placed in a decontaminated stainless-steel bowl, homogenized, and transferred to the appropriate sample container, or were homogenized directly in the appropriate sample container. Material greater than about ¼ inch was removed from the sample volume. Equipment decontamination procedures are discussed in Appendix B.

Confirmation samples collected from the excavation sidewalls were collected from a depth interval extending the full thickness of the contaminated soil zone. For excavations in unpaved areas, the sample was collected from the ground surface to the base of the excavation. For excavations in paved areas, the sample was collected from the base of the pavement/subgrade section to the base of the excavation. The surface of the sidewall was scraped using a decontaminated hand implement to expose a fresh surface for sample collection. Equal amounts of soil from the full thickness of the sidewall, or sampling interval, were collected using a decontaminated stainless-steel spoon, placed in a decontaminated stainless-steel bowl, homogenized, and transferred to the appropriate sample container, or were homogenized directly in the appropriate sample container.

5.3.4 INTERIM ACTION IMPLEMENTATION

Interim action implementation included the excavation and offsite disposal of affected soil identified during previous Site investigation activities, and the collection and analysis of compliance monitoring samples to verify that interim action cleanup levels were achieved. Cleanup activities were conducted in conformance with the applicable plans and specifications for the cleanup action areas (Appendix E) except;

- Repeated excavation was conducted in most areas where compliance monitoring samples exceeded the interim action cleanup levels. The general areas of additional excavation can be seen on Figures 20 and 21 by gray dots, which represent the locations where additional soil was removed following a compliance sample cleanup level exceedance.
- An unplanned interim action was conducted in 2007 when metals-contaminated soil was encountered in a utility construction trench south of the new Bayside Marine building development of the Craftsman District following implementation of the planned interim action (Area G1a on Figure 21). The interim action for this area is discussed in Section 5.3.4.2.

The following sections describe cleanup activities for each of the 16 North Marina Redevelopment interim action areas, including observations about the nature of contamination, the extent of excavation, the disposal location and volume of contaminated soil, and the results of compliance monitoring. Figures 20 and 21 show the boundaries of the cleanup excavations with the compliance monitoring results. Compliance monitoring results are shown in Table 25 (soil remaining) and Table 26 (failed compliance monitoring data representing soil subsequently removed). Appendix C, Figures C-1 through C-3, provide post-interim action survey maps showing the planned and actual excavation boundaries. Figure 22 presents a depiction of the areas with residual contamination following the interim actions.

5.3.4.1 Cleanup Action Area G-1

Cleanup Action Area G-1 was remediated to facilitate construction of the new Bayside Marine building. The G-1 Area was excavated between June and September 2006 to approximately Elevation 15 ft MLLW, 0.5 ft below the adjacent pavement grade to the east on the Ameron leasehold. Cleanup was not completed in the G-1 area because work was suspended when it was determined that the Port did not obtain access permission from Ameron for the excavation activities.

Eight compliance bottom samples (G1-B1 and G1-B3 through G1B-9) were collected on June 30, 2006 following excavation to the planned limits. Of these, four samples (G1-B3, G1-B4, G1-B8, and

G1-B9) exceeded the interim action cleanup levels. Two of these were on the west side of G-1 (G1-B4 and G1-B9) in the authorized work area for construction of the Bayside Marine building. Additional excavation was conducted in September 2006 to remove the remaining contaminated material from the G1-B4 and G1-B9 area. Compliance monitoring bottom samples G1-B10 and G1-B11 were also collected at this time. Samples G1-B1 and G1-B3 through G1-B8 were tested for NWTPH-Dx, metals, and cPAHs, and samples G1-B8 through G1-B11 were tested for metals (arsenic, lead, and copper were the only constituents that exceeded their interim action cleanup levels in Area G-1 characterization samples). All of the compliance monitoring samples collected following the re-excavation of the west side of Area G-1 were below the interim action cleanup levels. A total of 2,700 tons (about 1,800 yd^3) of contaminated soil was excavated and disposed of from Area G-1.

No sidewall compliance monitoring samples were collected from Area G-1. Sidewalls did not exist to the north and east because adjacent grades were essentially equal to the post-excavation Area G-1 surface. A sidewall was not collected from the south end of Area G-1 because the exposed face exhibited deposits of sandblast grit that were contiguous with sandblast grit removed from Area G-1.

Residual contamination remains in the G-1 area in the vicinity of bottom samples G1-B3 and G1-B8 (Figure 22), in northeast corner of Area G-1 (surface samples G1-AC 3 through AC-5), and beyond the southern excavation boundary. Observations made during implementation of the Area G-1 interim action indicated black, sand-sized material (apparent sandblast grit) in pockets and layers throughout much most of Area G1, except for the extreme northeast portion of the area. The apparent sandblast grit was most prevalent in the southern portion of Area G-1 and extends farther south beyond the excavation limits. Photographs taken during interim action implementation of the sandblast grit observed at the south end of Area G-1 are presented in Appendix F.

Pieces of multi-colored concrete-like waste material ranging from gravel to large boulder size were present within the soil removed during the Area G-1 interim action. Wasted concrete products were also observed including several concrete poles and metal pole stands. The soft, gray clay-like material with a concrete odor observed in the northeast portion of Area G-1 exhibited arsenic concentrations between 80 and 120 mg/kg, but was not removed during the interim action.

During cleanup activities in Area G-1 on June 22, 2006, Landau Associates' personnel observed freshly placed material within Area G-1 that was not present during previous Site activities. This material had the odor and appearance of a concrete waste material, and appeared similar to the material observed elsewhere in Area G-1. The material exhibited arsenic and copper concentrations above the cleanup screening levels and a pH of 8.06, as indicated in Table 27.

A total of 2,700 tons (about 1,800 yd^3) of contaminated soil was excavated and disposed of from Area G-1.

5.3.4.2 Cleanup Action Area I-1

Cleanup Action Area I-1 encompassed a soil stockpile in the northeast portion of Area I (Figure 19). The stockpile reportedly originated from the placement of soil and debris from other Port leaseholds, although the specific source is not known (Landau Associates 2004). The interim action for Area I-1 was conducted in July 2006. The excavation depth for Area I-1 extended to approximately 1.5 ft below adjacent grades in the western portion of Area I-1 and to approximately 0.5 ft in the eastern portion, as described below. The eastern portion of Area I-1 was included as part of excavation in Cleanup Action Area I-3b.

Two bottom and two sidewall compliance monitoring soil samples (I1-B1, I1-B2, I1-S1 and I1-S2) were collected from the western half of Area I-1 and were tested for metals. Compliance sampling for the east half of Area I-1 was conducted as part of Area I-3b.

Both bottom samples exceeded the interim action cleanup levels for arsenic. Based on these data, an additional 1 ft of soil was excavated from the western half of Area I-1, and two additional compliance monitoring bottom samples (I1-B1a and -B2a) were collected and tested; both samples achieved the interim action cleanup levels.

One AC sample (I1-AC-1) was collected from the affected Area I-1 soil and tested for metals, TBT, and pH. The AC sample did not exceed any of the interim action cleanup levels, exhibited a normal soil pH (7.2), and a low TBT concentration (0.95 mg/kg TBT ion).

A total of 560 tons (370 yd^3) of contaminated soil were removed from Area I-1 and was disposed of at the Waste Management solid waste landfill in Arlington, Oregon.

5.3.4.3 Cleanup Action Areas I-2 through I-5

Cleanup Action Areas I-2 through I-5 exhibited similar types of contamination and largely merged into each other. They all addressed fill soil that had been placed in the area over hydraulic fill. Because the excavation merged together, they are discussed together in this section. Figure 19 shows the original cleanup design Areas I-2 through I-5.

Interim action for Areas I-2 through I-5 was conducted from July through November 2006. Initial excavation for all of these areas occurred between June 29 and July 28, 2006, but the combination of iterative compliance monitoring and re-excavation in some areas and delayed access to the south portion of Area I-2 extended the interim action to mid-November 2006. As shown on Figure 21, the Area I excavation areas merged together and only two small areas in the northwest and southwest-central were not excavated during the interim action. The depth of excavation ranged from about 1 to 7 ft below the existing grades. At the completion of excavation, the merged excavation was relatively flat, with a bottom elevation of between about 16 ft and 18ft (MLLW), with sidewalls greater than 1 ft in elevation limited to the south end of Area I-2, Area I-5, and adjacent to the perimeter of the unexcavated area in the southwestern portion of Area I.

The locations of compliance monitoring samples collected for Areas I-2 through I-5 are shown on Figure 21. Compliance monitoring samples for Areas I-2 and I-5 were tested for metals and Areas I-3 and I-4 were tested for metals and cPAHs. Analytical results for failed compliance monitoring samples from re-excavated areas are provided in Table 26 and final compliance monitoring results (representing current conditions) are provided in Table 25.

At least one iteration of re-excavation due to compliance monitoring samples exceeding the interim action cleanup levels occurred in each of these cleanup areas. The most iterations of compliance monitoring testing and re-excavation occurred in Area I-5, which was extended a significant distance farther to the south and east than planned. Area I-5 was also the deepest excavation conducted during the interim action, extending up to about 7 ft BGS. Area I-5 is also the only interim action area for which the interim action cleanup levels were not met, with residual contamination remaining along the north sidewall because the excavation could not be extended beyond the north property line. The adjacent property to the north is owned by Norton Industries, Inc.

A number of observations were made during the interim action implementation in Areas I-2 through I-5 that were indicative of potential sources of the releases in these areas. Black apparent sandblast grit was present in pockets and layers in all areas, with the most significant deposits present in Areas I-3a, I-3b, I-4, and I-5. Multi-colored concrete-like waste was also observed in much of the area, with the largest and most continuous deposits observed in Areas I-2 and I-5. Sandblast grit was observed interbedded with a pink to gray concrete-like waste in much of Areas I-2 and I-5, including along the north sidewall of Area I-5 at the north property boundary (samples I5-AC-NWall a, and I5-AC-NWall b). Appendix F presents a number of photographs of observed conditions during interim action implementation in Areas I-2 through I-5.

A localized area of wood debris with a creosote odor was observed in Area I-2 during interim action implementation. A sample of the material (I2-AC-1A) exhibited cPAH concentrations above the cleanup screening level and the affected material was excavated and disposed of at a solid waste facility.

A total of about 16,200 tons (about 10,800 yd^3) of contaminated soil were removed from Areas I-2 through I-5 during the interim action; breakdown by area as follows:

- Area I-2: 7,965 tons
- Area I-3: (a and b) 3,650 tons
- Area I-4: 780 tons
- Area I-5: 3,810 tons.

The majority of the material was disposed of at the Waste Management solid waste landfill in Arlington, Oregon, although a portion of the soil from Area I-4 was sent to the Rinker Materials inert waste landfill in Everett.

5.3.4.4 Cleanup Action Areas -I-6 and I-7

Interim action implementation for Interim Action Areas I-6 and I-7 are discussed together because the nature of contamination and conditions observed for these areas during implementation of the interim action are similar. The primary IHS driving the interim action was heavy metals (arsenic) in Area 7, and cPAHs in Area 6. Area I-6 compliance monitoring samples were tested for metals and cPAHs and Area I-7 compliance monitoring samples were tested for metals.

Interim action for Areas I-6 and I-7 was implemented between late July and mid-September 2006. The excavation was extended deeper than the planned 2.5 ft excavation in the vicinity of bottom sample I6-B6, where the excavation was extended to 3.5 ft BGS. However, both Areas I-6 and I-7 were extended laterally beyond the planned excavation boundaries. Area I-6 was significantly expanded to the north and the south. Area I-7 was expanded a limited distance to the south and east. Following completion of the excavations, the interim action cleanup levels were achieved throughout Areas I-6 and I-7, and the current cleanup screening levels were achieved, except for exceedance of the copper screening level at four locations. A general characterization sample, I-GC-12.6S, was used as the sidewall compliance monitoring sample at the south end of Area I-7 following expansion of the excavation in this area.

A total of about 3,240 tons (2,200 yd^3) of soil were removed from Area I-6 and 2,500 tons (1,700 yd^3) from Area I-7.

5.3.4.5 Cleanup Action Areas I-8 through I-11

The interim action for Areas I-8 through I-11 was implemented in October 2005, in advance of the interim action for the remainder of the Site, to support construction of the upland portion of the 12th Street Yacht Basin. As a result, a separate set of plans and specifications (Appendix E) and compliance monitoring plan (Landau Associates 2005d) were developed for these cleanup action areas. As discussed in Section 3.3.4.2 and shown in Table 24, the planned excavation depth for Areas I-8 through I-11 ranged from 1.5 to 2.5 ft BGS. The depth of excavation in portions of Areas I-9 and I-11, which were planned to extend 1.5 ft BGS, was extended to 2.5 ft BGS due to exceedance of the interim action cleanup levels in some bottom compliance monitoring samples. However, the depth of excavation was not extended deeper than 2.5 ft BGS in any of these interim action areas. Post-interim action survey data are not available for these areas.

The excavation was extended from the top of slope at the shoreline to about 50 ft eastward to accommodate construction for the yacht basin, but sidewall samples were not collected because additional excavation to the east was planned as part of the Site-wide interim action. Compliance monitoring samples were tested for metals and cPAHs. The interim action cleanup levels were achieved throughout Areas I-8 through I-11, and the cleanup screening levels were also achieved except for an exceedance of the copper screening level at location I-10b.

Contaminated soil from Areas I-8 through I-11 was temporarily stockpiled in a vacant building on Port property until waste characterization was completed during design for the Site-wide interim action. The stockpiled soil was disposed of at the Rinker Materials inert waste landfill following waste characterization and approval by the Snohomish Health District.

Crushed base course material imported as subgrade support for the esplanade at the head of the 12th Street channel was determined to contain arsenic concentrations in exceedance of the interim action cleanup level. This condition was discovered when Area I-7 sidewall sample I7-S6 was inadvertently collected from the base course material. The Area I-7 excavation was extended farther west in two iterations, but subsequent testing (I7-S6a and I7-S6b) confirmed the elevated arsenic concentrations in the crushed rock.

Additional testing of the base course material was conducted to evaluate soil quality of the base course material through the excavation and sampling of test pits BF-TP-1 through BF-TP-5, as shown on Figure 5. As indicated in Table 28, the arsenic concentrations in BF-TP-3 through BF-TP-5 exceeded the interim action cleanup level, exhibiting concentrations ranging from 55 mg/kg to 126 mg/kg. Based on these data, the Port decided to remove the accessible portion of the base course material and contain it in the eastern portion of Interim Action Cleanup Area J-3, where long-term containment was already planned for arsenic and cPAH-affected soil and construction debris. Containment of the base course material is further discussed in Section 5.3.4.6 on J-3.

The base course material was placed in a uniform layer about 8 inches thick from the shoreline about 60 ft inland, and from the north property line to about 100 ft north of the south boundary of Area I, which constitutes about 700 yd^3. About the western 20 ft of the affected base course material was already covered by the concrete esplanade constructed for public access along the shoreline, and as a result, the affected base course beneath the esplanade was left in place and is contained by this structure. As a result, the volume of affected base course removed from Area I and contained in Area J-3 is about 470 yd^3. The affected esplanade area will be discussed further in Section 6.0 of this report.

A total of 3,260 tons (2,200) from Areas I-8 through I-11. The individual volumes/masses removed from Areas I-8 through I-11 were not individually determined.

5.3.4.6 Cleanup Action Area J-1

Cleanup Action Area J-1 was excavated to remove contaminated soil containing arsenic above the soil interim action cleanup level. The excavated soil was disposed of at the Rinker Materials Everett Washington inert waste landfill. The limits of excavation are shown on Figure 20. The planned depth of excavation for Area J-1 was 2.5 ft, including 1 ft of clean overburden soil.

Area J-1 was excavated to its planned excavation depth in late July and compliance monitoring samples were collected on August 1, 2006. Compliance monitoring samples were tested for metals and all compliance monitoring samples achieved the arsenic interim action cleanup level. However, wood and metal debris was observed in the southern portion of Area J-1 and the Port decided to conduct additional excavation in this area because the debris would not be suitable as foundation subgrade for future buildings. Further excavation of this area revealed extensive wood and metal debris, including a crushed 55-gallon drum and sections of rigid metal pipe located inside a concrete vault or chamber that was subdivided into a series of compartments. The original purpose of the concrete chamber is not known, but it may be related to the concrete vault encountered during the 1993 MSRC building construction and interim action described in Section 4.2. Photographs of the concrete chambers and the excavated debris present in the chambers are presented in Appendix F.

Characterization samples Chamber-1 through Chamber-4 were collected from the soil matrix present in the chambers. The samples were tested for NWTPH-Dx, BTEX, heavy metals, TCLP metals, cPAHs, and PCBs. The analytical results are presented in Tables 1, 2, 9, 14, and 17, and all analytical parameters were either not detected above the reporting limits or were well below the interim action cleanup levels. Based on these results, the contents of the chambers were excavated, the metal was segregated from the soil matrix and recycled, and the soil and wood debris was disposed of at the Waste Management solid waste landfill in Arlington, Oregon.

The concrete vault was demolished following removal of the contents and recycled in conjunction with other concrete debris generated during building demolition for the North Marina redevelopment. Two additional compliance monitoring bottom samples (J1-TB1 and J1-TB2), and three additional sidewall samples (J1-TS1 through J1-TS3), were collected from the former chamber area. The additional compliance monitoring samples were tested for heavy metals and cPAHs, and none of the samples exceeded the interim action cleanup levels or the cleanup screening levels. Final compliance monitoring data for samples J1-TB1 through J1-TS3 are provided in Tables 25 and 28.

A total of about 550 tons (370 yd^3) of soil was removed from Area J-1, including the material removed from the concrete chamber.

5.3.4.7 Cleanup Action Area J-3

Cleanup Action Area J-3 was excavated to remove arsenic and cPAH-contaminated soil and apparent construction debris. As indicated in Section 4.3.4.3, the affected material extends up to 17 ft BGS, but the proximity of the foundation for the covered work area at the north end of the MSRC building precluded complete removal of the material. As a result, the interim action excavation was limited to 6 ft BGS to provide sufficient depth for the installation of planned utilities above the affected media, while avoiding undermining of the adjacent foundations for the covered work area. The intent of the interim action was to contain the remainder of the affected soil *in situ* as part of the final cleanup action.

Interim action for Area J-3 was implemented in September 2006. The excavation was extended to its planned limits and six sidewall compliance monitoring samples (J1-S1 through J1-S6) were collected and analyzed for heavy metals and cPAHs. A sidewall sample was not collected from beneath the MSRC canopy area because the excavation was terminated adjacent to the foundations prior to reaching the limits of the affected material. Bottom compliance monitoring samples were not collected because the excavation was not extended vertically to the limits of the affected material. It is anticipated that the affected material below the base of the excavation is contaminated with arsenic and/or cPAHs, but additional soil quality monitoring is needed to determine whether the residual material below the base of the excavation is contaminated. Photographs illustrating the conditions observed during interim action implementation in Area J-3 are presented in Appendix F.

Compliance monitoring results for Area J-3 are presented in Table 25 and shown on Figure 21. The sidewall compliance monitoring samples achieved the interim action cleanup levels, except for sample J3-S1, which exceeded the interim action cleanup level for arsenic. The excavation was not extended farther east to address the J3-S1 exceedance because the sample was collected adjacent to the fenceline for the Ameron leasehold.

A total of about 2,560 tons (1,700 yd^3) of soil and debris were removed from Area J-3 and disposed of at the Waste Management solid waste landfill in Arlington, Oregon.

As indicated in Section 5.3.4.5, arsenic-containing crushed rock used for esplanade and pavement subgrade along the western side of Area I was excavated and placed in Area J-3 for long-term containment. Area J-3 was selected as the location for containing this material because cleanup of Area J-3 included containment of suspected arsenic- and cPAH-contaminated soil and construction debris that was left in place below the excavation depth for new utilities. The arsenic-containing crushed rock was placed in the eastern portion of Area J-3, away from the planned utility alignment for the new Craftsman District development, at the approximate location shown on Figure 22.

5.3.4.8 Cleanup Action Area M-1

Cleanup Action Area M-1 was excavated to remove contaminated soil containing cPAHs above the soil interim action cleanup level. Area M-1 was excavated to a depth of 2 ft BGS, with the upper 0.5 ft consisting of an asphalt pavement section. The Area M-1 interim action was implemented in August 2006.

A total of four bottom samples and seven sidewall samples were collected from the excavation, and the analytical results for the compliance monitoring samples are presented in Table 25 and shown on Figure 21. All samples were tested for cPAH, and sidewall sample M1-S1 was the only sample that exceeded the cPAH interim action cleanup level; the other samples did not exhibit detectable concentrations of cPAHs.

Sample M1-S1 was collected from the south side of the Ameron entrance. The excavation was not extended farther north to avoid interference with Ameron's operations. Additionally, it was recognized that additional characterization would be needed in the future to complete characterization activities on the Ameron leasehold, so the M-1 area could be further delineated and remediated in conjunction with these future activities.

A total of about 400 tons (270 yd^3) of soil was removed from Area M-1 and disposed of at the Rinker Materials inert waste landfill in Everett, Washington.

5.3.4.9 Cleanup Action Area G-1A (Areas I and G)

During construction of underground utilities south of the new Bayside Marine building in October 2007, multi-colored concrete-like waste material and apparent sandblast grit were encountered. Additionally, a heavy oil sheen was encountered in the southeast corner of the subsequent interim action excavation. The multi-colored concrete waste encountered in the excavation included a 4-inch diameter cylinder of green concrete-like material and a brittle, multi-colored varved (thinly layered) material that appeared to be accumulated settling pond sediment, as well as multi-colored concrete-like material similar to that encountered elsewhere during the interim action.

Soil from the utility vault excavation was stockpiled and construction was halted to allow remediation of the contaminated material prior to resuming further construction activities. The area was located south of the southeast corner of the new Bayside Marine building and portions of the area were in both Areas G and I. The extent north-south appeared to be limited to about a 50-ft zone based on other utility vault excavation locations. In the field, there was uncertainty about whether the excavation area was within Area G or Area I because the original fence had been removed and the excavation appeared to fall within the 10-ft zone between the former fenceline and the actual leasehold boundary (Section 3.4.4.2). The compliance monitoring samples were labeled G1a, but survey data subsequently indicated the excavation was in both areas (See Figure 21). The occurrence of the material straddling the fenceline suggested the contamination originated prior to construction of the fenceline that separates the two areas.

Area G-1A was excavated on October 5, 2007 to about 5 ft BGS. Excavation was terminated to the east on the Ameron leasehold boundary where apparent sandblast grit and concrete-like waste were observed, so east sidewall compliance samples were not collected. The excavation to the west encountered an electric utility conduit so could not be extended any farther in that direction. Multi-colored concrete-like waste material was present in the west excavation sidewall (see Appendix F), but three west sidewall compliance monitoring samples (G1A-100507-S1, -S2 and -S3) were collected since the excavation extended into Cleanup Action Area I-4, which had been previously remediated. Two compliance monitoring bottom samples (G1A-100507-B1 and G1A-100507-B2) were also obtained. Due to the constraints on any further excavation, the interim action was terminated and the excavation backfilled with clean structural fill. Compliance monitoring samples were tested for metals and cPAHs.

The compliance monitoring data are shown on Figure 21. The data indicate the bottom and sidewall samples at the north end of the excavation achieved the cleanup screening levels; however, the bottom sample collected in the southwest portion of the excavation and the western two sidewall samples exceeded the cleanup screening levels for arsenic, lead, and/or copper, with arsenic and copper exceeding the cleanup screening levels in all three samples. The compliance data and field observations indicate the sandblast waste continues to the east, west, and southwest, and multi-colored concrete-like waste continues to the west.

A total of about 170 tons of soil was removed from Area G-1A. Two soil samples collected from the stockpile material were tested for waste profiling (G1A-100907-STK-1 and G1A-101607-STK-2) and, based on the analytical results (Tables 1, 9, and 14), the material was disposed of as solid waste. One sample of green sandblast waste observed in the excavation (G1A-100907-AC-1) was obtained and analyzed for total metals. These data indicated no exceedances of the cleanup screening levels.

6.0 CONCLUSIONS

The interim action conducted for the Site achieved the interim action soil cleanup levels throughout most of the planned interim action areas and, with the exception of a few copper exceedances, the current soil screening levels developed for the Site were also achieved. The results of interim action compliance monitoring and observations, combined with the results of previous environmental investigations, support the following conclusions regarding Site environmental conditions:

- Soil contamination is not present in the hydraulic fill used to create much of the Site uplands, unless impacted by releases that occurred subsequent to its placement as upland fill.

- Soil contamination is generally limited to shallow soil located above the hydraulic fill

- Site groundwater generally achieves groundwater screening levels, with only localized areas of low level groundwater contamination indicated by available groundwater quality data.

Although soil screening levels were achieved in most areas, a limited amount of soil contamination associated with the interim actions remains that will need to be addressed during the RI/FS in conjunction with further characterization of portions of the Site not fully characterized or cleaned up as part of the interim actions. Specifically, the following issues associated with the interim actions will need to be addressed during the upcoming scoping for the RI/FS:

- Residual soil contamination remains in Area G-1 due to the interim action being terminated prior to completion in this area.
- Residual soil contamination remains in Area G-1a because utilities prevented further excavation to the west and excavation was terminated to the east because contamination extended into an area beyond the limits of the planned interim action.
- Residual soil contamination remains at the North sidewall of Area I-5, indicating that the release is also present on the adjacent property to the north.
- Arsenic-containing crushed rock base course material occurs beneath the esplanade and adjacent pavement at the head of the 12th Street Yacht Basin, and will require further evaluation during scoping for the RI/FS work plan.
- Soil and debris, and recently placed arsenic-containing crushed rock base course material, contained beneath asphalt pavement in Area J-3 will require further evaluation to determine whether it is contaminated with arsenic or cPAHs, similar to the material removed during the Area J-3 interim action.
- The arsenic and copper groundwater screening levels have been slightly exceeded in samples collected from locations within some of the 2005 to 2007 interim action areas and will require further evaluation during scoping for the RI/FS work plan.
- Groundwater quality was not evaluated in the area to the north of the MSRC building where petroleum hydrocarbon-affected soil and free product were encountered during construction of utilities for the Craftsman District.

- Because the aquatic portion of the Site was dredged during development of the 12th Street Marina, it is not anticipated that Site sediment is affected by previous Site activities. However, sediment characterization will be required to evaluate current sediment quality conditions.

These issues will be addressed within the RI/FS work plan that will be prepared for the Site. The RI/FS work plan will also address Site areas not previously subject to interim action or thorough environmental characterization, and will include a more extensive historical review than was conducted during previous investigations.

7.0 LIMITATIONS

This document has been prepared for the exclusive use of the Port of Everett for the North Marina Ameron/Hulbert Site. 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 of Everett 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 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.

LANDAU ASSOCIATES, INC.

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Alyssa B. Johnson
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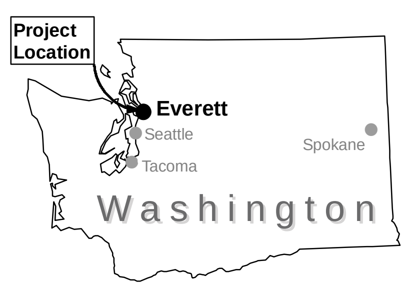

Data Source: ESRI 2008

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North Marina Ameron/Hulbert Site Interim Action Report Everett, Washington	**Vicinity Map**	Figure 1

Y:\Projects\147029\Mapdocs\Ameron Hulbert Site\Interim Action Report\Final\Fig2.mxd 10/30/2009 NAD 1983 StatePlane Washington North FIPS 4601 Feet

Legend

- Current Ameron Leasehold
- North Marina Boundary
- 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.

0 200 400
Scale in Feet

Data Source: 2007 Google Earth Image; Snohomish County Assessor

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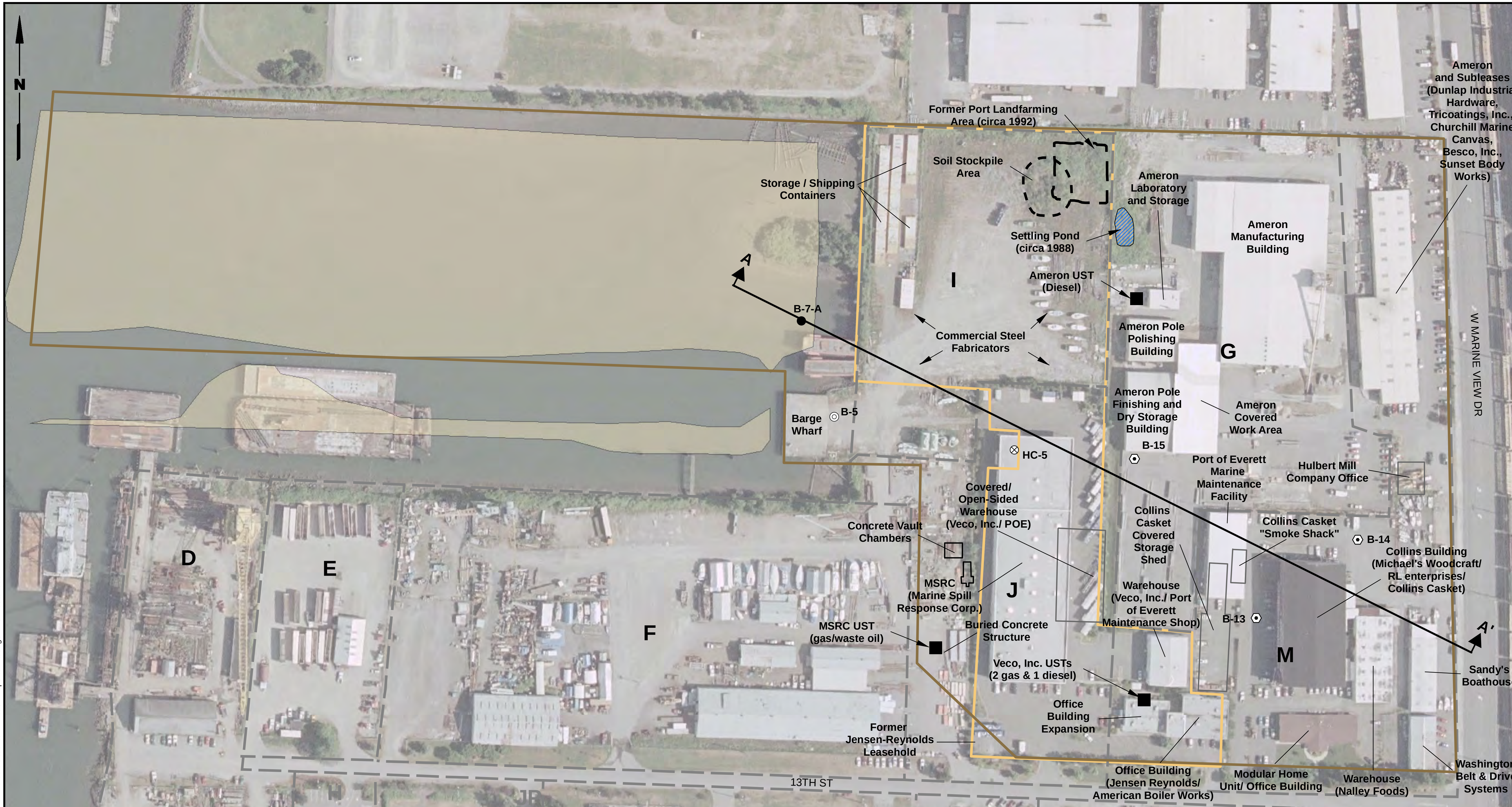
North Marina Ameron/Hulbert Site Interim Action Report Port of Everett, Washington	**North Marina Ameron/Hulbert Site Plan**	Figure 2



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Legend

- Hart Crowser Report 12-3-2003 Closed-Ended Test Pile
- Approximate Geotechnical Boring Location (Hart Crowser - 1992)
- Approximate Geotechnical Boring Location (Landau Associates - 2005)
- Approximate Geotechnical Boring Location (Dames & Moore - 1975)
- Cross Section A-A'
- J — Investigation Area Designation and Boundary
- Approximate Dredging Area of 12th Street Yacht Basin
- Approximate North Marina Ameron/Hulbert Site Boundary

0 160 320
Scale in Feet

Data Source: Google Earth (2003 Image)

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

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North Marina Ameron/Hulbert Site Interim Action Report Port of Everett, Washington	**Pre-Interim Action Site Features**	Figure 3

Y:\Projects\147029\Mapdocs\Ameron Hulbert Site\Interim Action Report\Final\Fig4.mxd 1/14/2010

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: Port of Everett (2009 Image)

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North Marina Ameron/Hulbert Site Interim Action Report Port of Everett, Washington	**Current Site Features**	Figure 4

Legend

- AGI & Earth Consultants, Inc. Concrete Settling Basin Sump Sample Location (1992)
- Earth Consultants, Inc. Surface Soil Sample Location (1987, 1992)
- Earth Consultants, Inc. Monitoring Well (1992)
- Earth Consultants, Inc. Test Pit Location (1992)
- LAI Surface Soil Sample Location (2004-2008)
- LAI Soil Boring Location (2004-2006)
- LAI Hand Auger Location (2006)
- LAI Monitoring Well (2004)
- LAI Test Pit Location (2005-2007)
- Hart Crowser Monitoring Well (1991-1992)
- Hart Crowser Boring Location (1991)
- Kleinfelder Surface Soil Sample Location (1993)
- Kleinfelder Test Pit Location (1993)
- Sweet Edwards/EMCON, Boring Location (1989)
- Sweet Edwards/EMCON, Monitoring Well (1989)
- Sweet Edwards/EMCON, Pond Sample (1989)
- Approximate North Marina Ameron/Hulbert Site Boundary
- G - Area Designation
- Soil Sample Location
- Groundwater Sample Location
- Soil and Groundwater Sample Location
- Soil Boring With No Analytical Sample Taken

Note

1. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.
2. * Indicates location is approximate.

Data Source: 6/19/2002 Google Earth Image

0 80 160

Scale in Feet

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North Marina Ameron/Hulbert Site
Interim Action Report
Port of Everett, Washington

Characterization Sample Locations
Northern Half of Site

Figure
5

Y:\Projects\147029\Mapdocs\Ameron Hulbert Site\Interim Action Report\Final\Fig6.mxd 10/30/2009 NAD 1983 StatePlane Washington North FIPS 4601 Feet

Legend

- Earth Consultants, Inc. Surface Soil Sample Location (1992)
- Earth Consultants, Inc. Monitoring Well (1992)
- LAI Surface Soil Sample Location (2004-2008)
- LAI Soil Boring Location (2004-2006)
- LAI Hand Auger Location (2006)
- LAI Monitoring Well (2004)
- LAI Test Pit Location (2005-2007)
- Hart Crowser Monitoring Well (1991-1992)
- Kleinfelder Test Pit Location (1993)
- Soil Sample Location
- Groundwater Sample Location
- Soil and Groundwater Sample Location
- Soil Boring With No Analytical Sample Taken
- Approximate North Marina 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.

Data Source: 6/19/2002 Google Earth Image

0 80 160

Scale in Feet

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North Marina Ameron/Hulbert Site Interim Action Report Port of Everett, Washington	**Characterization Sample Locations Southern Half of Site**	Figure 6

Y:\Projects\147029\Mapdocs\Ameron Hulbert Site\Interim Action Report\Final\Fig7.mxd 10/30/2009 NAD 1983 StatePlane Washington North FIPS 4601 Feet

Legend

- Stormwater Catch Basin Sample Location – Sediment and Water Sampled (LAI 2008)
- Stormwater Catch Basin Sample Location – Water Sampled Only (LAI 2008)
- Stormwater Outfall Sample Location - Water Only (ECI 1992, AGI 1992)
- Stormwater Sample Exceeds the Ecology Industrial Stormwater General Permit Criteria, or Stormwater Catch Basin Sediment Sample Exceeds MTCA Cleanup Screening Levels.
- Approximate Location of Storm Drain System Piping
- G - Area Designation
- Approximate North Marina Ameron/Hulbert Site Boundary

Note
1. As = Arsenic, Cu = Copper, Pb = Lead, Cd = Cadmium Zn = Zinc
2. 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

0 60 120
Scale in Feet

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North Marina Ameron/Hulbert Site
Interim Action Report
Port of Everett, Washington

Stormwater System Sample Locations and Results

Figure 7

Y:\Projects\147029\Mapdocs\Ameron Hulbert Site\Interim Action Report\Final\Fig8.mxd 10/30/2009 NAD 1983 StatePlane Washington North FIPS 4601 Feet

Legend

- Pentec Sediment Sample Locations (2001)
- Rittenhouse-Zemen Assoc. Sediment Coring Locations (1991)
- Earth Consultants, Inc. Sediment Sample Location (1992)
- Layton and Sell, Inc. Sediment Sample Location (1988; RZA 1989 App. B)
- SAIC Sediment Sample Location (2009)
- G - Area Designation
- 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.
2. Site aquatic lands were dredged as part of the 12th St. Yacht Basin development subsequent to data collection.

Data Source: 6/19/2002 Google Earth Image

0 140 280
Scale in Feet

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North Marina Ameron/Hulbert Site Interim Action Report Port of Everett, Washington	**Sediment Characterization Sample Locations**	Figure 8

Y:\Projects\147029\Mapdocs\Ameron Hulbert Site\Interim Action Report\Final\Fig9.mxd 10/30/2009 NAD 1983 StatePlane Washington North FIPS 4601 Feet

Legend

- Layton and Sell, Inc. Sediment Sample Location (1988; RZA 1989 App. B)
- Earth Consultants, Inc. Sediment Sample Location (1992)
- Sample location exceeds SMS Criteria
- No Discrete or Composite Sample Analyzed for this Location
- G - Area Designation
- Approximate North Marina Ameron/Hulbert Site Boundary

Note

1. Zn = Zinc.
2. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.
3. Site aquatic lands were dredged as part of the 12th St. Yacht Basin development subsequent to data collection.

Data Source: 6/19/2002 Google Earth Image

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North Marina Ameron/Hulbert Site Interim Action Report Port of Everett, Washington	**Layton & Sell, Inc. and Earth Consultants, Inc. Sediment Composite Sample Locations and Results**	Figure 9

Y:\Projects\147029\Mapdocs\Ameron Hulbert Site\Interim Action Report\Final\Fig10.mxd 10/30/2009 NAD 1983 StatePlane Washington North FIPS 4601 Feet

Legend

- ▼ Rittenhouse-Zemen Assoc. Sediment Coring Locations (1991)
- C-1 Shallow composite samples (0-4ft)
- * Discrete shallow sample location
- ● Sample location exceeds SMS Criteria
- G - Area Designation
- Approximate North Marina Ameron/Hulbert Site Boundary

Note
1. Hg = Mercury
2. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.
3. Site aquatic lands were dredged as part of the 12th St. Yacht Basin development subsequent to data collection.

Data Source: 6/19/2002 Google Earth Image

0 140 280
Scale in Feet

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North Marina Ameron/Hulbert Site
Interim Action Report
Port of Everett, Washington

RZA Shallow Sediment Composite Sample Locations and Results

Figure 10

Y:\Projects\147029\Mapdocs\Ameron Hulbert Site\Interim Action Report\Final\Fig11.mxd 10/30/2009 NAD 1983 StatePlane Washington North FIPS 4601 Feet

Legend

- ▼ Rittenhouse-Zemen Assoc. Sediment Coring Locations (1991)
- C-5 Deeper composite samples (>4ft)
- * Discrete deeper sample location
- ● (red) Sample location exceeds SMS Criteria
- ● (gray) No Deep Discrete or Composite Sample Collected at this Location
- G - Area Designation
- Approximate North Marina Ameron/Hulbert Site Boundary

Note
1. Hg = Mercury
2. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.
3. Site aquatic lands were dredged as part of the 12th St. Yacht Basin development subsequent to data collection.

0 140 280
Scale in Feet

Data Source: 6/19/2002 Google Earth Image

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North Marina Ameron/Hulbert Site Interim Action Report Port of Everett, Washington	**RZA Deep Sediment Composite Sample Locations and Results**	Figure 11

Y:\Projects\147029\Mapdocs\Ameron Hulbert Site\Interim Action Report\Final\Fig12.mxd 10/30/2009 NAD 1983 StatePlane Washington North FIPS 4601 Feet

Legend

- Pentec Sediment Coring Locations (2001)
- SAIC Sediment Sample Location (2009)
- CM-1 Surface Sediment Composite Sample Location (0-4ft)
- CM-S4 Sub-Surface Sediment Composite Sample Location (>4ft)
- Sample location exceeds SMS Criteria
- G - Area Designation
- 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.
2. Site aquatic lands were dredged as part of the 12th St. Yacht Basin development subsequent to data collection.

0 140 280
Scale in Feet

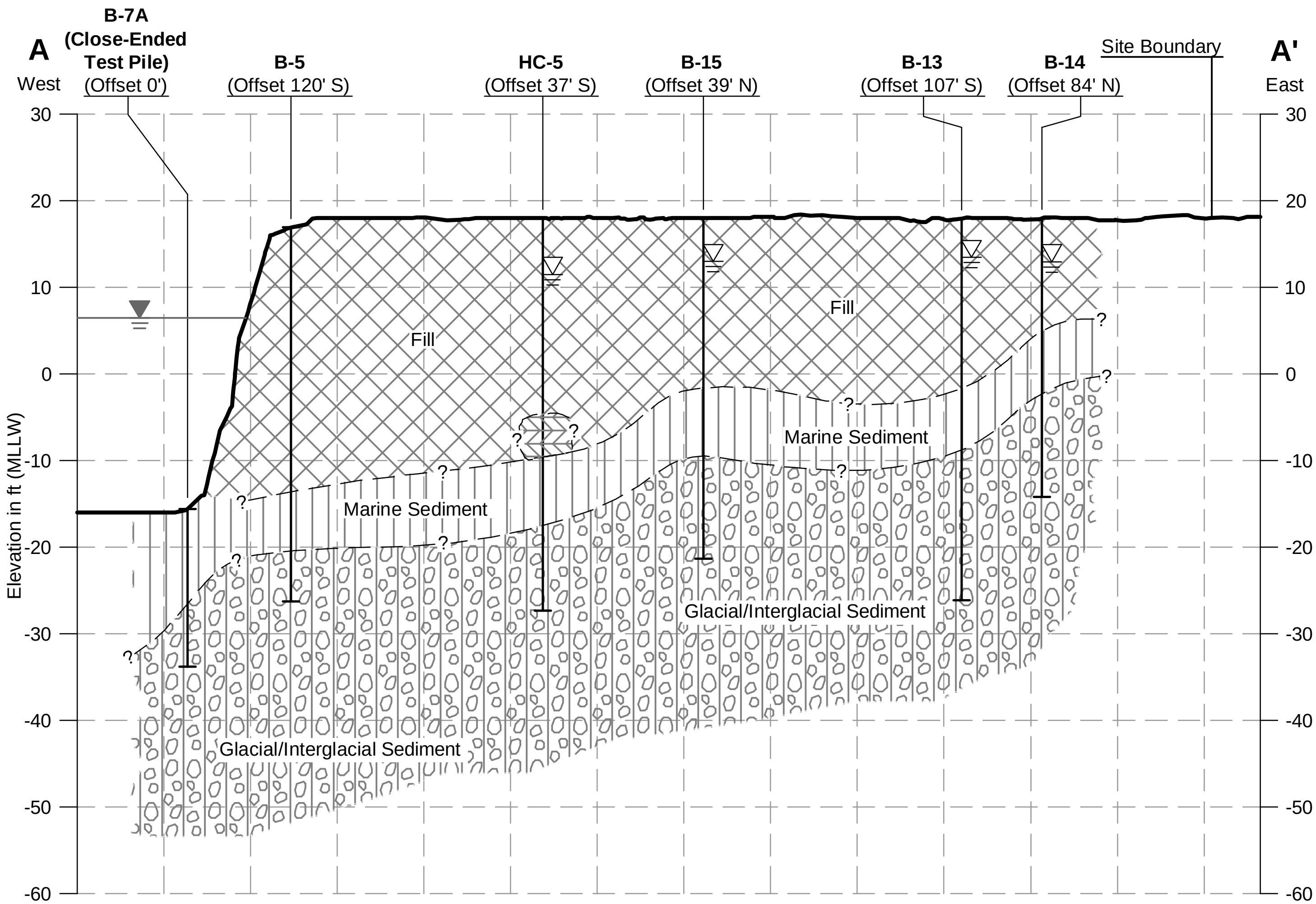
Data Source: 6/19/2002 Google Earth Image

Landau Associates

North Marina Ameron/Hulbert Site
Interim Action Report
Port of Everett, Washington

Pentec and SAIC Sediment Composite Sample Locations and Results

Figure
12



Legend

B-5
(Projected 74' S)

Depth of Water at Time of Drilling

Mean Sea Level

Notes

1. This cross section approximates conditions between data collections points.
2. Exploration location and identification projected to the cross section line.
3. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

Fill	Fine to fine medium SAND with silt to trace silt and silty fine SAND to fine sandy SILT with areas of debris (wood, concrete, metal) (loose to medium dense and soft to medium stiff)	Marine Sediment	Fine SAND with silt to silty fine SAND and fine sandy SILT to clayey SILT (very loose to medium dense and very soft to medium stiff)
Wood Debris	Wood as timber and sawdust	Glacial/Interglacial Sediment	Fine to medium SAND with silt to trace silt and clayey SILT (medium dense to very dense and medium stiff to hard)

0 200 400
Scale in Feet
Vertical Exaggeration 10X

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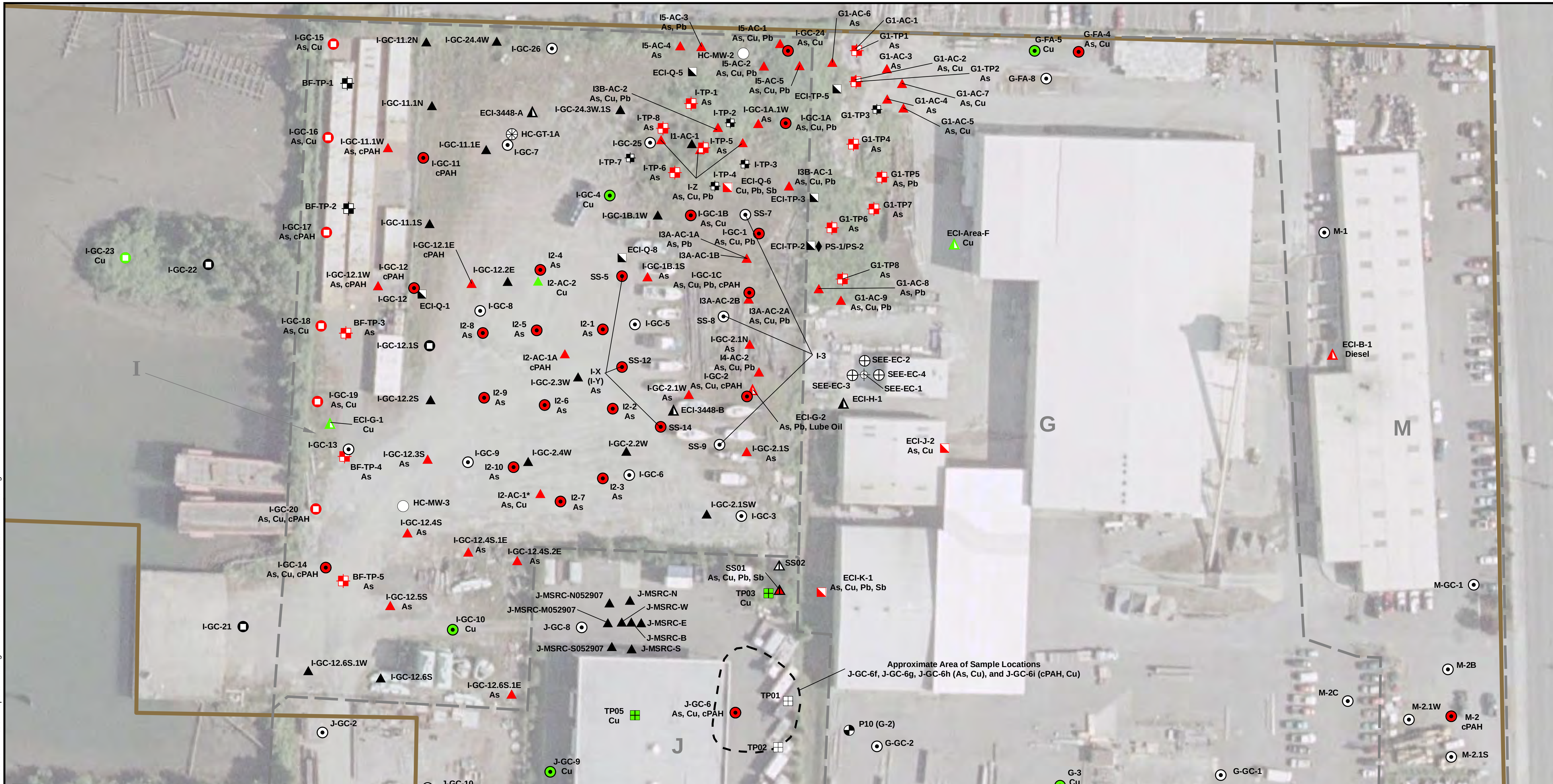
North Marina
Ameron/Hulbert Site
Interim Action Report
Port of Everett, Washington

Cross Section A-A'

Figure 13



Legend

- Earth Consultants, Inc. Surface Soil Sample Location (1987, 1992)
- Earth Consultants, Inc. Test Pit Location (1992)
- LAI Surface Soil Sample Location (2004-2008)
- LAI Soil Boring Location (2004-2006)
- LAI Monitoring Well (2004)
- LAI Hand Auger Location (2006)
- LAI Test Pit Location (2005-2007)
- Hart Crowser Monitoring Well (1991-1992)
- Hart Crowser Boring Location (1991)
- Kleinfelder Surface Sample Location (1993)
- Kleinfelder Test Pit Location (1993)
- Sweet Edwards/Emcon Boring Location (1989)
- Sweet Edwards/Emcon Monitoring Well (1989)
- Sweet Edwards/Emcon Pond Sample (1989)
- Soil Sample Exceeds Cleanup Screening Level - Constituent that exceeds is noted below sample name.
- Soil Sample Exceeds Cleanup Screening Level for Copper Only Based on Protection of Groundwater (Not Direct Contact)
- G - Area Designation
- Approximate North Marina Ameron/Hulbert Site Boundary

0 80 160

Scale in Feet

Data Source: 6/19/2002 Google Earth Image

Note

1. As = Arsenic, Cu = Copper, Pb = Lead, Sb = Antimony cPAHs = Carcinogenic Polycyclic Aromatic Hydrocarbons. PCBs = Polychlorinated biphenyls
2. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.
3. * Indicates location is approximate.

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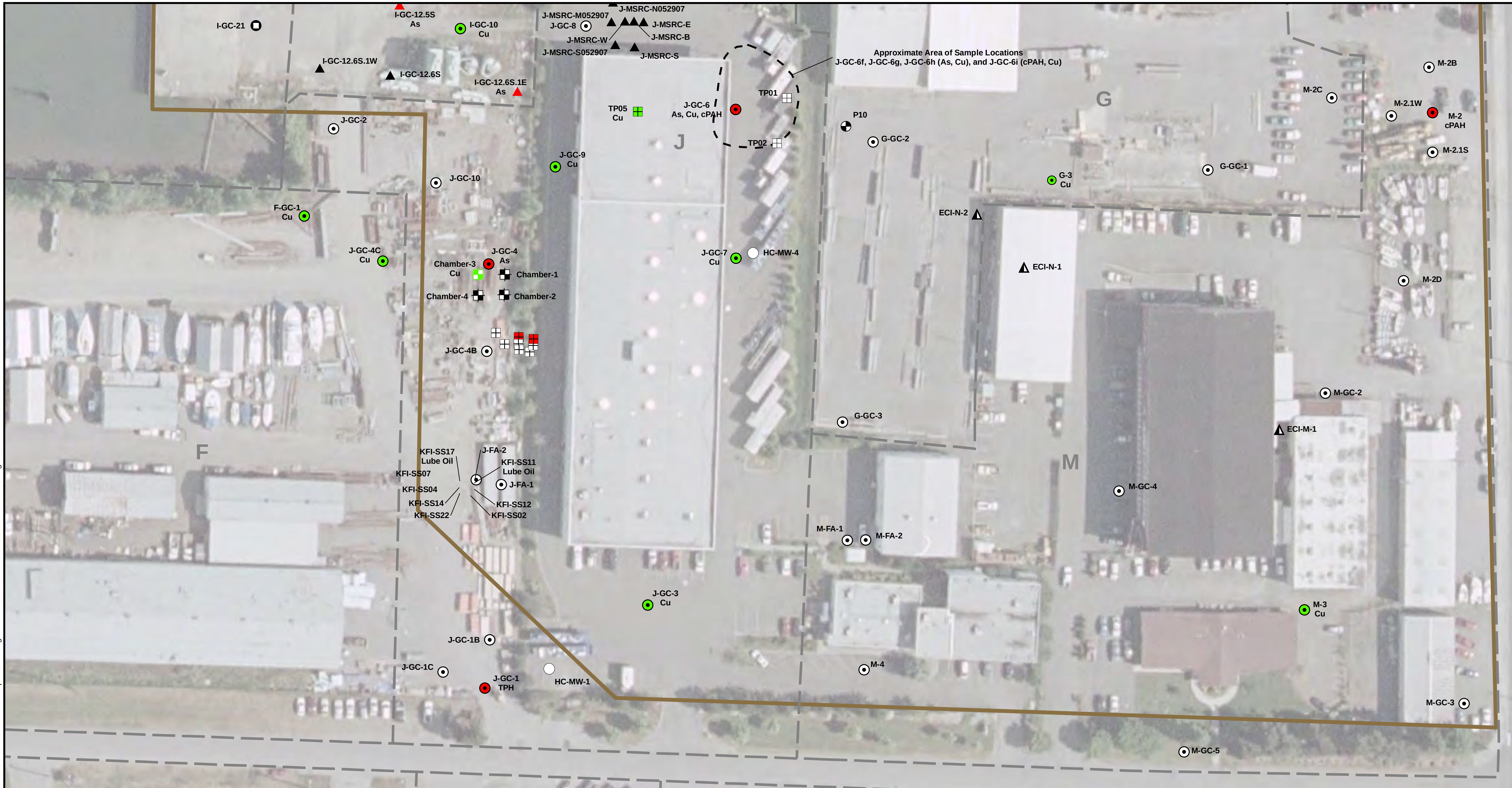
North Marina Ameron/Hulbert Site Interim Action Report Port of Everett, Washington	**Soil Analytical Results** **Northern Half of Site**	Figure 14



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Legend

- Earth Consultants, Inc. Surface Soil Sample Location (1992)
- LAI Surface Soil Sample Location (2004-2008)
- LAI Soil Boring Location (2004-2006)
- LAI Monitoring Well (2004)
- LAI Test Pit Location (2008)
- LAI Hand Auger Location (2006)
- Hart Crowser Monitoring Well (1991-1992)
- Kleinfelder Test Pit Location (1993)
- Soil Sample Exceeds Cleanup Screening Level - Constituent that exceeds is noted below sample name.
- Soil Sample Exceeds Cleanup Screening Level for Copper Only Based on Protection of Groundwater (Not Direct Contact)
- G - Area Designation
- Approximate North Marina Ameron/Hulbert Site Boundary

Note
1. As = Arsenic, Cu = Copper, cPAHs = Carcinogenic Polycyclic Aromatic Hydrocarbons, PCBs = Polychlorinated biphenyls, TPH = Total Petroleum Hydrocarbons
2. 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

0 80 160
Scale in Feet

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North Marina Ameron/Hulbert Site
Interim Action Report
Port of Everett, Washington

Soil Analytical Results
Southern Half of Site

Figure
15

Y:\Projects\147029\Mapdocs\Ameron Hulbert Site\Interim Action Report\Final\Fig16.mxd 10/30/2009 NAD 1983 StatePlane Washington North FIPS 4601 Feet

Legend

- ⊠ AGI & Earth Consultants, Inc. Concrete Settling Basin Sump Sample Location (1992)
- ◐ Earth Consultants, Inc. Monitoring Well (1992)
- ⊙ LAI Soil Boring Location (2004-2006)
- ◕ LAI Monitoring Well (2004)
- ▲ LAI Excavation Grab Sample (2007)
- ○ Hart Crowser Monitoring Well (1991-1992)
- ⊕ Sweet Edwards/Emcon Monitoring Well (1989)
- ♦ Sweet Edwards/Emcon Pond Sample (1989)
- ● Groundwater Sample Exceeds Cleanup Screening Level - Constituent that exceeds is noted below sample name (for metals analyses, only exceedances in dissolved concentrations are shown).
- Approximate North Marina Ameron/Hulbert Site Boundary
- G - Area Designation

Note

1. As = Arsenic, Cu = Copper, TPH = Total Petroleum Hydrocarbons, BEHP = Bis 2-Ethylhexyl phthalate.
2. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

0 80 160

Scale in Feet

Data Source: 6/19/2002 Google Earth Image

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North Marina Ameron/Hulbert Site Interim Action Report Port of Everett, Washington	**Groundwater Analytical Results Northern Half of Site**	Figure 16

Legend

- Earth Consultants, Inc. Monitoring Well (1992)
- LAI Soil Boring Location (2004-2006)
- LAI Monitoring Well (2004)
- Hart Crowser Monitoring Well (1991-1992)
- Groundwater Sample Exceeds Cleanup Screening Level - Constituent that exceeds is noted below sample name (for metals analyses, only exceedances in dissolved concentrations are shown).
- Approximate North Marina Ameron/Hulbert Site Boundary
- G - Area Designation

Note
1. As = Arsenic, Cu = Copper, VC= Vinyl Chloride
2. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

0 80 160
Scale in Feet

Data Source: 6/19/2002 Google Earth Image

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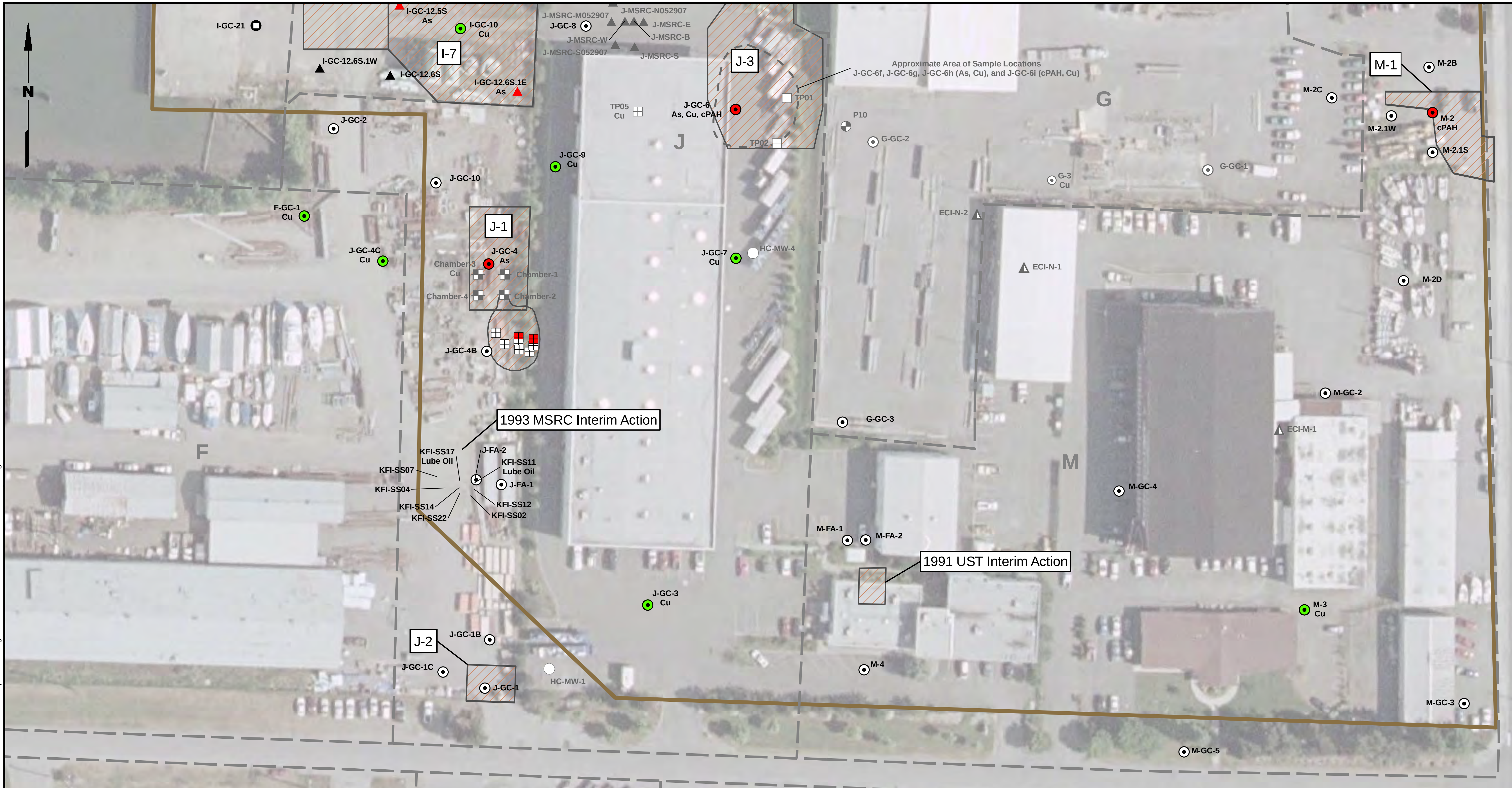
North Marina Ameron/Hulbert Site
Interim Action Report
Port of Everett, Washington

Groundwater Analytical Results
Southern Half of Site

Figure
17



Y:\Projects\147029\Mapdocs\Ameron Hulbert Site\Interim Action Report\Final\Fig18.mxd 4/6/2010 NAD 1983 StatePlane Washington North FIPS 4601 Feet

Legend

- Earth Consultants, Inc. Surface Soil Sample Location (1992)
- LAI Surface Soil Sample Location (2004-2008)
- LAI Soil Boring Location (2004-2006)
- LAI Monitoring Well (2004)
- LAI Test Pit Location (2008)
- LAI Hand Auger Location (2006)
- Hart Crowser Monitoring Well (1991-1992)
- Kleinfelder Test Pit Location (1993)
- Soil Sample Exceeds Cleanup Screening Level - Constituent that exceeds is noted below sample name.
- Soil Sample Exceeds Cleanup Screening Level for Copper Only Based on Protection of Groundwater (Not Direct Contact)
- Soil sample shown in gray were not used as part of interim action area design
- Planned Interim Action Areas
- G - Area Designation
- Approximate North Marina Ameron/Hulbert Site Boundary

Note

1. As = Arsenic, Cu = Copper, cPAHs = Carcinogenic Polycyclic Aromatic Hydrocarbons.
2. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

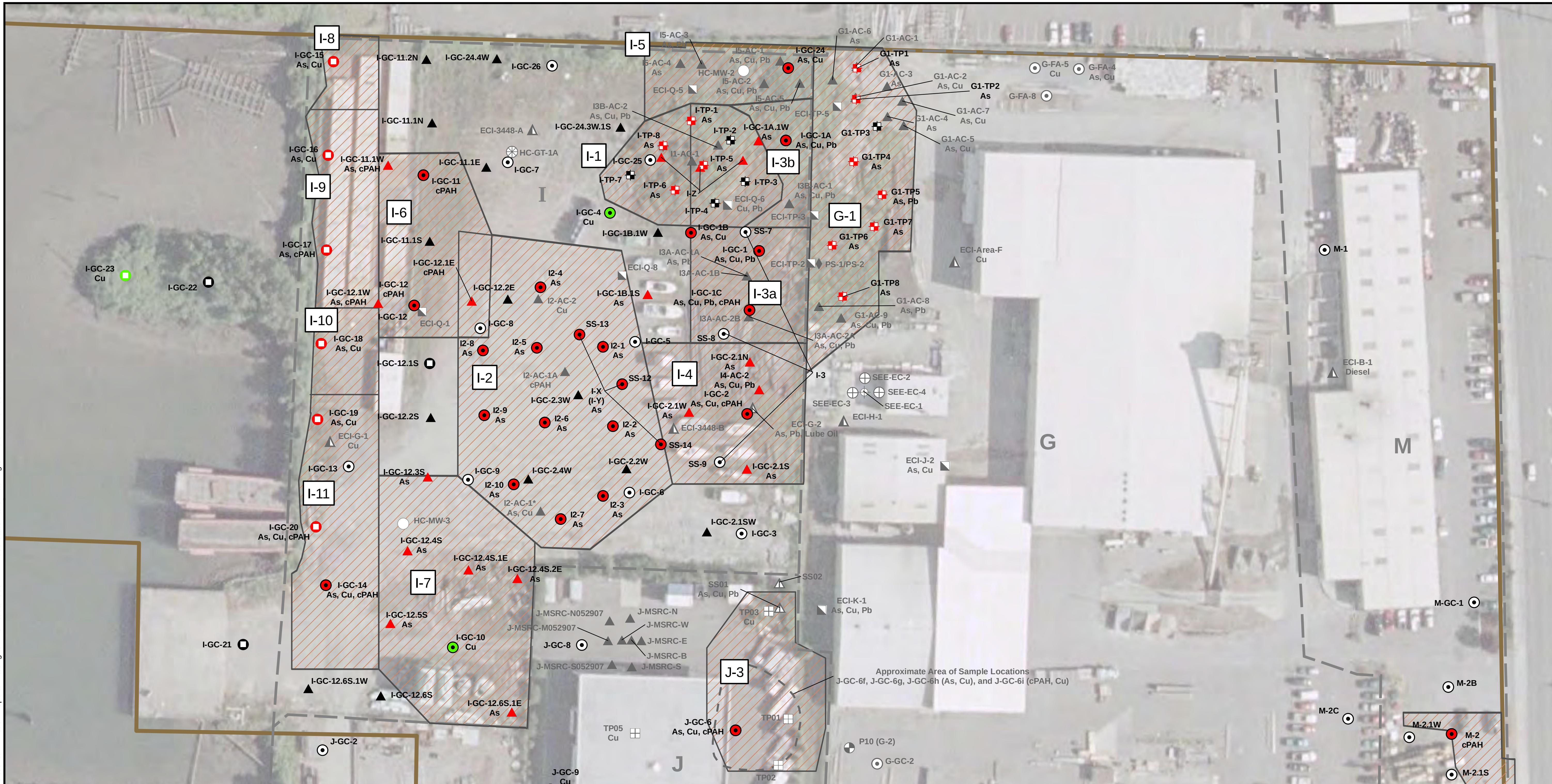
Data Source: 6/19/2002 Google Earth Image

0 80 160

Scale in Feet

LANDAU ASSOCIATES

North Marina Ameron/Hulbert Site Interim Action Report Port of Everett, Washington	**Planned Interim Action Areas - Southern Half of Site**	Figure 18



Legend

- Earth Consultants, Inc. Surface Soil Sample Location (1987-1992)
- Earth Consultants, Inc. Test Pit Location (1992)
- LAI Surface Soil Sample Location (2004-2008)
- LAI Soil Boring Location (2004-2006)
- LAI Monitoring Well (2004)
- LAI Hand Auger Location (2006)
- LAI Test Pit Location (2008)
- Hart Crowser Monitoring Well (1991-1992)
- Hart Crowser Boring Location (1991)
- Kleinfelder Surface Sample Location (1993)
- Kleinfelder Test Pit Location (1993)
- Sweet Edwards/Emcon Boring Location (1989)
- Sweet Edwards/Emcon Monitoring Well (1989)
- Sweet Edwards/Emcon Pond Sample (1989)
- Soil Sample Exceeds Cleanup Screening Level - Constituent that exceeds is noted below sample name.
- Soil Sample Exceeds Cleanup Screening Level for Copper Only Based on Protection of Groundwater (Not Direct Contact)
- Soil samples shown in gray were not used as part of interim action design
- Planned Interim Action Areas
- G - Area Designation
- Approximate North Marina Ameron/Hulbert Site Boundary

0 80 160
Scale in Feet

Data Source: 6/19/2002 Google Earth Image

Note

1. As = Arsenic, Cu = Copper, Pb = Lead, cPAHs = Carcinogenic Polycyclic Aromatic Hydrocarbons.
2. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.
3. * Indicates location is approximate.

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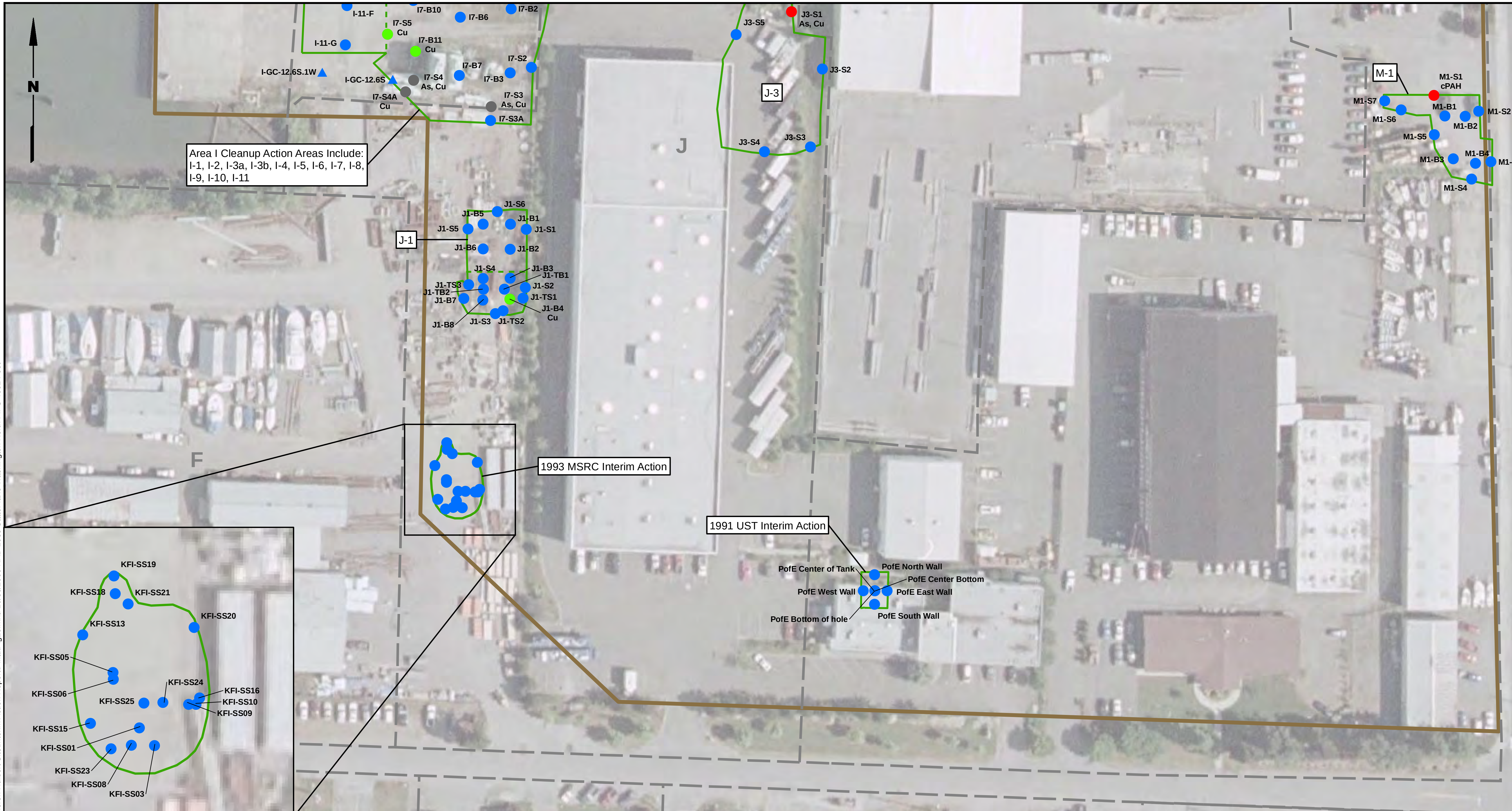
North Marina Ameron/Hulbert Site
Interim Action Report
Port of Everett, Washington

Planned Interim Action Areas - Northern Half of Site

Figure 19

Y:\Projects\147029\Mapdocs\Ameron Hulbert Site\Interim Action Report\Final\Fig19.mxd 10/30/2009 NAD 1983 StatePlane Washington North FIPS 4601 Feet



Legend

- Soil Sample Exceeded Cleanup Screening Level - Constituent that exceeds is noted below sample name. Represents soil remaining
- Soil Sample Exceeded Cleanup Screening Levels for Copper Based on Protection of Groundwater (Rather than Direct Contact). Represents Soil Remaining.
- Soil Sample Exceeded Cleanup Screening Level - Constituent that exceeds is noted below sample name. Represents soil removed
- Soil Sample Below Cleanup Screening Level
- LAI Surface Soil Characterization Sample Location - All Tested Constituents Below Cleanup Screening Levels
- G - Area Designation
- Approximate North Marina Ameron/Hulbert Site Boundary
- Areas of Excavation (dashed line indicates an internal excavation boundary with sidewall height greater than 1 ft)

Note
1. As = Arsenic, Cu = Copper
2. 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

0 80 160
Scale in Feet

Y:\Projects\147029\Mapdocs\Ameron Hulbert Site\Interim Action Report\Final\Fig20.mxd 10/30/2009 NAD 1983 StatePlane Washington North FIPS 4601 Feet

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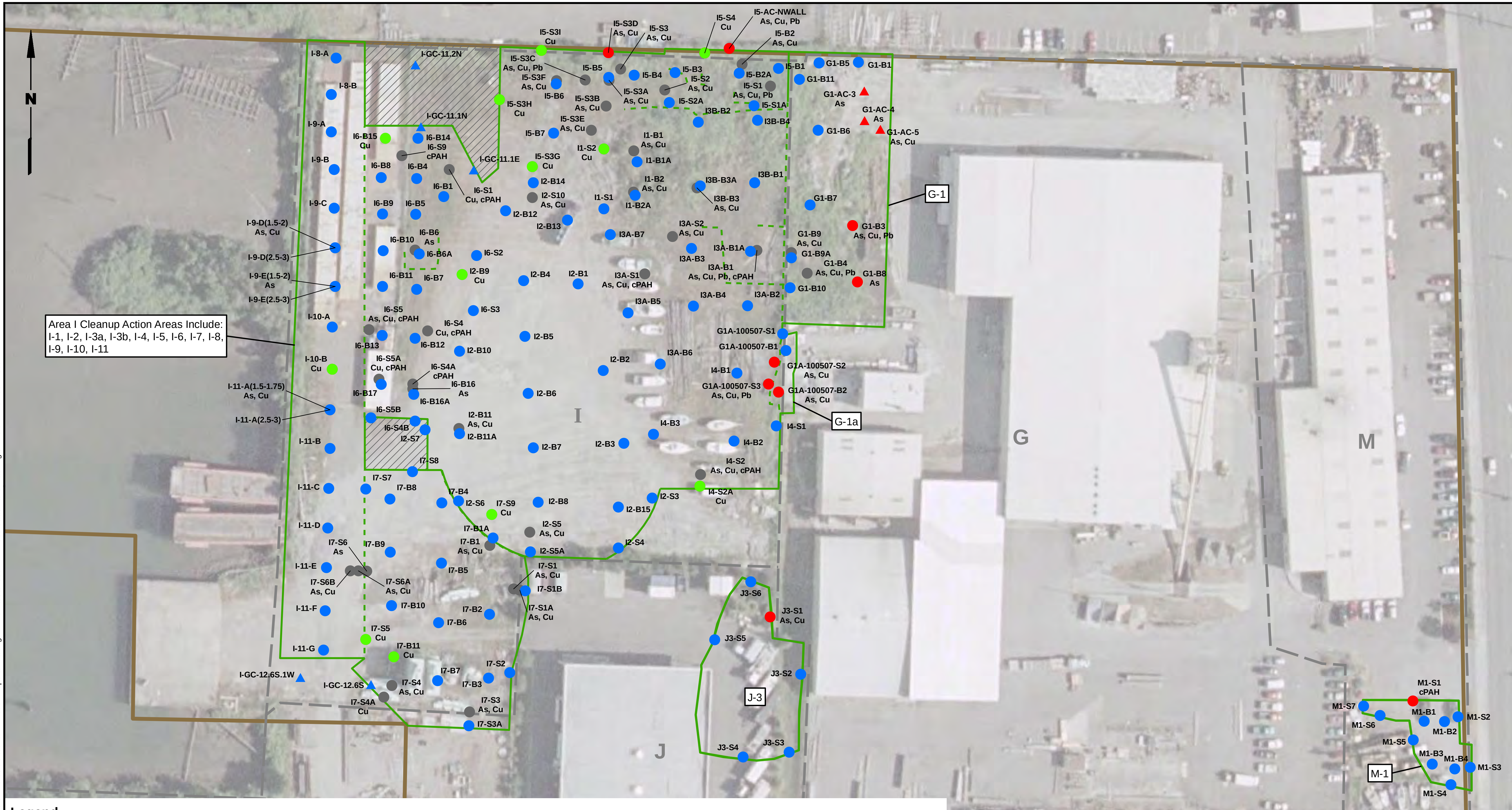
North Marina Ameron/Hulbert Site
Interim Action Report
Port of Everett, Washington

Soil Compliance Monitoring Results
Southern Half of Site

Figure 20



Y:\Projects\147029\Mapdocs\Ameron Hulbert Site\Interim Action Report\Final\Fig21.mxd 10/30/2009 NAD 1983 StatePlane Washington North FIPS 4601 Feet

Legend

- Soil Sample Exceeded Cleanup Screening Level - Constituent that exceeds is noted below sample name. Represents soil remaining
- Soil Sample Exceeded Cleanup Screening Levels for Copper Based on Protection of Groundwater (Not Direct Contact). Represents soil remaining
- Soil Sample Exceeded Cleanup Screening Level - Constituent that exceeds is noted below sample name. Represents soil removed
- Soil Sample Below Cleanup Screening Level
- LAI Surface Soil Characterization Sample Location - All Tested Constituents Below Cleanup Screening Levels
- LAI Surface Soil Characterization Sample Location - Constituent that exceeds is noted below sample name. Represents soil remaining
- G - Area Designation
- Areas of Excavation (dashed line indicates an internal excavation boundary with sidewall height greater than 1 ft)
- Approximate North Marina Ameron/Hulbert Site Boundary
- Non-Excavated Areas

Note

1. As = Arsenic, Cu = Copper, Pb = Lead, cPAHs = Carcinogenic Polycyclic Aromatic Hydrocarbons
2. 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

0 80 160

Scale in Feet

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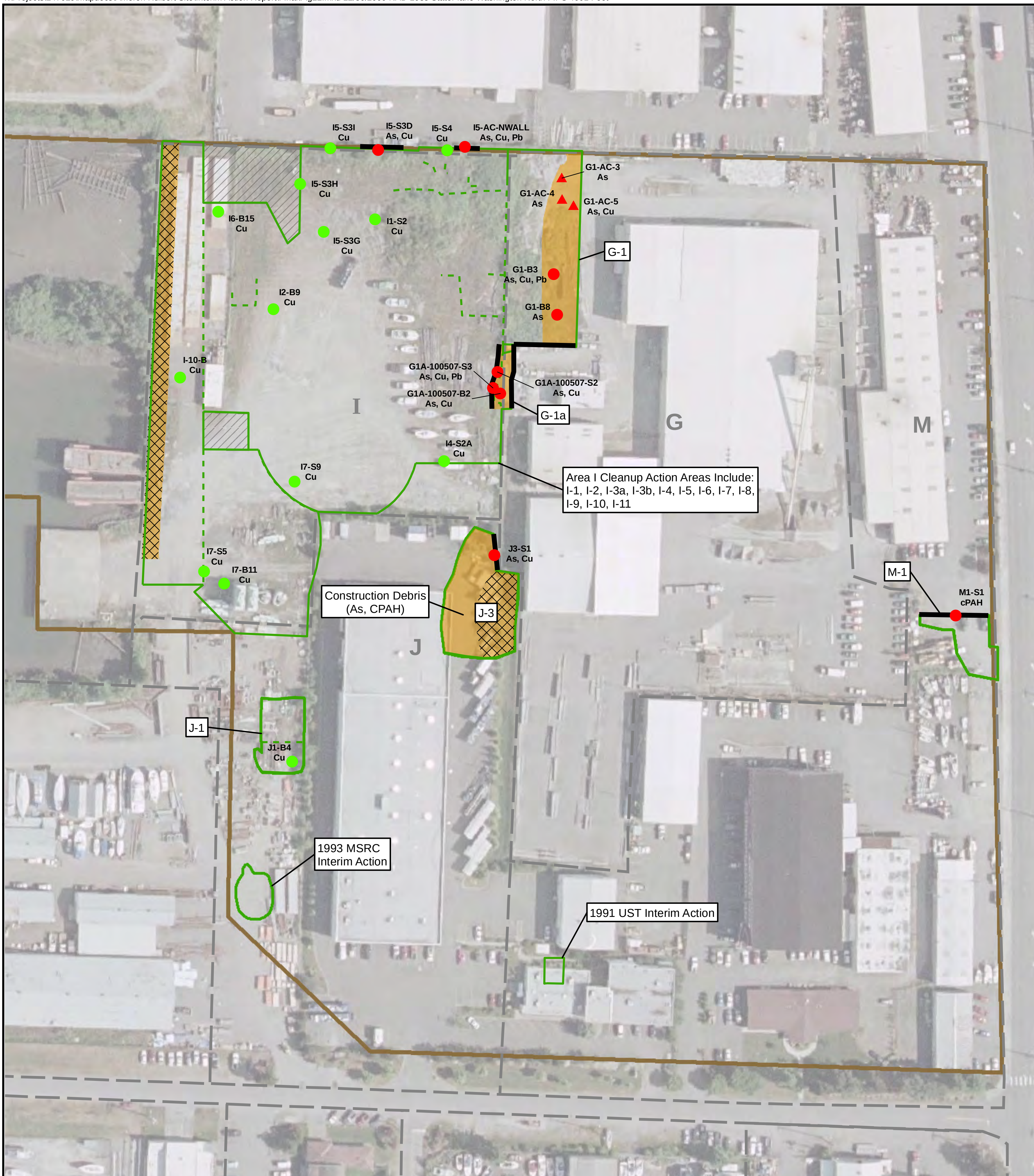
North Marina Ameron/Hulbert Site Interim Action Report Port of Everett, Washington	**Soil Compliance Monitoring Results** **Northern Half of Site**	Figure 21



Legend

- Soil Sample Exceeded Cleanup Screening Level - Constituent that exceeds is noted below sample name. Represents soil remaining
- Soil Sample Exceeded Cleanup Screening Levels for Copper Based on Protection of Groundwater (Not Direct Contact). Represents soil remaining
- LAI Surface Soil Characterization Sample Location - Constituent that exceeds is noted below sample name. Represents soil remaining
- (As, CPAH) Contamination Suspected But Not Confirmed
- Residual Contamination Present at Excavation Sidewall
- Residual Contamination Area
- Arsenic - affected crushed rock containment Area
- Approximate North Marina Ameron/Hulbert Site Boundary
- G - Area Designation
- Areas of Excavation (dashed line indicates an internal excavation boundary with sidewall height greater than 1 ft)
- Non-Excavated Areas

N

0 120 240

Scale in Feet

Note
1. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.
2. As = Arsenic; Cu = Copper; Pb = Lead, CPAH = Carcinogenic polycyclic aromatic hydrocarbons

Data Source: 6/19/2002 Google Earth Image

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North Marina Ameron/Hulbert Site Interim Action Report Port of Everett, Washington	**Areas of Residual Contamination Associated with Interim Action Areas**	Figure 22

TABLE 1
METALS IN CHARACTERIZATION AND WASTE PROFILE SOIL SAMPLES
INTERIM ACTION REPORT - AMERON HULBERT SITE
PORT OF EVERETT, WASHINGTON

					Metals (mg/kg) SW6000-7000 Series													
					Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Selenium	Silver	Thallium	Zinc
				Cleanup Screening Levels (a)	**32**	**20**	**1650**	**160**	**80**	**120000**	**36/3000**	**250**	**24**	**1600**	**400**	**400**	**5.9**	**24000**
Sample Name	Depth Range	Date Collected	Area ID (a)	Sample Type														
F-GC-1	(0-0.5)	1/14/2005	F	Boring		12			0.2 U		83.3 J	14	0.04 U					105 J
J-GC-4C	(0-0.5)	7/14/2005	F	Boring		19			0.2 U		56.8	18	0.05 U					181
ECI-Area-F		10/7/1991	G	Blasting Sand	10 U	7		1 U	1 U	1210	37	20 U	0.2 U	940	1 U	2	1 U	172
ECI-J-2	(3-3)	10/7/1991	G	Test Pit	100 U	40		10 U	12 U	377	514	200 U	0.2 U	281	1 U	20 U	1 U	722
ECI-K-1	(4-4)	10/7/1991	G	Test Pit	106	144		1 U	3	481	398	304	20 U	1120	1 U	2	1 U	1180
ECI-TP-2	(5-5)	10/7/1991	G	Test Pit	10 U	5 U		1 U	1 U	26	18	20 U	0.2 U	27	1 U	2 U	1 U	36
ECI-TP-3	(7-7)	10/7/1991	G	Test Pit	10 U	5 U		1 U	1 U	35	26	20 U	0.2 U	35	1 U	2 U	1 U	48
ECI-TP-5	(9-9)	10/7/1991	G	Test Pit	10 U	5 U		1 U	1 U	28	28	20 U	0.2 U	22	1 U	2 U	1 U	36
G1A-100507-AC-1		10/5/2007	G	Stock Pile		5 U			0.2 U	677	8.8	2	0.05 U					37
G1A-100907-STK-1		10/9/2007	G	Stock Pile		1750 J	117		1 U	61		1400	0.04 U		30 U	3		
G1A-101607-STK-2		10/16/2007	G	Stock Pile		840	182		1 U	44		1040	0.04 U		30 U	2		
G1-AC-1		6/22/2006	G	Surface Soil		20	73.9		0.6 U	133		11	0.06 U		10 U	0.9 U		
G1-AC-2		6/22/2006	G	Surface Soil		70	97		1 U	107	48	50	0.09		20 U	1 U		167
G1-AC-3		6/22/2006	G	Surface Soil		80	151		1 U	97		70	0.09 U		30 U	2 U		
G1-AC-4		6/22/2006	G	Surface Soil		90	159		1 U	221		70	0.1 U		30 U	2 U		
G1-AC-5		6/22/2006	G	Surface Soil		120	147		1 U	97	215 J	100	0.1 U		30 U	2 U		962 J
G1-AC-6		6/26/2006	G	Surface Soil		80	88		0.8 U	74		64	0.06 U		20 U	1 U		
G1-AC-7		6/27/2006	G	Surface Soil		280	60		1 U	427	263 J	180	0.04 U		20 U	1 U		695 J
G1-AC-8		6/27/2006	G	Surface Soil		720	315		3	38		1940	0.04 U		50 U	4		
G1-AC-9		6/23/2006	G	Surface Soil		6650			8	135	3010	4150	0.04 U					15400
G1-TP1	(0-4)	4/25/2006	G	Test Pit		103	67.5		0.3 U	54.8		73	0.11		7 U	0.4 U		
G1-TP2	(0-6)	4/25/2006	G	Test Pit		28	57.8		0.2 U	83.2		35	0.07		6 U	0.3 U		
G1-TP3	(0-5)	4/25/2006	G	Test Pit		14	32.1		0.2 U	34.4		10	0.05 U		6 U	0.4 U		
G1-TP4	(0-6)	4/25/2006	G	Test Pit		353	49		0.4	64.3		196	0.04 U		6 U	0.4 U		
G1-TP5	(0-5)	4/25/2006	G	Test Pit		1540	81.6		2.6	82		1060	0.04		10 U	1.9		
G1-TP6	(0-4)	4/25/2006	G	Test Pit		86	65.6		0.2 U	43.2		98	0.05 U		5 U	0.3 U		
G1-TP7	(0-5)	4/25/2006	G	Test Pit		37	35.1		0.3 U	39.7		23	0.05 U		6 U	0.4 U		
G1-TP8	(0-5)	4/25/2006	G	Test Pit		30	54.5		0.2 U	27.4		19	0.05 U		6 U	0.4 U		
G-3	(3-3)	2/11/2004	G	Boring		10.2			25.2	63.6	60.0	49	0.37			0.4 U		130
G-FA-4	(2-2.5)	1/20/2005	G	Boring		80			2 U		47	50	0.08 U					157
G-FA-5	(8-8.5)	1/20/2005	G	Boring		13			0.3 U		37.1	19	0.06 U					85
G-FA-8	(4-4.5)	1/20/2005	G	Boring		15			0.2 U		32.8	13	0.05 U					61.2
G-GC-1	(1.5-2)	3/2/2005	G	Boring		6			0.2 U		24	10	0.05 U					46.6
G-GC-2	(1.4-1.9)	3/2/2005	G	Boring		6			0.2 U		17.8	5	0.04 U					39.9
G-GC-3	(1-1.5)	3/2/2005	G	Boring		6			0.2		18.3	6	0.05 U					39
PS-1/PS-2		1/25/1989	G	Pond Sample	5 U	2.4	47.4	0.1 U	0.1 U	8.9	13	1.1	0.05 U	13	0.05 U	0.2 U	1 U	35.7
PZ-10 (c)	(3-3)	2/11/2004	G	Boring		6.3			0.2 U	31.3	22.1	8	0.07			0.3 U		52.1
STOCKPILE		11/12/2004	G	Stock Pile		13.9					119	97.5						199
ECI-3448-A		11/7/1988	I	Surface Soil		0.1 U	0.6		0.1 U	0.1 U	0.6	0.1 U	0.05 U	0.1 U	0.1 U	0.1 U		1.1
ECI-3448-B		11/7/1988	I	Surface Soil		4.8				47.6		57						
ECI-G-1 (d)	(0-0.5)	7/9/1987	I	Surface Soil			145			1 U	111	6		1 U		1 U		289
ECI-G-2	(0-0.5)	7/9/1987	I	Surface Soil		3000						1300						
ECI-Q-1	(1-2)	10/7/1991	I	Test Pit	10 U	5		1 U	1 U	27	20	20 U	0.2 U	33	1 U	2 U	1 U	50
ECI-Q-5	(1-2)	10/7/1991	I	Test Pit	10 U	5 U		1 U	1 U	22	12	20 U	0.2 U	29	1 U	2 U	1 U	33
ECI-Q-6	(0-1)	10/7/1991	I	Test Pit	58	5 U		1 U	3	7	1410	1350	0.2 U	10 U	2	7	1 U	4520
ECI-Q-8	(5-5)	10/7/1991	I	Test Pit	10 U	5 U		1 U	1 U	29	20	20 U	0.2 U	30	1 U	2 U	1 U	40
HC-GT-1A		11/7/1991	I	Boring					1.0 U	14	20	5.0 U		15				26
HC-MW02 (e)	(2.5-4)	11/6/1991	I	Boring					1.0 U	9	16	5.0 U		12				31
HC-MW02 (e,f)	(12.5-14)	11/6/1991	I	Boring	10 U	12 U			1.0 U	71	24 J	13	10 U	36	5 U	10 U		52

TABLE 1
METALS IN CHARACTERIZATION AND WASTE PROFILE SOIL SAMPLES
INTERIM ACTION REPORT - AMERON HULBERT SITE
PORT OF EVERETT, WASHINGTON

					Metals (mg/kg) SW6000-7000 Series													
					Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Selenium	Silver	Thallium	Zinc
				Cleanup Screening Levels (a)	**32**	**20**	**1650**	**160**	**80**	**120000**	**36/3000**	**250**	**24**	**1600**	**400**	**400**	**5.9**	**24000**
Sample Name	Depth Range	Date Collected	Area ID (a)	Sample Type														
HC-MW03 (e,f)	(5-6.5)	11/7/1991	I	Boring	10 U	12 U			1.0 U	83	22	6 U	10 U	19	5 U	10 U		30
HC-MW03 (e)	(10-11.5)	11/7/1991	I	Boring					1.0 U	15	19	5 U		13				24
I1-AC-1		6/21/2006	I	Surface Soil		16	56.1		0.2 U	35.3		57	0.37		5 U	0.3 U		
I2-AC-1		7/13/2006	I	Excavation		240	79		2 U	46	212	130	0.07 U		40 U	2 U		475
I2-AC-2		7/13/2006	I	Excavation		20	73		0.8 U	36	67.6	28	0.08 U		20 U	1 U		129
I2-1	(1-1.5)	5/8/2006	I	Boring		197	59.2		0.3	32.6		141	0.04 U		6 U	0.4 U		
I2-2	(1-2.25)	5/8/2006	I	Boring		130	79		0.7 U	42		56	0.07 U		20 U	1 U		
I2-3	(0.5-2.5)	5/8/2006	I	Boring		180	111		2 U	52		100	0.07 U		40 U	3 U		
I2-4	(1.4-2.4)	5/8/2006	I	Boring		70	69		0.8 U	37		47	0.06 U		20 U	1 U		
I2-5	(1.3-2.5)	5/8/2006	I	Boring		90	88		0.8 U	41		58	0.06 U		20 U	1 U		
I2-6	(1.5-2.2)	5/8/2006	I	Boring		130	112		0.8 U	40		71	0.06 U		20 U	1 U		
I2-7	(1.7-2.8)	5/8/2006	I	Boring		120	121		2 U	44		60	0.18		40 U	3 U		
I2-8	(1.5-3.3)	5/8/2006	I	Boring		100	101		0.7 U	61		70	0.08		20 U	1 U		
I2-9	(1.7-3.3)	5/8/2006	I	Boring		90	81		0.7 U	38		55	0.07 U		20 U	1 U		
I2-10	(1.5-2.5)	5/8/2006	I	Boring		44	54.8		0.2 U	33.6		32	0.05 U		6 U	0.3 U		
I-3		2/12/2004	I	Boring		6.2			0.2 U	32.7	21.1	6	0.06			0.4 U		44.3
I3A-AC-1A		6/29/2006	I	Surface Soil		4290	299		7	78		3230	0.04 U		50 U	6		
I3A-AC-1B		6/29/2006	I	Surface Soil		11	26.4		0.2 U	28.9		6	0.05		5 U	0.3 U		
I3A-AC-2A		6/30/2006	I	Surface Soil		5060			9	73	2920	3550	0.04 U					10600
I3A-AC-2B		6/30/2006	I	Surface Soil		7			0.2 U	22.6	8.7	2 U	0.05 U					31.2
I3B-AC-1		7/7/2006	I	Surface Soil		380	390		3	25	1890	1890	0.04 U		50 U	3		6600
I3B-AC-2		7/7/2006	I	Surface Soil		1800	166		3	54	1400	1450	0.04 U		20 U	4		4210
I4-AC-2		7/12/2006	I	Surface Soil		2080	418		5	73	2700	2830	0.04 U		50 U	5		8800
I5-AC-1		6/27/2006	I	Surface Soil		400	89.5		1.1	41	498	407	0.05 U		20 U	1.6		1100
I5-AC-2		6/28/2006	I	Surface Soil		1970	103		7	64	3170 J	2270	0.05 U		30 U	15		5810 J
I5-AC-3		6/28/2006	I	Surface Soil		1780	90		6	58		2090	0.05 U		30 U	8		
I5-AC-4		6/28/2006	I	Surface Soil		90	104		1.2	36		68	0.07 U		20 U	1 U		
I5-AC-5		7/14/2006	I	Surface Soil		2210	94		7	74	3430	2390	0.04 U		20 U	9		5820
I-GC-1	(0-0.5)	7/14/2005	I	Boring		1440			2.1		954	1070	0.05 U					3100
I-GC-1	(1-2)	7/14/2005	I	Boring		3690			7		2790	2560	0.04 U					7030
I-GC-1	(2-3)	7/14/2005	I	Boring		11			0.2 U		26	4	0.05 UJ					46.9
I-GC-1A	(0-0.5)	10/19/2005	I	Boring		640			1.5		447	459	0.05 U					1410
I-GC-1A	(1-2)	10/18/2005	I	Boring		9			0.2 U		25	7	0.05 U					45.5
I-GC-1A.1W		4/25/2006	I	Surface Soil		50												
I-GC-1B	(0-0.5)	10/19/2005	I	Boring		130			0.5 U		112	91	0.04 U					295
I-GC-1B	(1-2)	10/18/2005	I	Boring		8			0.2 U		14.3	4	0.05 U					37.4
I-GC-1B.1S	(0-0.5)	3/1/2006	I	Surface Soil		53												
I-GC-1B.1W	(0-0.5)	3/1/2006	I	Surface Soil		10												
I-GC-1C	(0-0.5)	10/19/2005	I	Boring		1640			4		1140	1310	0.05 U					3650
I-GC-1C	(1-2)	10/18/2005	I	Boring		380			1.2		410	360	0.06 U					923
I-GC-1C	(2-3)	10/18/2005	I	Boring		10			0.2		17.5	5	0.06 U					53.9
I-GC-2	(0-0.5)	7/14/2005	I	Boring		130			0.5 U		193	94	0.05 U					252
I-GC-2	(1-2)	7/14/2005	I	Boring		9			0.2 U		27	10	0.05 U					44.4
I-GC-2.1N	(0-0.5)	3/1/2006	I	Surface Soil		90												
I-GC-2.1S	(0-0.5)	3/1/2006	I	Surface Soil		21												
I-GC-2.1SW	(0-0.5)	3/27/2006	I	Surface Soil		8												
I-GC-2.1W	(0-0.5)	3/1/2006	I	Surface Soil		30												
I-GC-2.2W	(0-0.5)	3/29/2006	I	Surface Soil		12												
I-GC-2.3W	(0-0.5)	3/29/2006	I	Surface Soil		7												
I-GC-2.4W	(0-0.5)	3/29/2006	I	Surface Soil		14												

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INTERIM ACTION REPORT - AMERON HULBERT SITE
PORT OF EVERETT, WASHINGTON

Sample Name	Depth Range	Date Collected	Area ID (a)	Sample Type	Metals (mg/kg) SW6000-7000 Series													
					Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Selenium	Silver	Thallium	Zinc
				Cleanup Screening Levels (a)	**32**	**20**	**1650**	**160**	**80**	**120000**	**36/3000**	**250**	**24**	**1600**	**400**	**400**	**5.9**	**24000**
I-GC-3	(0-0.5)	7/14/2005	I	Boring		6			0.2 U		27.1	18	0.05					56.8
I-GC-4	(0-0.5)	7/14/2005	I	Boring		7			0.2 U		39.5	15	0.05					65.6
I-GC-5	(3-3.5)	7/14/2005	I	Boring		6			0.2 U		29.2	7	0.09					52.4
I-GC-6	(3.5-4)	7/14/2005	I	Boring		7			0.2 U		26.9	4	0.05 U					43.9
I-GC-7	(0-0.5)	7/14/2005	I	Boring		5 U			0.2 U		27	11	0.05 U					54.6
I-GC-8	(3.5-4)	7/14/2005	I	Boring		9			0.2 U		29	5	0.06 U					52
I-GC-9	(3.5-4)	7/14/2005	I	Boring		10			0.2 U		33.8	6	0.07					56
I-GC-10	(0-0.5)	7/14/2005	I	Boring		19			0.2 U		46.9	32	0.06					149
I-GC-11	(0-0.5)	7/14/2005	I	Boring		11			0.2 U		26.9	10	0.04 U					55.3
I-GC-11.1E	(0-0.5)	3/1/2006	I	Surface Soil		6												
I-GC-11.1N	(0-0.5)	3/1/2006	I	Surface Soil		9												
I-GC-11.1S	(0.75-1.25)	3/1/2006	I	Surface Soil		10												
I-GC-11.1W	(0-0.5)	3/1/2006	I	Surface Soil		50												
I-GC-11.2N	(0-0.5)	3/1/2006	I	Surface Soil		16												
I-GC-12	(0-0.5)	7/14/2005	I	Boring		10			0.2 U		23.9	32	0.04 U					127
I-GC-12.1E	(0-0.5)	3/1/2006	I	Surface Soil		10												
I-GC-12.1S	(0.75-1.25)	3/1/2006	I	Hand Auger		14												
I-GC-12.1W	(0-0.5)	3/1/2006	I	Surface Soil		48												
I-GC-12.2S	(0.25-0.75)	3/1/2006	I	Surface Soil		17												
I-GC-12.3S	(0-0.5)	3/1/2006	I	Surface Soil		41												
I-GC-12.4S	(0.25-0.75)	3/1/2006	I	Surface Soil		40												
I-GC-12.4S.1E	(0-0.5)	3/27/2006	I	Surface Soil		30												
I-GC-12.4S.2E	(0-0.5)	3/27/2006	I	Surface Soil		27												
I-GC-12.5S	(0.5-1)	3/1/2006	I	Surface Soil		29												
I-GC-12.6S	(0-0.5)	3/27/2006	I	Surface Soil		5												
I-GC-12.6S.1E	(0-0.5)	3/27/2006	I	Surface Soil		34												
I-GC-12.6S.1W	(0-0.5)	3/27/2006	I	Surface Soil		15												
I-GC-13	(0-0.5)	7/14/2005	I	Boring		15			0.2 U		22.2	12	0.04 U					55
I-GC-14	(0-0.5)	7/14/2005	I	Boring		50			0.5 U		167 J	45	0.05 U					354
I-GC-14	(1-2)	7/14/2005	I	Boring		5 U			0.2 U		15.6	2	0.05 U					30.6
I-GC-15	(0-0.5)	8/22/2005	I	Hand Auger		40			0.5 U		26	9	0.05 U					76
I-GC-15	(1-2)	8/22/2005	I	Hand Auger		32			0.4		50.3	29	0.06 U					360
I-GC-15	(2-3)	8/22/2005	I	Hand Auger		11			0.3 U		33.3	21	0.07					76.3
I-GC-16	(0-0.5)	8/22/2005	I	Hand Auger		50			0.5 U		65.5	17	0.04 U					433
I-GC-16	(1-2)	8/22/2005	I	Hand Auger		7			0.2 U		16.8	3	0.05 U					39.8
I-GC-17	(0-0.5)	8/22/2005	I	Hand Auger		34			0.2 U		20	15	0.04					81.5
I-GC-17	(1-2)	8/22/2005	I	Hand Auger		10			0.2 U		21.6	4	0.05 U					42.3
I-GC-18	(0-0.5)	8/22/2005	I	Hand Auger		35			0.2 U		26.3	16	0.04 U					148
I-GC-18	(1-2)	8/22/2005	I	Hand Auger		45			0.2 U		38.4	33	0.05 U					96.1
I-GC-18	(2-3)	8/22/2005	I	Hand Auger		9			0.2 U		15.9	3	0.05					36.6
I-GC-19	(0-0.5)	8/22/2005	I	Hand Auger		31			0.2 U		37.6	18	0.12					700
I-GC-19	(1-2)	8/22/2005	I	Hand Auger		18			0.2 U		53.2	11	0.11					121
I-GC-20	(0-0.5)	8/22/2005	I	Hand Auger		38			0.2 U		40.6	13	0.06					128
I-GC-20	(1-2)	8/22/2005	I	Hand Auger		8			0.2 U		26.2	4	0.04 U					44.3
I-GC-21	(0-0.5)	8/22/2005	I	Hand Auger		10			0.2 U		34.9	29	0.05					96.9
I-GC-22	(0-0.5)	8/22/2005	I	Hand Auger		9			0.2 U		25.4	9	0.07					49.6
I-GC-23	(0-0.5)	8/22/2005	I	Hand Auger		10			0.4		43.5	12	0.1					53.8
I-GC-24	(1.2-6)	10/19/2005	I	Boring		105			1		166	61	0.08 U					537
I-GC-24	(6.5-7.5)	10/19/2005	I	Boring		20			0.2		33.2	9	0.06 U					43.7
I-GC-24	(7.5-8)	10/18/2005	I	Boring		11			0.2 U		22	7	0.11					42.4

TABLE 1
METALS IN CHARACTERIZATION AND WASTE PROFILE SOIL SAMPLES
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					Metals (mg/kg) SW6000-7000 Series													
					Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Selenium	Silver	Thallium	Zinc
				Cleanup Screening Levels (a)	**32**	**20**	**1650**	**160**	**80**	**120000**	**36/3000**	**250**	**24**	**1600**	**400**	**400**	**5.9**	**24000**
Sample Name	Depth Range	Date Collected	Area ID (a)	Sample Type														
I-GC-24.3W.1S	(0-0.5)	3/1/2006	I	Surface Soil		6												
I-GC-24.4W	(0-0.5)	3/1/2006	I	Surface Soil		10												
I-GC-25	(0.5-1)	10/19/2005	I	Boring		9			0.2		19.9	6	0.05 U					35.4
I-GC-26	(0-0.5)	10/19/2005	I	Boring		13			0.2		31.2	9	0.05 U					50.6
I-TP-1	(0-3)	4/25/2006	I	Test Pit		22	71.8		0.2 U	28.1		14	0.05 U		5 U	0.3 U		
I-TP-2	(0-2.5)	4/25/2006	I	Test Pit		18	45.5		0.2 U	39		27	0.06		6 U	0.4 U		
I-TP-3	(0-4)	4/25/2006	I	Test Pit		13	42		0.2 U	31.8		16	0.14		5 U	0.3 U		
I-TP-4	(0-3)	4/25/2006	I	Test Pit		10	26.9		0.2 U	30.8		7	0.05		6 U	0.3 U		
I-TP-5	(0-5)	4/25/2006	I	Test Pit		122	25.4		0.2 U	28.3		76	0.05		6 U	0.4 U		
I-TP-6	(0-4)	4/25/2006	I	Test Pit		24	42		0.2 U	29.4		48	0.2		5 U	0.3 U		
I-TP-7	(0-4)	4/25/2006	I	Test Pit		15	45.1		0.2 U	30		30	0.3		5 U	0.3 U		
I-TP-8	(0-4)	4/25/2006	I	Test Pit		30	28.1		0.2 U	29.6		50	0.06		6 U	0.3 U		
IW-11		1/5/2006	I	Surface Soil		28												
IW-13		3/1/2006	I	Surface Soil		39												
IW-14		3/1/2006	I	Surface Soil		20												
I-X		2/12/2004	I	Boring		60	76.1		0.4	41.4		41	0.07 U		9 U	0.5 U		
I-Y		2/12/2004	I	Boring		5.3	71.6		0.2 U	33.2		6	0.05		6 U	0.3 U		
I-Z		2/12/2004	I	Surface Soil		240			0.7	56	868	280	0.83			0.8 U		863
Chamber-1		8/11/2006	J	Excavation		5			0.2 U	26.4	15.6	4	0.05 U					39.6
Chamber-2		8/11/2006	J	Excavation		6 U			0.2 U	30	15.3	4	0.05 U					38.4
Chamber-3		8/11/2006	J	Excavation		8 U			2	40.6	38.7	54	22.8					288
Chamber-4		8/11/2006	J	Excavation		7 U			0.5	22.8	24.5	25	11.9					235
HC-MW01 (e,f)	(5-6.5)	11/6/1991	J	Boring	10 U	12 U			4 U	78	14	5.0 U	10 U	22	5 U	10 U		25
HC-MW01 (e)	(7.5-9)	11/6/1991	J	Boring					1 U	8	11	5.0 U		10				16
HC-MW04 (e)	(5-6.5)	11/7/1991	J	Boring					1 U	10	15	5.0 U		12				22
HC-MW04 (e)	(20-21.5)	11/7/1991	J	Boring					1 U	13	21	5.0 U		18				27
J-GC-1	(0.5-1)	1/14/2005	J	Boring		8			0.2 U		19.7	6	0.05 U					69.6
J-GC-2	(0-0.5)	3/2/2005	J	Boring		5 U			0.2 U		18.2	4	0.04 U					34
J-GC-3	(0-0.5)	3/2/2005	J	Boring		14			0.3		287	23	0.05 U					339
J-GC-4	(1.5-2)	3/3/2005	J	Boring		30			0.5 U		31.8	42	0.08					77
J-GC-4	(2.5-3.5)	3/3/2005	J	Boring		7												
J-GC-4	(3.5-4.5)	3/3/2005	J	Boring		8												
J-GC-4B	(0-0.5)	7/14/2005	J	Boring		5 U			0.2 U		16.6	4	0.05 U					34.7
J-GC-6	(1.1-1.6)	7/15/2005	J	Boring		27			0.2 U		43.8	56	0.06					104
J-GC-6	(2.1-3.1)	7/15/2005	J	Boring		20 U			0.6 U		80.7	42	0.06 U					76
J-GC-6	(2-2.7)	7/15/2005	J	Boring		20 U			0.6 U		80.2	55	0.05 U					69
J-GC-6f	(0.7-1.1)	2/6/2006	J	Boring		9			0.2 U		26.2	9	0.11					51.3
J-GC-6g	(1-1.5)	2/6/2006	J	Boring		11			0.2 U		41.9	30	0.1					75.4
J-GC-6h	(1-1.5)	2/6/2006	J	Boring		34			0.2 U		48.7	31	0.07					90.1
J-GC-6i	(1-1.5)	2/6/2006	J	Boring		9			0.2 U		29.4	46	0.05 U					70.7
J-GC-6i	(3.2-4)	2/6/2006	J	Boring		20 U			0.6 U		99.4	142	0.05 U					109
J-GC-7	(0.7-1.2)	7/15/2005	J	Boring		12			0.2 U		36.3	40	0.07					70.1
J-GC-8	(2.1-2.6)	7/15/2005	J	Boring		9			0.2 U		32	5	0.06 U					53.2
J-GC-9	(1.4-1.9)	7/15/2005	J	Boring		12			0.2 U		37.6	16	0.09					84.5
J-GC-10	(0-0.5)	7/14/2005	J	Boring		12			0.2 U		33.7	13	0.05 U					89
SS01	(0.5-0.5)	5/20/1993	J	Surface Soil	580	1600		0.45	1.5 U	84	1800	1400	0.11 U	48	0.89	0.3 U	0.45	6200
SS02	(0.5-0.5)	5/20/1993	J	Surface Soil	2.8 U	11		0.28 U	1.4 U	25	30	11	0.11 U	28	0.29 U	1.4 U	0.29 U	130
TP01	(1-1)	5/20/1993	J	Test Pit	2.7 U	14		0.27 U	1.3 U	20	24	150	0.1 U	24	0.27 U	1.3 U	0.27 U	62
TP01	(3-3)	5/20/1993	J	Test Pit	3.1 U	6.9		0.31 U	1.5 U	19	22	22	0.12 U	23	0.32 U	1.5 U	0.32 U	57
TP02	(2-2)	5/20/1993	J	Test Pit	2.9 U	4		0.29 U	1.4 U	20	9.5	2.6	0.11 U	26	0.3 U	1.4 U	0.3 U	30

TABLE 1
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					Metals (mg/kg) SW6000-7000 Series													
					Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Selenium	Silver	Thallium	Zinc
				Cleanup Screening Levels (a)	**32**	**20**	**1650**	**160**	**80**	**120000**	**36/3000**	**250**	**24**	**1600**	**400**	**400**	**5.9**	**24000**
Sample Name	Depth Range	Date Collected	Area ID (a)	Sample Type														
TP03	(0.5-0.5)	5/20/1993	J	Test Pit	8.2	13		0.26 U	1.3 U	25	55	42	0.11 U	23	0.27 U	1.3 U	0.27 U	110
TP05	(0.5-0.5)	5/20/1993	J	Test Pit	8.5	20		0.26 U	2.6 U	1200	65	150	0.1 U	560	0.26 U	6.5 U	0.26 U	910
TP05	(1-1)	5/20/1993	J	Test Pit	2.8 U	5.3		0.28 U	1.4 U	25	15	2.7	0.11 U	23	0.27 U	1.4 U	0.27 U	36
M-1	(0.3-0.8)	1/18/2005	M	Boring		5 U			0.2 U		14.1	7	0.04 U					32.5
M-2	(1.5-2)	1/18/2005	M	Boring		5 U			0.3		23.2	47	0.05 U					118
M-3	(0-0.5)	1/18/2005	M	Boring		14			0.2 U		85.3	184	0.05 U					106
M-4	(0.8-1.3)	1/17/2005	M	Boring		6			0.2 U		16.4	6	0.05 U					36.2
M-GC-1	(1.6-2.1)	3/3/2005	M	Boring		5 U			0.2 U		17.6	28	0.06					60.8
M-GC-2	(1.5-2)	3/2/2005	M	Boring		5			0.3		18.7	5	0.04 U					33.6
M-GC-3	(1-1.5)	3/3/2005	M	Boring		5 U			0.2 U		10.7	2	0.05 U					20.4
M-GC-4	(1.5-2)	3/2/2005	M	Boring		8			0.2 U		23.2	28	0.05 U					78.5
M-GC-5	(1-1.5)	3/2/2005	M	Boring		5 U			0.2 U		15.4	3	0.05 U					33.3

U = the analyte was not detected in the sample at the given reporting limit.
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 reporting limit is an estimate.
Shaded cells indicate an exceedance of the lowest site cleanup level.
(a) Development of the cleanup levels is presented in Table 3.
(b) Refers to the Investigation Area, described in Section 2.1 of the main report.
(c) PZ-10 is located at P-10. PZ-10 was taken during the drilling for the P-10 monitoring well.
(d) Sample was also analyzed for aluminum, boron, calcium, iron, magnesium, silicon, sodium, and tin. Results were below the detection limit for magnesium, and tin. Results were not reported because they are not considered a concern for the Site.
(e) Analysis of the sample were performed using X-Ray Florescence Spectrometry (XRF) or Flame Atomic Absorption (FAA). Quantitations are estimates, compound identifications are tentative.
(f) Samples were also analyzed for Aluminum, Iron, Manganese, and Sulfur. Results are not reported because these metals are not considered a concern for the Site. See Hart Crowser 1991, Appendix C for full results. Both XRF and FAA were used for this sample, the highest result for detects is reported. If the constituent was not detected using either method, the lowest detection limit is reported.

TABLE 2
PETROLEUM HYDROCARBONS AND BTEX IN CHARACTERIZATION AND WASTE PROFILE SOIL SAMPLES
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					NWTPH-Dx (mg/kg)			NWTPH-G (mg/kg)	BTEX (mg/kg) Method 8020/8015/8021/8260						NWTPH-HCID / Hydrocarbon Scan (mg/kg)					
					Diesel-Range Organics	Lube Oil	Mineral Oil	Gasoline-Range Organics	Benzene	Toluene	Ethylbenzene	m, p-Xylene	o-Xylene	Xylenes, Total	Diesel	Lube Oil	Gasoline-Range Organics	Jet Fuel	Kerosene	Mineral Spirits
				Cleanup Screening Levels (a)	**2000**	**2000**	**4000**	**100 / 30 (d)**	**0.29**	**110**	**18**	**15**	**150**	**15**	**2000**	**2000**	**100 / 30 (d)**			
Sample Name	Depth Range	Date Collected	Area ID	Sample Type																
F-GC-1	(0-0.5)	1/14/2005	F	Boring	53 U	110 U											21 U			
ECI-H-1		10/7/1991	G	Surface Soil	1400															
ECI-N-2		10/7/1991	G	Surface Soil	61				0.005 U	0.005 U	0.005 U			0.005 U						
G1-TP1	(0-4)	4/25/2006	G	Test Pit	180	110														
G1-TP2	(0-6)	4/25/2006	G	Test Pit	92	97														
G1-TP3	(0-5)	4/25/2006	G	Test Pit	98	15														
G1-TP4	(0-6)	4/25/2006	G	Test Pit	17	45														
G1-TP5	(0-5)	4/25/2006	G	Test Pit	12	21														
G1-TP6	(0-4)	4/25/2006	G	Test Pit	5.5 U	16														
G1-TP7	(0-5)	4/25/2006	G	Test Pit	7.6	18														
G1-TP8	(0-5)	4/25/2006	G	Test Pit	32	91														
G-3	(3-3)	2/11/2004	G	Boring	13	62		6.7 UJ	0.033 U	0.033 U	0.033 U	0.067 U	0.033 U	0.130 U						
G-FA-4	(2-2.5)	1/20/2005	G	Boring					0.0012 U	0.18	0.41 ES	1.3 ES	0.94 ES							
G-FA-5	(8-8.5)	1/20/2005	G	Boring	120	57			0.0009 U	0.0009 U	0.0009 U	0.0009 U	0.0009 U							
G-FA-8	(4-4.5)	1/20/2005	G	Boring	5 U	10 U			0.0008 U	0.0008 U	0.0008 U	0.0011	0.0008 U							
G-GC-1	(1.5-2)	3/2/2005	G	Boring											50 U	100 U	20 U			
G-GC-2	(1.4-1.9)	3/2/2005	G	Boring											50 U	100 U	20 U			
G-GC-3	(1-1.5)	3/2/2005	G	Boring											50 U	100 U	20 U			
PZ-10 (b)	(3-3)	2/11/2008	G	Boring	5.0 U	10 U		6.6 UJ	0.033 U	0.033 U	0.033 U	0.066 U	0.033 U	0.130 U						
SEE-EC-1	(1-1.5)	1/11/1989	G	Boring	10 U				0.005 U	0.01 U	0.01 U			0.01 U						
SEE-EC-1	(3-4.5)	1/11/1989	G	Boring	19				0.005 U	0.01 U	0.01 U			0.01 U						
SEE-EC-1	(5-6.5)	1/11/1989	G	Boring	86				0.005 U	0.01 U	0.01 U			0.028						
SEE-EC-1	(7.5-9)	1/11/1989	G	Boring	22				0.005 U	0.01 U	0.01 U			0.01 U						
SEE-EC-2	(1-2.5)	1/11/1989	G	Monitoring Well	10 U				0.005 U	0.01 U	0.01 U			0.01 U						
SEE-EC-2	(12-13.5)	1/11/1989	G	Monitoring Well	10 U				0.005 U	0.01 U	0.01 U			0.01 U						
SEE-EC-2	(3-4.5)	1/11/1989	G	Monitoring Well	39				0.005 U	0.01 U	0.01 U			0.01 U						
SEE-EC-2	(5-6.5)	1/11/1989	G	Monitoring Well	22				0.005 U	0.01 U	0.01 U			0.01 U						
SEE-EC-2	(7.5-9)	1/11/1989	G	Monitoring Well	43				0.005 U	0.01 U	0.01 U			0.01 U						
SEE-EC-3	(10-11.5)	1/11/1989	G	Monitoring Well	10 U				0.005 U	0.01 U	0.01 U			0.01 U						
SEE-EC-3	(12.5-14)	1/11/1989	G	Monitoring Well	10 U				0.005 U	0.01 U	0.01 U			0.01 U						
SEE-EC-3	(2-3.5)	1/11/1989	G	Monitoring Well	27				0.005 U	0.01 U	0.01 U			0.01 U						
SEE-EC-3	(5-6.5)	1/11/1989	G	Monitoring Well	10 U				0.005 U	0.01 U	0.01 U			0.01 U						
SEE-EC-3	(7.5-9)	1/11/1989	G	Monitoring Well	10 U				0.005 U	0.01 U	0.01 U			0.01 U						
SEE-EC-4	(10-11.5)	1/11/1989	G	Monitoring Well	10 U				0.005 U	0.01 U	0.01 U			0.01 U						
SEE-EC-4	(12.5-14)	1/11/1989	G	Monitoring Well	10 U				0.005 U	0.01 U	0.01 U			0.01 U						
SEE-EC-4	(2-3.5)	1/11/1989	G	Monitoring Well	10 U				0.005 U	0.01 U	0.01 U			0.01 U						
SEE-EC-4	(5-6.5)	1/11/1989	G	Monitoring Well	10 U				0.005 U	0.01 U	0.01 U			0.01 U						
SEE-EC-4	(7.5-9)	1/11/1989	G	Monitoring Well	10 U				0.005 U	0.01 U	0.01 U			0.01 U						
STOCKPILE		11/12/2004	G	Stock Pile	110 J	190 J									70 J	140 J	28 UJ			
ECI-G-2	(0-0.5)	7/9/1987	I	Surface Soil		17700														
ECI-Q-1	(1-2)	10/7/1991	I	Test Pit	10 U	230		10 U	0.005 U	0.005 U	0.005 U			0.005 U			10 U	10 U	10 U	10 U
ECI-Q-5	(1-2)	10/7/1991	I	Test Pit	10 U	50		10 U	0.005 U	0.005 U	0.005 U			0.005 U			10 U	10 U	10 U	10 U
ECI-Q-6	(0-1)	10/7/1991	I	Test Pit	20	60		10 U	0.005 U	0.005 U	0.005 U			0.005 U			10 U	10 U	10 U	10 U
ECI-Q-8	(5-5)	10/7/1991	I	Test Pit	10 U	100		10 U	0.005 U	0.005 U	0.005 U			0.005 U			10 U	10 U	10 U	10 U
HC-GT-1A (c)		11/7/1991	I	Boring					0.05 U	0.05 U	0.05 U			0.05 U	10 U	10 U	10 U		10 U	10 U
HC-MW02 (c)	(2.5-4)	11/6/1991	I	Boring					0.29	0.62	0.055			0.29	23	10 U	10 U		10 U	10 U
HC-MW02 (c)	(12.5-14)	11/6/1991	I	Boring					0.05 U	0.05 U	0.05 U			0.05 U	10 U	40	10 U		10 U	10 U
HC-MW03 (c)	(5-6.5)	11/7/1991	I	Boring					0.05 U	0.05 U	0.05 U			0.05 U	10 U	10 U	10 U		10 U	10 U
HC-MW03 (c)	(10-11.5)	11/7/1991	I	Boring					0.05 U	0.05 U	0.05 U			0.05 U	10 U	10 U	10 U		10 U	10 U
I2-AC-1A		7/12/2006	I	Excavation	52	74														
I2-1	(1-1.5)	5/8/2006	I	Boring	85	1000									58	120	23 U			
I2-2	(1-2.25)	5/8/2006	I	Boring	1200	220									76	150	30 U			
I2-3	(0.5-2.5)	5/8/2006	I	Boring	1800	300									80	160 U	32 U			
I2-4	(1.4-2.4)	5/8/2006	I	Boring	1100	200									73	150 U	29 U			
I2-5	(1.3-2.5)	5/8/2006	I	Boring	1300	220									70	140 U	28 U			
I2-6	(1.5-2.2)	5/8/2006	I	Boring	1700	270									79	160 U	31 U			
I2-7	(1.7-2.8)	5/8/2006	I	Boring	1800	570									87	180	35 U			
I2-8	(1.5-3.3)	5/8/2006	I	Boring	1100	240									70	140	28 U			
I2-9	(1.7-3.3)	5/8/2006	I	Boring	1300	200									77	150	31 U			
I2-10	(1.5-2.5)	5/8/2006	I	Boring	260	77									60	120 U	24 U			
I-3		2/12/2004	I	Boring	19	34														
I-GC-1	(0-0.5)	7/14/2005	I	Boring											50 U	100 U	20 U			
I-GC-2	(0-0.5)	7/14/2005	I	Boring	17	69	59								50 U	100	20 U			

TABLE 2
PETROLEUM HYDROCARBONS AND BTEX IN CHARACTERIZATION AND WASTE PROFILE SOIL SAMPLES
INTERIM ACTION REPORT - AMERON HULBERT SITE
PORT OF EVERETT, WASHINGTON

					NWTPH-Dx (mg/kg)			NWTPH-G (mg/kg)	BTEX (mg/kg) Method 8020/8015/8021/8260						NWTPH-HCID / Hydrocarbon Scan (mg/kg)					
					Diesel-Range Organics	Lube Oil	Mineral Oil	Gasoline-Range Organics	Benzene	Toluene	Ethylbenzene	m, p-Xylene	o-Xylene	Xylenes, Total	Diesel	Lube Oil	Gasoline-Range Organics	Jet Fuel	Kerosene	Mineral Spirits
				Cleanup Screening Levels (a)	**2000**	**2000**	**4000**	**100 / 30 (d)**	**0.29**	**110**	**18**	**15**	**150**	**15**	**2000**	**2000**	**100 / 30 (d)**			
Sample Name	Depth Range	Date Collected	Area ID	Sample Type																
I-GC-3	(0-0.5)	7/14/2005	I	Boring											50 U	100 U	20 U			
I-GC-4	(0-0.5)	7/14/2005	I	Boring	9.5	63	53								50 U	100	20 U			
I-GC-5	(3-3.5)	7/14/2005	I	Boring											50 U	100 U	20 U			
I-GC-6	(3.5-4)	7/14/2005	I	Boring	13	130	110								50 U	100	20 U			
I-GC-7	(0-0.5)	7/14/2005	I	Boring											50 U	100 U	20 U			
I-GC-8	(3.5-4)	7/14/2005	I	Boring											50 U	100 U	20 U			
I-GC-9	(3.5-4)	7/14/2005	I	Boring											50 U	100 U	20 U			
I-GC-10	(0-0.5)	7/14/2005	I	Boring	23	120	100								50 U	100	20 U			
I-GC-11	(0-0.5)	7/14/2005	I	Boring											50 U	100 U	20 U			
I-GC-12	(0-0.5)	7/14/2005	I	Boring	52	280	240								50	100	20 U			
I-GC-13	(0-0.5)	7/14/2005	I	Boring	17	110	91								50 U	100	20 U			
I-GC-14	(0-0.5)	7/14/2005	I	Boring	17	72	61								50 U	100	20 U			
I-GC-15	(0-0.5)	8/22/2005	I	Hand Auger											50 U	100 U	20 U			
I-GC-16	(0-0.5)	8/22/2005	I	Hand Auger	250	630									50	100	20 U			
I-GC-17	(0-0.5)	8/22/2005	I	Hand Auger											50 U	100 U	20 U			
I-GC-18	(0-0.5)	8/22/2005	I	Hand Auger	110	210									50	100	20 U			
I-GC-19	(0-0.5)	8/22/2005	I	Hand Auger											50 U	100 U	20 U			
I-GC-20	(0-0.5)	8/22/2005	I	Hand Auger	24	79									50 U	100	20 U			
I-GC-21	(0-0.5)	8/22/2005	I	Hand Auger	60	160									50	100	20 U			
I-GC-22	(0-0.5)	8/22/2005	I	Hand Auger											50 U	100 U	20 U			
I-GC-23	(0-0.5)	8/22/2005	I	Hand Auger	24	58									50	100	20 U			
I-GC-24	(1.2-6)	10/19/2005	I	Boring	1200	960									52	100	21			
I-GC-24	(6.5-7.5)	10/19/2005	I	Boring											50 U	100 U	20 U			
I-GC-25	(0.5-1)	10/19/2005	I	Boring											50 U	100 U	20 U			
I-GC-26	(0-0.5)	10/19/2005	I	Boring											50 U	100 U	20 U			
I-TP-1	(0-3)	4/25/2006	I	Test Pit	13	110														
I-TP-2	(0-2.5)	4/25/2006	I	Test Pit	11	38														
I-TP-3	(0-4)	4/25/2006	I	Test Pit	8.2	44														
I-TP-4	(0-3)	4/25/2006	I	Test Pit	5.9 U	15														
I-TP-5	(0-5)	4/25/2006	I	Test Pit	10	24														
I-TP-6	(0-4)	4/25/2006	I	Test Pit	12	58														
I-TP-7	(0-4)	4/25/2006	I	Test Pit	11	55														
I-TP-8	(0-4)	4/25/2006	I	Test Pit	14	56														
IW-11		1/5/2006	I	Surface Soil	34	81														
IW-13		3/1/2006	I	Surface Soil	37 J	100 J														
IW-14		3/1/2006	I	Surface Soil	45 J	63 J														
I-X		2/12/2004	I	Boring	0.94	150														
I-Y		2/12/2004	I	Boring	7	10 U														
I-Z		2/12/2004	I	Surface Soil	5 U	14														
Chamber-1		8/11/2006	J	Excavation	5.5 U	11 U			0.0011 U	0.0011 U	0.0011 U	0.0011 U	0.0011 U							
Chamber-2		8/11/2006	J	Excavation	5.6 U	11 U			0.0088 U	0.0088 U	0.0088 U	0.0088 U	0.0088 U							
Chamber-3		8/11/2006	J	Excavation	190	1100			0.0022 U	0.0022 U	0.0022 U	0.0022 U	0.0022 U							
Chamber-4		8/11/2006	J	Excavation	180	720			0.0017 U	0.0017 U	0.0017 U	0.0017 U	0.0017 U							
HC-MW01 (c)	(5-6.5)	11/6/1991	J	Boring					0.05 U	0.05 U	0.05 U			0.05 U	10 U	10 U	10 U		10 U	10 U
HC-MW01 (c)	(7.5-9)	11/6/1991	J	Boring					0.05 U	0.05 U	0.05 U			0.05 U	10 U	10 U	10 U		10 U	10 U
HC-MW04 (c)	(5-6.5)	11/7/1991	J	Boring					0.05 U	0.05 U	0.05 U			0.05 U	10 U	10 U	10 U		10 U	10 U
HC-MW04 (c)	(20-21.5)	11/7/1991	J	Boring					0.05 U	0.097	0.15			0.26	10 U	10 U	10 U		10 U	10 U
J-FA-1	(4-5)	1/17/2005	J	Boring											60 U	120 U	24 U			
J-FA-2	(4-5)	1/17/2005	J	Boring	46 J	540									56	110	22 U			
J-GC-1	(0.5-1)	1/14/2005	J	Boring	310	3.7									52	100	21 U			
J-GC-1	(1.5-2.5)	1/14/2005	J	Boring	5 UJ	10 UJ														
J-GC-1B	(0.9-1.4)	7/14/2005	J	Boring	5.3 U	11 U														
J-GC-1C	(0.7-1.2)	7/14/2005	J	Boring	5.3 U	11 U														
J-GC-2	(0-0.5)	3/2/2005	J	Boring											50 U	100 U	20 U			
J-GC-3	(0-0.5)	3/2/2005	J	Boring											50 U	100 U	20 U			
J-GC-4	(1.5-2)	3/3/2005	J	Boring											50 U	100 U	20 U			
J-GC-6	(1.1-1.6)	7/15/2005	J	Boring	82	130									50 U	100	20 U			
J-GC-7	(0.7-1.2)	7/15/2005	J	Boring											50 U	100 U	20 U			
J-GC-8	(2.1-2.6)	7/15/2005	J	Boring											50 U	100 U	20 U			
J-GC-9	(1.4-1.9)	7/15/2005	J	Boring	26	140									50 U	100	20 U			
J-GC-10	(0-0.5)	7/14/2005	J	Boring											50 U	100 U	20 U			
J-MSRC		5/23/2007	J	Excavation	390000	410000									500	1000	200 U			
J-MSRC-B		5/24/2007	J	Excavation	690	770									50	100	20 U			

TABLE 2
PETROLEUM HYDROCARBONS AND BTEX IN CHARACTERIZATION AND WASTE PROFILE SOIL SAMPLES
INTERIM ACTION REPORT - AMERON HULBERT SITE
PORT OF EVERETT, WASHINGTON

					NWTPH-Dx (mg/kg)			NWTPH-G (mg/kg)	BTEX (mg/kg) Method 8020/8015/8021/8260						NWTPH-HCID / Hydrocarbon Scan (mg/kg)					
					Diesel-Range Organics	Lube Oil	Mineral Oil	Gasoline-Range Organics	Benzene	Toluene	Ethylbenzene	m, p-Xylene	o-Xylene	Xylenes, Total	Diesel	Lube Oil	Gasoline-Range Organics	Jet Fuel	Kerosene	Mineral Spirits
				Cleanup Screening Levels (a)	**2000**	**2000**	**4000**	**100 / 30 (d)**	**0.29**	**110**	**18**	**15**	**150**	**15**	**2000**	**2000**	**100 / 30 (d)**			
Sample Name	Depth Range	Date Collected	Area ID	Sample Type																
J-MSRC-E		5/24/2007	J	Excavation	25 U	50 U									50 U	100 U	20 U			
J-MSRC-M052907		5/29/2007	J	Excavation	25 U	50 U									50	100	20 U			
J-MSRC-N		5/24/2007	J	Excavation	190	200									50	100	20 U			
J-MSRC-N052907		5/29/2007	J	Excavation	440	460									50	100	20 U			
J-MSRC-S		5/24/2007	J	Excavation	60	110									50	100	20 U			
J-MSRC-S052907		5/29/2007	J	Excavation	25 U	50 U									50	100	20 U			
J-MSRC-SP1		5/24/2007	J	Excavation	580	720									50	100	20 U			
J-MSRC-SP2		5/24/2007	J	Excavation	140	190									50	100	20 U			
J-MSRC-SP3		5/24/2007	J	Excavation	190	200									50	100	20 U			
J-MSRC-W		5/24/2007	J	Excavation	450	480									50	100	20 U			
KFI-SS02	(8-8)	10/1/1993	J	Excavation	73	870														
KFI-SS04	(6-6)	10/1/1993	J	Excavation	470	400														
KFI-SS07	(7-7)	10/1/1993	J	Excavation	230	1700														
KFI-SS11	(4-4)	10/20/1993	J	Excavation		52000														
KFI-SS12	(8-8)	10/20/1993	J	Excavation	145	460														
KFI-SS14	(14-14)	10/20/1993	J	Excavation	216	1660														
KFI-SS17	(14-14)	10/20/1993	J	Excavation		10060														
KFI-SS22	(19-19)	10/20/1993	J	Excavation	10 U	435														
KFI-WP01		9/30/1993	J	Stock Pile	6000															
KFI-WP02		9/30/1993	J	Stock Pile	14000															
KFI-WP03		9/30/1993	J	Stock Pile	15000															
KFI-WP04		9/30/1993	J	Stock Pile	13000															
KFI-WP-A		10/1/1993	J	Stock Pile	570	1300														
KFI-WP-B		10/1/1993	J	Stock Pile	390	770														
KFI-WP-C		10/1/1993	J	Stock Pile	130	280														
KFI-WP-Comp		9/30/1993	J	Stock Pile	3700				0.07 U	0.07 U	0.2			2.3						
KFI-WP-D		10/1/1993	J	Stock Pile	480	1500														
ECI-B-1		10/7/1991	M	Surface Soil	7160															
ECI-M-1		9/24/1991	M	Surface Soil	10 U	79		10 U									10 U			
ECI-N-1		10/7/1991	M	Surface Soil	310				0.005 U	0.005 U	0.005 U			0.005 U						
M-1	(0.3-0.8)	1/18/2005	M	Boring	53 U	110 U											21 U			
M-2	(1.5-2)	1/18/2005	M	Boring	58 U	120 U											23 U			
M-3	(0-0.5)	1/18/2005	M	Boring	58 U	120 U											23 U			
M-4	(0.8-1.3)	1/17/2005	M	Boring	53 UJ	110 UJ											21 UJ			
M-FA-1	(3.5-4)	1/17/2005	M	Boring	5 U	10 U		2.7 U	0.0068 U	0.014 U	0.014 U	0.027 U	0.014 U	0.054 U						
M-FA-2	(3.5-4)	1/17/2005	M	Boring	5 U	10 U		3.4 U	0.0085 U	0.017 U	0.017 U	0.034 U	0.017 U	0.068 U						
M-GC-1	(1.6-2.1)	3/3/2005	M	Boring	50 U	100 U											20 U			
M-GC-2	(1.5-2)	3/2/2005	M	Boring	50 U	100 U											20 U			
M-GC-3	(1-1.5)	3/3/2005	M	Boring	50 U	100 U											20 U			
M-GC-4	(1.5-2)	3/2/2005	M	Boring	50 U	100 U											20 U			
M-GC-5	(1-1.5)	3/2/2005	M	Boring	50 U	100 U											20 U			
CSP-1		10/20/1993		Stock Pile	10 U	67														
CSP-2		10/20/1993		Stock Pile	1050	1960														
CSP-3		10/20/1993		Stock Pile	1060	1990														
CSP-4		10/20/1993		Stock Pile	90	60														

U = the analyte was not detected in the sample at the given reporting limit.
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 reporting limit is an estimate
ES = The concentration indicated for this analyte is an estimated value above the calibration range of the instrument. This value is considered an estimate
Shaded cells indicate an exceedance of the site cleanup levels

(a) Development of the cleanup levels is presented in Table 4.
(b) PZ-10 is located at P-10. PZ-10 was taken during the drilling for the P-10 monitoring well
(c) Analysis of the sample were performed using screening techniques. Quantitations are
estimates, compound identifications are tentative.
(d) Cleanup Level is 30 if benzene is present.

TABLE 3
PETROLEUM HYDROCARBONS AND BTEX IN CHARACTERIZATION WATER SAMPLES
INTERIM ACTION REPORT - AMERON HULBERT SITE
PORT OF EVERETT, WASHINGTON

					NWTPH-Dx (µg/L)		NWTPH-G (µg/L)	BTEX (µg/L) EPA 8020/8021/8240/8260						NWTPH-HCID/ Hydrocarbon Scan					
					Diesel-Range Organics	Lube Oil	Gasoline-Range Organics	Benzene	Ethylbenzene	Toluene	m, p-Xylene	o-Xylene	Xylenes, Total	Diesel-Range Organics	Lube Oil	Gasoline-Range Organics	Jet Fuel	Kerosene	Mineral Spirits
				Cleanup Screening Levels (a)	**500**	**500**	**800**	**51**	**2100**	**15000**	**1600**	**16000**	**1600**	**500**	**500**	**800**			
Sample Name	Depth Range	Date Collected	Area ID	Sample Type															
ECI-AGI-D-1		6/23/1992	G	Concrete Settling Basin Sump				1 U	1 U	1 U			1 U						
ECI-D-1		10/7/1991	G	Concrete Settling Basin Sump				1 U	1 U	1 U			1 U						
ECI-MW-2		10/7/1991	G	Monitoring Well				1 U	1 U	1 U			1 U						
G-1		12/22/2003	G	Boring	250 U	500 U	250 U	0.2 U	0.2 U	0.2 U	0.4 U	0.2 U							
G-2		12/22/2003	G	Boring	250 U	500 U	250 U	0.2 U	0.2 U	0.4	0.4 U	0.2 U							
G-3		2/11/2004	G	Boring				0.2 U	0.2 U	0.2 U	0.4 U	0.2 U							
G-FA-4		1/20/2005	G	Boring	250 U	500 U		1 U	4.3	1.1	17	4.1							
G-FA-7		1/20/2005	G	Boring	250 U	500 U		1 U	1 U	1 U	1 U	1 U							
SEE-EC-2	(2-12)	1/12/1989	G	Monitoring Well	10 U			0.5 U	0.5 U	9.1			3.1						
SEE-EC-3	(2-12)	1/12/1989	G	Monitoring Well	10 U			0.5 U	0.5 U	0.6			2.3						
SEE-EC-4	(2-12)	1/12/1989	G	Monitoring Well	10 U			0.5 U	0.5 U	0.67			0.72						
HC-MW02	(7-16)	7/10/1992	I	Monitoring Well				1 U	1 U	1 U			1 U						
HC-MW03	(5-15)	7/10/1992	I	Monitoring Well				1 U	1 U	1 U			1 U						
P11		2/19/2004	I	Monitoring Well	250 U	500 U	250 U	0.2 U	0.2 U	0.2 U	0.4 U	0.2 U							
P12		2/19/2004	I	Monitoring Well	250 U	500 U	250 U	0.2 U	0.2 U	0.2 U	0.4 U	0.2 U							
HC-MW01	(5-15)	7/10/1992	J	Monitoring Well				1 U	1 U	1 U			1 U						
HC-MW04	(5-15)	7/10/1992	J	Monitoring Well				1 U	1 U	1 U			1 U						
J-1		2/12/2004	J	Boring	250 U	500 U	250 U	0.2 U	0.2 U	1.6	0.4 U	0.2 U							
J-2		2/12/2004	J	Boring	250 U	500 U	250 U	0.2 U	0.2 U	2.3	0.4 U	0.2 U							
J-FA-1		1/17/2005	J	Boring										630 U	630 U	250 U			
J-FA-2		1/17/2005	J	Boring										630 U	630 U	250 U			
ECI-MW-1		10/7/1991	M	Monitoring Well			500 U	5 U	10 U	10 U			10 U	50 U	50 U	50 U	50 U	50 U	50 U
ECI-MW-3		10/7/1991	M	Monitoring Well				1 U	1 U	1 U			1 U						
M-1		1/18/2005	M	Boring				1 U	1 U	1 U	1 U	1 U		630 U	630 U	250 U			
M-2		1/18/2005	M	Boring				1 U	1 U	1 U	1 U	1 U		630 U	630 U	250 U			
M-3		1/18/2005	M	Boring				6.4	1 U	1 U	1 U	1 U		630 U	630 U	250 U			
M-4		1/17/2005	M	Boring				1 U	1 U	1 U	1 U	1 U		630 U	630 U	250 U			
M-FA-1		1/17/2005	M	Boring	250 U	500 U	250 U	1 U	1 U	1 U	1 U	1 U	2 U						
M-FA-2		1/17/2005	M	Boring	250 U	500 U	250 U	1 U	1 U	1 U	1 U	1 U	2 U						

U = the analyte was not detected in the sample at the given reporting limit.

(a) Development of the cleanup levels is presented in Table 3

TABLE 4
METALS IN CHARACTERIZATION WATER SAMPLES
INTERIM ACTION REPORT - AMERON HULBERT SITE PORT OF EVERETT, WASHINGTON

	Area ID:	G	G	G	G	G	G	G	G	G
	Sample Name:	AGI-MW-2	ECI-Area-D	ECI-D-1	G-3	G-FA-4	G-FA-7	P10	PS-1/2	PS-3
	Depth Range:									
	Date Collected:	6/30/1992	10/9/1991	10/7/1991	2/11/2004	1/20/2005	1/20/2005	2/18/2004	1/19/1989	1/19/1989
	Sample Type:	Monitoring Well	Concrete Settling Basin Sump	Concrete Settling Basin Sump	Boring	Boring	Boring	Monitoring Well	Pond Sample	Pond Sample
	Cleanup Screening Levels (a)									
DISSOLVED METALS (µg/L)										
SW6000-7000 Series										
Antimony	640	5 U	50 U						500 U	
Arsenic	5	7.5	5 U		1 U	8	10	4	10 U	
Beryllium	273	5 U	5 U						10 U	
Cadmium	8.8	0.2 U	3 U		2 U	0.2 U	0.2 U	2 U	1 U	
Chromium	240000	10 U	7		5 U			5 U	11	
Cobalt									10 U	
Copper	2.4	10 U	10 U		2 U	0.6	0.5 U	2 U	10	
Lead	8.1	3 U	2 U		1 U	1 U	1 U	1 U	5 U	
Mercury	0.1	0.2 U	0.5 U		0.1 U	0.1 U	0.1 U	0.1 U	1 U	
Molybdenum									500 U	
Nickel	20	10 U	20 U						10 U	
Selenium	0.5	5 U	5 U						10 U	
Silver	5.4	5 U	10 U		3 U			3 U	10 U	
Thallium	0.5	5 U	5 U						100 U	
Vanadium									500 U	
Zinc	81	10 U	10 U		6 U	4 U	4 U	6 U	10 U	
TOTAL METALS (µg/L)										
SW6000-7000 Series										
Antimony	640	5 U		50 U						500 U
Arsenic	5	87		5 U						10 U
Beryllium	273	5 U		5 U						10 U
Cadmium	8.8	2.3		3 U						6
Chromium	240000	320		6						13
Cobalt										10 U
Copper	2.4	400		14						10
Lead	8.1	190		2 U						120
Mercury	0.1	0.68		0.5 U						1 U
Molybdenum										500 U
Nickel	20	380		20 U						10 U
Selenium	0.5	5 U		5 U						10 U
Silver	5.4	5 U		10 U						10 U
Thallium	0.5	5 U		5 U						100 U
Vanadium										500 U
Zinc	81	750		10 U						10 U

TABLE 4
METALS IN CHARACTERIZATION WATER SAMPLES
INTERIM ACTION REPORT - AMERON HULBERT SITE PORT OF EVERETT, WASHINGTON

	Area ID:	I	I	I	I	J	J	J	J	M	M	M	M
	Sample Name:	HC-MW02	HC-MW03	P11	P12	HC-MW01	HC-MW04	J-1	J-2	M-1	M-2	M-3	M-4
	Depth Range:	(7-16)	(5-15)			(5-15)	(5-15)						
	Date Collected:	7/10/1992	7/10/1992	2/19/2004	2/19/2004	7/10/1992	7/10/1992	2/12/2004	2/12/2004	1/18/2005	1/18/2005	1/18/2005	1/17/2005
	Sample Type:	Monitoring Well	Monitoring Well	Monitoring Well	Monitoring Well	Monitoring Well	Monitoring Well	Boring	Boring	Boring	Boring	Boring	Boring
	Cleanup Screening Levels (a)												
DISSOLVED METALS (µg/L)													
SW6000-7000 Series													
Antimony	640	10 U	10 U			10 U	10 U						
Arsenic	5	10 U	10 U	1 U	2	10 U	10 U	2	6	1.8	14	0.8	2.3
Beryllium	273	10 U	10 U			10 U	10 U						
Cadmium	8.8	0.4 U	0.4 U	2 U	2 U	0.4 U	0.4 U	2 U	2 U	0.2 U	0.2 U	0.2 U	0.2 U
Chromium	240000	20 U	20 U	5 U	5 U	20 U	20 U	5 U	5 U				
Cobalt													
Copper	2.4	12	38	2 U	2 U	12	20 U	4	2 U	0.7	0.6	0.5 U	0.5 U
Lead	8.1	6.6	6 U	1 U	1 U	6 U	6 U	1 U	1 U	1 U	1 U	1 U	1 U
Mercury	0.1	0.2 U	0.2 U	0.1 U	0.1 U	0.2 U	0.2 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Molybdenum													
Nickel	20	20 U	20 U			20 U	20 U						
Selenium	0.5	10 U	10 U			10 U	10 U						
Silver	5.4	10 U	10 U	3 U	3 U	10 U	10 U	3 U	3 U				
Thallium	0.5	10 U	10 U			10 U	10 U						
Vanadium													
Zinc	81	12	12	6 U	6 U	16	12	6 U	6 U	4 U	4 U	4 U	4 U
TOTAL METALS (µg/L)													
SW6000-7000 Series													
Antimony	640	10 U	10 U			10 U	10 U						
Arsenic	5	15	26			16	15						
Beryllium	273	10 U	10 U			10 U	10 U						
Cadmium	8.8	0.4 U	1			4.4	4.5						
Chromium	240000	13	54			31	30						
Cobalt													
Copper	2.4	28	78			51	68						
Lead	8.1	26	30			16	20						
Mercury	0.1	0.2 U	0.2 U			0.2 U	0.2 U						
Molybdenum													
Nickel	20	20 U	50			36	30						
Selenium	0.5	10 U	10 U			10 U	10 U						
Silver	5.4	10 U	10 U			10 U	10 U						
Thallium	0.5	10 U	10 U			10 U	10 U						
Vanadium													
Zinc	81	48	100			84	77						

U = the analyte was not detected in the sample at the given reporting limit.

Shaded cells indicate an exceedance of the site cleanup levels.

(a) Development of the cleanup levels is presented in Table 3.

TABLE 5
VOCS IN CHARACTERIZATION WATER SAMPLES
INTERIM ACTION REPORT - AMERON HULBERT SITE,
PORT OF EVERETT, WASHINGTON

Area ID:		G	G	G	G	G	G	G	G	I	I	I	I	I
Sample Name:		AGI-D-1	ECI-D-1	ECI-MW-2	G-1	G-2	G-3	G-FA-4	G-FA-7	HC-MW02	HC-MW02	HC-MW03	HC-MW03	P11
Depth Range:											(7-16)		(5-15)	
Date Collected:		6/23/1992	10/7/1991	10/7/1991	12/22/2003	12/22/2003	2/11/2004	1/20/2005	1/20/2005	11/8/1991	7/10/1992	11/8/2009	7/10/1992	2/19/2004
Sample Type:	Cleanup Screening Levels (a)	Concrete Settling Basin Sump	Concrete Settling Basin Sump	Monitoring Well	Boring	Boring	Boring	Boring	Boring	Monitoring Well	Monitoring Well	Monitoring Well	Monitoring Well	Monitoring Well
VOCs (µg/L)														
EPA Method 8260														
1,1,1,2-Tetrachloroethane					0.2 U	0.2 U	0.2 U	1 U	1 U					0.2 U
1,1,1-Trichloroethane	420000	1 U	1 U	1 U	0.2 U	0.2 U	0.2 U	1 U	1 U	1 U	1 U	1 U	1 U	0.2 U
1,1,2,2-Tetrachloroethane		1 U	1 U	1 U	0.2 U	0.2 U	0.2 U	1 U	1 U	5 U	1 U	5 U	1 U	0.2 U
1,1,2-Trichloro-1,2,2-trifluoroethane					0.2 U	0.2 U	0.2 U	2 U	2 U					0.2 U
1,1,2-Trichloroethane		1 U	1 U	1 U	0.2 U	0.2 U	0.2 U	1 U	1 U	1 U	1 U	1 U	1 U	0.2 U
1,1-Dichloroethane	800	1 U	1 U	1 U	0.2 U	0.2 U	0.2 U	1 U	1 U	5 U	1 U	5 U	1 U	0.2 U
1,1-Dichloroethene		1 U	1 U	1 U	0.2 U	0.2 U	0.2 U	1 U	1 U	5 U	1 U	5 U	1 U	0.2 U
1,1-Dichloropropene					0.2 U	0.2 U	0.2 U	1 U	1 U					0.2 U
1,2,3-Trichlorobenzene					0.5 U	0.5 U	0.5 U	5 U	5 U					0.5 U
1,2,3-Trichloropropane					0.5 U	0.5 U	0.5 U	2 U	2 U					0.5 U
1,2,4-Trichlorobenzene					0.5 U	0.5 U	0.5 U	5 U	5 U					0.5 U
1,2,4-Trimethylbenzene	400				0.2 U	0.2 U	0.2 U	1 U	1 U					0.2 U
1,2-Dibromo-3-chloropropane					2 U	2 U	2 U	5 U	5 U					2 U
1,2-Dichlorobenzene			1 U	1 U	0.2 U	0.2 U	0.2 U	1 U	1 U					0.2 U
1,2-Dichloroethane	1600	1 U	1	1 U	0.2 U	0.2 U	0.2 U	1 U	1 U	5 U	1 U	5 U	1 U	0.2 U
1,2-Dichloroethene		1 U									1 U		1 U	
1,2-Dichloropropane		1 U	1 U	1 U	0.2 U	0.2 U	0.2 U	1 U	1 U	5 U	1 U	5 U	1 U	0.2 U
1,3,5-Trimethylbenzene	400				0.2 U	0.2 U	0.2 U	1 U	1 U					0.2 U
1,3-Dichlorobenzene			1 U	1 U	0.2 U	0.2 U	0.2 U	1 U	1 U					0.2 U
1,3-Dichloropropane					0.2 U	0.2 U	0.2 U	1 U	1 U					0.2 U
1,4-Dichlorobenzene			1 U	1 U	0.2 U	0.2 U	0.2 U	1 U	1 U					0.2 U
2,2-Dichloropropane					0.2 U	0.2 U	0.2 U	1 U	1 U					0.2 U
2-Butanone		10 U	10 U	10 U	1 U	1 U	1 U	5 U	5 U		10 U		10 U	1 U
2-Chloroethylvinylether			10 U	10 U	0.5 U	0.5 U	0.5 U	5 U	5 U					0.5 U
2-Chlorotoluene					0.2 U	0.2 U	0.2 U	1 U	1 U					0.2 U
2-Hexanone		10 U	10 U	10 U	1 U	1 U	1 U	5 U	5 U		10 U		10 U	1 U
4-Chlorotoluene					0.2 U	0.2 U	0.2 U	1 U	1 U					0.2 U
4-Isopropyltoluene					0.2 U	0.2 U	0.2 U	1 U	1 U					0.2 U
4-Methyl-2-Pentanone (MIBK)		10 U	10 U	10 U	1 U	1 U	1 U	5 U	5 U		10 U		10 U	1 U
Acetone	800	10 U	20 U	20 U	2.8	1 U	1 U	5 U	5 U		10 U		10 U	1 U
Acrolein					5 U	5 U	5 U	50 U	50 U					5 U
Acrylonitrile					1 U	1 U	1 U	5 U	5 U					1 U
Benzene	51	1 U	1 U	1 U	0.2 U	0.2 U	0.2 U	1 U	1 U		1 U		1 U	0.2 U
Bromobenzene					0.2 U	0.2 U	0.2 U	1 U	1 U					0.2 U
Bromochloromethane					0.2 U	0.2 U	0.2 U	1 U	1 U					0.2 U
Bromodichloromethane		1 U	1 U	1 U	0.2 U	0.2 U	0.2 U	1 U	1 U	5 U	1 U	5 U	1 U	0.2 U
Bromoethane					0.2 U	0.2 U	0.2 U	2 U	2 U					0.2 U
Bromoform		5 U	1 U	1 U	0.2 U	0.2 U	0.2 U	1 U	1 U	5 U	5 U	5 U	5 U	0.2 U
Bromomethane		10 U	1 U	1 U	0.2 U	0.2 U	0.2 U	1 U	1 U		10 U		10 U	0.2 U
Carbon Disulfide	800	1 U	1 U	1 U	0.2 U	0.2 U	0.2 U	1 U	1 U					0.2 U
Carbon Tetrachloride		1 U	1 U	1 U	0.2 U	0.2 U	0.2 U	1 U	1 U	1 U	1 U	1 U	1 U	0.2 U
Chlorobenzene		1 U	1 U	1 U	0.2 U	0.2 U	0.2 U	1 U	1 U	5 U	1 U	5 U	1 U	0.2 U
Chloroethane	15	1 U	1 U	1 U	0.2 U	0.2 U	0.2 U	1 U	1 U		1 U		1 U	0.2 U
Chloroform	470	1 U	4	1 U	0.2 U	0.2 U	0.2 U	1 U	1 U	1 U	1 U	1 U	1 U	0.2 U
Chloromethane		10 U	1 U	1 U	0.2 U	0.2 U	0.2 U	1 U	1 U		10 U		10 U	0.2 U
cis-1,2-Dichloroethene	70		1 U	1 U	0.2 U	0.2 U	0.2 U	1 U	1 U					0.2 U
cis-1,3-Dichloropropene		1 U	1 U	1 U	0.2 U	0.2 U	0.2 U	1 U	1 U	5 U	1 U	5 U	1 U	0.2 U
Dibromochloromethane		1 U	1 U	1 U	0.2 U	0.2 U	0.2 U	1 U	1 U	5 U	1 U	5 U	1 U	0.2 U
Dibromomethane					0.2 U	0.2 U	0.2 U	1 U	1 U					0.2 U

TABLE 5
VOCS IN CHARACTERIZATION WATER SAMPLES
INTERIM ACTION REPORT - AMERON HULBERT SITE,
PORT OF EVERETT, WASHINGTON

	Area ID:	G	G	G	G	G	G	G	G	I	I	I	I	I
	Sample Name:	AGI-D-1	ECI-D-1	ECI-MW-2	G-1	G-2	G-3	G-FA-4	G-FA-7	HC-MW02	HC-MW02	HC-MW03	HC-MW03	P11
	Depth Range:										(7-16)		(5-15)	
	Date Collected:	6/23/1992	10/7/1991	10/7/1991	12/22/2003	12/22/2003	2/11/2004	1/20/2005	1/20/2005	11/8/1991	7/10/1992	11/8/2009	7/10/1992	2/19/2004
	Sample Type:	Concrete Settling Basin Sump	Concrete Settling Basin Sump	Monitoring Well	Boring	Boring	Boring	Boring	Boring	Monitoring Well	Monitoring Well	Monitoring Well	Monitoring Well	Monitoring Well
	Cleanup Screening Levels (a)													
Ethylbenzene	2100	1 U	1 U	1 U	0.2 U	0.2 U	0.2 U	4.3	1 U		1 U		1 U	0.2 U
Ethylene Dibromide					0.2 U	0.2 U	0.2 U	1 U	1 U					0.2 U
Hexachlorobutadiene					0.5 U	0.5 U	0.5 U	5 U	5 U					0.5 U
Isopropylbenzene					0.2 U	0.2 U	0.2 U	1 U	1 U					0.2 U
m, p-Xylene	1600				0.4 U	0.4 U	0.4 U	17	1 U					0.4 U
Methyl Iodide					0.2 U	0.2 U	0.2 U	1 U	1 U					0.2 U
Methylene Chloride	590	5 U	10 U	10 U	0.3 U	0.3 U	0.3 U	2 U	2 U	5 U	5 U	5 U	5 U	0.3 U
Naphthalene	4900				0.5 U	0.5 U	0.5 U	5 U	5 U					0.5 U
n-Butylbenzene					0.2 U	0.2 U	0.2 U	1 U	1 U					0.2 U
n-Propylbenzene					0.2 U	0.2 U	0.2 U	1 U	1 U					0.2 U
o-Xylene	16000				0.2 U	0.2 U	0.2 U	4.1	1 U					0.2 U
sec-Butylbenzene					0.2 U	0.2 U	0.2 U	1 U	1 U					0.2 U
Styrene		1 U	1 U	1 U	0.2 U	0.2 U	0.2 U	1 U	1 U		1 U		1 U	0.2 U
tert-Butylbenzene					0.2 U	0.2 U	0.2 U	1 U	1 U					0.2 U
Tetrachloroethene		1 U	1 U	1 U	0.2 U	0.2 U	0.2 U	1 U	1 U	1 U	1 U	1 U	1 U	0.2 U
Toluene	15000	1 U	1 U	1 U	0.2 U	0.4	0.2 U	1.1	1 U		1 U		1 U	0.2 U
trans-1,2-Dichloroethene	10000		1 U	1 U	0.2 U	0.2 U	0.2 U	1 U	1 U	5 U		5 U		0.2 U
trans-1,3-Dichloropropene		1 U	1 U	1 U	0.2 U	0.2 U	0.2 U	1 U	1 U		1 U		1 U	0.2 U
trans-1,4-Dichloro-2-butene					1 U	1 U	1 U	5 U	5 U					1 U
Trichloroethene	30	1 U	1 U	1 U	0.2 U	0.2 U	0.2 U	1 U	1 U	1 U	1 U	1 U	1 U	0.2 U
Trichlorofluoromethane			1 U	1 U	0.2 U	0.2 U	0.2 U	1 U	1 U	1 U		1 U		0.2 U
Trichlorotrifluoroethane			10 U	10 U										
Vinyl Acetate		10 U	10 U	10 U	0.2 U	0.2 U	0.2 U	5 U	5 U		10 U		10 U	0.2 U
Vinyl Chloride	2.4	1 U	1 U	1 U	0.2 U	0.2 U	0.2 U	1 U	1 U		1 U		1 U	0.2 U

TABLE 5
VOCS IN CHARACTERIZATION WATER SAMPLES
INTERIM ACTION REPORT - AMERON HULBERT SITE,
PORT OF EVERETT, WASHINGTON

Area ID:		I	J	J	J	J	J	J	M	M	M	M	M
Sample Name:		P12	HC-MW01	HC-MW01	HC-MW04	HC-MW04	J-1	J-2	ECI-MW-3	M-1	M-2	M-3	M-4
Depth Range:				(5-15)		(5-15)							
Date Collected:		2/19/2004	11/8/1991	7/10/1992	11/8/1991	7/10/1992	2/12/2004	2/12/2004	10/7/1991	1/18/2005	1/18/2005	1/18/2005	1/17/2005
Sample Type:	Cleanup Screening Levels (a)	Monitoring Well	Monitoring Well	Monitoring Well	Monitoring Well	Monitoring Well	Boring	Boring	Monitoring Well	Boring	Boring	Boring	Boring
VOCs (µg/L)													
EPA Method 8260													
1,1,1,2-Tetrachloroethane		0.2 U					0.2 U	0.2 U		1 U	1 U	1 U	1 U
1,1,1-Trichloroethane	420000	0.2 U	1 U	1 U	1 U	1 U	0.2 U	0.2 U	1 U	1 U	1 U	1 U	1 U
1,1,2,2-Tetrachloroethane		0.2 U	5 U	1 U	5 U	1 U	0.2 U	0.2 U	1 U	1 U	1 U	1 U	1 U
1,1,2-Trichloro-1,2,2-trifluoroethane		0.2 U					0.2 U	0.2 U		2 U	2 U	2 U	2 U
1,1,2-Trichloroethane		0.2 U	1 U	1 U	1 U	1 U	0.2 U	0.2 U	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethane	800	0.2 U	5 U	1 U	5 U	1 U	0.2 U	0.2 U	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethene		0.2 U	5 U	1 U	5 U	1 U	0.2 U	0.2 U	1 U	1 U	1 U	1 U	1 U
1,1-Dichloropropene		0.2 U					0.2 U	0.2 U		1 U	1 U	1 U	1 U
1,2,3-Trichlorobenzene		0.5 U					0.5 U	0.5 U		5 U	5 U	5 U	5 U
1,2,3-Trichloropropane		0.5 U					0.5 U	0.5 U		2 U	2 U	2 U	2 U
1,2,4-Trichlorobenzene		0.5 U					0.5 U	0.5 U		5 U	5 U	5 U	5 U
1,2,4-Trimethylbenzene	400	0.2 U					0.2 U	0.2 U		1 U	1 U	1 U	1 U
1,2-Dibromo-3-chloropropane		2 U					2 U	2 U		5 U	5 U	5 U	5 U
1,2-Dichlorobenzene		0.2 U					0.2 U	0.2 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichloroethane	1600	0.2 U	5 U	1 U	5 U	1 U	0.2 U	0.2 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichloroethene				1 U		1 U							
1,2-Dichloropropane		0.2 U	5 U	1 U	5 U	1 U	0.2 U	0.2 U	1 U	1 U	1 U	1 U	1 U
1,3,5-Trimethylbenzene	400	0.2 U					0.2 U	0.2 U		1 U	1 U	1 U	1 U
1,3-Dichlorobenzene		0.2 U					0.2 U	0.2 U	1 U	1 U	1 U	1 U	1 U
1,3-Dichloropropane		0.2 U					0.2 U	0.2 U		1 U	1 U	1 U	1 U
1,4-Dichlorobenzene		0.2 U					0.2 U	0.2 U	1 U	1 U	1 U	1 U	1 U
2,2-Dichloropropane		0.2 U					0.2 U	0.2 U		1 U	1 U	1 U	1 U
2-Butanone		1 U		10 U		10 U	1 U	1 U	10 U	5 U	5 U	5 U	5 U
2-Chloroethylvinylether		0.5 U					0.5 U	0.5 U	10 U	5 U	5 U	5 U	5 U
2-Chlorotoluene		0.2 U					0.2 U	0.2 U		1 U	1 U	1 U	1 U
2-Hexanone		1 U		10 U		10 U	1 U	1 U	10 U	5 U	5 U	5 U	5 U
4-Chlorotoluene		0.2 U					0.2 U	0.2 U		1 U	1 U	1 U	1 U
4-Isopropyltoluene		0.2 U					0.2 U	0.2 U		1 U	1 U	1 U	1 U
4-Methyl-2-Pentanone (MIBK)		1 U		10 U		10 U	1 U	1 U	10 U	5 U	5 U	5 U	5 U
Acetone	800	3.7		10 U		10 U	1 U	1 U	20 U	5 U	5 U	5 U	5 U
Acrolein		5 U					5 U	5 U		50 U	50 U	50 U	50 U
Acrylonitrile		1 U					1 U	1 U		5 U	5 U	5 U	5 U
Benzene	51	0.2 U		1 U		1 U	0.2 U	0.2 U	1 U	1 U	1 U	6.4	1 U
Bromobenzene		0.2 U					0.2 U	0.2 U		1 U	1 U	1 U	1 U
Bromochloromethane		0.2 U					0.2 U	0.2 U		1 U	1 U	1 U	1 U
Bromodichloromethane		0.2 U	5 U	1 U	5 U	1 U	0.2 U	0.2 U	1 U	1 U	1 U	1 U	1 U
Bromoethane		0.2 U					0.2 U	0.2 U		2 U	2 U	2 U	2 U
Bromoform		0.2 U	5 U	5 U	5 U	5 U	0.2 U	0.2 U	1 U	1 U	1 U	1 U	1 U
Bromomethane		0.2 U		10 U		10 U	0.2 U	0.2 U	1 U	1 U	1 U	1 U	1 U
Carbon Disulfide	800	0.2 U					0.2 U	0.2 U	1 U	1 U	1 U	1 U	1 U
Carbon Tetrachloride		0.2 U	1 U	1 U	1 U	1 U	0.2 U	0.2 U	1 U	1 U	1 U	1 U	1 U
Chlorobenzene		0.2 U	5 U	1 U	5 U	1 U	0.2 U	0.2 U	1 U	1 U	1 U	1 U	1 U
Chloroethane	15	0.2 U		1 U		1 U	0.2 U	0.2 U	1 U	1 U	1 U	1 U	1 U
Chloroform	470	0.2 U	1 U	1 U	1 U	1 U	0.2 U	0.2 U	1 U	1 U	1 U	1 U	1 U
Chloromethane		0.2 U		10 U		10 U	0.2 U	0.2 U	1 U	1 U	1 U	1 U	1 U
cis-1,2-Dichloroethene	70	0.2 U					0.2 U	0.2 U	1 U	1 U	1 U	1 U	1 U
cis-1,3-Dichloropropene		0.2 U	5 U	1 U	5 U	1 U	0.2 U	0.2 U	1 U	1 U	1 U	1 U	1 U
Dibromochloromethane		0.2 U	5 U	1 U	5 U	1 U	0.2 U	0.2 U	1 U	1 U	1 U	1 U	1 U
Dibromomethane		0.2 U					0.2 U	0.2 U		1 U	1 U	1 U	1 U

TABLE 5
VOCS IN CHARACTERIZATION WATER SAMPLES
INTERIM ACTION REPORT - AMERON HULBERT SITE,
PORT OF EVERETT, WASHINGTON

	Area ID:	I	J	J	J	J	J	J	M	M	M	M	M
	Sample Name:	P12	HC-MW01	HC-MW01	HC-MW04	HC-MW04	J-1	J-2	ECI-MW-3	M-1	M-2	M-3	M-4
	Depth Range:			(5-15)		(5-15)							
	Date Collected:	2/19/2004	11/8/1991	7/10/1992	11/8/1991	7/10/1992	2/12/2004	2/12/2004	10/7/1991	1/18/2005	1/18/2005	1/18/2005	1/17/2005
	Sample Type:	Monitoring Well	Monitoring Well	Monitoring Well	Monitoring Well	Monitoring Well	Boring	Boring	Monitoring Well	Boring	Boring	Boring	Boring
	Cleanup Screening Levels (a)												
Ethylbenzene	2100	0.2 U		1 U		1 U	0.2 U	0.2 U	1 U	1 U	1 U	1 U	1 U
Ethylene Dibromide		0.2 U					0.2 U	0.2 U		1 U	1 U	1 U	1 U
Hexachlorobutadiene		0.5 U					0.5 U	0.5 U		5 U	5 U	5 U	5 U
Isopropylbenzene		0.2 U					0.2 U	0.2 U		1 U	1 U	1 U	1 U
m, p-Xylene	1600	0.4 U					0.4 U	0.4 U		1 U	1 U	1 U	1 U
Methyl Iodide		0.2 U					0.2 U	0.2 U		1 U	1 U	1 U	1 U
Methylene Chloride	590	0.3 U	5 U	5 U	5 U	5 U	0.3 U	0.3 U	10 U	2 U	2 U	2 U	2 U
Naphthalene	4900	0.5 U					0.5 U	0.5 U		5 U	5 U	5 U	5 U
n-Butylbenzene		0.2 U					0.2 U	0.2 U		1 U	1 U	1 U	1 U
n-Propylbenzene		0.2 U					0.2 U	0.2 U		1 U	1 U	1 U	1 U
o-Xylene	16000	0.2 U					0.2 U	0.2 U		1 U	1 U	1 U	1 U
sec-Butylbenzene		0.2 U					0.2 U	0.2 U		1 U	1 U	1 U	1 U
Styrene		0.2 U		1 U		1 U	0.2 U	0.2 U	1 U	1 U	1 U	1 U	1 U
tert-Butylbenzene		0.2 U					0.2 U	0.2 U		1 U	1 U	1 U	1 U
Tetrachloroethene		0.2 U	1 U	1 U	1 U	1 U	0.2 U	0.2 U	1 U	1 U	1 U	1 U	1 U
Toluene	15000	0.2 U		1 U		1 U	1.6	2.3	1 U	1 U	1 U	1 U	1 U
trans-1,2-Dichloroethene	10000	0.2 U	5 U		5 U		0.2 U	0.2 U	1 U	1 U	1 U	1 U	1 U
trans-1,3-Dichloropropene		0.2 U		1 U		1 U	0.2 U	0.2 U	1 U	1 U	1 U	1 U	1 U
trans-1,4-Dichloro-2-butene		1 U					1 U	1 U		5 U	5 U	5 U	5 U
Trichloroethene	30	0.2 U	1 U	1 U	1 U	1 U	0.2 U	0.2 U	1 U	1 U	1 U	1 U	1 U
Trichlorofluoromethane		0.2 U	1 U		1 U		0.2 U	0.2 U	1 U	1 U	1 U	1 U	1 U
Trichlorotrifluoroethane									10 U				
Vinyl Acetate		0.2 U		10 U		10 U	0.2 U	0.2 U	10 U	5 U	5 U	5 U	5 U
Vinyl Chloride	2.4	0.2 U		1 U		1 U	0.2 U	0.2 U	1 U	1 U	1 U	13	1 U

U = the analyte was not detected in the sample at the given reporting limit.
Shaded cells indicate an exceedance of the site cleanup levels.

(a) Development of the cleanup levels is presented in Table 3.

TABLE 6
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Sample Name	Depth Range	Date Collected	Area ID	Sample Type	Metals	Metal Leachate	TBT	cPAHs	PCBs	TPH-G TPH-Dx	TPH-HCID	BTEX	SVOCs	VOCs
F-GC-1	(0-0.5)	1/14/2005	F	Boring	X		X	X		X	X		X	
J-GC-4C	(0-0.5)	7/14/2005	F	Boring	X									
ECI-Area-F		10/7/1991	G	Blasting Sand	X	X								
ECI-J-2	(3-3)	10/7/1991	G	Test Pit	X	X								
ECI-K-1	(4-4)	10/7/1991	G	Test Pit	X	X								
ECI-H-1		10/7/1991	G	Surface Soil						X				
ECI-N-2		10/7/1991	G	Surface Soil						X		X	X	X
ECI-TP-2	(5-5)	10/7/1991	G	Test Pit	X									
ECI-TP-3	(7-7)	10/7/1991	G	Test Pit	X									
ECI-TP-5	(9-9)	10/7/1991	G	Test Pit	X									
G1A-100507-AC-1		10/5/2007	G	Stock Pile	X	X		X					X	
G1A-100907-STK-1		10/9/2007	G	Stock Pile	X	X		X						
G1A-101607-STK-2		10/16/2007	G	Stock Pile	X	X		X						
G1-AC-1		6/22/2006	G	Surface Soil	X		X							
G1-AC-2		6/22/2006	G	Surface Soil	X		X							
G1-AC-3		6/22/2006	G	Surface Soil	X			X					X	X
G1-AC-4		6/22/2006	G	Surface Soil	X			X					X	X
G1-AC-5		6/22/2006	G	Surface Soil	X		X	X					X	X
G1-AC-6		6/26/2006	G	Surface Soil	X									
G1-AC-7		6/27/2006	G	Surface Soil	X		X							
G1-AC-8		6/27/2006	G	Surface Soil	X		X							
G1-AC-9		6/23/2006	G	Surface Soil	X		X							
G1-TP1	(0-4)	4/25/2006	G	Test Pit	X					X				
G1-TP2	(0-6)	4/25/2006	G	Test Pit	X					X				
G1-TP3	(0-5)	4/25/2006	G	Test Pit	X					X				
G1-TP4	(0-6)	4/25/2006	G	Test Pit	X	X				X				
G1-TP5	(0-5)	4/25/2006	G	Test Pit	X	X				X				
G1-TP6	(0-4)	4/25/2006	G	Test Pit	X					X				
G1-TP7	(0-5)	4/25/2006	G	Test Pit	X					X				
G1-TP8	(0-5)	4/25/2006	G	Test Pit	X					X				
G-3	(3-3)	2/11/2004	G	Boring	X			X	X	X		X		
G-FA-4	(2-2.5)	1/20/2005	G	Boring	X							X	X	X
G-FA-5	(8-8.5)	1/20/2005	G	Boring	X			X		X		X	X	X
G-FA-8	(4-4.5)	1/20/2005	G	Boring	X			X		X		X	X	X
G-GC-1	(1.5-2)	3/2/2005	G	Boring	X			X			X		X	
G-GC-2	(1.4-1.9)	3/2/2005	G	Boring	X			X			X		X	
G-GC-3	(1-1.5)	3/2/2005	G	Boring	X			X			X		X	
M-2C	(1-1.5)	7/15/2005	G	Boring				X					X	
PS-1/PS-2		1/25/1989	G	Pond Sample	X									
PZ-10[(a)]	(3-3)	2/11/2004	G	Boring	X			X	X	X		X		
SEE-EC-1	(1-1.5)	1/11/1989	G	Boring						X		X		
SEE-EC-1	(3-4.5)	1/11/1989	G	Boring						X		X		
SEE-EC-1	(5-6.5)	1/11/1989	G	Boring						X		X		
SEE-EC-1	(7.5-9)	1/11/1989	G	Boring						X		X		
SEE-EC-2	(1-2.5)	1/11/1989	G	Monitoring Well						X		X		
SEE-EC-2	(12-13.5)	1/11/1989	G	Monitoring Well						X		X		
SEE-EC-2	(3-4.5)	1/11/1989	G	Monitoring Well						X		X		
SEE-EC-2	(5-6.5)	1/11/1989	G	Monitoring Well						X		X		
SEE-EC-2	(7.5-9)	1/11/1989	G	Monitoring Well						X		X		
SEE-EC-3	(10-11.5)	1/11/1989	G	Monitoring Well						X		X		
SEE-EC-3	(12.5-14)	1/11/1989	G	Monitoring Well						X		X		
SEE-EC-3	(2-3.5)	1/11/1989	G	Monitoring Well						X		X		
SEE-EC-3	(5-6.5)	1/11/1989	G	Monitoring Well						X		X		
SEE-EC-3	(7.5-9)	1/11/1989	G	Monitoring Well						X		X		
SEE-EC-4	(10-11.5)	1/11/1989	G	Monitoring Well						X		X		
SEE-EC-4	(12.5-14)	1/11/1989	G	Monitoring Well						X		X		
SEE-EC-4	(2-3.5)	1/11/1989	G	Monitoring Well						X		X		
SEE-EC-4	(5-6.5)	1/11/1989	G	Monitoring Well						X		X		
SEE-EC-4	(7.5-9)	1/11/1989	G	Monitoring Well						X		X		
STOCKPILE		11/12/2004	G	Stock Pile	X				X	X	X		X	X
ECI-3448-A		11/7/1988	I	Surface Soil	X									
ECI-3448-B		11/7/1988	I	Surface Soil	X									
ECI-G-1	(0-0.5)	7/9/1987	I	Surface Soil	X				X					
ECI-G-2	(0-0.5)	7/9/1987	I	Surface Soil	X					X				
ECI-Q-1	(1-2)	10/7/1991	I	Test Pit	X					X	X	X	X	X
ECI-Q-5	(1-2)	10/7/1991	I	Test Pit	X					X	X	X	X	X
ECI-Q-6	(0-1)	10/7/1991	I	Test Pit	X	X				X	X	X	X	X
ECI-Q-8	(5-5)	10/7/1991	I	Test Pit	X					X	X	X	X	X
HC-GT-1A		11/7/1991	I	Boring	X						X	X		X
HC-MW02	(2.5-4)	11/6/1991	I	Boring	X						X	X		X
HC-MW02	(12.5-14)	11/6/1991	I	Boring	X						X	X		X
HC-MW03	(5-6.5)	11/7/1991	I	Boring	X						X	X		X
HC-MW03	(10-11.5)	11/7/1991	I	Boring	X						X	X		X
I1-AC-1		6/21/2006	I	Surface Soil	X		X							
I2-AC-1		7/13/2006	I	Excavation	X		X							
I2-AC-1A		7/12/2006	I	Excavation				X		X				
I2-AC-2		7/13/2006	I	Excavation	X		X							
I2-1	(1-1.5)	5/8/2006	I	Boring	X			X		X	X		X	
I2-2	(1-2.25)	5/8/2006	I	Boring	X			X		X	X		X	
I2-3	(0.5-2.5)	5/8/2006	I	Boring	X			X		X	X		X	
I2-4	(1.4-2.4)	5/8/2006	I	Boring	X			X		X	X		X	

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I2-5	(1.3-2.5)	5/8/2006	I	Boring	X			X		X	X		X	
I2-6	(1.5-2.2)	5/8/2006	I	Boring	X			X		X	X		X	
I2-7	(1.7-2.8)	5/8/2006	I	Boring	X			X		X	X		X	
I2-8	(1.5-3.3)	5/8/2006	I	Boring	X			X		X	X		X	
I2-9	(1.7-3.3)	5/8/2006	I	Boring	X			X		X	X		X	
I2-10	(1.5-2.5)	5/8/2006	I	Boring	X			X		X	X		X	
I2-WP	(1.5-2.5)	5/8/2006	I	Boring		X			X					
I-3		2/12/2004	I	Boring	X			X		X			X	
I3A-AC-1A		6/29/2006	I	Surface Soil	X		X							
I3A-AC-1B		6/29/2006	I	Surface Soil	X		X							
I3A-AC-2A		6/30/2006	I	Surface Soil	X		X							
I3A-AC-2B		6/30/2006	I	Surface Soil	X		X							
I3B-AC-1		7/7/2006	I	Surface Soil	X		X							
I3B-AC-2		7/7/2006	I	Surface Soil	X		X							
I4-AC-2		7/12/2006	I	Surface Soil	X		X							
I5-AC-1		6/27/2006	I	Surface Soil	X									
I5-AC-2		6/28/2006	I	Surface Soil	X		X							
I5-AC-3		6/28/2006	I	Surface Soil	X									
I5-AC-4		6/28/2006	I	Surface Soil	X		X							
I5-AC-5		7/14/2006	I	Surface Soil	X		X							
I-GC-1	(0-0.5)	7/14/2005	I	Boring	X	X		X			X		X	
I-GC-1	(1-2)	7/14/2005	I	Boring	X	X								
I-GC-1	(2-3)	7/14/2005	I	Boring	X									
I-GC-1A	(0-0.5)	10/19/2005	I	Boring	X			X					X	
I-GC-1A	(1-2)	10/18/2005	I	Boring	X									
I-GC-1A.1W		4/25/2006	I	Surface Soil	X									
I-GC-1B	(0-0.5)	10/19/2005	I	Boring	X			X					X	
I-GC-1B	(1-2)	10/18/2005	I	Boring	X									
I-GC-1B.1S	(0-0.5)	3/1/2006	I	Surface Soil	X									
I-GC-1B.1W	(0-0.5)	3/1/2006	I	Surface Soil	X									
I-GC-1C	(0-0.5)	10/19/2005	I	Boring	X	X		X					X	
I-GC-1C	(1-2)	10/18/2005	I	Boring	X			X					X	
I-GC-1C	(2-3)	10/18/2005	I	Boring	X									
I-GC-2	(0-0.5)	7/14/2005	I	Boring	X			X		X	X		X	
I-GC-2	(1-2)	7/14/2005	I	Boring	X			X					X	
I-GC-2.1N	(0-0.5)	3/1/2006	I	Surface Soil	X									
I-GC-2.1S	(0-0.5)	3/1/2006	I	Surface Soil	X									
I-GC-2.1SW	(0-0.5)	3/27/2006	I	Surface Soil	X									
I-GC-2.1W	(0-0.5)	3/1/2006	I	Surface Soil	X									
I-GC-2.2W	(0-0.5)	3/29/2006	I	Surface Soil	X									
I-GC-2.3W	(0-0.5)	3/29/2006	I	Surface Soil	X									
I-GC-2.4W	(0-0.5)	3/29/2006	I	Surface Soil	X									
I-GC-3	(0-0.5)	7/14/2005	I	Boring	X			X			X		X	
I-GC-4	(0-0.5)	7/14/2005	I	Boring	X			X		X	X		X	
I-GC-4	(1-2)	7/14/2005	I	Boring				X					X	
I-GC-5	(3-3.5)	7/14/2005	I	Boring	X			X			X		X	
I-GC-6	(3.5-4)	7/14/2005	I	Boring	X			X		X	X		X	
I-GC-7	(0-0.5)	7/14/2005	I	Boring	X			X			X		X	
I-GC-8	(3.5-4)	7/14/2005	I	Boring	X			X			X		X	
I-GC-9	(3.5-4)	7/14/2005	I	Boring	X			X			X		X	
I-GC-10	(0-0.5)	7/14/2005	I	Boring	X			X		X	X		X	
I-GC-11	(0-0.5)	7/14/2005	I	Boring	X			X			X		X	
I-GC-11	(1-2)	7/14/2005	I	Boring				X					X	
I-GC-11	(2-3)	7/14/2005	I	Boring				X					X	
I-GC-11.1E	(0-0.5)	3/1/2006	I	Surface Soil	X			X					X	
I-GC-11.1N	(0-0.5)	3/1/2006	I	Surface Soil	X			X					X	
I-GC-11.1S	(0.75-1.25)	3/1/2006	I	Surface Soil	X			X					X	
I-GC-11.1W	(0-0.5)	3/1/2006	I	Surface Soil	X			X					X	
I-GC-11.2N	(0-0.5)	3/1/2006	I	Surface Soil	X									
I-GC-12	(0-0.5)	7/14/2005	I	Boring	X			X		X	X		X	
I-GC-12	(1-2)	7/14/2005	I	Boring				X					X	
I-GC-12.1E	(0-0.5)	3/1/2006	I	Surface Soil	X			X					X	
I-GC-12.1S	(0.75-1.25)	3/1/2006	I	Hand Auger	X			X					X	
I-GC-12.1W	(0-0.5)	3/1/2006	I	Surface Soil	X			X					X	
I-GC-12.2E	(0-0.5)	3/10/2006	I	Surface Soil				X					X	
I-GC-12.2S	(0.25-0.75)	3/1/2006	I	Surface Soil	X									
I-GC-12.3S	(0-0.5)	3/1/2006	I	Surface Soil	X									
I-GC-12.4S	(0.25-0.75)	3/1/2006	I	Surface Soil	X									
I-GC-12.4S.1E	(0-0.5)	3/27/2006	I	Surface Soil	X									
I-GC-12.4S.2E	(0-0.5)	3/27/2006	I	Surface Soil	X									
I-GC-12.5S	(0.5-1)	3/1/2006	I	Surface Soil	X			X					X	
I-GC-12.6S	(0-0.5)	3/27/2006	I	Surface Soil	X									
I-GC-12.6S.1E	(0-0.5)	3/27/2006	I	Surface Soil	X									
I-GC-12.6S.1W	(0-0.5)	3/27/2006	I	Surface Soil	X									
I-GC-13	(0-0.5)	7/14/2005	I	Boring	X			X		X	X		X	
I-GC-14	(0-0.5)	7/14/2005	I	Boring	X			X		X	X		X	
I-GC-14	(1-2)	7/14/2005	I	Boring	X			X					X	
I-GC-15	(0-0.5)	8/22/2005	I	Hand Auger	X			X			X		X	
I-GC-15	(1-2)	8/22/2005	I	Hand Auger	X									
I-GC-15	(2-3)	8/22/2005	I	Hand Auger	X									
I-GC-16	(0-0.5)	8/22/2005	I	Hand Auger	X			X		X	X		X	

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I-GC-16	(1-2)	8/22/2005	I	Hand Auger	X									
I-GC-17	(0-0.5)	8/22/2005	I	Hand Auger	X			X			X		X	
I-GC-17	(1-2)	8/22/2005	I	Hand Auger	X			X					X	
I-GC-18	(0-0.5)	8/22/2005	I	Hand Auger	X			X		X	X		X	
I-GC-18	(1-2)	8/22/2005	I	Hand Auger	X									
I-GC-18	(2-3)	8/22/2005	I	Hand Auger	X									
I-GC-19	(0-0.5)	8/22/2005	I	Hand Auger	X			X			X		X	
I-GC-19	(1-2)	8/22/2005	I	Hand Auger	X									
I-GC-20	(0-0.5)	8/22/2005	I	Hand Auger	X			X		X	X		X	
I-GC-20	(1-2)	8/22/2005	I	Hand Auger	X			X					X	
I-GC-21	(0-0.5)	8/22/2005	I	Hand Auger	X			X		X	X		X	
I-GC-22	(0-0.5)	8/22/2005	I	Hand Auger	X			X			X		X	
I-GC-23	(0-0.5)	8/22/2005	I	Hand Auger	X			X		X	X		X	
I-GC-24	(1.2-6)	10/19/2005	I	Boring	X			X		X	X		X	
I-GC-24	(6.5-7.5)	10/19/2005	I	Boring	X			X			X		X	
I-GC-24	(7.5-8)	10/18/2005	I	Boring	X									
I-GC-24.3W.1S	(0-0.5)	3/1/2006	I	Surface Soil	X									
I-GC-24.4W	(0-0.5)	3/1/2006	I	Surface Soil	X									
I-GC-25	(0.5-1)	10/19/2005	I	Boring	X			X			X		X	
I-GC-26	(0-0.5)	10/19/2005	I	Boring	X			X			X		X	
I-TP-1	(0-3)	4/25/2006	I	Test Pit	X					X				
I-TP-2	(0-2.5)	4/25/2006	I	Test Pit	X					X				
I-TP-3	(0-4)	4/25/2006	I	Test Pit	X					X				
I-TP-4	(0-3)	4/25/2006	I	Test Pit	X					X				
I-TP-5	(0-5)	4/25/2006	I	Test Pit	X	X				X				
I-TP-6	(0-4)	4/25/2006	I	Test Pit	X					X				
I-TP-7	(0-4)	4/25/2006	I	Test Pit	X					X				
I-TP-8	(0-4)	4/25/2006	I	Test Pit	X					X				
IW-11		1/5/2006	I	Surface Soil	X					X				
IW-13		3/1/2006	I	Surface Soil	X					X				
IW-14		3/1/2006	I	Surface Soil	X					X				
I-X		2/12/2004	I	Boring	X			X	X	X			X	X
I-Y		2/12/2004	I	Boring	X			X	X	X			X	X
I-Z		2/12/2004	I	Surface Soil	X			X		X			X	
Chamber-1		8/11/2006	J	Excavation	X	X		X	X	X		X	X	X
Chamber-2		8/11/2006	J	Excavation	X	X		X	X	X		X	X	X
Chamber-3		8/11/2006	J	Excavation	X	X	X	X	X	X		X	X	X
Chamber-4		8/11/2006	J	Excavation	X	X		X	X	X		X	X	X
CSP-1		10/20/1993	J	Stock Pile						X				
CSP-2		10/20/1993	J	Stock Pile						X				
CSP-3		10/20/1993	J	Stock Pile						X				
CSP-4		10/20/1993	J	Stock Pile						X				
J-FA-1	(4-5)	1/17/2005	J	Boring							X			
J-FA-2	(4-5)	1/17/2005	J	Boring						X	X			
J-GC-1	(0.5-1)	1/14/2005	J	Boring	X			X		X	X		X	
J-GC-1	(1.5-2.5)	1/14/2005	J	Boring						X				
J-GC-1B	(0.9-1.4)	7/14/2005	J	Boring						X				
J-GC-1C	(0.7-1.2)	7/14/2005	J	Boring						X				
J-GC-2	(0-0.5)	3/2/2005	J	Boring	X			X			X		X	
J-GC-3	(0-0.5)	3/2/2005	J	Boring	X			X			X		X	
J-GC-4	(1.5-2)	3/3/2005	J	Boring	X			X			X		X	
J-GC-4	(2.5-3.5)	3/3/2005	J	Boring	X									
J-GC-4	(3.5-4.5)	3/3/2005	J	Boring	X									
J-GC-4B	(0-0.5)	7/14/2005	J	Boring	X									
J-GC-6	(1.1-1.6)	7/15/2005	J	Boring	X			X		X	X		X	
J-GC-6	(2.1-3.1)	7/15/2005	J	Boring	X									
J-GC-6	(2-2.7)	7/15/2005	J	Boring	X			X					X	
J-GC-6	(3.1-4.1)	7/15/2005	J	Boring				X					X	
J-GC-6f	(0.7-1.1)	2/6/2006	J	Boring	X			X						
J-GC-6g	(1-1.5)	2/6/2006	J	Boring	X			X						
J-GC-6h	(1-1.5)	2/6/2006	J	Boring	X			X						
J-GC-6i	(1-1.5)	2/6/2006	J	Boring	X			X						
J-GC-6i	(3.2-4)	2/6/2006	J	Boring	X			X						
J-GC-7	(0.7-1.2)	7/15/2005	J	Boring	X			X			X		X	
J-GC-8	(2.1-2.6)	7/15/2005	J	Boring	X			X			X		X	
J-GC-9	(1.4-1.9)	7/15/2005	J	Boring	X			X		X	X		X	
J-GC-10	(0-0.5)	7/14/2005	J	Boring	X			X			X		X	
J-MSRC		5/23/2007	J	Excavation				X	X	X	X		X	X
J-MSRC-B		5/24/2007	J	Excavation						X	X			
J-MSRC-E		5/24/2007	J	Excavation						X	X			
J-MSRC-M052907		5/29/2007	J	Excavation						X	X			
J-MSRC-N		5/24/2007	J	Excavation						X	X			
J-MSRC-N052907		5/29/2007	J	Excavation						X	X			
J-MSRC-S		5/24/2007	J	Excavation						X	X			
J-MSRC-S052907		5/29/2007	J	Excavation						X	X			
J-MSRC-SP1		5/24/2007	J	Excavation						X	X			
J-MSRC-SP2		5/24/2007	J	Excavation						X	X			
J-MSRC-SP3		5/24/2007	J	Excavation						X	X			
J-MSRC-W		5/24/2007	J	Excavation						X	X			
HC-MW01	(5-6.5)	11/6/1991	J	Boring	X						X	X		X
HC-MW01	(7.5-9)	11/6/1991	J	Boring	X						X	X		X

TABLE 6
SOIL CHARACTERIZATION AND WASTE PROFILE SAMPLE ANALYSIS GRID
INTERIM ACTION REPORT - AMERON HULBERT SITE
PORT OF EVERETT, WASHINGTON

Sample Name	Depth Range	Date Collected	Area ID	Sample Type	Metals	Metal Leachate	TBT	cPAHs	PCBs	TPH-G TPH-Dx	TPH-HCID	BTEX	SVOCs	VOCs
HC-MW04	(5-6.5)	11/7/1991	J	Boring	X						X	X		X
HC-MW04	(20-21.5)	11/7/1991	J	Boring	X						X	X		X
KFI-SS02	(8-8)	10/1/1993	J	Excavation						X				
KFI-SS04	(6-6)	10/1/1993	J	Excavation						X				
KFI-SS07	(7-7)	10/1/1993	J	Excavation						X				
KFI-SS11	(4-4)	10/20/1993	J	Excavation						X				
KFI-SS12	(8-8)	10/20/1993	J	Excavation						X				
KFI-SS14	(14-14)	10/20/1993	J	Excavation						X				
KFI-SS17	(14-14)	10/20/1993	J	Excavation						X				
KFI-SS22	(19-19)	10/20/1993	J	Excavation						X				
KFI-WP01		9/30/1993	J	Stock Pile					X	X				
KFI-WP02		9/30/1993	J	Stock Pile					X	X				
KFI-WP03		9/30/1993	J	Stock Pile					X	X				
KFI-WP04		9/30/1993	J	Stock Pile					X	X				
KFI-WP-A		10/1/1993	J	Stock Pile						X				
KFI-WP-B		10/1/1993	J	Stock Pile						X				
KFI-WP-C		10/1/1993	J	Stock Pile						X				
KFI-WP-Comp		9/30/1993	J	Stock Pile		X		X		X		X	X	X
KFI-WP-D		10/1/1993	J	Stock Pile						X				
SS01	(0.5-0.5)	5/20/1993	J	Surface Soil	X									
SS02	(0.5-0.5)	5/20/1993	J	Surface Soil	X									
TP01	(1-1)	5/20/1993	J	Test Pit	X									
TP01	(3-3)	5/20/1993	J	Test Pit	X									
TP02	(2-2)	5/20/1993	J	Test Pit	X									
TP03	(0.5-0.5)	5/20/1993	J	Test Pit	X									
TP05	(0.5-0.5)	5/20/1993	J	Test Pit	X									
TP05	(1-1)	5/20/1993	J	Test Pit	X									
ECI-B-1		10/7/1991	M	Surface Soil						X				
ECI-M-1		9/24/1991	M	Surface Soil						X	X			
ECI-N-1		10/7/1991	M	Surface Soil						X		X	X	X
M-1	(0.3-0.8)	1/18/2005	M	Boring	X			X		X	X		X	
M-2	(1.5-2)	1/18/2005	M	Boring	X			X		X	X		X	
M-2	(2-3)	1/18/2005	M	Boring				X					X	
M-2.1S	(1-1.5)	3/1/2006	M	Boring				X					X	
M-2.1W	(1-1.5)	3/1/2006	M	Boring				X					X	
M-2B	(1-1.5)	7/15/2005	M	Boring				X					X	
M-2D	(0.9-1.4)	7/15/2005	M	Boring				X					X	
M-3	(0-0.5)	1/18/2005	M	Boring	X			X		X	X		X	
M-4	(0.8-1.3)	1/17/2005	M	Boring	X			X		X	X		X	
M-FA-1	(3.5-4)	1/17/2005	M	Boring						X		X		X
M-FA-2	(3.5-4)	1/17/2005	M	Boring						X		X		X
M-GC-1	(1.6-2.1)	3/3/2005	M	Boring	X			X		X	X		X	
M-GC-2	(1.5-2)	3/2/2005	M	Boring	X			X		X	X		X	
M-GC-3	(1-1.5)	3/3/2005	M	Boring	X			X		X	X		X	
M-GC-4	(1.5-2)	3/2/2005	M	Boring	X			X		X	X		X	
M-GC-5	(1-1.5)	3/2/2005	M	Boring	X			X		X	X		X	

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

TABLE 7
STORMWATER SAMPLE RESULTS
INTERIM ACTION REPORT - AMERON HULBERT SITE
PORT OF EVERETT, WASHINGTON

	Ecology Industrial Stormwater General Permit Criteria					
Area ID:		G	G	M		R
Sample Name:		CB-2	CB-3	CB-1	ECI-Area-R	R
Date Collected:		3/26/2008	3/26/2008	3/26/2008	10/9/1991	6/23/1992
Sample Type:		Stormwater Catch Basin	Stormwater Catch Basin	Stormwater Catch Basin	Storm Water Outfall	Storm Water Outfall
TOTAL METALS (µg/L)						
Method 6010/7470/200.8						
Antimony		50 U	50 U	50 U	50 U	
Arsenic		1.1	8.5	12.3	6	
Beryllium		1 U	1 U	1 U	5 U	
Cadmium		2 U	2 U	2 U	3 U	
Chromium		5 U	68	24	5	
Copper	149	9	36	25	11	
Lead	159	5	8	13	2	
Mercury		0.10 U	0.10 U	0.10 U	0.5 U	
Nickel		10 U	30	10	20 U	
Selenium		0.5 U	0.5 U	0.7	5 U	
Silver		3 U	3 U	3 U	10 U	
Thallium		0.2 U	0.2 U	0.2 U	5 U	
Zinc	372	250	3,230	330	43	
DISSOLVED METALS (µg/L)						
Method 6010/7470/200.8						
Antimony		50 U	50 U	50 U		
Arsenic		0.3	2.1	11		
Beryllium		1 U	1 U	1 U		
Cadmium		2 U	2 U	2 U		
Chromium		5 U	5 U	12		
Copper	149	2 U	2 U	22		
Lead	159	5	1 U	24		
Mercury		0.10 U	0.10 U	0.10 U		
Nickel		10 U	10 U	10 U		
Selenium		0.5 U	0.5 U	0.5 U		
Silver		3 U	3 U	3 U		
Thallium		0.2 U	0.2 U	0.2 U		
Zinc	372	100	1,640	380		
SVOCs (µg/L)						
SW8260						
N-nitrosodimethylamine					10 U	
Aniline					40 U	
Bis-(2-Chloroethyl) Ether					10 U	
1,2-Dichlorobenzene					10 U	
1,3-Dichlorobenzene					10 U	
1,4-Dichlorobenzene					10 U	
2,2'-Oxybis(1-Chloropropane)					10 U	
N-Nitroso-di-n-propylamine					10 U	
Hexachloroethane					10 U	
Nitrobenzene					10 U	
Isophorone					10 U	
bis(2-Chloroethoxy) Methane					10 U	
1,2,3-Trichlorobenzene					10 U	
Naphthalene					10 U	
4-Chloroaniline					10 U	
Hexachlorobutadiene					10 U	
2-Methylnaphthalene					10 U	
Hexachlorocyclopentadiene					20 U	
2-Chloronaphthalene					10 U	
2-Nitroaniline					40 U	
Dimethylphthalate					10 U	
Acenaphthylene					10 U	
3-Nitroaniline					40 U	
Acenaphthene					10 U	
Dibenzofuran					10 U	
2,4-Dinitrotoluene					10 U	
Phenol					10 U	
2-Chlorophenol					10 U	
Benzyl Alcohol					10 U	
2-Methylphenol					10 U	
3- and 4-Methylphenol					10 U	
2-Nitrophenol					10 U	
2,4-Dimethylphenol					10 U	
Benzoic Acid					100 U	
2,6-Dinitrotoluene					10 U	
Diethylphthalate					10 U	
4-Chlorophenyl-phenylether					10 U	
Fluorene					10 U	
4-Nitroaniline					40 U	
N-Nitrosodiphenylamine					10 U	

TABLE 7
STORMWATER SAMPLE RESULTS
INTERIM ACTION REPORT - AMERON HULBERT SITE
PORT OF EVERETT, WASHINGTON

Area ID:		G	G	M		R
Sample Name:		CB-2	CB-3	CB-1	ECI-Area-R	R
Date Collected:		3/26/2008	3/26/2008	3/26/2008	10/9/1991	6/23/1992
Sample Type:		Stormwater Catch Basin	Stormwater Catch Basin	Stormwater Catch Basin	Storm Water Outfall	Storm Water Outfall
	Ecology Industrial Stormwater General Permit Criteria					
4-Bromophenyl-phenylether					10 U	
Hexachlorobenzene					10 U	
Phenanthrene					10 U	
Anthracene					10 U	
Di-n-Butylphthalate					10 U	
Fluoranthene					10 U	
Pyrene					10 U	
Benzyl butyl phthalate					10 U	
3,3'-Dichlorobenzidine					40 U	
Benzo(a)anthracene					10 U	
Bis(2-ethylhexyl)phthalate					10 U	
Chrysene					10 U	
Di-n-octyl phthalate					10 U	
Benzo(b)fluoranthene					10 U	
Benzo(k)fluoranthene					10 U	
Benzo(a)Pyrene					10 U	
Indeno(1,2,3-cd)pyrene					10 U	
Dibenz(a,h)anthracene					10 U	
Benzo(g,h,i)perylene					10 U	
2,4-Dichlorophenol					10 U	
4-Chloro-3-methylphenol					10 U	
2,4,6-Trichlorophenol					10 U	
2,4,5-Trichlorophenol					10 U	
2,4-Dinitrophenol					100 U	
4-Nitrophenol					100 U	
4,6-Dinitro-2-Methylphenol					40 U	
Pentachlorophenol					60 U	
VOCs (µg/L)						
SW8260						
Bromomethane					1 U	10 U
Carbon Disulfide					1 U	1 U
1,1,1-Trichloroethane					1 U	1 U
1,1,2,2-Tetrachloroethane					1 U	1 U
1,1,2-Trichloroethane					1 U	1 U
1,1-Dichloroethane					1 U	1 U
1,1-Dichloroethene					1 U	1 U
1,2-Dichlorobenzene					1 U	
1,2-Dichloroethane					1 U	1 U
1,2-Dichloroethene						1 U
1,2-Dichloropropane					1 U	1 U
1,3-Dichlorobenzene					1 U	
1,4-Dichlorobenzene					1 U	
2-Butanone					10 U	10 U
2-Chloroethylvinylether					10 U	
2-Hexanone					10 U	10 U
4-Methyl-2-Pentanone (MIBK)					10 U	10 U
Acetone					51	10 U
Benzene					1 U	1 U
Bromodichloromethane					1 U	1 U
Bromoform					1 U	5 U
Bromomethane					1 U	
Carbon Disulfide					1 U	
Carbon Tetrachloride					1 U	1 U
Chlorobenzene					1 U	1 U
chloroethane					1 U	1 U
Chloroform					10	10
chloromethane					1 U	10 U
cis-1,2-Dichloroethene					1 U	
cis-1,3-Dichloropropene					1 U	1 U
Dibromochloromethane					1 U	1 U
Ethylbenzene					1 U	1 U
Methylene Chloride					10 U	5 U
styrene					1 U	1 U
Tetrachloroethene					1 U	1 U
Toluene					1 U	1 U
trans-1,2-Dichloroethene					1 U	
trans-1,3-Dichloropropene					1 U	1 U
Trichloroethene					1 U	1 U
Trichlorofluoromethane					1 U	
Trichlorotrifluoroethane					10 U	
vinyl acetate					10 U	10 U
vinyl chloride					1 U	1 U
Xylenes, Total					1 U	1 U

TABLE 7
STORMWATER SAMPLE RESULTS
INTERIM ACTION REPORT - AMERON HULBERT SITE
PORT OF EVERETT, WASHINGTON

	Area ID:	G	G	M		
	Sample Name:	CB-2	CB-3	CB-1	ECI-Area-R	R
	Date Collected:	3/26/2008	3/26/2008	3/26/2008	10/9/1991	6/23/1992
	Sample Type:	Stormwater Catch Basin	Stormwater Catch Basin	Stormwater Catch Basin	Storm Water Outfall	Storm Water Outfall
	Ecology Industrial Stormwater General Permit Criteria					
PCBs and Pesticides (µg/L)						
Alpha-BHC					0.04 U	
Gamma-BHC					0.04 U	
Beta-BHC					0.1 U	
Heptachlor					0.04 U	
Delta-BHC					0.04 U	
Aldrin					0.04 U	
Heptachlor Epoxide					0.04 U	
EndoSulfan I					0.04 U	
4,4'-DDE					0.04 U	
Dieldrin					0.04 U	
Endrin					0.04 U	
4,4'-DDD					0.04 U	
Endrin Aldehyde					0.04 U	
Endosulfan Sulfate					0.04 U	
Methoxychlor					0.1 U	
Toxaphene					1 U	
Chlordane					0.5 U	
Aroclor 1016					0.2 U	
Aroclor 1221					0.2 U	
Aroclor 1232					0.2 U	
Aroclor 1242					0.2 U	
Aroclor 1248					0.2 U	
Aroclor 1254					0.2 U	
Aroclor 1260					0.2 U	
INORGANICS (SU)						
Method 150.1						
pH	5- 10 (acceptable range)	7.05	7.00	6.92		

U = the analyte was not detected in the sample at the given reporting limit.
Shaded cells indicate an exceedance of the site cleanup levels.

TABLE 8
VOCS IN CHARACTERIZATION AND WASTE PROFILE SOIL SAMPLES
INTERIM ACTION REPORT - AMERON HULBERT SITE
PORT OF EVERETT, WASHINGTON

	Area ID:	I	I	I	I	I	I	I	I	I	I	I	J	J	J	J	J
	Sample Name:	ECI-Q-1	ECI-Q-5	ECI-Q-6	ECI-Q-8	HC-GT-1A (b)	HC-MW-2 (b)	HC-MW-2 (b)	HC-MW-3 (b)	HC-MW-3 (b)	I-X	I-Y	Chamber-1	Chamber-2	Chamber-3	Chamber-4	HC-MW-1 (b)
	Depth Range:	(1-2)	(1-2)	(0-1)	(5-5)		(2.5-4)	(12.5-14)	(5-6.5)	(10-11.5)							(5-6.5)
	Date Collected:	10/7/1991	10/7/1991	10/7/1991	10/7/1991	11/7/1991	11/6/1991	11/6/1991	11/7/1991	11/7/1991	2/12/2004	2/12/2004	8/11/2006	8/11/2006	8/11/2006	8/11/2006	11/6/1991
	Sample Type:	Test Pit	Test Pit	Test Pit	Test Pit	Boring	Boring	Boring	Boring	Boring	Boring	Boring	Excavation	Excavation	Excavation	Excavation	Boring
	Cleanup Screening Levels (a)																
VOCs (mg/kg)																	
EPA Method 8260																	
1,1,1,2-Tetrachloroethane													0.0011 U	0.0088 U	0.0022 U	0.0017 U	
1,1,1-Trichloroethane	3400	0.005 U	0.005 U	0.005 U	0.005 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U			0.0011 U	0.0088 U	0.0022 U	0.0017 U	0.05 U
1,1,2,2-Tetrachloroethane		0.005 U	0.005 U	0.005 U	0.005 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U			0.0011 U	0.0088 U	0.0022 U	0.0017 U	0.25 U
1,1,2-Trichloro-1,2,2-trifluoroethane													0.0021 U	0.018 U	0.0045 U	0.0034 U	
1,1,2-Trichloroethane		0.005 U	0.005 U	0.005 U	0.005 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U			0.0011 U	0.0088 U	0.0022 U	0.0017 U	0.05 U
1,1-Dichloroethane	4.3	0.005 U	0.005 U	0.005 U	0.005 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U			0.0011 U	0.0088 U	0.0022 U	0.0017 U	0.25 U
1,1-Dichloroethene		0.005 U	0.005 U	0.005 U	0.005 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U			0.0011 U	0.0088 U	0.0022 U	0.0017 U	0.25 U
1,1-Dichloropropene													0.0011 U	0.0088 U	0.0022 U	0.0017 U	
1,2,3-Trichlorobenzene													0.0053 U	0.044 U	0.011 U	0.0086 U	
1,2,3-Trichloropropane													0.0021 U	0.018 U	0.0045 U	0.0034 U	
1,2,4-Trichlorobenzene											0.14 U	0.081 U					
1,2,4-Trimethylbenzene	4000												0.0011 U	0.0088 U	0.0034	0.0017 U	
1,2-Dibromo-3-chloropropane													0.0053 U	0.044 U	0.011 U	0.0086 U	
1,2-Dichlorobenzene		0.005 U	0.005 U	0.005 U	0.005 U						0.14 U	0.081 U					
1,2-Dichloroethane		0.005 U	0.005 U	0.005 U	0.005 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U			0.0011 U	0.0088 U	0.0022 U	0.0017 U	0.25 U
1,2-Dichloropropane		0.005 U	0.005 U	0.005 U	0.005 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U			0.0011 U	0.0088 U	0.0022 U	0.0017 U	0.25 U
1,3,5-Trimethylbenzene	4000												0.0011 U	0.0088 U	0.0022 U	0.0017 U	
1,3-Dichlorobenzene		0.005 U	0.005 U	0.005 U	0.005 U						0.14 U	0.081 U					
1,3-Dichloropropane													0.0011 U	0.0088 U	0.0022 U	0.0017 U	
1,4-Dichlorobenzene		0.005 U	0.005 U	0.005 U	0.005 U						0.14 U	0.081 U					
2,2-Dichloropropane													0.0011 U	0.0088 U	0.0022 U	0.0017 U	
2-Butanone	48000	0.01 U	0.01 U	0.01 U	0.01 U								0.0053 U	0.044 U	0.011 U	0.0086 U	
2-Chloroethylvinylether		0.01 U	0.01 U	0.01 U	0.01 U								0.0053 U	0.044 U	0.011 U	0.0086 U	
2-Chlorotoluene													0.0011 U	0.0088 U	0.0022 U	0.0017 U	
2-Hexanone		0.01 U	0.01 U	0.01 U	0.01 U								0.0053 U	0.044 U	0.011 U	0.0086 U	
4-Chlorotoluene													0.0011 U	0.0088 U	0.0022 U	0.0017 U	
4-Isopropyltoluene													0.0011 U	0.0088 U	0.05	0.0018	
4-Methyl-2-Pentanone (MIBK)		0.01 U	0.01 U	0.01 U	0.01 U								0.0053 U	0.044 U	0.011 U	0.0086 U	
Acetone	3.2	0.05 U	0.05 U	0.05 U	0.05 U								0.027	0.06	0.03	0.013	
Acrolein													0.053 U	0.44 U	0.11 U	0.086 U	
Acrylonitrile													0.0053 U	0.044 U	0.011 U	0.0086 U	
Benzene	0.29	0.005 U	0.005 U	0.005 U	0.005 U										0.0022 U		
Bromobenzene													0.0011 U	0.0088 U	0.0022 U	0.0017 U	
Bromochloromethane													0.0011 U	0.0088 U	0.0022 U	0.0017 U	
Bromodichloromethane		0.005 U	0.005 U	0.005 U	0.005 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U			0.0011 U	0.0088 U	0.0022 U	0.0017 U	0.25 U
Bromoethane													0.0021 U	0.018 U	0.0045 U	0.0034 U	
Bromoform		0.005 U	0.005 U	0.005 U	0.005 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U			0.0011 U	0.0088 U	0.0022 U	0.0017 U	0.25 U
Bromomethane		0.005 U	0.005 U	0.005 U	0.005 U								0.0011 U	0.0088 U	0.0022 U	0.0017 U	
Carbon Disulfide		0.005 U	0.005 U	0.005 U	0.005 U								0.0011 U	0.0088 U	0.0022 U	0.0017 U	
Carbon Tetrachloride		0.005 U	0.005 U	0.005 U	0.005 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U			0.0011 U	0.0088 U	0.0022 U	0.0017 U	0.05 U
Chlorobenzene		0.005 U	0.005 U	0.005 U	0.005 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U			0.0011 U	0.0088 U	0.0022 U	0.0017 U	0.25 U
Chloroethane		0.005 U	0.005 U	0.005 U	0.005 U								0.0011 U	0.0088 U	0.0022 U	0.0017 U	
Chloroform		0.005 U	0.005 U	0.005 U	0.005 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U			0.0011 U	0.0088 U	0.0022 U	0.0017 U	0.05 U
Chloromethane		0.005 U	0.005 U	0.005 U	0.005 U								0.0011 U	0.0088 U	0.0022 U	0.0017 U	
cis-1,2-Dichloroethene		0.005 U	0.005 U	0.005 U	0.005 U								0.0011 U	0.0088 U	0.0022 U	0.0017 U	
cis-1,3-Dichloropropene		0.005 U	0.005 U	0.005 U	0.005 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U			0.0011 U	0.0088 U	0.0022 U	0.0017 U	0.25 U
Dibromochloromethane		0.005 U	0.005 U	0.005 U	0.005 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U			0.0011 U	0.0088 U	0.0022 U	0.0017 U	0.25 U
Dibromomethane																	
Ethylbenzene	18	0.005 U	0.005 U	0.005 U	0.005 U										0.0022 U		
Ethylene Dibromide													0.0011 U	0.0088 U	0.0022 U	0.0017 U	
Hexachlorobutadiene											0.27 U	0.16 U					
Isopropylbenzene	8000												0.0011 U	0.0088 U	0.0037	0.0017 U	
m, p-Xylene	15														0.0022 U		
Methyl Iodide													0.0011 U	0.0088 U	0.0022 U	0.0017 U	
Methylene Chloride		0.1 U	0.1 U	0.1 U	0.1 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U			0.0021 U	0.018 U	0.01	0.0034 U	0.25 U
Naphthalene	140										0.24	0.081 U					
n-Butylbenzene													0.0011 U	0.0088 U	0.0022 U	0.0017 U	
n-Propylbenzene													0.0011 U	0.0088 U	0.0022 U	0.0017 U	
o-Xylene	150														0.0022 U		
sec-Butylbenzene													0.0011 U	0.0088 U	0.0022 U	0.0017 U	
Styrene		0.005 U	0.005 U	0.005 U	0.005 U								0.0011 U	0.0088 U	0.0022 U	0.0017 U	
tert-Butylbenzene													0.0011 U	0.0088 U	0.0022 U	0.0017 U	

TABLE 8
VOCS IN CHARACTERIZATION AND WASTE PROFILE SOIL SAMPLES
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	Area ID:	I	I	I	I	I	I	I	I	I	I	I	J	J	J	J	J
	Sample Name:	ECI-Q-1	ECI-Q-5	ECI-Q-6	ECI-Q-8	HC-GT-1A (b)	HC-MW-2 (b)	HC-MW-2 (b)	HC-MW-3 (b)	HC-MW-3 (b)	I-X	I-Y	Chamber-1	Chamber-2	Chamber-3	Chamber-4	HC-MW-1 (b)
	Depth Range:	(1-2)	(1-2)	(0-1)	(5-5)		(2.5-4)	(12.5-14)	(5-6.5)	(10-11.5)							(5-6.5)
	Date Collected:	10/7/1991	10/7/1991	10/7/1991	10/7/1991	11/7/1991	11/6/1991	11/6/1991	11/7/1991	11/7/1991	2/12/2004	2/12/2004	8/11/2006	8/11/2006	8/11/2006	8/11/2006	11/6/1991
	Sample Type:	Test Pit	Test Pit	Test Pit	Test Pit	Boring	Boring	Boring	Boring	Boring	Boring	Boring	Excavation	Excavation	Excavation	Excavation	Boring
	Cleanup Screening Levels (a)																
Tetrachloroethene	1.9	0.005 U	0.005 U	0.005 U	0.005 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U			0.0011 U	0.0088 U	0.0022 U	0.0017 U	0.05 U
Toluene	110	0.005 U	0.005 U	0.005 U	0.005 U										0.0022 U		
trans-1,2-Dichloroethene		0.005 U	0.005 U	0.005 U	0.005 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U			0.0011 U	0.0088 U	0.0022 U	0.0017 U	0.25 U
trans-1,3-Dichloropropene		0.005 U	0.005 U	0.005 U	0.005 U								0.0011 U	0.0088 U	0.0022 U	0.0017 U	
trans-1,4-Dichloro-2-butene													0.0053 U	0.044 U	0.011 U	0.0086 U	
Trichloroethene	0.2	0.005 U	0.005 U	0.005 U	0.005 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U			0.0011 U	0.0088 U	0.0022 U	0.0017 U	0.05 U
Trichlorofluoromethane		0.005 U	0.005 U	0.005 U	0.005 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U			0.0011 U	0.0088 U	0.0022 U	0.0017 U	0.05 U
Trichlorotrifluoroethane		0.01 U	0.01 U	0.01 U	0.01 U												
Vinyl Acetate		0.01 U	0.01 U	0.01 U	0.01 U								0.0053 U	0.044 U	0.011 U	0.0086 U	
Vinyl Chloride		0.005 U	0.005 U	0.005 U	0.005 U								0.0011 U	0.0088 U	0.0022 U	0.0017 U	

TABLE 8
VOCS IN CHARACTERIZATION AND WASTE PROFILE SOIL SAMPLES
INTERIM ACTION REPORT - AMERON HULBERT SITE
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Area ID:		J	J	J	J	J	G	G	G	G	G	G	G	G	M	M	M
Sample Name:		**HC-MW-1 (b)**	**HC-MW-4 (b)**	**HC-MW-4 (b)**	**J-MSRC**	**KFI-WP-Comp**	**ECI-N-2**	**G1-AC-3**	**G1-AC-4**	**G1-AC-5**	**G-FA-4**	**G-FA-5**	**G-FA-8**	**STOCKPILE**	**ECI-N-1**	**M-FA-1**	**M-FA-2**
Depth Range:		(7.5-9)	(5-6.5)	(20-21.5)							(2-2.5)	(8-8.5)	(4-4.5)			(3.5-4)	(3.5-4)
Date Collected:		11/6/1991	11/7/1991	11/7/1991	5/23/2007	9/30/1993	10/7/1991	6/22/2006	6/22/2006	6/22/2006	1/20/2005	1/20/2005	1/20/2005	11/12/2004	10/7/1991	1/17/2005	1/17/2005
Sample Type:	**Cleanup Screening Levels (a)**	Boring	Boring	Boring	Excavation	Stock Pile	Surface Soil	Surface Soil	Surface Soil	Surface Soil	Boring	Boring	Boring	Stock Pile	Surface Soil	Boring	Boring
VOCs (mg/kg)																	
EPA Method 8260																	
1,1,1,2-Tetrachloroethane											0.0012 U	0.0009 U	0.0008 U				
1,1,1-Trichloroethane	3400	0.05 U	0.05 U	0.05 U		0.07 U	0.005 U				0.003	0.0009 U	0.0008 U	0.004 UJ	0.005 U		
1,1,2,2-Tetrachloroethane		0.25 U	0.25 U	0.25 U		0.07 U	0.005 U				0.0012 U	0.0009 U	0.0008 U	0.004 UJ	0.005 U		
1,1,2-Trichloro-1,2,2-trifluoroethane											0.0024 U	0.0017 U	0.0016 U				
1,1,2-Trichloroethane		0.05 U	0.05 U	0.05 U		0.07 U	0.005 U				0.0012 U	0.0009 U	0.0008 U	0.004 UJ	0.005 U		
1,1-Dichloroethane	4.3	0.25 U	0.25 U	0.25 U		0.07 U	0.005 U				0.0012 U	0.0009 U	0.0008 U	0.004 UJ	0.005 U		
1,1-Dichloroethene		0.25 U	0.25 U	0.25 U		0.07 U	0.005 U				0.0012 U	0.0009 U	0.0008 U	0.004 UJ	0.005 U		
1,1-Dichloropropene											0.0012 U	0.0009 U	0.0008 U				
1,2,3-Trichlorobenzene											0.0059 U	0.0044 U	0.0039 U				
1,2,3-Trichloropropane											0.0024 U	0.0017 U	0.0016 U				
1,2,4-Trichlorobenzene					50 U	2.3 U		0.066 U	0.076 U	0.064 U	0.0059 U	0.0044 U	0.0039 U				
1,2,4-Trimethylbenzene	4000										0.3 ES	0.0009 U	0.0008 U				
1,2-Dibromo-3-chloropropane											0.0059 U	0.0044 U	0.0039 U				
1,2-Dichlorobenzene					50 U	2.3 U	0.005 U	0.066 U	0.076 U	0.064 U	0.0012 U	0.0009 U	0.0008 U		0.005 U		
1,2-Dichloroethane		0.25 U	0.25 U	0.25 U		0.07 U	0.005 U				0.0012 U	0.0009 U	0.0008 U	0.004 UJ	0.005 U		
1,2-Dichloropropane		0.25 U	0.25 U	0.25 U		0.07 U	0.005 U				0.0012 U	0.0009 U	0.0008 U	0.004 UJ	0.005 U		
1,3,5-Trimethylbenzene	4000										0.3 ES	0.0009 U	0.0008 U				
1,3-Dichlorobenzene					50 U	2.3 U	0.005 U	0.066 U	0.076 U	0.064 U	0.0012 U	0.0009 U	0.0008 U		0.005 U		
1,3-Dichloropropane											0.0012 U	0.0009 U	0.0008 U				
1,4-Dichlorobenzene					50 U	2.3 U	0.005 U	0.066 U	0.076 U	0.064 U	0.0012 U	0.0009 U	0.0008 U		0.005 U		
2,2-Dichloropropane											0.0012 U	0.0009 U	0.0008 U				
2-Butanone	48000					0.7 U	0.01 U				0.028	0.0044 U	0.0039 U	0.014 UJ	0.01 U		
2-Chloroethylvinylether							0.01 U				0.0059 U	0.0044 U	0.0039 U		0.01 U		
2-Chlorotoluene											0.0012 U	0.0009 U	0.0008 U				
2-Hexanone						0.7 U	0.01 U				0.0059 U	0.0044 U	0.0039 U	0.014 UJ	0.01 U		
4-Chlorotoluene											0.0012 U	0.0009 U	0.0008 U				
4-Isopropyltoluene											0.0012 U	0.0009 U	0.0008 U				
4-Methyl-2-Pentanone (MIBK)						0.7 U	0.01 U				0.0059 U	0.0044 U	0.0039 U	0.014 UJ	0.01 U		
Acetone	3.2					2.3 B	0.05 U				0.3	0.0044 U	0.0077	0.014 UJ	0.05 U		
Acrolein											0.059 U	0.044 U	0.039 U				
Acrylonitrile											0.0059 U	0.0044 U	0.0039 U				
Benzene	0.29					0.07 U	0.005 U				0.0012 U	0.0009 U	0.0008 U	0.004 UJ	0.005 U	0.0068 U	0.0085 U
Bromobenzene											0.0012 U	0.0009 U	0.0008 U				
Bromochloromethane											0.0012 U	0.0009 U	0.0008 U				
Bromodichloromethane		0.25 U	0.25 U	0.25 U		0.07 U	0.005 U				0.0012 U	0.0009 U	0.0008 U	0.004 UJ	0.005 U		
Bromoethane											0.0024 U	0.0017 U	0.0016 U				
Bromoform		0.25 U	0.25 U	0.25 U		0.35 U	0.005 U				0.0012 U	0.0009 U	0.0008 U	0.004 UJ	0.005 U		
Bromomethane						0.7 U	0.005 U				0.0012 U	0.0009 U	0.0008 U	0.004 UJ	0.005 U		
Carbon Disulfide						0.07 U	0.005 U				0.0012 U	0.0009 U	0.0008 U	0.004 UJ	0.005 U		
Carbon Tetrachloride		0.05 U	0.05 U	0.05 U		0.07 U	0.005 U				0.0012 U	0.0009 U	0.0008 U	0.004 UJ	0.005 U		
Chlorobenzene		0.25 U	0.25 U	0.25 U		0.07 U	0.005 U				0.0012 U	0.0009 U	0.0008 U	0.004 UJ	0.005 U		
Chloroethane						0.07 U	0.005 U				0.0012 U	0.0009 U	0.0008 U	0.004 UJ	0.005 U		
Chloroform		0.05 U	0.05 U	0.05 U		0.07 U	0.005 U				0.0012 U	0.0009 U	0.0008 U	0.004 UJ	0.005 U		
Chloromethane						0.7 U	0.005 U				0.0012 U	0.0009 U	0.0008 U	0.004 UJ	0.005 U		
cis-1,2-Dichloroethene							0.005 U				0.0012 U	0.0009 U	0.0008 U	0.004 UJ	0.005 U		
cis-1,3-Dichloropropene		0.25 U	0.25 U	0.25 U		0.07 U	0.005 U				0.0012 U	0.0009 U	0.0008 U	0.004 UJ	0.005 U		
Dibromochloromethane		0.25 U	0.25 U	0.25 U		0.07 U	0.005 U				0.0012 U	0.0009 U	0.0008 U	0.004 UJ	0.005 U		
Dibromomethane											0.0012 U	0.0009 U	0.0008 U				
Ethylbenzene	18					0.2	0.005 U				0.41 ES	0.0009 U	0.0008 U	0.004 UJ	0.005 U	0.014 U	0.017 U
Ethylene Dibromide											0.0012 U	0.0009 U	0.0008 U				
Hexachlorobutadiene					50 U	2.3 U		0.066 U	0.076 U	0.064 U	0.0059 U	0.0044 U	0.0039 U				
Isopropylbenzene	8000										0.17	0.0009 U	0.0008 U				
m, p-Xylene	15										1.3 ES	0.0009 U	0.0011	0.004 UJ		0.027 U	0.034 U
Methyl Iodide											0.0012 U	0.0009 U	0.0008 U				
Methylene Chloride		0.25 U	0.25 U	0.25 U		0.35 U	0.1 U				0.0024 U	0.0017 U	0.0016 U	0.28 J	0.1 U		
Naphthalene	140				50 U	1.8 J		0.066 U	0.076 U	0.064 U	0.024	0.0044	0.0039 U				
n-Butylbenzene											0.0051	0.0009 U	0.0008 U				
n-Propylbenzene											0.19	0.0009 U	0.0008 U				
o-Xylene	150										0.94 ES	0.0009 U	0.0008 U	0.004 UJ		0.014 U	0.017 U
sec-Butylbenzene											0.0012 U	0.0009 U	0.0008 U				
Styrene						0.07 U	0.005 U				0.0012 U	0.0009 U	0.0008 U	0.004 UJ	0.005 U		
tert-Butylbenzene											0.0012 U	0.0009 U	0.0008 U				

TABLE 8
VOCS IN CHARACTERIZATION AND WASTE PROFILE SOIL SAMPLES
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Area ID:		J	J	J	J	J	G	G	G	G	G	G	G	G	M	M	M
Sample Name:		**HC-MW-1 (b)**	**HC-MW-4 (b)**	**HC-MW-4 (b)**	**J-MSRC**	**KFI-WP-Comp**	**ECI-N-2**	**G1-AC-3**	**G1-AC-4**	**G1-AC-5**	**G-FA-4**	**G-FA-5**	**G-FA-8**	**STOCKPILE**	**ECI-N-1**	**M-FA-1**	**M-FA-2**
Depth Range:		(7.5-9)	(5-6.5)	(20-21.5)							(2-2.5)	(8-8.5)	(4-4.5)			(3.5-4)	(3.5-4)
Date Collected:		11/6/1991	11/7/1991	11/7/1991	5/23/2007	9/30/1993	10/7/1991	6/22/2006	6/22/2006	6/22/2006	1/20/2005	1/20/2005	1/20/2005	11/12/2004	10/7/1991	1/17/2005	1/17/2005
Sample Type:	**Cleanup Screening Levels (a)**	Boring	Boring	Boring	Excavation	Stock Pile	Surface Soil	Surface Soil	Surface Soil	Surface Soil	Boring	Boring	Boring	Stock Pile	Surface Soil	Boring	Boring
Tetrachloroethene	1.9	0.05 U	0.05 U	0.079		0.07 U	0.005 U				0.0019	0.0009 U	0.0008 U	0.004 UJ	0.005 U		
Toluene	110					0.07 U	0.005 U				0.18	0.0009 U	0.0008 U	0.004 UJ	0.005 U	0.014 U	0.017 U
trans-1,2-Dichloroethene		0.25 U	0.25 U	0.25 U			0.005 U				0.0012 U	0.0009 U	0.0008 U	0.004 UJ	0.005 U		
trans-1,3-Dichloropropene						0.07 U	0.005 U				0.0012 U	0.0009 U	0.0008 U	0.004 UJ	0.005 U		
trans-1,4-Dichloro-2-butene											0.0059 U	0.0044 U	0.0039 U				
Trichloroethene	0.2	0.05 U	0.05 U	0.05 U		0.07 U	0.005 U				0.0012 U	0.0009 U	0.0008 U	0.004 UJ	0.005 U		
Trichlorofluoromethane		0.05 U	0.05 U	0.05 U			0.005 U				0.0012 U	0.0009 U	0.0008 U	0.004 UJ	0.005 U		
Trichlorotrifluoroethane							0.01 U								0.01 U		
Vinyl Acetate						0.7 U	0.01 U				0.0059 U	0.0044 U	0.0039 U		0.01 U		
Vinyl Chloride						0.07 U	0.005 U				0.0012 U	0.0009 U	0.0008 U	0.004 UJ	0.005 U		

U = the analyte was not detected in the sample at the given reporting limit.
ES = The concentration indicated for this analyte is an estimated value above the calibration range of the instrument.
This value is considered an estimate.

(a) Development of the cleanup levels is presented in Table 4.
(b) Analysis of the sample were performed using screening techniques. Quantitations are estimates, compound identifications are tentative.

TABLE 9
METAL LEACHATE IN CHARACTERIZATION AND WASTE PROFILE SOIL SAMPLES
INTERIM ACTION REPORT - AMERON HULBERT SITE
PORT OF EVERETT, WASHINGTON

					Metal Leachate (mg/L) SW6000-7000 TCLP										
Sample Name	Depth Range	Date Collected	Area ID	Sample Type	Arsenic	Barium	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Selenium	Silver	Zinc
ECI-Area-F		10/7/1991	G	Blasting Sand				0.03	0.04			0.97			1.39
ECI-J-2	(3-3)	10/7/1991	G	Test Pit				0.03	0.02			0.04			0.11
ECI-K-1	(4-4)	10/7/1991	G	Test Pit	0.1 U			0.01 U	0.37			0.21			0.86
G1A-100507-AC-1		10/5/2007	G	Stock Pile	0.2 U					0.1 U					
G1A-100907-STK-1		10/9/2007	G	Stock Pile	0.6					0.6					
G1A-101607-STK-2		10/16/2007	G	Stock Pile	0.2 U					0.3					
G1-TP4	(0-6)	4/25/2006	G	Test Pit	0.2 U	0.13	0.01 U	0.02 U		0.1 U	0.0001 U		0.2 U	0.02 U	
G1-TP5	(0-5)	4/25/2006	G	Test Pit	1	0.43	0.01	0.02 U		0.6	0.0001 U		0.2 U	0.02 U	
ECI-Q-6	(0-1)	10/7/1991	I	Test Pit					8.11	2.9		0.03			13.4
I2-WP	(1.5-2.5)	5/8/2006	I	Boring	0.2 U	0.36	0.01 U	0.07		0.1 U	0.0001 U		0.2 U	0.02 U	
I-GC-1	(0-0.5)	7/15/2005	I	Boring	0.7					0.3					
I-GC-1	(1-2)	7/14/2005	I	Boring	1					2.3					
I-GC-1C	(0-0.5)	10/19/2005	I	Boring	0.6					0.2					
I-TP-5	(0-5)	4/25/2006	I	Test Pit	0.2 U	0.04	0.01 U	0.02 U		0.1 U	0.0001 U		0.2 U	0.02 U	
Chamber-1		8/11/2006	J	Excavation	0.2 U	0.07	0.01 U	0.02 U		0.1 U	0.0001 U		0.2 U	0.02 U	
Chamber-2		8/11/2006	J	Excavation	0.2 U	0.06	0.01 U	0.02 U		0.1 U	0.0001 U		0.2 U	0.02 U	
Chamber-3		8/11/2006	J	Excavation	0.2 U	0.28	0.01 U	0.02 U		0.1 U	0.0001 U		0.2 U	0.02 U	
Chamber-4		8/11/2006	J	Excavation	0.2 U	0.25	0.01 U	0.02 U		0.1 U	0.0001 U		0.2 U	0.02 U	
KFI-WP-Comp		9/30/1993	J	Stock Pile	0.05 U	1.1	0.005 U	0.01 U		0.042	0.0002 U		0.05 U	0.005 U	

U = the analyte was not detected in the sample at the given reporting limit.

TABLE 10
MARINE SEDIMENT SAMPLE RESULTS
INTERIM ACTION REPORT - AMERON HULBERT SITE
PORT OF EVERETT, WASHINGTON

	Cleanup Screening Levels SQS (b)	CSL (c)	A2-13 (a)	CM-1	CM-2	CM-3	CM-S4	CM-S5	CM-S6	CM-S7	CM-S8	ECI-Area-R	RZA-B-2	RZA-B-4	RZA-B-5	RZA-B-7	RZA-B-9
Depth Range:													(13-14.5)	(0-1.5)	(10.5-11.5)	(0-1.5)	(2-3)
Date Collected:			8/4/2008	11/10/2000	11/8/2000	11/7/2000	11/9/2000	11/9/2000	11/8/2000	11/7/2000	11/7/2000	10/9/1991	10/19/1990	10/19/1990	10/22/1990	10/23/1990	10/24/1990
Sample Type:			Marine Sediment Core	Marine Sediment Core	Marine Sediment Core	Marine Sediment Core	Marine Sediment Core	Marine Sediment Core	Marine Sediment Core	Marine Sediment Core	Marine Sediment Core	Marine Sediment/ Storm Water Outfall	Marine Sediment Core	Marine Sediment Core	Marine Sediment Core	Marine Sediment Core	Marine Sediment Core
Petroleum Hydrocarbons (mg/kg)																	
NWPTH-D/EPA413.1																	
Diesel Range Organics												2100					
Total Oil & Grease																	
Metals (mg/kg)																	
EPA 6000/7000/200.8																	
Antimony				7 U	6 U	7 U	6 U	6 U	7 U	6 U	6 U	11					
Arsenic	57	93	20	10	10	10	11	8	12	7	7	57					
Beryllium												1 U					
Cadmium	5.1	6.7	0.4	0.3 U	0.3	0.3 U	0.3	0.3 U	0.3 U	0.2 U	0.3 U	3					
Chromium	260	270	59	41.9	41.1	53.4	41.2	40.8	43.1	44.4	44	118					
Copper	390	390	60.0	39	31	47	34	30	31	33	30	167					
Lead	450	530	11	12	8	10	10	8	7	5	5	113					
Mercury	0.41	0.59	0.12	0.06	0.07	0.09	0.05	0.06 U	0.07 U	0.05	0.06 U	0.2 U					
Nickel				39	37	48	39	39	41	43	44	38					
Selenium												1 U					
Silver	6.1	6.1	0.6 U	0.4 U	0.4 U	0.6	0.4 U	0.4 U	0.4 U	0.4	0.4 U	2					
Thallium												1 U					
Zinc	410	960	90	62	58	76	56	51	55	56	56	526					
Pesticides (mg/kg)																	
EPA 8080																	
4,4'-DDD				0.0017 U	0.002 U	0.0019 U	0.0019 U	0.0019 U	0.0019 U	0.0019 U	0.0019 U	0.1 U					
4,4'-DDE				0.0017 U	0.002 U	0.0019 U	0.0019 U	0.0019 U	0.0019 U	0.0019 U	0.0019 U	0.1 U					
4,4'-DDT				0.0017 U	0.002 U	0.0019 U	0.0019 U	0.0019 U	0.0019 U	0.0019 U	0.0019 U						
Aldrin				0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.1 U					
Alpha-BHC												0.1 U					
Beta-BHC												0.3 U					
Chlordane				0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	1 U					
Delta-BHC												0.1 U					
Dieldrin				0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.1 U					
EndoSulfan I												0.1 U					
Endosulfan Sulfate												0.1 U					
Endrin												0.1 U					
Endrin Aldehyde												0.1 U					
Gamma-BHC												0.1 U					
Heptachlor				0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.1 U					
Heptachlor Epoxide												0.1 U					
Lindane				0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U						
Methoxychlor												0.2 U					
Total DDT				0.0017 U	0.002 U	0.0019 U	0.0019 U	0.0019 U	0.0019 U	0.0019 U	0.0019 U						
Toxaphene												3 U					

TABLE 10
MARINE SEDIMENT SAMPLE RESULTS
INTERIM ACTION REPORT - AMERON HULBERT SITE
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	Cleanup Screening Levels SQS (b)	Cleanup Screening Levels CSL (c)	A2-13 (a)	CM-1	CM-2	CM-3	CM-S4	CM-S5	CM-S6	CM-S7	CM-S8	ECI-Area-R	RZA-B-2	RZA-B-4	RZA-B-5	RZA-B-7	RZA-B-9
Depth Range:													(13-14.5)	(0-1.5)	(10.5-11.5)	(0-1.5)	(2-3)
Date Collected:			8/4/2008	11/10/2000	11/8/2000	11/7/2000	11/9/2000	11/9/2000	11/8/2000	11/7/2000	11/7/2000	10/9/1991	10/19/1990	10/19/1990	10/22/1990	10/23/1990	10/24/1990
Sample Type:			Marine Sediment Core	Marine Sediment Core	Marine Sediment Core	Marine Sediment Core	Marine Sediment Core	Marine Sediment Core	Marine Sediment Core	Marine Sediment Core	Marine Sediment Core	Marine Sediment/ Storm Water Outfall	Marine Sediment Core	Marine Sediment Core	Marine Sediment Core	Marine Sediment Core	Marine Sediment Core
PCBs (mg/kg OC)																	
EPA 8080																	
Aroclor 1016			1.124 U	1.214 U	1.176 U	1.118 U	2.065 U	2.317 U	2.235 U	2.043 U	2.235 U	59 U					
Aroclor 1221			1.124 U	2.500 U	2.294 U	2.176 U	4.239 U	4.512 U	4.588 U	4.086 U	4.588 U	59 U					
Aroclor 1232			1.124 U	1.214 U	1.176 U	1.118 U	2.065 U	2.317 U	2.235 U	2.043 U	2.235 U	59 U					
Aroclor 1242			1.124 U	1.214 U	1.176 U	1.118 U	2.065 U	2.317 U	2.235 U	2.043 U	2.235 U	59 U					
Aroclor 1248			1.124 U	1.214 U	1.176 U	1.118 U	2.065 U	2.317 U	2.235 U	2.043 U	2.235 U	59 U					
Aroclor 1254			1.124 U	1.214 U	1.176 U	1.118 U	2.065 U	2.317 U	2.235 U	2.043 U	2.235 U	59 U					
Aroclor 1260			1.124 U	1.214 U	1.176 U	1.118 U	2.065 U	2.317 U	2.235 U	2.043 U	2.235 U	59 U					
Aroclor 1262			1.124 U														
Aroclor 1268			1.124 U														
Total PCBs	130		1.124 U	2.500 U	2.294 U	2.176 U	4.239 U	4.512 U	4.588 U	4.086 U	4.588 U	59 U					
Organotin (mg/L)																	
Porewater																	
Tributyltin				0.00002 U	0.00007 U	0.00002 U											
Tributyl Tins (mg/kg)																	
Krone 1988 SIM GC/MS																	
Tributyl Tin Ion			0.0038 U														
Dibutyl Tin Ion			0.0056 U														
Butyl Tin Ion			0.0040 U														
Bioassay																	
Biochemical Oxygen Demand (mg/Kg)																	
Chemical Oxygen Demand (mg/Kg)																	
Microtox Test (% Light Change)																	
Amphipod Mortality (%)			10														
Echinoderm Mortality (%)																	
Neanthes Mortality (%)			4														
Conventionals																	
Ammonia (mg/Kg)													16.1	25	12.5	19.1	13.8
Sulfide (mg/kg)			137	71	19	16	5.6 U	12	6	3.6 U	640						
Total Kjeldahl Nitrogen (mg/Kg)																	
Total Sulfides (mg/Kg)													2.8	10.1	5 U	5 U	12.6
Total Volatile Solids (mg/Kg)																	
N Ammonia (mg N/kg)			8.79	45	25	20	150	34	56	36	47						
Total Organic Carbon (%)			1.78	1.4	1.7	1.7	0.92	0.82	0.85	0.93	0.85	1.7 (d)	1.7 (d)	1.7 (d)	1.7 (d)	1.7 (d)	1.7 (d)
Total Solids (%)			53.80	71.9	72.6	67.6	73.9	76.6	73.2	73.2	73.1		74.5	72	80.1	73.4	65.2
Total Volatile Solids (%)			6.82	4.6	4.6	6.3	2.8	2.7	2.8	3.1	2.8						
Preserved Total Solids (%)			54.80	69	69.8	58	77.6	67.2	74.7	66.7	55.6						

TABLE 10
MARINE SEDIMENT SAMPLE RESULTS
INTERIM ACTION REPORT - AMERON HULBERT SITE
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	Cleanup Screening Levels																
Sample Name:			A2-13 (a)	CM-1	CM-2	CM-3	CM-S4	CM-S5	CM-S6	CM-S7	CM-S8	ECI-Area-R	RZA-B-2	RZA-B-4	RZA-B-5	RZA-B-7	RZA-B-9
Depth Range:													(13-14.5)	(0-1.5)	(10.5-11.5)	(0-1.5)	(2-3)
Date Collected:			8/4/2008	11/10/2000	11/8/2000	11/7/2000	11/9/2000	11/9/2000	11/8/2000	11/7/2000	11/7/2000	10/9/1991	10/19/1990	10/19/1990	10/22/1990	10/23/1990	10/24/1990
Sample Type:			Marine Sediment Core	Marine Sediment Core	Marine Sediment Core	Marine Sediment Core	Marine Sediment Core	Marine Sediment Core	Marine Sediment Core	Marine Sediment Core	Marine Sediment Core	Marine Sediment/ Storm Water Outfall	Marine Sediment Core	Marine Sediment Core	Marine Sediment Core	Marine Sediment Core	Marine Sediment Core
	SQS (b)	CSL (c)															
SVOCs (mg/kg OC)																	
EPA SW8270/8120																	
LPAHs																	
Acenaphthene	16	57	1.124 U	1.357 U	1.176 U	1.176 U	2.065 U	2.317 U	2.235 U	2.043 U	2.235 U	588 U					
Acenaphthylene	66	66	1.124 U	1.357 U	1.176 U	1.235	2.065 U	2.317 U	2.235 U	2.043 U	2.235 U	588 U					
Anthracene	220	1200	1.067 J	1.357 U	1.176 U	1.176 U	2.065 U	2.317 U	2.235 U	2.043 U	2.235 U	588 U					
Fluorene	23	79	1.124 U	1.357 U	1.176 U	1.176 U	2.065 U	2.317 U	2.235 U	2.043 U	2.235 U	588 U					
Naphthalene	99	170	1.124 U	3.786	2.882	4.176	3.370	3.659	4.353	2.581	2.118 J	588 U					
Phenanthrene	100	480	1.292	3.143	1.882	3.176	2.174	3.049	2.588	2.366	2.235 U	588 U					
2-Methylnaphthalene	38	64	1.124 U	1.357 U	1.176 U	1.176 U	2.065 U	2.317 U	2.235 U	2.043 U	2.235 U	588 U					
Total LPAH	370	780	2.360 J	6.929	4.765	8.588	5.543	6.707	6.941	4.946	2.118 J	588 U					
HPAHs																	
Benzo(a)anthracene	110	270	0.787 J	1.714	1.118 J	1.353	2.065 U	2.317 U	2.235 U	2.043 U	2.235 U	588 U					
Benzo(a)pyrene	99	210	0.674 J	1.429	1.176 U	1.412	2.065 U	2.317 U	2.235 U	2.043 U	2.235 U	588 U					
Benzo(b)fluoranthene	--	--	1.629									588 U					
Benzo(k)fluoranthene	--	--	0.843 J									588 U					
Total Benzofluoranthenes	230	450	3.258 J	2.643 J	1.176 U	2.588	2.065 U	2.317 U	2.235 U	2.043 U	2.235 U	588 U					
Benzo(g,h,i)perylene	31	78	1.124 U	1.357 U	1.176 U	1.176 U	2.065 U	2.317 U	2.235 U	2.043 U	2.235 U	588 U					
Chrysene	110	460	1.461	2.071	1.471	2.235	2.065 U	2.317 U	2.235 U	2.043 U	2.235 U	588 U					
Dibenz(a,h)anthracene			1.124 U									588 U					
Fluoranthene	160	1200	3.652	4.714	2.765	5.176	2.065 U	2.561	4.118	2.366	2.235 U	588 U					
Indeno(1,2,3-cd)pyrene	34	88	1.124 U	1.357 U	1.176 U	1.176 U	2.065 U	2.317 U	2.235 U	2.043 U	2.235 U	588 U					
Pyrene	1000	1400	2.360	4.286	2.412	4.118	2.065 U	3.293	3.765	2.688	2.353	588 U					
Total HPAH	960	5300	8.933	16.857 J	7.765 J	16.882	2.065 U	5.854	7.882	5.054	2.353	588 U					
OTHER SVOCs																	
1,2,4-Trichlorobenzene	0.81	1.8	1.124 U	0.493 U	0.412 U	0.459 U	0.641 U	0.768 U	0.741 U	0.753 U	0.741 U		0.38 U	0.38 U	0.38 U	0.38 U	0.38 U
1,2-Dichlorobenzene	2.3	2.3	1.124 U	0.100 U	0.082 U	0.094 U	0.130 U	0.159 U	0.153 U	0.151 U	0.153 U	588 U	1.12 U	1.12 U	1.12 U	1.12 U	1.12 U
1,3-Dichlorobenzene			1.124 U	0.100 U	0.082 U	0.094 U	0.130 U	0.159 U	0.153 U	0.151 U	0.153 U	588 U	10 U	10 U	10 U	10 U	10 U
1,4-Dichlorobenzene	3.1	9	1.124 U	0.100 U	0.082 U	0.094 U	0.130 U	0.159 U	0.153 U	0.151 U	0.153 U	588 U	1.53 U	1.53 U	1.53 U	1.53 U	1.53 U
Bis(2-ethylhexyl)phthalate	47	78	4.157	1.571	2.000	2.000	3.696	2.317	2.353	2.043 U	3.294	588 U					
Benzyl butyl phthalate	4.9	64	1.124 U	1.357 U	1.176 U	1.176 U	2.065 U	2.317 U	2.235 U	2.043 U	2.235 U	588 U					
Dibenzofuran	15	58	1.124 U	1.357 U	1.176 U	1.176 U	2.065 U	2.317 U	2.235 U	2.043 U	2.235 U	588 U					
Diethylphthalate	61	110	1.124 U	1.357 U	1.176 U	1.176 U	2.065 U	2.317 U	2.235 U	2.043 U	2.235 U	588 U					
Dimethylphthalate	53	53	1.124 U	1.357 U	1.176 U	1.176 U	2.065 U	2.317 U	2.235 U	2.043 U	2.235 U	588 U					
Di-n-Butylphthalate	220	1700	1.124 U	1.714 UJ	2.000 UJ	1.588 UJ	4.022 UJ	4.634 UJ	3.647 UJ	10.753 UJ	3.294 UJ	588 U					
Di-n-octyl phthalate	58	4500	1.124 U	1.357 U	1.176 U	1.176 U	2.065 U	2.317 U	2.235 U	2.043 U	2.235 U	588 U					
Hexachlorobenzene	0.38	2.3	1.124 U	1.357 U	1.176 U	1.176 U	2.065 U	2.317 U	2.235 U	2.043 U	2.235 U	588 U	1.35 U	1.35 U	1.35 U	1.35 U	
Hexachlorobutadiene	3.9	6.2	1.124 U	1.357 U	1.176 U	1.176 U	2.065 U	2.317 U	2.235 U	2.043 U	2.235 U	588 U					
Hexachloroethane			1.124 U	1.357 U	1.176 U	1.176 U	2.065 U	2.317 U	2.235 U	2.043 U	2.235 U	588 U					
N-Nitrosodiphenylamine	11	11	1.124 U	1.357 U	1.176 U	1.176 U	2.065 U	2.317 U	2.235 U	2.043 U	2.235 U	588 U					

TABLE 10
MARINE SEDIMENT SAMPLE RESULTS
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	Cleanup Screening Levels SQS (b)	CSL (c)	A2-13 (a)	CM-1	CM-2	CM-3	CM-S4	CM-S5	CM-S6	CM-S7	CM-S8	ECI-Area-R	RZA-B-2	RZA-B-4	RZA-B-5	RZA-B-7	RZA-B-9
Sample Name:			A2-13 (a)	CM-1	CM-2	CM-3	CM-S4	CM-S5	CM-S6	CM-S7	CM-S8	ECI-Area-R	RZA-B-2	RZA-B-4	RZA-B-5	RZA-B-7	RZA-B-9
Depth Range:													(13-14.5)	(0-1.5)	(10.5-11.5)	(0-1.5)	(2-3)
Date Collected:			8/4/2008	11/10/2000	11/8/2000	11/7/2000	11/9/2000	11/9/2000	11/8/2000	11/7/2000	11/7/2000	10/9/1991	10/19/1990	10/19/1990	10/22/1990	10/23/1990	10/24/1990
Sample Type:			Marine Sediment Core	Marine Sediment Core	Marine Sediment Core	Marine Sediment Core	Marine Sediment Core	Marine Sediment Core	Marine Sediment Core	Marine Sediment Core	Marine Sediment Core	Marine Sediment/ Storm Water Outfall	Marine Sediment Core	Marine Sediment Core	Marine Sediment Core	Marine Sediment Core	Marine Sediment Core
SVOCs (mg/kg)																	
EPA SW8270/8120																	
1-Methylnaphthalene			0.020 U														
2,4-Dimethylphenol	0.029	0.029	0.020 U	0.019 U	0.02 U	0.02 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	10 U					
2-Methylphenol	0.063	0.063	0.020 U	0.019 U	0.02 U	0.02 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	10 U					
4-Methylphenol	0.67	0.67	0.490	0.041	0.031	0.039	0.021	0.019 U	0.021	0.019 U	0.019 U						
Benzoic Acid	0.65	0.65	0.200 U	0.19 U	0.2 U	0.2 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	60 U					
Benzyl Alcohol	0.057	0.073	0.020 U	0.019 U	0.02 U	0.02 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	10 U					
Pentachlorophenol	0.36	0.69	0.098 U	0.093 U	0.098 U	0.099 U	0.096 U	0.093 U	0.096 U	0.096 U	0.096 U	60 U					
Phenol	0.42	1.2	0.140	0.054	0.024	0.036	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	10 U					
2,2'-Oxybis(1-Chloropropane)												10 U					
2,4,5-Trichlorophenol												10 U					
2,4,6-Trichlorophenol												10 U					
2,4-Dichlorophenol												10 U					
2,4-Dinitrophenol												60 U					
2,4-Dinitrotoluene												10 U					
2,6-Dinitrotoluene												10 U					
2-Chloronaphthalene												10 U					
2-Chlorophenol												10 U					
2-Nitroaniline												60 U					
2-Nitrophenol												10 U					
3- and 4-Methylphenol												10 U					
3,3'-Dichlorobenzidine												10 U					
3-Nitroaniline												60 U					
4,6-Dinitro-2-Methylphenol												60 U					
4-Bromophenyl-phenylether												10 U					
4-Chloro-3-methylphenol												10 U					
4-Chloroaniline												10 U					
4-Chlorophenyl-phenylether												10 U					
4-Nitroaniline												60 U					
4-Nitrophenol												60 U					
Aniline												10 U					
Benzofluoranthenes	230	450		0.037 J	0.02 U	0.044	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U						
Carbazole																	
Dibenzo(a,h)anthracene	12	33		0.019 U	0.02 U	0.02 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U						
Hexachlorocyclopentadiene												10 U					
Isophorone												10 U					
Nitrobenzene												10 U					
N-nitrosodimethylamine												10 U					
N-Nitroso-di-n-propylamine												10 U					

TABLE 10
MARINE SEDIMENT SAMPLE RESULTS
INTERIM ACTION REPORT - AMERON HULBERT SITE
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	Cleanup Screening Levels SQS (b)	Cleanup Screening Levels CSL (c)	A2-13 (a)	CM-1	CM-2	CM-3	CM-S4	CM-S5	CM-S6	CM-S7	CM-S8	ECI-Area-R	RZA-B-2	RZA-B-4	RZA-B-5	RZA-B-7	RZA-B-9
Depth Range:													(13-14.5)	(0-1.5)	(10.5-11.5)	(0-1.5)	(2-3)
Date Collected:			8/4/2008	11/10/2000	11/8/2000	11/7/2000	11/9/2000	11/9/2000	11/8/2000	11/7/2000	11/7/2000	10/9/1991	10/19/1990	10/19/1990	10/22/1990	10/23/1990	10/24/1990
Sample Type:			Marine Sediment Core	Marine Sediment Core	Marine Sediment Core	Marine Sediment Core	Marine Sediment Core	Marine Sediment Core	Marine Sediment Core	Marine Sediment Core	Marine Sediment Core	Marine Sediment/ Storm Water Outfall	Marine Sediment Core	Marine Sediment Core	Marine Sediment Core	Marine Sediment Core	Marine Sediment Core
VOCs (mg/kg)																	
EPA 8260/824																	
1,1,1-Trichloroethane												0.005 U					
1,1,2,2-Tetrachloroethane												0.005 U					
1,1,2-Trichloroethane												0.005 U					
1,1-Dichloroethane												0.005 U					
1,1-Dichloroethene												0.005 U					
1,2,3-Trichlorobenzene												10 U					
1,2-Dichlorobenzene												0.005 U					
1,2-Dichloroethane												0.005 U					
1,2-Dichloropropane												0.005 U					
1,3-Dichlorobenzene												0.005 U					
1,4-Dichlorobenzene												0.005 U					
2-Butanone												0.01 U					
2-Chloroethylvinylether												0.01 U					
2-Hexanone												0.01 U					
4-Methyl-2-Pentanone (MIBK)												0.01 U					
Acetone												0.05 U					
Benzene												0.005 U					
bis(2-Chloroethoxy) Methane												10 U					
Bis-(2-Chloroethyl) Ether												10 U					
Bromodichloromethane												0.005 U					
Bromoform												0.005 U					
Bromomethane												0.005 U					
Carbon Disulfide												0.005 U					
Carbon Tetrachloride												0.005 U					
Chlorobenzene												0.005 U					
Chloroethane												0.005 U					
Chloroform												0.005 U					
Chloromethane												0.005 U					
cis-1,2-Dichloroethene												0.005 U					
cis-1,3-Dichloropropene												0.005 U					
Dibromochloromethane												0.005 U					
Ethylbenzene				0.0014 U	0.0014 U	0.0016 U	0.0012 U	0.0013 U	0.0013 U	0.0014 U	0.0013 U	0.005 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Methylene Chloride												0.017					
Styrene												0.005 U					
Tetrachloroethene				0.0014 U	0.0014 U	0.0016 U	0.0012 U	0.0013 U	0.0013 U	0.0014 U	0.0013 U	0.005 U	0.014 U	0.014 U	0.014 U	0.014 U	0.014 U
Toluene												0.005 U					
trans-1,2-Dichloroethene												0.005 U					
trans-1,3-Dichloropropene												0.005 U					
Trichloroethene				0.0014 U	0.0014 U	0.0016 U	0.0012 U	0.0013 U	0.0013 U	0.0014 U	0.0013 U	0.005 U	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U
Trichlorofluoromethane												0.005 U					
Trichlorotrifluoroethane												0.01 U					
Vinyl Acetate												0.01 U					
Vinyl Chloride												0.005 U					
Xylenes, Total				0.0014 U	0.0014 U	0.0016 U	0.0012 U	0.0013 U	0.0013 U	0.0014 U	0.0013 U	0.005 U	0.012 U	0.012 U	0.012 U	0.012 U	0.012 U

TABLE 10
MARINE SEDIMENT SAMPLE RESULTS
INTERIM ACTION REPORT - AMERON HULBERT SITE
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Sample Name:	Cleanup Screening Levels SQS (b)	Cleanup Screening Levels CSL (c)	A2-13 (a)	CM-1	CM-2	CM-3	CM-S4	CM-S5	CM-S6	CM-S7	CM-S8	ECI-Area-R	RZA-B-2	RZA-B-4	RZA-B-5	RZA-B-7	RZA-B-9
Depth Range:													(13-14.5)	(0-1.5)	(10.5-11.5)	(0-1.5)	(2-3)
Date Collected:			8/4/2008	11/10/2000	11/8/2000	11/7/2000	11/9/2000	11/9/2000	11/8/2000	11/7/2000	11/7/2000	10/9/1991	10/19/1990	10/19/1990	10/22/1990	10/23/1990	10/24/1990
Sample Type:			Marine Sediment Core	Marine Sediment Core	Marine Sediment Core	Marine Sediment Core	Marine Sediment Core	Marine Sediment Core	Marine Sediment Core	Marine Sediment Core	Marine Sediment Core	Marine Sediment/ Storm Water Outfall	Marine Sediment Core	Marine Sediment Core	Marine Sediment Core	Marine Sediment Core	Marine Sediment Core
GRAIN SIZE																	
Clay (phi <10) (%)			8.7	4.9	5.5	7.5	4.3	4.2	5.5	5.3	5						
Clay (phi 8 to 9) (%)			4.5	2.1	2.1	3	1.7	1.8	2.2	2.1	1.9						
Clay (phi 9 to 10) (%)			5.5	1.8	1.8	2.6	1.6	1.2	1.7	1.7	1.8						
Fines (%)			83.2	44.8	46.7	67.9	45.8	46	49.3	50	40.3						
Gravel (>phi -1) (%)			0.2	2.6	2.2	2.2	0.2	0.5	0.4	1.6	1.9						
Sand (phi 0 to 1) (%)			0.7	3.8	3.3	1.3	4.4	3.5	2.5	1.6	2.2						
Sand (phi -1 to 0) (%)			0.8	1.3	1.5	1.6	0.9	0.7	0.7	0.7	1.3						
Sand (phi 1 to 2) (%)			1.8	9.4	5.9	1.8	10.7	10.4	7.3	5.7	13.6						
Sand (phi 2 to 3) (%)			3.8	12.9	15.1	5.5	18.8	14.2	15.3	15.4	19.7						
Sand (phi 3 to 4) (%)			9.6	25.2	25.5	19.7	19.3	24.7	24.6	25	21						
Silt (phi 4 to 5) (%)			14.4	18.3	17.3	22.5	21.2	23.4	20.3	22.7	14.4						
Silt (phi 5 to 6) (%)			23.3	8.8	10.2	16.4	9	8.2	10.4	9	8.3						
Silt (phi 6 to 7) (%)			16.6	5.7	6.4	10.7	5.2	4.7	6.1	6.6	5.7						
Silt (phi 7 to 8) (%)			10.2	3.2	3.4	5.2	2.9	2.5	3.1	2.6	3.2						

TABLE 10
MARINE SEDIMENT SAMPLE RESULTS
INTERIM ACTION REPORT - AMERON HULBERT SITE
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	Cleanup Screening Levels SQS (b)	Cleanup Screening Levels CSL (c)	RZA-B-10	RZA-B-11	RZA-B-13	RZA-C-1	RZA-C-2	RZA-C-3	RZA-C-4	RZA-C-5	RZA-C-6	RZA-C-7	RZA-C-8	LS-COMP-A	LS-COMP-B
Depth Range:			(4-6)	(6-7)	(3-4)										
Date Collected:			10/24/1990	10/29/1990	10/30/1990	10/21/1990	10/30/1990	10/24/1990	10/23/1990	10/21/1990	10/30/1990	10/25/1990	10/23/1990	10/8/1987	10/8/1987
Sample Type:			Marine Sediment Core	Marine Sediment Core	Marine Sediment Core	Marine Sediment Core	Marine Sediment Core	Marine Sediment Core	Marine Sediment Core	Marine Sediment Core	Marine Sediment Core	Marine Sediment Core	Marine Sediment Core	Marine Sediment Core	Marine Sediment Core
Petroleum Hydrocarbons (mg/kg)															
NWPTH-D/EPA413.1															
Diesel Range Organics															
Total Oil & Grease						140	240	170	250	30 U	96	81	100		
Metals (mg/kg)															
EPA 6000/7000/200.8															
Antimony						0.64	1.3	0.89	1.1	0.56	0.87	0.17	1	0.7	0.6
Arsenic	57	93				6.7	6.5	2.5	11	3.6	3.4	3.3	10	0.8	0.8
Beryllium															
Cadmium	5.1	6.7				2.6	4.2	3.7	3.8	2.8	3.5	3.4	3.6	0.4	0.6
Chromium	260	270				48	72	42	70	41	55	39	51		
Copper	390	390				18	25	15	40	4.4	14	9.6	17	60	75
Lead	450	530				24	26	17	27	11	15	14	16	15	87
Mercury	0.41	0.59				0.14	0.92	0.11	0.17	0.1	0.90	0.071	0.14	0.1	0.1
Nickel						30	68	49	73	29	58	53	41	58	65
Selenium															
Silver	6.1	6.1				1.3	1.1	0.35	0.58	0.41	0.28	0.45	0.29	0.5	0.5
Thallium															
Zinc	410	960				64	74	62	87	55	59	53	54	142	123
Pesticides (mg/kg)															
EPA 8080															
4,4'-DDD															
4,4'-DDE															
4,4'-DDT															
Aldrin						0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.0008 U	0.0008 U
Alpha-BHC															
Beta-BHC															
Chlordane						0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.034 U	0.032 U
Delta-BHC															
Dieldrin						0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.0017 U	0.0016 U
EndoSulfan I															
Endosulfan Sulfate															
Endrin															
Endrin Aldehyde															
Gamma-BHC															
Heptachlor						0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.0008 U	0.0008 U
Heptachlor Epoxide															
Lindane						0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.0008 U	0.0008 U
Methoxychlor															
Total DDT						0.69 U	0.69 U	0.69 U	0.69 U	0.69 U	0.69 U	0.69 U	0.69 U	0.0017 U	0.0016 U
Toxaphene															

TABLE 10
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	Cleanup Screening Levels SQS (b)	CSL (c)	RZA-B-10	RZA-B-11	RZA-B-13	RZA-C-1	RZA-C-2	RZA-C-3	RZA-C-4	RZA-C-5	RZA-C-6	RZA-C-7	RZA-C-8	LS-COMP-A	LS-COMP-B
Sample Name:			RZA-B-10	RZA-B-11	RZA-B-13	RZA-C-1	RZA-C-2	RZA-C-3	RZA-C-4	RZA-C-5	RZA-C-6	RZA-C-7	RZA-C-8	LS-COMP-A	LS-COMP-B
Depth Range:			(4-6)	(6-7)	(3-4)										
Date Collected:			10/24/1990	10/29/1990	10/30/1990	10/21/1990	10/30/1990	10/24/1990	10/23/1990	10/21/1990	10/30/1990	10/25/1990	10/23/1990	10/8/1987	10/8/1987
Sample Type:			Marine Sediment Core	Marine Sediment Core	Marine Sediment Core	Marine Sediment Core	Marine Sediment Core	Marine Sediment Core	Marine Sediment Core	Marine Sediment Core	Marine Sediment Core	Marine Sediment Core	Marine Sediment Core	Marine Sediment Core	Marine Sediment Core
PCBs (mg/kg OC)															
EPA 8080															
Aroclor 1016															
Aroclor 1221															
Aroclor 1232															
Aroclor 1242															
Aroclor 1248															
Aroclor 1254															
Aroclor 1260															
Aroclor 1262															
Aroclor 1268															
Total PCBs	130					6.468 U	4.305 U	4.333 U	3.812 U	13.402 U	10.156 U	12.500 U	9.091 U	1.349 U	1.208 U
Organotin (mg/L)															
Porewater															
Tributyltin															
Tributyl Tins (mg/kg)															
Krone 1988 SIM GC/MS															
Tributyl Tin Ion															
Dibutyl Tin Ion															
Butyl Tin Ion															
Bioassay															
Biochemical Oxygen Demand (mg/Kg)						425.4	419.4	521.3	667.5	375	354.2	458.9	563.5		
Chemical Oxygen Demand (mg/Kg)						49743.6	98716	100061.5	112715.2	22727.3	48451.1	16408.9	22881.6		
Microtox Test (% Light Change)						-24	-24	-23.3	-16.4	-27	-4.4	3.5	-1.7		
Amphipod Mortality (%)						40	50	56	50	9	34	31	61		
Echinoderm Mortality (%)						11.1	6.7	9.8	24.6	7	2.7	8.4	8.6		
Neanthes Mortality (%)						4	4	8	10	2	6	6	4		
Conventionals															
Ammonia (mg/Kg)			12.5	12.9	14.5										
Sulfide (mg/kg)															
Total Kjeldahl Nitrogen (mg/Kg)						470	1800	770	500	250	600	560	640		
Total Sulfides (mg/Kg)			12.2	5.6	10.6									3.2	2.4
Total Volatile Solids (mg/Kg)						5.2	7.4	7.6	6.8	3.3	3.3	1.7	2.6		
N Ammonia (mg N/kg)															
Total Organic Carbon (%)			1.7 (d)	1.7 (d)	1.7 (d)	2.01	3.02	3	3.41	0.97	1.28	1.04	1.43	2.52	2.65
Total Solids (%)			63.9	76	70.3	66.3	66.2	65	60.4	74.8	66.5	76.3	70.1	71.6	69.8
Total Volatile Solids (%)														6.61	6.60
Preserved Total Solids (%)															

TABLE 10
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	Cleanup Screening Levels SQS (b)	CSL (c)	RZA-B-10	RZA-B-11	RZA-B-13	RZA-C-1	RZA-C-2	RZA-C-3	RZA-C-4	RZA-C-5	RZA-C-6	RZA-C-7	RZA-C-8	LS-COMP-A	LS-COMP-B
Sample Name:			RZA-B-10	RZA-B-11	RZA-B-13	RZA-C-1	RZA-C-2	RZA-C-3	RZA-C-4	RZA-C-5	RZA-C-6	RZA-C-7	RZA-C-8	LS-COMP-A	LS-COMP-B
Depth Range:			(4-6)	(6-7)	(3-4)										
Date Collected:			10/24/1990	10/29/1990	10/30/1990	10/21/1990	10/30/1990	10/24/1990	10/23/1990	10/21/1990	10/30/1990	10/25/1990	10/23/1990	10/8/1987	10/8/1987
Sample Type:			Marine Sediment Core	Marine Sediment Core	Marine Sediment Core	Marine Sediment Core	Marine Sediment Core	Marine Sediment Core	Marine Sediment Core	Marine Sediment Core	Marine Sediment Core	Marine Sediment Core	Marine Sediment Core	Marine Sediment Core	Marine Sediment Core
SVOCs (mg/kg OC)															
EPA SW8270/8120															
LPAHs															
Acenaphthene	16	57				9.950 U	6.623 U	6.667 U	5.865 U	20.619 U	15.625 U	19.231 U	13.986 U	0.198 J	0.170 U
Acenaphthylene	66	66				9.950 U	6.623 U	6.667 U	5.865 U	20.619 U	15.625 U	19.231 U	13.986 U	0.516 J	0.030 U
Anthracene	220	1200				6.468 U	4.305 U	4.333 U	3.812 U	13.402 U	10.156 U	12.500 U	9.091 U	0.476 J	0.340 J
Fluorene	23	79				9.950 U	6.623 U	6.667 U	5.865 U	20.619 U	15.625 U	19.231 U	13.986 U	0.516	0.174 U
Naphthalene	99	170				10.448 U	6.954 U	7.000 U	6.158 U	21.649 U	16.406 U	20.192 U	14.685 U	0.516 J	0.415 J
Phenanthrene	100	480				15.920 U	10.596 U	10.667 U	9.384 U	32.990 U	25.000 U	30.769 U	22.378 U	1.190	0.830
2-Methylnaphthalene	38	64				9.950 U	6.623 U	6.667 U	5.865 U	20.619 U	15.625 U	19.231 U	13.986 U	0.159 J	0.260 U
Total LPAH	370	780				30.348 U	20.199 U	20.333 U	17.889 U	62.887 U	47.656 U	58.654 U	42.657 U	3.413 J	1.585 J
HPAHs															
Benzo(a)anthracene	110	270				22.388 U	14.901 U	15.000 U	13.196 U	46.392 U	35.156 U	43.269 U	31.469 U	2.183	1.358
Benzo(a)pyrene	99	210				33.831 U	22.517 U	22.667 U	19.941 U	70.103 U	53.125 U	65.385 U	47.552 U	1.349	1.057
Benzo(b)fluoranthene	--	--				39.801 U	26.490 U	26.667 U	23.460 U	82.474 U	62.500 U	76.923 U	55.944 U		
Benzo(k)fluoranthene	--	--				39.801 U	26.490 U	26.667 U	23.460 U	82.474 U	62.500 U	76.923 U	55.944 U		
Total Benzofluoranthenes	230	450				39.801 U	26.490 U	26.667 U	23.460 U	82.474 U	62.500 U	76.923 U	55.944 U	3.294	1.849 J
Benzo(g,h,i)perylene	31	78				26.866 U	17.881 U	18.000 U	15.836 U	55.670 U	42.188 U	51.923 U	37.762 U	1.190	0.679
Chrysene	110	460				33.333 U	22.185 U	22.333 U	19.648 U	69.072 U	52.344 U	64.423 U	46.853 U	1.548	1.208
Dibenz(a,h)anthracene						6.468 U	4.305 U	4.333 U	3.812 U	13.402 U	10.156 U	12.500 U	9.091 U		
Fluoranthene	160	1200				31.343 U	20.861 U	21.000 U	18.475 U	64.948 U	49.219 U	60.577 U	44.056 U	2.937	1.509
Indeno(1,2,3-cd)pyrene	34	88				9.950 U	6.623 U	6.667 U	5.865 U	20.619 U	15.625 U	19.231 U	13.986 U	0.992	0.642 J
Pyrene	1000	1400				21.393 U	14.238 U	14.333 U	12.610 U	44.330 U	33.594 U	41.346 U	30.070 U	3.016	2.038
Total HPAH	960	5300				89.552 U	59.603 U	60.000 U	52.786 U	185.567 U	140.625 U	173.077 U	125.874 U	16.508	10.340 J
OTHER SVOCs															
1,2,4-Trichlorobenzene	0.81	1.8	0.38 U	0.38 U	0.38 U	3.184 U	2.119 U	2.133 U	1.877 U	6.598 U	5.000 U	6.154 U	4.476 U	0.306 U	0.275 U
1,2-Dichlorobenzene	2.3	2.3	1.12 U	1.12 U	1.12 U	1.841 U	1.225 U	1.233 U	1.085 U	3.814 U	2.891 U	3.558 U	2.587 U	0.040 U	0.034 U
1,3-Dichlorobenzene			10 U	10 U	10 U	8.458 U	5.629 U	5.667 U	4.985 U	17.526 U	13.281 U	16.346 U	11.888 U	0.060 U	0.053 U
1,4-Dichlorobenzene	3.1	9	1.53 U	1.53 U	1.53 U	9.453 U	6.291 U	6.333 U	5.572 U	19.588 U	14.844 U	18.269 U	13.287 U	0.151 U	0.136
Bis(2-ethylhexyl)phthalate	47	78				154.229 U	102.649 U	103.333 U	90.909 U	319.588 U	242.188 U	298.077 U	216.783 U	1.944 B	1.057 B
Benzyl butyl phthalate	4.9	64				23.383 U	31.457	15.667 U	13.783 U	48.454 U	36.719 U	45.192 U	32.867 U	1.468 J	1.057
Dibenzofuran	15	58				9.950 U	6.623 U	6.667 U	5.865 U	20.619 U	15.625 U	19.231 U	13.986 U	0.278 U	0.249 U
Diethylphthalate	61	110				4.826 U	3.212 U	3.233 U	2.845 U	10.000 U	7.578 U	9.327 U	6.783 U	0.131 U	0.117 U
Dimethylphthalate	53	53				7.960 U	5.298 U	5.333 U	4.692 U	16.495 U	12.500 U	15.385 U	11.189 U	0.476 J	0.143 U
Di-n-Butylphthalate	220	1700				69.652 U	46.358 U	46.667 U	55.718	144.330 U	109.375 U	336.538	97.902 U	0.254 U	0.230 U
Di-n-octyl phthalate	58	4500				308.458 U	205.298 U	206.667 U	181.818 U	639.175 U	484.375 U	596.154 U	433.566 U	0.397 J	0.491 U
Hexachlorobenzene	0.38	2.3				8.358 U	5.563 U	5.600 U	4.927 U	17.320 U	13.125 U	16.154 U	11.748 U	0.290 U	0.260 U
Hexachlorobutadiene	3.9	6.2				10.547 U	7.020 U	7.067 U	6.217 U	21.856 U	16.563 U	20.385 U	14.825 U	0.302 U	0.272 U
Hexachloroethane						69.652 U	46.358 U	46.667 U	41.056 U	144.330 U	109.375 U	134.615 U	97.902 U	0.262 U	0.234 U
N-Nitrosodiphenylamine	11	11				8.010 U	5.331 U	5.367 U	4.721 U	16.598 U	12.578 U	15.481 U	11.259 U	0.516 U	0.491 U

TABLE 10
MARINE SEDIMENT SAMPLE RESULTS
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	Cleanup Screening Levels														
Sample Name:			RZA-B-10	RZA-B-11	RZA-B-13	RZA-C-1	RZA-C-2	RZA-C-3	RZA-C-4	RZA-C-5	RZA-C-6	RZA-C-7	RZA-C-8	LS-COMP-A	LS-COMP-B
Depth Range:			(4-6)	(6-7)	(3-4)										
Date Collected:			10/24/1990	10/29/1990	10/30/1990	10/21/1990	10/30/1990	10/24/1990	10/23/1990	10/21/1990	10/30/1990	10/25/1990	10/23/1990	10/8/1987	10/8/1987
Sample Type:			Marine Sediment Core	Marine Sediment Core	Marine Sediment Core	Marine Sediment Core	Marine Sediment Core	Marine Sediment Core	Marine Sediment Core	Marine Sediment Core	Marine Sediment Core	Marine Sediment Core	Marine Sediment Core	Marine Sediment Core	Marine Sediment Core
	SQS (b)	CSL (c)													
SVOCs (mg/kg)															
EPA SW8270/8120															
1-Methylnaphthalene															
2,4-Dimethylphenol	0.029	0.029				0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.012 U	0.011 U
2-Methylphenol	0.063	0.063				0.072 U	0.072 U	0.072 U	0.072 U	0.072 U	0.072 U	0.072 U	0.072 U	0.0050 U	0.0047 U
4-Methylphenol	0.67	0.67				0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.0025 U	0.0024 U
Benzoic Acid	0.65	0.65				0.69 U	0.69 U	0.69 U	0.69 U	0.69 U	0.69 U	0.69 U	0.69 U	0.058 J	0.012 U
Benzyl Alcohol	0.057	0.073				0.073 U	0.073 U	0.073 U	0.073 U	0.073 U	0.073 U	0.073 U	0.073 U	0.0044 U	0.0042 U
Pentachlorophenol	0.36	0.69				0.504 U	0.504 U	0.504 U	0.504 U	0.504 U	0.504 U	0.504 U	0.504 U	0.0053 U	0.0051 U
Phenol	0.42	1.2				0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.0033 U	0.0032 U
2,2'-Oxybis(1-Chloropropane)															
2,4,5-Trichlorophenol															
2,4,6-Trichlorophenol															
2,4-Dichlorophenol															
2,4-Dinitrophenol															
2,4-Dinitrotoluene															
2,6-Dinitrotoluene															
2-Chloronaphthalene															
2-Chlorophenol															
2-Nitroaniline															
2-Nitrophenol															
3- and 4-Methylphenol															
3,3'-Dichlorobenzidine															
3-Nitroaniline															
4,6-Dinitro-2-Methylphenol															
4-Bromophenyl-phenylether															
4-Chloro-3-methylphenol															
4-Chloroaniline															
4-Chlorophenyl-phenylether															
4-Nitroaniline															
4-Nitrophenol															
Aniline															
Benzofluoranthenes	230	450												0.083	0.049 J
Carbazole															
Dibenzo(a,h)anthracene	12	33												0.0085 U	0.0081 U
Hexachlorocyclopentadiene															
Isophorone															
Nitrobenzene															
N-nitrosodimethylamine															
N-Nitroso-di-n-propylamine															

TABLE 10
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INTERIM ACTION REPORT - AMERON HULBERT SITE
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	Cleanup Screening Levels SQS (b)	CSL (c)	RZA-B-10	RZA-B-11	RZA-B-13	RZA-C-1	RZA-C-2	RZA-C-3	RZA-C-4	RZA-C-5	RZA-C-6	RZA-C-7	RZA-C-8	LS-COMP-A	LS-COMP-B
Depth Range:			(4-6)	(6-7)	(3-4)										
Date Collected:			10/24/1990	10/29/1990	10/30/1990	10/21/1990	10/30/1990	10/24/1990	10/23/1990	10/21/1990	10/30/1990	10/25/1990	10/23/1990	10/8/1987	10/8/1987
Sample Type:			Marine Sediment Core	Marine Sediment Core	Marine Sediment Core	Marine Sediment Core	Marine Sediment Core	Marine Sediment Core	Marine Sediment Core	Marine Sediment Core	Marine Sediment Core	Marine Sediment Core	Marine Sediment Core	Marine Sediment Core	Marine Sediment Core
VOCs (mg/kg)															
EPA 8260/824															
1,1,1-Trichloroethane															
1,1,2,2-Tetrachloroethane															
1,1,2-Trichloroethane															
1,1-Dichloroethane															
1,1-Dichloroethene															
1,2,3-Trichlorobenzene															
1,2-Dichlorobenzene															
1,2-Dichloroethane															
1,2-Dichloropropane															
1,3-Dichlorobenzene															
1,4-Dichlorobenzene															
2-Butanone															
2-Chloroethylvinylether															
2-Hexanone															
4-Methyl-2-Pentanone (MIBK)															
Acetone															
Benzene															
bis(2-Chloroethoxy) Methane															
Bis-(2-Chloroethyl) Ether															
Bromodichloromethane															
Bromoform															
Bromomethane															
Carbon Disulfide															
Carbon Tetrachloride															
Chlorobenzene															
Chloroethane															
Chloroform															
Chloromethane															
cis-1,2-Dichloroethene															
cis-1,3-Dichloropropene															
Dibromochloromethane															
Ethylbenzene			0.01 U	0.01 U	0.01 U									0.0026 U	0.0025 U
Methylene Chloride															
Styrene															
Tetrachloroethene			0.014 U	0.014 U	0.014 U									0.0015 U	0.0014 U
Toluene															
trans-1,2-Dichloroethene															
trans-1,3-Dichloropropene															
Trichloroethene			0.16 U	0.16 U	0.16 U									0.0017 U	0.0017 U
Trichlorofluoromethane															
Trichlorotrifluoroethane															
Vinyl Acetate															
Vinyl Chloride															
Xylenes, Total			0.012 U	0.012 U	0.012 U									0.0029 U	0.0028 U

TABLE 10
MARINE SEDIMENT SAMPLE RESULTS
INTERIM ACTION REPORT - AMERON HULBERT SITE
PORT OF EVERETT, WASHINGTON

	Cleanup Screening Levels SQS (b)	CSL (c)	RZA-B-10	RZA-B-11	RZA-B-13	RZA-C-1	RZA-C-2	RZA-C-3	RZA-C-4	RZA-C-5	RZA-C-6	RZA-C-7	RZA-C-8	LS-COMP-A	LS-COMP-B
Depth Range:			(4-6)	(6-7)	(3-4)										
Date Collected:			10/24/1990	10/29/1990	10/30/1990	10/21/1990	10/30/1990	10/24/1990	10/23/1990	10/21/1990	10/30/1990	10/25/1990	10/23/1990	10/8/1987	10/8/1987
Sample Type:			Marine Sediment Core	Marine Sediment Core	Marine Sediment Core	Marine Sediment Core	Marine Sediment Core	Marine Sediment Core	Marine Sediment Core	Marine Sediment Core	Marine Sediment Core	Marine Sediment Core	Marine Sediment Core	Marine Sediment Core	Marine Sediment Core
GRAIN SIZE															
Clay (phi <10) (%)															
Clay (phi 8 to 9) (%)															
Clay (phi 9 to 10) (%)															
Fines (%)															
Gravel (>phi -1) (%)															
Sand (phi 0 to 1) (%)															
Sand (phi -1 to 0) (%)															
Sand (phi 1 to 2) (%)															
Sand (phi 2 to 3) (%)															
Sand (phi 3 to 4) (%)															
Silt (phi 4 to 5) (%)															
Silt (phi 5 to 6) (%)															
Silt (phi 6 to 7) (%)															
Silt (phi 7 to 8) (%)															

U = the analyte was not detected in the sample at the given reporting limit
J = Indicates the analyte was positively identified; the associated numerica
value is the approximate concentration of the analyte in the sample
UJ = The analyte was not detected in the sample; the reported sample reporting
limit is an estimate.
Shaded value indicates exceedance of SQS
Boxed value indicates exceedance of CSL

(a) See SAIC 2009, Appendix F for full bioassay analysis of A2-13
(b) SMS Sediment Quality Standard (Chapter 173-204 WAC).
(c) CSL Cleanup Screening Level (Chapter 173-204 WAC).
(d) No TOC data is available. Recorded value is the average of the TOC data
data presented on this table.

TABLE 11
WATER CHARACTERIZATION AND WASTE PROFILE SAMPLE ANALYSIS GRID
INTERIM ACTION REPORT - AMERON HULBERT SITE
PORT OF EVERETT, WASHINGTON

Sample Name	Depth Range	Date Collected	Area ID	Sample Type	Metals	cPAHs	TPH-G TPH-Dx	TPH-HCID	BTEX	SVOCs	VOCs
AGI-D-1		6/23/1992	G	Concrete Settling Basin Sump					X		X
AGI-MW-2		6/30/1992	G	Monitoring Well	X						
ECI-Area-D		10/9/1991	G	Concrete Settling Basin Sump	X						
ECI-D-1		10/7/1991	G	Concrete Settling Basin Sump	X				X	X	X
ECI-MW-2		10/7/1991	G	Monitoring Well					X	X	X
G-1		12/22/2003	G	Boring		X	X		X	X	X
G-2		12/22/2003	G	Boring		X	X		X	X	X
G-3		2/11/2004	G	Boring	X	X			X	X	X
G-FA-4		1/20/2005	G	Boring	X	X	X		X	X	X
G-FA-7		1/20/2005	G	Boring	X	X	X		X	X	X
P10		2/18/2004	G	Monitoring Well	X	X				X	
PS-1/2		1/19/1989	G	Pond Sample	X						
PS-3		1/19/1989	G	Pond Sample	X						
SEE-EC-2	(2-12)	1/12/1989	G	Monitoring Well			X		X		
SEE-EC-3	(2-12)	1/12/1989	G	Monitoring Well			X		X		
SEE-EC-4	(2-12)	1/12/1989	G	Monitoring Well			X		X		
HC-MW02		11/8/1991	I	Monitoring Well							X
HC-MW02	(7-16)	7/10/1992	I	Monitoring Well	X				X		X
HC-MW03		11/8/1991	I	Monitoring Well							X
HC-MW03	(5-15)	7/10/1992	I	Monitoring Well	X				X		X
P11		2/19/2004	I	Monitoring Well	X	X	X		X	X	X
P12		2/19/2004	I	Monitoring Well	X	X	X		X	X	X
HC-MW01		11/8/1991	J	Monitoring Well							X
HC-MW01	(5-15)	7/10/1992	J	Monitoring Well	X				X		X
HC-MW04		11/8/1991	J	Monitoring Well							X
HC-MW04	(5-15)	7/10/1992	J	Monitoring Well	X				X		X
J-1		2/12/2004	J	Boring	X	X	X		X	X	X
J-2		2/12/2004	J	Boring	X	X	X		X	X	X
J-FA-1		1/17/2005	J	Boring				X			
J-FA-2		1/17/2005	J	Boring				X			
ECI-MW-1		10/7/1991	M	Monitoring Well			X	X	X		
ECI-MW-3		10/7/1991	M	Monitoring Well					X	X	X
M-1		1/18/2005	M	Boring	X			X	X	X	X
M-2		1/18/2005	M	Boring	X			X	X	X	X
M-3		1/18/2005	M	Boring	X			X	X	X	X
M-4		1/17/2005	M	Boring	X			X	X	X	X
M-FA-1		1/17/2005	M	Boring			X		X		
M-FA-2		1/17/2005	M	Boring			X		X		

TABLE 12
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 Cleanup 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
BTEX (mg/kg)						
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)

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TABLE 12
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 Cleanup 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
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(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)
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
VOCs (mg/kg)						
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	--

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TABLE 12
SOIL CLEANUP LEVELS FOR DETECTED CONSTITUENTS
AMERON/HULBERT SITE, PORT OF EVERETT, WASHINGTON

-- = Soil criteria not established.
Shaded value = selected as proposed cleanup 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.
(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 13
GROUNDWATER CLEANUP LEVELS FOR DETECTED CONSTITUENTS (1)
INTERIM ACTION REPORT - 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 Cleanup Screening Level (5)
VOLATILES (µg/L)										
1,1,1-Trichloroethane	---	NA	NA	NA	NA	NA	420,000	nc	1	420,000
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
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)
Beryllium	--	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
Copper	---	3.1 (d)	2.4	3.1 (d)	NA	NA	2,700	nc	1	2.4
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	20	20 (f)
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
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)

TABLE 13
GROUNDWATER CLEANUP LEVELS FOR DETECTED CONSTITUENTS (1)
INTERIM ACTION REPORT - AMERON/HULBERT SITE
PORT OF EVERETT, WASHINGTON

Analyte	Potable Groundwater Levels (2, 3)	State and Federal ARARs (2): 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	MTCA B Equation (2): Human Health MTCA Method B Surface Water Equation 173-340-730	Practical Quantitation Limit (4)	Preliminary Cleanup Screening Level (5)	
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 Cleanup Screening Level.
"---" = A potable groundwater Cleanup Screening Level was not provided because an applicable surface water Cleanup Screening Level was identified.
NA = Cleanup 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.

(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 ug/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.

(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) Practical quantitation limits (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 14
cPAHs IN CHARACTERIZATION AND WASTE PROFILE SOIL SAMPLES
INTERIM ACTION REPORT - AMERON HULBERT SITE
PORT OF EVERETT, WASHINGTON

					cPAHs (mg/kg) SW8270/8270SIM							
					Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Indeno(1,2,3-cd)pyrene	cPAH TEQ
				Cleanup Screening Levels (a)		0.14						0.14
Sample Name	Depth Range	Date Collected	Area ID	Sample Type								
F-GC-1	(0-0.5)	1/14/2005	F	Boring	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U
G1A-100507-AC-1		10/5/2007	G	Stock Pile	0.066 U	0.066 U	0.066 U	0.066 U	0.066 U	0.066 U	0.066 U	0.066 U
G1A-100907-STK-1		10/9/2007	G	Stock Pile	0.064 U	0.064 U	0.064 U	0.064 U	0.064 U	0.064 U	0.064 U	0.064 U
G1A-101607-STK-2		10/16/2007	G	Stock Pile	0.065 U	0.065 U	0.065 U	0.065 U	0.065 U	0.065 U	0.065 U	0.065 U
G1-AC-3		6/22/2006	G	Surface Soil	0.066 U	0.066 U	0.066 U	0.066 U	0.066 U	0.066 U	0.066 U	0.066 U
G1-AC-4		6/22/2006	G	Surface Soil	0.076 U	0.076 U	0.076 U	0.076 U	0.076 U	0.076 U	0.076 U	0.076 U
G1-AC-5		6/22/2006	G	Surface Soil	0.064 U	0.064 U	0.064 U	0.064 U	0.064 U	0.064 U	0.064 U	0.064 U
G-3	(3-3)	2/11/2004	G	Boring	0.051	0.047	0.063	0.052	0.071	0.0095 U	0.032	0.0675
G-FA-5	(8-8.5)	1/20/2005	G	Boring	0.069	0.079	0.066 U	0.066 U	0.14	0.066 U	0.066 U	0.0873
G-FA-8	(4-4.5)	1/20/2005	G	Boring	0.064 U	0.064 U	0.064 U	0.064 U	0.064 U	0.064 U	0.064 U	0.064 U
G-GC-1	(1.5-2)	3/2/2005	G	Boring	0.064 U	0.064 U	0.064 U	0.064 U	0.064 U	0.064 U	0.064 U	0.064 U
G-GC-2	(1.4-1.9)	3/2/2005	G	Boring	0.062 U	0.062 U	0.062 U	0.062 U	0.062 U	0.062 U	0.062 U	0.062 U
G-GC-3	(1-1.5)	3/2/2005	G	Boring	0.062 U	0.062 U	0.062 U	0.062 U	0.062 U	0.062 U	0.062 U	0.062 U
M-2C	(1-1.5)	7/15/2005	G	Boring	0.065 U	0.085	0.068	0.069	0.087	0.065 U	0.065 U	0.09957
PZ-10 (b)	(3-3)	2/11/2004	G	Boring	0.011	0.0093	0.0098	0.0098	0.019	0.0072 U	0.0072 U	0.0126
I2-AC-1A		7/12/2006	I	Excavation	0.15	0.16	0.22	0.13	0.21	0.062 U	0.062 U	0.2121
I2-1	(1-1.5)	5/8/2006	I	Boring	0.065 U	0.065 U	0.12	0.065 U	0.17	0.065 U	0.065 U	0.0137
I2-2	(1-2.25)	5/8/2006	I	Boring	0.066 U	0.066 U	0.066 U	0.066 U	0.066 U	0.066 U	0.066 U	0.066 U
I2-3	(0.5-2.5)	5/8/2006	I	Boring	0.066 U	0.066 U	0.066 U	0.066 U	0.066 U	0.066 U	0.066 U	0.066 U
I2-4	(1.4-2.4)	5/8/2006	I	Boring	0.066 U	0.066 U	0.066 U	0.066 U	0.066 U	0.066 U	0.066 U	0.066 U
I2-5	(1.3-2.5)	5/8/2006	I	Boring	0.067 U	0.067 U	0.067 U	0.067 U	0.067 U	0.067 U	0.067 U	0.067 U
I2-6	(1.5-2.2)	5/8/2006	I	Boring	0.066 U	0.066 U	0.066 U	0.066 U	0.066 U	0.066 U	0.066 U	0.066 U
I2-7	(1.7-2.8)	5/8/2006	I	Boring	0.067 U	0.067 U	0.067 U	0.067 U	0.067 U	0.067 U	0.067 U	0.067 U
I2-8	(1.5-3.3)	5/8/2006	I	Boring	0.064 U	0.064 U	0.064 U	0.064 U	0.064 U	0.064 U	0.064 U	0.064 U
I2-9	(1.7-3.3)	5/8/2006	I	Boring	0.064 U	0.064 U	0.064 U	0.064 U	0.064 U	0.064 U	0.064 U	0.064 U
I2-10	(1.5-2.5)	5/8/2006	I	Boring	0.064 U	0.064 U	0.064 U	0.064 U	0.064 U	0.064 U	0.064 U	0.064 U
I-3		2/12/2004	I	Boring	0.019	0.019	0.04	0.028	0.04	0.0084 U	0.013	0.0294
I-GC-1	(0-0.5)	7/14/2005	I	Boring	0.066 U	0.066 U	0.066 U	0.066 U	0.066 U	0.066 U	0.066 U	0.066 U
I-GC-1A	(0-0.5)	10/19/2005	I	Boring	0.061 U	0.061 U	0.061 U	0.061 U	0.061 U	0.061 U	0.061 U	0.061 U
I-GC-1B	(0-0.5)	10/19/2005	I	Boring	0.066 U	0.066 U	0.066 U	0.066 U	0.066 U	0.066 U	0.066 U	0.066 U
I-GC-1C	(0-0.5)	10/19/2005	I	Boring	0.13	0.093	0.16	0.18	0.36	0.066 U	0.074	0.151
I-GC-1C	(1-2)	10/18/2005	I	Boring	0.064 U	0.064 U	0.064 U	0.064 U	0.064 U	0.064 U	0.064 U	0.064 U
I-GC-2	(0-0.5)	7/14/2005	I	Boring	0.084	0.11	0.26	0.14	0.23	0.062 U	0.062 U	0.1607
I-GC-2	(1-2)	7/14/2005	I	Boring	0.065 U	0.065 U	0.065 U	0.065 U	0.065 U	0.065 U	0.065 U	0.065 U
I-GC-3	(0-0.5)	7/14/2005	I	Boring	0.065 U	0.068	0.083	0.065 U	0.08	0.065 U	0.065 U	0.0771
I-GC-4	(0-0.5)	7/14/2005	I	Boring	0.064 U	0.079	0.077	0.064 U	0.07	0.064 U	0.064 U	0.0874
I-GC-4	(1-2)	7/14/2005	I	Boring	0.064 U	0.064 U	0.064 U	0.064 U	0.064 U	0.064 U	0.064 U	0.064 U
I-GC-5	(3-3.5)	7/14/2005	I	Boring	0.066 U	0.066 U	0.066 U	0.066 U	0.066 U	0.066 U	0.066 U	0.066 U
I-GC-6	(3.5-4)	7/14/2005	I	Boring	0.064 U	0.064 U	0.064 U	0.064 U	0.064 U	0.064 U	0.064 U	0.064 U
I-GC-7	(0-0.5)	7/14/2005	I	Boring	0.063 U	0.063 U	0.085	0.063 U	0.076	0.063 U	0.063 U	0.00926
I-GC-8	(3.5-4)	7/14/2005	I	Boring	0.066 U	0.066 U	0.066 U	0.066 U	0.066 U	0.066 U	0.066 U	0.066 U
I-GC-9	(3.5-4)	7/14/2005	I	Boring	0.067 U	0.067 U	0.067 U	0.067 U	0.067 U	0.067 U	0.067 U	0.067 U
I-GC-10	(0-0.5)	7/14/2005	I	Boring	0.065 U	0.065 U	0.065 U	0.065 U	0.065 U	0.065 U	0.065 U	0.065 U
I-GC-11	(0-0.5)	7/14/2005	I	Boring	0.13	0.23	0.35	0.16	0.26	0.064 U	0.11	0.3076
I-GC-11	(1-2)	7/14/2005	I	Boring	0.32	0.48	0.71	0.48	0.7	0.073	0.23	0.6683
I-GC-11	(2-3)	7/14/2005	I	Boring	0.065 U	0.065 U	0.065 U	0.065 U	0.065 U	0.065 U	0.065 U	0.065 U
I-GC-11.1E	(0-0.5)	3/1/2006	I	Surface Soil	0.085	0.09	0.19	0.11	0.17	0.064 U	0.064 U	0.1302
I-GC-11.1N	(0-0.5)	3/1/2006	I	Surface Soil	0.065 U	0.065 U	0.065 U	0.065 U	0.065 U	0.065 U	0.065 U	0.065 U

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					cPAHs (mg/kg) SW8270/8270SIM							
					Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Indeno(1,2,3-cd)pyrene	cPAH TEQ
				Cleanup Screening Levels (a)		**0.14**						**0.14**
Sample Name	Depth Range	Date Collected	Area ID	Sample Type								
I-GC-11.1S	(0.75-1.25)	3/1/2006	I	Surface Soil	0.075	0.097	0.19	0.083	0.3	0.064 U	0.064 U	0.1348
I-GC-11.1W	(0-0.5)	3/1/2006	I	Surface Soil	0.16	0.14	0.2	0.11	0.28	0.065 U	0.065 U	0.1898
I-GC-12	(0-0.5)	7/14/2005	I	Boring	0.29	0.41	0.62	0.34	1.1	0.081	0.22	0.5761
I-GC-12	(1-2)	7/14/2005	I	Boring	0.074	0.075	0.076	0.086	0.079	0.066 U	0.066 U	0.09939
I-GC-12.1E	(0-0.5)	3/1/2006	I	Surface Soil	0.13	0.12	0.21	0.1	0.28	0.064 U	0.067	0.1735
I-GC-12.1S	(0.75-1.25)	3/1/2006	I	Hand Auger	0.064 U	0.064 U	0.064 U	0.064 U	0.064 U	0.064 U	0.064 U	0.064 U
I-GC-12.1W	(0-0.5)	3/1/2006	I	Surface Soil	0.11	0.13	0.13	0.096	0.14	0.065 U	0.072	0.1722
I-GC-12.2E	(0-0.5)	3/10/2006	I	Surface Soil	0.063 U	0.063 U	0.063 U	0.063 U	0.063 U	0.063 U	0.063 U	0.063 U
I-GC-12.5S	(0.5-1)	3/1/2006	I	Surface Soil	0.064 U	0.064 U	0.087	0.064 U	0.076	0.064 U	0.064 U	0.00946
I-GC-13	(0-0.5)	7/14/2005	I	Boring	0.066 U	0.066 U	0.066 U	0.066 U	0.066 U	0.066 U	0.066 U	0.066 U
I-GC-14	(0-0.5)	7/14/2005	I	Boring	0.077	0.097	0.21	0.099	0.18	0.065 U	0.1	0.1474
I-GC-14	(1-2)	7/14/2005	I	Boring	0.064 U	0.064 U	0.064 U	0.064 U	0.064 U	0.064 U	0.064 U	0.064 U
I-GC-15	(0-0.5)	8/22/2005	I	Hand Auger	0.066 U	0.066 U	0.066 U	0.066 U	0.066 U	0.066 U	0.066 U	0.066 U
I-GC-16	(0-0.5)	8/22/2005	I	Hand Auger	0.064 U	0.064 U	0.064 U	0.064 U	0.064 U	0.064 U	0.064 U	0.064 U
I-GC-17	(0-0.5)	8/22/2005	I	Hand Auger	0.12	0.16	0.15	0.072	0.13	0.066 U	0.13	0.2085
I-GC-17	(1-2)	8/22/2005	I	Hand Auger	0.063 U	0.063 U	0.063 U	0.063 U	0.063 U	0.063 U	0.063 U	0.063 U
I-GC-18	(0-0.5)	8/22/2005	I	Hand Auger	0.066 U	0.066 U	0.066 U	0.066 U	0.066 U	0.066 U	0.066 U	0.066 U
I-GC-19	(0-0.5)	8/22/2005	I	Hand Auger	0.066 U	0.066 U	0.094	0.066 U	0.078	0.066 U	0.066 U	0.01018
I-GC-20	(0-0.5)	8/22/2005	I	Hand Auger	0.34	0.53	1.1	0.59	0.97	0.12	0.39	0.7937
I-GC-20	(1-2)	8/22/2005	I	Hand Auger	0.064 U	0.064 U	0.064 U	0.064 U	0.064 U	0.064 U	0.064 U	0.064 U
I-GC-21	(0-0.5)	8/22/2005	I	Hand Auger	0.064 U	0.064 U	0.065	0.064 U	0.064 U	0.064 U	0.064 U	0.0065
I-GC-22	(0-0.5)	8/22/2005	I	Hand Auger	0.066 U	0.066 U	0.066 U	0.066 U	0.066 U	0.066 U	0.066 U	0.066 U
I-GC-23	(0-0.5)	8/22/2005	I	Hand Auger	0.064 U	0.064 U	0.064 U	0.064 U	0.064 U	0.064 U	0.064 U	0.064 U
I-GC-24	(1.2-6)	10/19/2005	I	Boring	0.065 U	0.065 U	0.065 U	0.065 U	0.078	0.065 U	0.065 U	0.00078
I-GC-24	(6.5-7.5)	10/19/2005	I	Boring	0.064 U	0.064 U	0.064 U	0.064 U	0.064 U	0.064 U	0.064 U	0.064 U
I-GC-25	(0.5-1)	10/19/2005	I	Boring	0.062 U	0.062 U	0.062 U	0.062 U	0.062 U	0.062 U	0.062 U	0.062 U
I-GC-26	(0-0.5)	10/19/2005	I	Boring	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U
I-X		2/12/2004	I	Boring	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U
I-Y		2/12/2004	I	Boring	0.081 U	0.081 U	0.081 U	0.081 U	0.081 U	0.081 U	0.081 U	0.081 U
I-Z		2/12/2004	I	Surface Soil	0.021	0.017	0.028	0.015	0.031	0.0087 U	0.01	0.02471
Chamber-1		8/11/2006	J	Excavation	0.065 U	0.065 U	0.065 U	0.065 U	0.065 U	0.065 U	0.065 U	0.065 U
Chamber-2		8/11/2006	J	Excavation	0.066 U	0.066 U	0.066 U	0.066 U	0.066 U	0.066 U	0.066 U	0.066 U
Chamber-3		8/11/2006	J	Excavation	0.066 U	0.066 U	0.077	0.066 U	0.094	0.066 U	0.066 U	0.0086
Chamber-4		8/11/2006	J	Excavation	0.066 U	0.066 U	0.066 U	0.066 U	0.066 U	0.066 U	0.066 U	0.066 U
J-GC-1 (c)	(0.5-1)	1/14/2005	J	Boring	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U
J-GC-1 (c)	(0.5-1)	1/14/2005	J	Boring	0.066 U	0.066 U	0.066 U	0.066 U	0.074	0.066 U	0.066 U	0.00074
J-GC-2	(0-0.5)	3/2/2005	J	Boring	0.064 U	0.064 U	0.064 U	0.064 U	0.064 U	0.064 U	0.064 U	0.064 U
J-GC-3	(0-0.5)	3/2/2005	J	Boring	0.065 U	0.065 U	0.065 U	0.065 U	0.065 U	0.065 U	0.065 U	0.065 U
J-GC-4	(1.5-2)	3/3/2005	J	Boring	0.065 U	0.065 U	0.065 U	0.065 U	0.065 U	0.065 U	0.065 U	0.065 U
J-GC-6	(1.1-1.6)	7/15/2005	J	Boring	0.065 U	0.065 U	0.065 U	0.065 U	0.065 U	0.065 U	0.065 U	0.065 U
J-GC-6	(2-2.7)	7/15/2005	J	Boring	0.38 J	0.38 J	0.31 J	0.38 J	0.35 J	0.064 UJ	0.15 J	0.5055 J
J-GC-6	(3.1-4.1)	7/15/2005	J	Boring	0.064 UJ	0.064 UJ	0.064 UJ	0.064 UJ	0.064 UJ	0.064 UJ	0.064 UJ	0.064 UJ
J-GC-6f	(0.7-1.1)	2/6/2006	J	Boring	0.064 U	0.064 U	0.064 U	0.064 U	0.064 U	0.064 U	0.064 U	0.064 U
J-GC-6g	(1-1.5)	2/6/2006	J	Boring	0.09	0.098	0.078	0.087	0.11	0.065 U	0.072	0.1318
J-GC-6h	(1-1.5)	2/6/2006	J	Boring	0.064 U	0.064 U	0.064 U	0.064 U	0.069	0.064 U	0.064 U	0.00069
J-GC-6i	(1-1.5)	2/6/2006	J	Boring	0.066 U	0.066 U	0.066 U	0.066 U	0.066 U	0.066 U	0.066 U	0.066 U
J-GC-6i	(3.2-4)	2/6/2006	J	Boring	0.3	0.39	0.37	0.37	0.47	0.077	0.27	0.5565
J-GC-7	(0.7-1.2)	7/15/2005	J	Boring	0.066 U	0.066 U	0.066 U	0.066 U	0.066 U	0.066 U	0.066 U	0.066 U
J-GC-8	(2.1-2.6)	7/15/2005	J	Boring	0.066 U	0.066 U	0.066 U	0.066 U	0.066 U	0.066 U	0.066 U	0.066 U

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					cPAHs (mg/kg) SW8270/8270SIM							
					Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Indeno(1,2,3-cd)pyrene	cPAH TEQ
				Cleanup Screening Levels (a)		**0.14**						**0.14**
Sample Name	Depth Range	Date Collected	Area ID	Sample Type								
J-GC-9	(1.4-1.9)	7/15/2005	J	Boring	0.064 U	0.064 U	0.064 U	0.064 U	0.064 U	0.064 U	0.064 U	0.064 U
J-GC-10	(0-0.5)	7/14/2005	J	Boring	0.064 U	0.064 U	0.069	0.064 U	0.064 U	0.064 U	0.064 U	0.0069
J-MSRC		5/23/2007	J	Excavation	50 U	50 U	50 U	50 U	69	50 U	50 U	0.69
KFI-WP-Comp		9/30/1993	J	Stock Pile	2.3 U	2.3 U	2.3 U	2.3 U	2.3 U	2.3 U	2.3 U	2.3 U
M-1	(0.3-0.8)	1/18/2005	M	Boring	0.066 U	0.066 U	0.066 U	0.066 U	0.066 U	0.066 U	0.066 U	0.066 U
M-2	(1.5-2)	1/18/2005	M	Boring	0.13	0.18	0.12	0.12	0.21	0.064	0.095	0.235
M-2	(2-3)	1/18/2005	M	Boring	0.064 UJ	0.064 UJ	0.064 UJ	0.064 UJ	0.064 UJ	0.064 UJ	0.064 UJ	0.064 UJ
M-2.1S	(1-1.5)	3/1/2006	M	Boring	0.064 U	0.064 U	0.064 U	0.064 U	0.064 U	0.064 U	0.064 U	0.064 U
M-2.1W	(1-1.5)	3/1/2006	M	Boring	0.064 U	0.064 U	0.064 U	0.064 U	0.064 U	0.064 U	0.064 U	0.064 U
M-2B	(1-1.5)	7/15/2005	M	Boring	0.064 U	0.064 U	0.064 U	0.064 U	0.064 U	0.064 U	0.064 U	0.064 U
M-2D	(0.9-1.4)	7/15/2005	M	Boring	0.065 U	0.065 U	0.065 U	0.065 U	0.065 U	0.065 U	0.065 U	0.065 U
M-3	(0-0.5)	1/18/2005	M	Boring	0.064 U	0.064 U	0.064 U	0.064 U	0.064 U	0.064 U	0.064 U	0.064 U
M-4	(0.8-1.3)	1/17/2005	M	Boring	0.062 UJ	0.062 UJ	0.062 UJ	0.062 UJ	0.062 UJ	0.062 UJ	0.062 UJ	0.062 UJ
M-GC-1	(1.6-2.1)	3/3/2005	M	Boring	0.063 U	0.063 U	0.063 U	0.063 U	0.063 U	0.063 U	0.063 U	0.063 U
M-GC-2	(1.5-2)	3/2/2005	M	Boring	0.062 U	0.062 U	0.062 U	0.062 U	0.062 U	0.062 U	0.062 U	0.062 U
M-GC-3	(1-1.5)	3/3/2005	M	Boring	0.065 U	0.065 U	0.065 U	0.065 U	0.065 U	0.065 U	0.065 U	0.065 U
M-GC-4	(1.5-2)	3/2/2005	M	Boring	0.065 U	0.065 U	0.065 U	0.065 U	0.065 U	0.065 U	0.065 U	0.065 U
M-GC-5	(1-1.5)	3/2/2005	M	Boring	0.064 U	0.064 U	0.064 U	0.064 U	0.064 U	0.064 U	0.064 U	0.064 U

U = the analyte was not detected in the sample at the given reporting limit.
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 reporting limit is an estimate.
Shaded cells indicate an exceedance of the site cleanup levels.

(a) Development of the cleanup levels is presented in Table 4.
(b) PZ-10 is located at P-10. PZ-10 was taken during the drilling for the P-10 monitoring well.
(c) Sample analyzed using both EPA Method 8270SIM and standard EPA Method 8270.
Lower reporting limits achieved using EPA Method 8270SIM.

TABLE 15
TRIBUTYL TINS IN CHARACTERIZATION AND WASTE PROFILE SOIL SAMPLES
INTERIM ACTION REPORT - AMERON HULBERT SITE
PORT OF EVERETT, WASHINGTON

					Tributyl Tins (mg/kg) KRONE 1989					
					Butyl Tin Ion	Butyl Tin Trichloride	Dibutyl Tin Dichloride	Dibutyl Tin Ion	Tributyl Tin Chloride	Tributyl Tin Ion
				Cleanup Screening Levels (a)						**7**
Sample Name	Depth Range	Date Collected	Area ID	Sample Type						
F-GC-1	(0-0.5)	1/14/2005	F	Boring		0.01	0.038		0.069	
G1-AC-1		6/22/2006	G	Surface Soil	0.0039 U			0.0055 U		0.0037 U
G1-AC-2		6/22/2006	G	Surface Soil	0.0039 U			0.0056 U		0.0037 U
G1-AC-5		6/22/2006	G	Surface Soil	0.004 UJ			0.0057 UJ		0.0038 UJ
G1-AC-7		6/27/2006	G	Surface Soil	0.0038 UJ			0.0054 UJ		0.0036 UJ
G1-AC-8		6/27/2006	G	Surface Soil	0.0038 U			0.0054 U		0.0036 U
G1-AC-9		6/23/2006	G	Surface Soil	0.0037 U			0.0053 U		0.0035 U
I1-AC-1		6/21/2006	I	Surface Soil	0.093			0.3		0.95
I2-AC-1		7/13/2006	I	Excavation	0.0041 U			0.0058 U		0.0038 U
I2-AC-2		7/13/2006	I	Excavation	0.0039 U			0.0056 U		0.0037 U
I3A-AC-1A		6/29/2006	I	Surface Soil	0.004 U			0.0057 U		0.0038 U
I3A-AC-1B		6/29/2006	I	Surface Soil	0.004 U			0.0057 U		0.0038 U
I3A-AC-2A		6/30/2006	I	Surface Soil	0.0038 U			0.0054 U		0.0036 U
I3A-AC-2B		6/30/2006	I	Surface Soil	0.0041 U			0.0058 U		0.0038 U
I3B-AC-1		7/7/2006	I	Surface Soil	0.0038 U			0.0054 U		0.0036 U
I3B-AC-2		7/7/2006	I	Surface Soil	0.004 U			0.0057 U		0.0038 U
I4-AC-2		7/12/2006	I	Surface Soil	0.0038 U			0.0053 U		0.0036 U
I5-AC-2		6/28/2006	I	Surface Soil	0.0039 U			0.0056 U		0.0037 U
I5-AC-4		6/28/2006	I	Surface Soil	0.0039 U			0.0055 U		0.0037 U
I5-AC-5		7/14/2006	I	Surface Soil	0.0039 U			0.0056 U		0.0037 U

U = the analyte was not detected in the sample at the given reporting limit.
UJ = The analyte was not detected in the sample; the reported sample reporting limit is an estimate.

(a) Development of the cleanup levels is presented in Table 4.

TABLE 16
SVOCS IN CHARACTERIZATION AND WASTE PROFILE SOIL SAMPLES
INTERIM ACTION REPORT - AMERON HULBERT SITE
PORT OF EVERETT, WASHINGTON

Area ID:		F	G	G	G	G	G	G	G	G	G	G	G	G	G	I	I
Sample Name:		F-GC-1	ECI-N-2	G1A-100507-AC-1	G1-AC-3	G1-AC-4	G1-AC-5	G-FA-4	G-FA-5	G-FA-8	G-GC-1	G-GC-2	G-GC-3	M-2C	STOCKPILE	ECI-Q-1	ECI-Q-5
Depth Range:		(0-0.5)						(2-2.5)	(8-8.5)	(4-4.5)	(1.5-2)	(1.4-1.9)	(1-1.5)	(1-1.5)		(1-2)	(1-2)
Date Collected:		1/14/2005	10/7/1991	10/5/2007	6/22/2006	6/22/2006	6/22/2006	1/20/2005	1/20/2005	1/20/2005	3/2/2005	3/2/2005	3/2/2005	7/15/2005	11/12/2004	10/7/1991	10/7/1991
Sample Type:		Boring	Surface Soil	Excavation	Surface Soil	Surface Soil	Surface Soil	Boring	Boring	Boring	Boring	Boring	Boring	Boring	Stock Pile	Test Pit	Test Pit
	Cleanup Levels (b)																
SVOCs (mg/kg)																	
EPA Method 8270/8270SIM																	
1,2,4-Trichlorobenzene					0.066 U	0.076 U	0.064 U	0.0059 U	0.066 U	0.064 U					0.470 UJ		
1,2-Dichlorobenzene			0.005 U		0.066 U	0.076 U	0.064 U	0.0012 U	0.066 U	0.064 U					0.470 UJ	0.005 U	0.005 U
1,3-Dichlorobenzene			0.005 U		0.066 U	0.076 U	0.064 U	0.0012 U	0.066 U	0.064 U					0.470 UJ	0.005 U	0.005 U
1,4-Dichlorobenzene			0.005 U		0.066 U	0.076 U	0.064 U	0.0012 U	0.066 U	0.064 U					0.470 UJ	0.005 U	0.005 U
1-Methylnaphthalene	24														0.470 UJ		
2,2'-Oxybis(1-Chloropropane)					0.066 U	0.076 U	0.064 U		0.066 U	0.064 U							
2,3,4,6-Tetrachlorophenol																	
2,4,5-Trichlorophenol					0.33 U	0.38 U	0.32 U		0.33 U	0.32 U							
2,4,6-Trichlorophenol					0.33 U	0.38 U	0.32 U		0.33 U	0.32 U					0.470 UJ		
2,4-Dichlorophenol					0.33 U	0.38 U	0.32 U		0.33 U	0.32 U					0.470 UJ		
2,4-Dimethylphenol					0.066 U	0.076 U	0.064 U		0.066 U	0.064 U					0.470 UJ		
2,4-Dinitrophenol					0.66 U	0.76 U	0.64 U		0.66 U	0.64 U					0.470 UJ		
2,4-Dinitrotoluene					0.33 U	0.38 U	0.32 U		0.33 U	0.32 U					0.940 UJ		
2,6-Dichlorophenol															0.470 UJ		
2,6-Dinitrotoluene					0.33 U	0.38 U	0.32 U		0.33 U	0.32 U							
2-Chloronaphthalene					0.066 U	0.076 U	0.064 U		0.066 U	0.064 U					0.470 UJ		
2-Chlorophenol					0.066 U	0.076 U	0.064 U		0.066 U	0.064 U					0.470 UJ		
2-Methylnaphthalene	320				0.16	0.18	0.5		0.066 U	0.064 U					0.470 UJ		
2-Methylphenol					0.066 U	0.076 U	0.064 U		0.066 U	0.064 U					0.470 UJ		
2-Nitroaniline					0.33 U	0.38 U	0.32 U		0.33 U	0.32 U					0.470 UJ		
2-Nitrophenol					0.33 U	0.38 U	0.32 U		0.33 U	0.32 U					0.470 UJ		
3,3'-Dichlorobenzidine					0.33 U	0.38 U	0.32 U		0.33 U	0.32 U					0.470 UJ		
3-Nitroaniline					0.33 U	0.38 U	0.32 U		0.33 U	0.32 U					0.470 UJ		
4,6-Dinitro-2-Methylphenol					0.66 U	0.76 U	0.64 U		0.66 U	0.64 U					0.470 UJ		
4-Bromophenyl-Phenylether					0.066 U	0.076 U	0.064 U		0.066 U	0.064 U					0.470 UJ		
4-Chloro-3-Methylphenol					0.33 U	0.38 U	0.32 U		0.33 U	0.32 U					0.470 UJ		
4-Chloroaniline					0.33 U	0.38 U	0.32 U		0.33 U	0.32 U					0.470 UJ		
4-Chlorophenyl-Phenylether					0.066 U	0.076 U	0.064 U		0.066 U	0.064 U					0.470 UJ		
4-Methylphenol	--				0.066 U	0.076 U	0.064 U		0.066 U	0.064 U					0.470 UJ		
4-Nitroaniline					0.33 U	0.38 U	0.32 U		0.33 U	0.32 U					0.470 UJ		
4-Nitrophenol					0.33 U	0.38 U	0.32 U		0.33 U	0.32 U					0.470 UJ		
Acenaphthene	66				0.066 U	0.076 U	0.064 U		0.066 U	0.064 U					0.470 UJ		
Acenaphthylene					0.066 U	0.076 U	0.064 U		0.066 U	0.064 U					0.470 UJ		
Aniline															0.470 UJ		
Anthracene	12000				0.066 U	0.076 U	0.064 U		0.066 U	0.064 U							
Azobenzene															0.470 UJ		
Benzidine																	
Benzo(a)anthracene		0.07 U		0.066 U	0.066 U	0.076 U	0.064 U		0.069	0.064 U	0.064 U	0.062 U	0.062 U	0.065 U			
Benzo(a)pyrene	0.14	0.07 U		0.066 U	0.066 U	0.076 U	0.064 U		0.079	0.064 U	0.064 U	0.062 U	0.062 U	0.085	0.640 J		
Benzo(b)fluoranthene		0.07 U		0.066 U	0.066 U	0.076 U	0.064 U		0.066 U	0.064 U	0.064 U	0.062 U	0.062 U	0.068	0.570 J		
Benzo(g,h,i)perylene					0.066 U	0.076 U	0.064 U		0.066 U	0.064 U					0.660 J		
Benzo(k)fluoranthene		0.07 U		0.066 U	0.066 U	0.076 U	0.064 U		0.066 U	0.064 U	0.064 U	0.062 U	0.062 U	0.069	0.470 UJ		
Benzoic Acid	320000				0.66 U	0.76 U	0.65 U		0.66 U	0.64 U					0.470 UJ		
Benzyl Alcohol					0.33 U	0.38 U	0.32 U		0.33 U	0.32 U					1.200 J		
Benzyl butyl phthalate					0.066 U	0.076 U	0.064 U		0.066 U	0.064 U					0.470 UJ		
bis(2-Chloroethoxy) Methane					0.066 U	0.076 U	0.064 U		0.066 U	0.064 U					0.470 UJ		
Bis-(2-Chloroethyl) Ether					0.066 U	0.076 U	0.064 U		0.066 U	0.064 U					0.470 UJ		
Bis(2-Ethylhexyl)Phthalate	4.9				0.35	0.96	1.2		0.19	0.064 U					0.470 UJ		
Carbazole	50				0.066 U	0.076 U	0.064 U		0.066 U	0.064 U					0.470 UJ		
Chrysene		0.07 U		0.066 U	0.066 U	0.076 U	0.064 U		0.14	0.064 U	0.064 U	0.062 U	0.062 U	0.087	0.470 UJ		
Dibenz(a,h)anthracene		0.07 U		0.066 U	0.066 U	0.076 U	0.064 U		0.066 U	0.064 U	0.064 U	0.062 U	0.062 U	0.065 U	0.730 J		
Dibenzofuran	160				0.066 U	0.076 U	0.064 U		0.066 U	0.064 U					0.470 UJ		
Diethylphthalate					0.066 U	0.076 U	0.064 U		0.066 U	0.064 U					0.470 UJ		
Dimethylphthalate					0.066 U	0.076 U	0.064 U		0.066 U	0.064 U					0.470 UJ		
Di-N-Butylphthalate					0.066 U	0.076 U	0.064 U		0.066 U	0.064 U					0.470 UJ		
Di-n-Octyl phthalate	1600				0.066 U	0.076 U	0.075		0.066 U	0.064 U					0.470 UJ		
Fluoranthene	89				0.066 U	0.076 U	0.099		0.17	0.064 U					0.470 UJ		
Fluorene	553				0.066 U	0.08	0.099		0.066 U	0.064 U					1.400 J		
Hexachlorobenzene					0.066 U	0.076 U	0.064 U		0.066 U	0.064 U					0.470 UJ		

TABLE 16
SVOCS IN CHARACTERIZATION AND WASTE PROFILE SOIL SAMPLES
INTERIM ACTION REPORT - AMERON HULBERT SITE
PORT OF EVERETT, WASHINGTON

	Area ID:	F	G	G	G	G	G	G	G	G	G	G	G	G	G	I	I
	Sample Name:	F-GC-1	ECI-N-2	G1A-100507-AC-1	G1-AC-3	G1-AC-4	G1-AC-5	G-FA-4	G-FA-5	G-FA-8	G-GC-1	G-GC-2	G-GC-3	M-2C	STOCKPILE	ECI-Q-1	ECI-Q-5
	Depth Range:	(0-0.5)						(2-2.5)	(8-8.5)	(4-4.5)	(1.5-2)	(1.4-1.9)	(1-1.5)	(1-1.5)		(1-2)	(1-2)
	Date Collected:	1/14/2005	10/7/1991	10/5/2007	6/22/2006	6/22/2006	6/22/2006	1/20/2005	1/20/2005	1/20/2005	3/2/2005	3/2/2005	3/2/2005	7/15/2005	11/12/2004	10/7/1991	10/7/1991
	Sample Type:	Boring	Surface Soil	Excavation	Surface Soil	Surface Soil	Surface Soil	Boring	Boring	Boring	Boring	Boring	Boring	Boring	Stock Pile	Test Pit	Test Pit
	Cleanup Levels (b)																
Hexachlorobutadiene					0.066 U	0.076 U	0.064 U	0.0059 U	0.066 U	0.064 U					0.470 UJ		
Hexachlorocyclopentadiene					0.33 U	0.38 U	0.32 U		0.33 U	0.32 U					0.470 UJ		
Hexachloroethane					0.066 U	0.076 U	0.064 U		0.066 U	0.064 U					0.470 UJ		
Indeno(1,2,3-cd)pyrene		0.07 U		0.066 U	0.066 U	0.076 U	0.064 U		0.066 U	0.064 U	0.064 U	0.062 U	0.062 U	0.065 U	0.470 UJ		
Isophorone					0.066 U	0.076 U	0.064 U		0.066 U	0.064 U					0.470 UJ		
Naphthalene	140				0.066 U	0.076 U	0.064 U	0.024	0.08	0.064 U					0.470 UJ		
Nitrobenzene					0.066 U	0.076 U	0.064 U		0.066 U	0.064 U					0.470 UJ		
N-Nitrosodimethylamine															0.470 UJ		
N-Nitroso-Di-N-Propylamine					0.33 U	0.38 U	0.32 U		0.33 U	0.32 U							
N-Nitrosodiphenylamine					0.074 U	0.11 U	0.15 U		0.066 U	0.064 U					0.470 UJ		
Pentachlorophenol					0.33 U	0.38 U	0.32 U		0.33 U	0.32 U					0.470 UJ		
Phenanthrene	12000				0.27	0.31	0.48		0.21	0.064 U					0.470 UJ		
Phenol					0.066 U	0.076 U	0.064 U		0.066 U	0.064 U					1.300 J		
Pyrene	2400				0.066 U	0.076 U	0.091		0.18	0.064 U					0.470 UJ		
Pyridine															1.200 J		

TABLE 16
SVOCS IN CHARACTERIZATION AND WASTE PROFILE SOIL SAMPLES
INTERIM ACTION REPORT - AMERON HULBERT SITE
PORT OF EVERETT, WASHINGTON

	Area ID:	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I
	Sample Name:	ECI-Q-6	ECI-Q-8	I2-1	I2-2	I2-3	I2-4	I2-5	I2-6	I2-7	I2-8	I2-9	I2-10	I-3	I-GC-1	I-GC-1A	I-GC-1B	I-GC-1C	I-GC-1C
	Depth Range:	(0-1)	(5-5)	(1-1.5)	(1-2.25)	(0.5-2.5)	(1.4-2.4)	(1.3-2.5)	(1.5-2.2)	(1.7-2.8)	(1.5-3.3)	(1.7-3.3)	(1.5-2.5)		(0-0.5)	(0-0.5)	(0-0.5)	(0-0.5)	(1-2)
	Date Collected:	10/7/1991	10/7/1991	5/8/2006	5/8/2006	5/8/2006	5/8/2006	5/8/2006	5/8/2006	5/8/2006	5/8/2006	5/8/2006	5/8/2006	2/12/2004	7/14/2005	10/19/2005	10/19/2005	10/19/2005	10/18/2005
	Sample Type:	Test Pit	Test Pit	Boring	Boring	Boring	Boring	Boring	Boring	Boring	Boring	Boring	Boring	Boring	Boring	Boring	Boring	Boring	Boring
	Cleanup Levels (b)																		
SVOCs (mg/kg)																			
EPA Method 8270/8270SIM																			
1,2,4-Trichlorobenzene																			
1,2-Dichlorobenzene		0.005 U	0.005 U																
1,3-Dichlorobenzene		0.005 U	0.005 U																
1,4-Dichlorobenzene		0.005 U	0.005 U																
1-Methylnaphthalene	24																		
2,2'-Oxybis(1-Chloropropane)																			
2,3,4,6-Tetrachlorophenol																			
2,4,5-Trichlorophenol																			
2,4,6-Trichlorophenol																			
2,4-Dichlorophenol																			
2,4-Dimethylphenol																			
2,4-Dinitrophenol																			
2,4-Dinitrotoluene																			
2,6-Dichlorophenol																			
2,6-Dinitrotoluene																			
2-Chloronaphthalene																			
2-Chlorophenol																			
2-Methylnaphthalene	320																		
2-Methylphenol																			
2-Nitroaniline																			
2-Nitrophenol																			
3,3'-Dichlorobenzidine																			
3-Nitroaniline																			
4,6-Dinitro-2-Methylphenol																			
4-Bromophenyl-Phenylether																			
4-Chloro-3-Methylphenol																			
4-Chloroaniline																			
4-Chlorophenyl-Phenylether																			
4-Methylphenol	--																		
4-Nitroaniline																			
4-Nitrophenol																			
Acenaphthene	66																		
Acenaphthylene																			
Aniline																			
Anthracene	12000																		
Azobenzene																			
Benzidine																			
Benzo(a)anthracene				0.065 U	0.066 U	0.066 U	0.066 U	0.067 U	0.066 U	0.067 U	0.064 U	0.064 U	0.064 U	0.019	0.066 U	0.061 U	0.066 U	0.13	0.064 U
Benzo(a)pyrene	0.14			0.065 U	0.066 U	0.066 U	0.066 U	0.067 U	0.066 U	0.067 U	0.064 U	0.064 U	0.064 U	0.019	0.066 U	0.061 U	0.066 U	0.093	0.064 U
Benzo(b)fluoranthene				0.12	0.066 U	0.066 U	0.066 U	0.067 U	0.066 U	0.067 U	0.064 U	0.064 U	0.064 U	0.04	0.066 U	0.061 U	0.066 U	0.16	0.064 U
Benzo(g,h,i)perylene																			
Benzo(k)fluoranthene				0.065 U	0.066 U	0.066 U	0.066 U	0.067 U	0.066 U	0.067 U	0.064 U	0.064 U	0.064 U	0.028	0.066 U	0.061 U	0.066 U	0.18	0.064 U
Benzoic Acid	320000																		
Benzyl Alcohol																			
Benzyl butyl phthalate																			
bis(2-Chloroethoxy) Methane																			
Bis-(2-Chloroethyl) Ether																			
Bis(2-Ethylhexyl)Phthalate	4.9																		
Carbazole	50																		
Chrysene				0.17	0.066 U	0.066 U	0.066 U	0.067 U	0.066 U	0.067 U	0.064 U	0.064 U	0.064 U	0.04	0.066 U	0.061 U	0.066 U	0.36	0.064 U
Dibenz(a,h)anthracene				0.065 U	0.066 U	0.066 U	0.066 U	0.067 U	0.066 U	0.067 U	0.064 U	0.064 U	0.064 U	0.0084 U	0.066 U	0.061 U	0.066 U	0.066 U	0.064 U
Dibenzofuran	160																		
Diethylphthalate																			
Dimethylphthalate																			
Di-N-Butylphthalate																			
Di-n-Octyl phthalate	1600																		
Fluoranthene	89																		
Fluorene	553																		
Hexachlorobenzene																			

TABLE 16
SVOCS IN CHARACTERIZATION AND WASTE PROFILE SOIL SAMPLES
INTERIM ACTION REPORT - AMERON HULBERT SITE
PORT OF EVERETT, WASHINGTON

	Area ID:	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I
	Sample Name:	ECI-Q-6	ECI-Q-8	I2-1	I2-2	I2-3	I2-4	I2-5	I2-6	I2-7	I2-8	I2-9	I2-10	I-3	I-GC-1	I-GC-1A	I-GC-1B	I-GC-1C	I-GC-1C
	Depth Range:	(0-1)	(5-5)	(1-1.5)	(1-2.25)	(0.5-2.5)	(1.4-2.4)	(1.3-2.5)	(1.5-2.2)	(1.7-2.8)	(1.5-3.3)	(1.7-3.3)	(1.5-2.5)		(0-0.5)	(0-0.5)	(0-0.5)	(0-0.5)	(1-2)
	Date Collected:	10/7/1991	10/7/1991	5/8/2006	5/8/2006	5/8/2006	5/8/2006	5/8/2006	5/8/2006	5/8/2006	5/8/2006	5/8/2006	5/8/2006	2/12/2004	7/14/2005	10/19/2005	10/19/2005	10/19/2005	10/18/2005
	Sample Type:	Test Pit	Test Pit	Boring	Boring	Boring	Boring	Boring	Boring	Boring	Boring	Boring	Boring	Boring	Boring	Boring	Boring	Boring	Boring
	Cleanup Levels (b)																		
Hexachlorobutadiene																			
Hexachlorocyclopentadiene																			
Hexachloroethane																			
Indeno(1,2,3-cd)pyrene				0.065 U	0.066 U	0.066 U	0.066 U	0.067 U	0.066 U	0.067 U	0.064 U	0.064 U	0.064 U	0.013	0.066 U	0.061 U	0.066 U	0.074	0.064 U
Isophorone																			
Naphthalene	140																		
Nitrobenzene																			
N-Nitrosodimethylamine																			
N-Nitroso-Di-N-Propylamine																			
N-Nitrosodiphenylamine																			
Pentachlorophenol																			
Phenanthrene	12000																		
Phenol																			
Pyrene	2400																		
Pyridine																			

TABLE 16
SVOCS IN CHARACTERIZATION AND WASTE PROFILE SOIL SAMPLES
INTERIM ACTION REPORT - AMERON HULBERT SITE
PORT OF EVERETT, WASHINGTON

	Area ID:	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I
	Sample Name:	I-GC-2	I-GC-2	I-GC-3	I-GC-4	I-GC-4	I-GC-5	I-GC-6	I-GC-7	I-GC-8	I-GC-9	I-GC-10	I-GC-11	I-GC-11	I-GC-11	I-GC-11.1E	I-GC-11.1N	I-GC-11.1S
	Depth Range:	(0-0.5)	(1-2)	(0-0.5)	(0-0.5)	(1-2)	(3-3.5)	(3.5-4)	(0-0.5)	(3.5-4)	(3.5-4)	(0-0.5)	(0-0.5)	(1-2)	(2-3)	(0-0.5)	(0-0.5)	(0.75-1.25)
	Date Collected:	7/14/2005	7/14/2005	7/14/2005	7/14/2005	7/14/2005	7/14/2005	7/14/2005	7/14/2005	7/14/2005	7/14/2005	7/14/2005	7/14/2005	7/14/2005	7/14/2005	3/1/2006	3/1/2006	3/1/2006
	Sample Type:	Boring	Boring	Boring	Boring	Boring	Boring	Boring	Boring	Boring	Boring	Boring	Boring	Boring	Boring	Surface Soil	Surface Soil	Surface Soil
	Cleanup Levels (b)																	
SVOCs (mg/kg)																		
EPA Method 8270/8270SIM																		
1,2,4-Trichlorobenzene																		
1,2-Dichlorobenzene																		
1,3-Dichlorobenzene																		
1,4-Dichlorobenzene																		
1-Methylnaphthalene	24																	
2,2'-Oxybis(1-Chloropropane)																		
2,3,4,6-Tetrachlorophenol																		
2,4,5-Trichlorophenol																		
2,4,6-Trichlorophenol																		
2,4-Dichlorophenol																		
2,4-Dimethylphenol																		
2,4-Dinitrophenol																		
2,4-Dinitrotoluene																		
2,6-Dichlorophenol																		
2,6-Dinitrotoluene																		
2-Chloronaphthalene																		
2-Chlorophenol																		
2-Methylnaphthalene	320																	
2-Methylphenol																		
2-Nitroaniline																		
2-Nitrophenol																		
3,3'-Dichlorobenzidine																		
3-Nitroaniline																		
4,6-Dinitro-2-Methylphenol																		
4-Bromophenyl-Phenylether																		
4-Chloro-3-Methylphenol																		
4-Chloroaniline																		
4-Chlorophenyl-Phenylether																		
4-Methylphenol	--																	
4-Nitroaniline																		
4-Nitrophenol																		
Acenaphthene	66																	
Acenaphthylene																		
Aniline																		
Anthracene	12000																	
Azobenzene																		
Benzidine																		
Benzo(a)anthracene		0.084	0.065 U	0.065 U	0.064 U	0.064 U	0.066 U	0.064 U	0.063 U	0.066 U	0.067 U	0.065 U	0.13	0.32	0.065 U	0.085	0.065 U	0.075
Benzo(a)pyrene	0.14	0.11	0.065 U	0.068	0.079	0.064 U	0.066 U	0.064 U	0.063 U	0.066 U	0.067 U	0.065 U	0.23	0.48	0.065 U	0.09	0.065 U	0.097
Benzo(b)fluoranthene		0.26	0.065 U	0.083	0.077	0.064 U	0.066 U	0.064 U	0.085	0.066 U	0.067 U	0.065 U	0.35	0.71	0.065 U	0.19	0.065 U	0.19
Benzo(g,h,i)perylene																		
Benzo(k)fluoranthene		0.14	0.065 U	0.065 U	0.064 U	0.064 U	0.066 U	0.064 U	0.063 U	0.066 U	0.067 U	0.065 U	0.16	0.48	0.065 U	0.11	0.065 U	0.083
Benzoic Acid	320000																	
Benzyl Alcohol																		
Benzyl butyl phthalate																		
bis(2-Chloroethoxy) Methane																		
Bis-(2-Chloroethyl) Ether																		
Bis(2-Ethylhexyl)Phthalate	4.9																	
Carbazole	50																	
Chrysene		0.23	0.065 U	0.08	0.07	0.064 U	0.066 U	0.064 U	0.076	0.066 U	0.067 U	0.065 U	0.26	0.7	0.065 U	0.17	0.065 U	0.3
Dibenz(a,h)anthracene		0.062 U	0.065 U	0.065 U	0.064 U	0.064 U	0.066 U	0.064 U	0.063 U	0.066 U	0.067 U	0.065 U	0.064 U	0.073	0.065 U	0.064 U	0.065 U	0.064 U
Dibenzofuran	160																	
Diethylphthalate																		
Dimethylphthalate																		
Di-N-Butylphthalate																		
Di-n-Octyl phthalate	1600																	
Fluoranthene	89																	
Fluorene	553																	
Hexachlorobenzene																		

TABLE 16
SVOCS IN CHARACTERIZATION AND WASTE PROFILE SOIL SAMPLES
INTERIM ACTION REPORT - AMERON HULBERT SITE
PORT OF EVERETT, WASHINGTON

	Area ID:	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I
	Sample Name:	I-GC-2	I-GC-2	I-GC-3	I-GC-4	I-GC-4	I-GC-5	I-GC-6	I-GC-7	I-GC-8	I-GC-9	I-GC-10	I-GC-11	I-GC-11	I-GC-11	I-GC-11.1E	I-GC-11.1N	I-GC-11.1S
	Depth Range:	(0-0.5)	(1-2)	(0-0.5)	(0-0.5)	(1-2)	(3-3.5)	(3.5-4)	(0-0.5)	(3.5-4)	(3.5-4)	(0-0.5)	(0-0.5)	(1-2)	(2-3)	(0-0.5)	(0-0.5)	(0.75-1.25)
	Date Collected:	7/14/2005	7/14/2005	7/14/2005	7/14/2005	7/14/2005	7/14/2005	7/14/2005	7/14/2005	7/14/2005	7/14/2005	7/14/2005	7/14/2005	7/14/2005	7/14/2005	3/1/2006	3/1/2006	3/1/2006
	Sample Type:	Boring	Boring	Boring	Boring	Boring	Boring	Boring	Boring	Boring	Boring	Boring	Boring	Boring	Boring	Surface Soil	Surface Soil	Surface Soil
	Cleanup Levels (b)																	
Hexachlorobutadiene																		
Hexachlorocyclopentadiene																		
Hexachloroethane																		
Indeno(1,2,3-cd)pyrene		0.062 U	0.065 U	0.065 U	0.064 U	0.064 U	0.066 U	0.064 U	0.063 U	0.066 U	0.067 U	0.065 U	0.11	0.23	0.065 U	0.064 U	0.065 U	0.064 U
Isophorone																		
Naphthalene	140																	
Nitrobenzene																		
N-Nitrosodimethylamine																		
N-Nitroso-Di-N-Propylamine																		
N-Nitrosodiphenylamine																		
Pentachlorophenol																		
Phenanthrene	12000																	
Phenol																		
Pyrene	2400																	
Pyridine																		

TABLE 16
SVOCS IN CHARACTERIZATION AND WASTE PROFILE SOIL SAMPLES
INTERIM ACTION REPORT - AMERON HULBERT SITE
PORT OF EVERETT, WASHINGTON

Area ID:		I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I
Sample Name:		I-GC-11.1W	I-GC-12	I-GC-12	I-GC-12.1E	I-GC-12.1S	I-GC-12.1W	I-GC-12.2E	I-GC-12.5S	I-GC-13	I-GC-14	I-GC-14	I-GC-15	I-GC-16	I-GC-17	I-GC-17	I-GC-18
Depth Range:		(0-0.5)	(0-0.5)	(1-2)	(0-0.5)	(0.75-1.25)	(0-0.5)	(0-0.5)	(0.5-1)	(0-0.5)	(0-0.5)	(1-2)	(0-0.5)	(0-0.5)	(0-0.5)	(1-2)	(0-0.5)
Date Collected:		3/1/2006	7/14/2005	7/14/2005	3/1/2006	3/1/2006	3/1/2006	3/10/2006	3/1/2006	7/14/2005	7/14/2005	7/14/2005	8/22/2005	8/22/2005	8/22/2005	8/22/2005	8/22/2005
Sample Type:	Cleanup Levels (b)	Surface Soil	Boring	Boring	Surface Soil	Hand Auger	Surface Soil	Surface Soil	Surface Soil	Boring	Boring	Boring	Hand Auger	Hand Auger	Hand Auger	Hand Auger	Hand Auger
SVOCs (mg/kg)																	
EPA Method 8270/8270SIM																	
1,2,4-Trichlorobenzene																	
1,2-Dichlorobenzene																	
1,3-Dichlorobenzene																	
1,4-Dichlorobenzene																	
1-Methylnaphthalene	24																
2,2'-Oxybis(1-Chloropropane)																	
2,3,4,6-Tetrachlorophenol																	
2,4,5-Trichlorophenol																	
2,4,6-Trichlorophenol																	
2,4-Dichlorophenol																	
2,4-Dimethylphenol																	
2,4-Dinitrophenol																	
2,4-Dinitrotoluene																	
2,6-Dichlorophenol																	
2,6-Dinitrotoluene																	
2-Chloronaphthalene																	
2-Chlorophenol																	
2-Methylnaphthalene	320																
2-Methylphenol																	
2-Nitroaniline																	
2-Nitrophenol																	
3,3'-Dichlorobenzidine																	
3-Nitroaniline																	
4,6-Dinitro-2-Methylphenol																	
4-Bromophenyl-Phenylether																	
4-Chloro-3-Methylphenol																	
4-Chloroaniline																	
4-Chlorophenyl-Phenylether																	
4-Methylphenol	--																
4-Nitroaniline																	
4-Nitrophenol																	
Acenaphthene	66																
Acenaphthylene																	
Aniline																	
Anthracene	12000																
Azobenzene																	
Benzidine																	
Benzo(a)anthracene		0.16	0.29	0.074	0.13	0.064 U	0.11	0.063 U	0.064 U	0.066 U	0.077	0.064 U	0.066 U	0.064 U	0.12	0.063 U	0.066 U
Benzo(a)pyrene	0.14	0.14	0.41	0.075	0.12	0.064 U	0.13	0.063 U	0.064 U	0.066 U	0.097	0.064 U	0.066 U	0.064 U	0.16	0.063 U	0.066 U
Benzo(b)fluoranthene		0.2	0.62	0.076	0.21	0.064 U	0.13	0.063 U	0.087	0.066 U	0.21	0.064 U	0.066 U	0.064 U	0.15	0.063 U	0.066 U
Benzo(g,h,i)perylene																	
Benzo(k)fluoranthene		0.11	0.34	0.086	0.1	0.064 U	0.096	0.063 U	0.064 U	0.066 U	0.099	0.064 U	0.066 U	0.064 U	0.072	0.063 U	0.066 U
Benzoic Acid	320000																
Benzyl Alcohol																	
Benzyl butyl phthalate																	
bis(2-Chloroethoxy) Methane																	
Bis-(2-Chloroethyl) Ether																	
Bis(2-Ethylhexyl)Phthalate	4.9																
Carbazole	50																
Chrysene		0.28	1.1	0.079	0.28	0.064 U	0.14	0.063 U	0.076	0.066 U	0.18	0.064 U	0.066 U	0.064 U	0.13	0.063 U	0.066 U
Dibenz(a,h)anthracene		0.065 U	0.081	0.066 U	0.064 U	0.064 U	0.065 U	0.063 U	0.064 U	0.066 U	0.065 U	0.064 U	0.066 U	0.064 U	0.066 U	0.063 U	0.066 U
Dibenzofuran	160																
Diethylphthalate																	
Dimethylphthalate																	
Di-N-Butylphthalate																	
Di-n-Octyl phthalate	1600																
Fluoranthene	89																
Fluorene	553																
Hexachlorobenzene																	

TABLE 16
SVOCS IN CHARACTERIZATION AND WASTE PROFILE SOIL SAMPLES
INTERIM ACTION REPORT - AMERON HULBERT SITE
PORT OF EVERETT, WASHINGTON

	Area ID:	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I
	Sample Name:	I-GC-11.1W	I-GC-12	I-GC-12	I-GC-12.1E	I-GC-12.1S	I-GC-12.1W	I-GC-12.2E	I-GC-12.5S	I-GC-13	I-GC-14	I-GC-14	I-GC-15	I-GC-16	I-GC-17	I-GC-17	I-GC-18
	Depth Range:	(0-0.5)	(0-0.5)	(1-2)	(0-0.5)	(0.75-1.25)	(0-0.5)	(0-0.5)	(0.5-1)	(0-0.5)	(0-0.5)	(1-2)	(0-0.5)	(0-0.5)	(0-0.5)	(1-2)	(0-0.5)
	Date Collected:	3/1/2006	7/14/2005	7/14/2005	3/1/2006	3/1/2006	3/1/2006	3/10/2006	3/1/2006	7/14/2005	7/14/2005	7/14/2005	8/22/2005	8/22/2005	8/22/2005	8/22/2005	8/22/2005
	Sample Type:	Surface Soil	Boring	Boring	Surface Soil	Hand Auger	Surface Soil	Surface Soil	Surface Soil	Boring	Boring	Boring	Hand Auger	Hand Auger	Hand Auger	Hand Auger	Hand Auger
	Cleanup Levels (b)																
Hexachlorobutadiene																	
Hexachlorocyclopentadiene																	
Hexachloroethane																	
Indeno(1,2,3-cd)pyrene		0.065 U	0.22	0.066 U	0.067	0.064 U	0.072	0.063 U	0.064 U	0.066 U	0.1	0.064 U	0.066 U	0.064 U	0.13	0.063 U	0.066 U
Isophorone																	
Naphthalene	140																
Nitrobenzene																	
N-Nitrosodimethylamine																	
N-Nitroso-Di-N-Propylamine																	
N-Nitrosodiphenylamine																	
Pentachlorophenol																	
Phenanthrene	12000																
Phenol																	
Pyrene	2400																
Pyridine																	

TABLE 16
SVOCS IN CHARACTERIZATION AND WASTE PROFILE SOIL SAMPLES
INTERIM ACTION REPORT - AMERON HULBERT SITE
PORT OF EVERETT, WASHINGTON

Area ID:		I	I	I	I	I	I	I	I	I	I	I	I	I	J	J	J
Sample Name:		I-GC-19	I-GC-20	I-GC-20	I-GC-21	I-GC-22	I-GC-23	I-GC-24	I-GC-24	I-GC-25	I-GC-26	I-X	I-Y	I-Z	Chamber-1	Chamber-2	Chamber-3
Depth Range:		(0-0.5)	(0-0.5)	(1-2)	(0-0.5)	(0-0.5)	(0-0.5)	(1.2-6)	(6.5-7.5)	(0.5-1)	(0-0.5)						
Date Collected:		8/22/2005	8/22/2005	8/22/2005	8/22/2005	8/22/2005	8/22/2005	10/19/2005	10/19/2005	10/19/2005	10/19/2005	2/12/2004	2/12/2004	2/12/2004	8/11/2006	8/11/2006	8/11/2006
Sample Type:	Cleanup Levels (b)	Hand Auger	Hand Auger	Hand Auger	Hand Auger	Hand Auger	Hand Auger	Boring	Boring	Boring	Boring	Boring	Boring	Surface Soil	Excavation	Excavation	Excavation
SVOCs (mg/kg)																	
EPA Method 8270/8270SIM																	
1,2,4-Trichlorobenzene												0.14 U	0.081 U				
1,2-Dichlorobenzene												0.14 U	0.081 U				
1,3-Dichlorobenzene												0.14 U	0.081 U				
1,4-Dichlorobenzene												0.14 U	0.081 U				
1-Methylnaphthalene	24																
2,2'-Oxybis(1-Chloropropane)												0.14 U	0.081 U		0.065 U	0.066 U	0.066 U
2,3,4,6-Tetrachlorophenol																	
2,4,5-Trichlorophenol												0.68 U	0.41 U		0.32 U	0.33 U	0.33 U
2,4,6-Trichlorophenol												0.68 U	0.41 U		0.32 U	0.33 U	0.33 U
2,4-Dichlorophenol												0.41 U	0.24 U		0.32 U	0.33 U	0.33 U
2,4-Dimethylphenol												0.41 U	0.24 U		0.065 U	0.066 U	0.066 U
2,4-Dinitrophenol												1.4 U	0.81 U		0.65 U	0.66 U	0.66 U
2,4-Dinitrotoluene												0.68 U	0.41 U		0.32 U	0.33 U	0.33 U
2,6-Dichlorophenol																	
2,6-Dinitrotoluene												0.68 U	0.41 U		0.32 U	0.33 U	0.33 U
2-Chloronaphthalene												0.14 U	0.081 U		0.065 U	0.066 U	0.066 U
2-Chlorophenol												0.14 U	0.081 U		0.065 U	0.066 U	0.066 U
2-Methylnaphthalene	320											2.4	0.081 U		0.13	0.61	0.066 U
2-Methylphenol												0.14 U	0.081 U		0.065 U	0.066 U	0.066 U
2-Nitroaniline												0.68 U	0.41 U		0.32 U	0.33 U	0.33 U
2-Nitrophenol												0.68 U	0.41 U		0.32 U	0.33 U	0.33 U
3,3'-Dichlorobenzidine												0.68 U	0.41 U		0.32 U	0.33 U	0.33 U
3-Nitroaniline												0.82 U	0.49 U		0.32 U	0.33 U	0.33 U
4,6-Dinitro-2-Methylphenol												1.4 U	0.81 U		0.65 U	0.66 U	0.66 U
4-Bromophenyl-Phenylether												0.14 U	0.081 U		0.065 U	0.066 U	0.066 U
4-Chloro-3-Methylphenol												0.27 U	0.16 U		0.32 U	0.33 U	0.33 U
4-Chloroaniline												0.41 U	0.24 U		0.32 U	0.33 U	0.33 U
4-Chlorophenyl-Phenylether												0.14 U	0.081 U		0.065 U	0.066 U	0.066 U
4-Methylphenol	--											0.14 U	0.081 U		0.065 U	0.066 U	0.066 U
4-Nitroaniline												0.68 U	0.41 U		0.32 U	0.33 U	0.33 U
4-Nitrophenol												0.68 U	0.41 U		0.32 U	0.33 U	0.33 U
Acenaphthene	66											0.14 U	0.081 U		0.065 U	0.15	0.066 U
Acenaphthylene												0.14 U	0.081 U		0.065 U	0.066 U	0.066 U
Aniline																	
Anthracene	12000											0.14 U	0.081 U		0.065 U	0.066 U	0.097
Azobenzene																	
Benzidine																	
Benzo(a)anthracene		0.066 U	0.34	0.064 U	0.064 U	0.066 U	0.064 U	0.065 U	0.064 U	0.062 U	0.06 U	0.14 U	0.081 U	0.021			
Benzo(a)pyrene	0.14	0.066 U	0.53	0.064 U	0.064 U	0.066 U	0.064 U	0.065 U	0.064 U	0.062 U	0.06 U	0.14 U	0.081 U	0.017			
Benzo(b)fluoranthene		0.094	1.1	0.064 U	0.065	0.066 U	0.064 U	0.065 U	0.064 U	0.062 U	0.06 U	0.14 U	0.081 U	0.028			
Benzo(g,h,i)perylene												0.14 U	0.081 U		0.065 U	0.066 U	0.066 U
Benzo(k)fluoranthene		0.066 U	0.59	0.064 U	0.064 U	0.066 U	0.064 U	0.065 U	0.064 U	0.062 U	0.06 U	0.14 U	0.081 U	0.015			
Benzoic Acid	320000											1.4 U	0.81 U		0.65 U	0.66 U	0.66 U
Benzyl Alcohol												0.68 U	0.41 U		0.32 U	0.33 U	0.33 U
Benzyl butyl phthalate												0.14 U	0.081 U		0.065 U	0.066 U	0.066 U
bis(2-Chloroethoxy) Methane												0.14 U	0.081 U		0.065 U	0.066 U	0.066 U
Bis-(2-Chloroethyl) Ether												0.27 U	0.16 U		0.065 U	0.066 U	0.066 U
Bis(2-Ethylhexyl)Phthalate	4.9											0.14 U	0.081 U		0.065 U	0.066 U	0.15
Carbazole	50											0.14 U	0.081 U		0.065 U	0.066 U	0.066 U
Chrysene		0.078	0.97	0.064 U	0.064 U	0.066 U	0.064 U	0.078	0.064 U	0.062 U	0.06 U	0.14 U	0.081 U	0.031			
Dibenz(a,h)anthracene		0.066 U	0.12	0.064 U	0.064 U	0.066 U	0.064 U	0.065 U	0.064 U	0.062 U	0.06 U	0.14 U	0.081 U	0.0087 U			
Dibenzofuran	160											0.14 U	0.081 U		0.065 U	0.066 U	0.066 U
Diethylphthalate												0.14 U	0.081 U		0.065 U	0.066 U	0.066 U
Dimethylphthalate												0.14 U	0.081 U		0.065 U	0.066 U	0.066 U
Di-N-Butylphthalate												0.14 U	0.081 U		0.065 U	0.066 U	0.066 U
Di-n-Octyl phthalate	1600											0.14 U	0.081 U		0.065 U	0.066 U	0.066 U
Fluoranthene	89											0.14 U	0.081 U		0.065 U	0.066 U	0.099
Fluorene	553											0.14 U	0.081 U		0.065 U	0.066 U	0.066 U
Hexachlorobenzene												0.14 U	0.081 U		0.065 U	0.066 U	0.066 U

TABLE 16
SVOCS IN CHARACTERIZATION AND WASTE PROFILE SOIL SAMPLES
INTERIM ACTION REPORT - AMERON HULBERT SITE
PORT OF EVERETT, WASHINGTON

	Area ID:	I	I	I	I	I	I	I	I	I	I	I	I	I	J	J	J
	Sample Name:	I-GC-19	I-GC-20	I-GC-20	I-GC-21	I-GC-22	I-GC-23	I-GC-24	I-GC-24	I-GC-25	I-GC-26	I-X	I-Y	I-Z	Chamber-1	Chamber-2	Chamber-3
	Depth Range:	(0-0.5)	(0-0.5)	(1-2)	(0-0.5)	(0-0.5)	(0-0.5)	(1.2-6)	(6.5-7.5)	(0.5-1)	(0-0.5)						
	Date Collected:	8/22/2005	8/22/2005	8/22/2005	8/22/2005	8/22/2005	8/22/2005	10/19/2005	10/19/2005	10/19/2005	10/19/2005	2/12/2004	2/12/2004	2/12/2004	8/11/2006	8/11/2006	8/11/2006
	Sample Type:	Hand Auger	Hand Auger	Hand Auger	Hand Auger	Hand Auger	Hand Auger	Boring	Boring	Boring	Boring	Boring	Boring	Surface Soil	Excavation	Excavation	Excavation
	Cleanup Levels (b)																
Hexachlorobutadiene												0.27 U	0.16 U				
Hexachlorocyclopentadiene												0.68 U	0.41 U		0.32 U	0.33 U	0.33 U
Hexachloroethane												0.27 U	0.16 U		0.065 U	0.066 U	0.066 U
Indeno(1,2,3-cd)pyrene		0.066 U	0.39	0.064 U	0.064 U	0.066 U	0.064 U	0.065 U	0.064 U	0.062 U	0.06 U	0.14 U	0.081 U	0.01			
Isophorone												0.14 U	0.081 U		0.065 U	0.066 U	0.066 U
Naphthalene	140											0.24	0.081 U				
Nitrobenzene												0.14 U	0.081 U		0.065 U	0.066 U	0.066 U
N-Nitrosodimethylamine																	
N-Nitroso-Di-N-Propylamine												0.27 U	0.16 U		0.32 U	0.33 U	0.33 U
N-Nitrosodiphenylamine												0.14 U	0.081 U		0.065 U	0.066 U	0.066 U
Pentachlorophenol												0.68 U	0.41 U		0.32 U	0.33 U	0.33 U
Phenanthrene	12000											1.2	0.081 U		0.065 U	0.066 U	0.076
Phenol												0.27 U	0.16 U		0.065 U	0.066 U	0.066 U
Pyrene	2400											0.16	0.081 U		0.065 U	0.066 U	0.07
Pyridine																	

TABLE 16
SVOCS IN CHARACTERIZATION AND WASTE PROFILE SOIL SAMPLES
INTERIM ACTION REPORT - AMERON HULBERT SITE
PORT OF EVERETT, WASHINGTON

Area ID:		J	J	J	J	J	J	J	J	J	J	J	J	J	J	J	M	M
Sample Name:		Chamber-4	J-GC-1 (a)	J-GC-1 (a)	J-GC-2	J-GC-3	J-GC-4	J-GC-6	J-GC-6	J-GC-6	J-GC-7	J-GC-8	J-GC-9	J-GC-10	J-MSRC	KFI-WP-Comp	ECI-N-1	M-1
Depth Range:			(0.5-1)	(0.5-1)	(0-0.5)	(0-0.5)	(1.5-2)	(1.1-1.6)	(2-2.7)	(3.1-4.1)	(0.7-1.2)	(2.1-2.6)	(1.4-1.9)	(0-0.5)				(0.3-0.8)
Date Collected:		8/11/2006	1/14/2005	1/14/2005	3/2/2005	3/2/2005	3/3/2005	7/15/2005	7/15/2005	7/15/2005	7/15/2005	7/15/2005	7/15/2005	7/14/2005	5/23/2007	9/30/1993	10/7/1991	1/18/2005
Sample Type:		Excavation	Boring	Boring	Boring	Boring	Boring	Boring	Boring	Boring	Boring	Boring	Boring	Boring	Excavation	Stock Pile	Surface Soil	Boring
	Cleanup Levels (b)																	
SVOCs (mg/kg)																		
EPA Method 8270/8270SIM																		
1,2,4-Trichlorobenzene															50 U	2.3 U		
1,2-Dichlorobenzene															50 U	2.3 U	0.005 U	
1,3-Dichlorobenzene															50 U	2.3 U	0.005 U	
1,4-Dichlorobenzene															50 U	2.3 U	0.005 U	
1-Methylnaphthalene	24														50 U			
2,2'-Oxybis(1-Chloropropane)		0.066 U													50 U	2.3 U		
2,3,4,6-Tetrachlorophenol															125 U			
2,4,5-Trichlorophenol		0.33 U													50 U	12 U		
2,4,6-Trichlorophenol		0.33 U													50 U	2.3 U		
2,4-Dichlorophenol		0.33 U													50 U	2.3 U		
2,4-Dimethylphenol		0.066 U													50 U	2.3 U		
2,4-Dinitrophenol		0.66 U													250 U	12 U		
2,4-Dinitrotoluene		0.33 U													125 U	2.3 U		
2,6-Dichlorophenol															50 U			
2,6-Dinitrotoluene		0.33 U													125 U	2.3 U		
2-Chloronaphthalene		0.066 U													50 U	2.3 U		
2-Chlorophenol		0.066 U													50 U	2.3 U		
2-Methylnaphthalene	320	0.066 U													50 U	8.8		
2-Methylphenol		0.066 U													50 U	2.3 U		
2-Nitroaniline		0.33 U													125 U	12 U		
2-Nitrophenol		0.33 U													125 U	2.3 U		
3,3'-Dichlorobenzidine		0.33 U													50 U	4.8 U		
3-Nitroaniline		0.33 U													125 U	12 U		
4,6-Dinitro-2-Methylphenol		0.66 U													125 U	12 U		
4-Bromophenyl-Phenylether		0.066 U													50 U	2.3 U		
4-Chloro-3-Methylphenol		0.33 U													50 U	2.3 U		
4-Chloroaniline		0.33 U													50 U	2.3 U		
4-Chlorophenyl-Phenylether		0.066 U													50 U	2.3 U		
4-Methylphenol	--	0.066 U													50 U	2.3 U		
4-Nitroaniline		0.33 U													125 U	12 U		
4-Nitrophenol		0.33 U													250 U	12 U		
Acenaphthene	66	0.066 U													50 U	2.3 U		
Acenaphthylene		0.066 U													50 U	2.3 U		
Aniline															50 U	2.3 U		
Anthracene	12000	0.066 U													50 U	2.3 U		
Azobenzene															50 U			
Benzidine																23 U		
Benzo(a)anthracene			0.13 U	0.066 U	0.064 U	0.065 U	0.065 U	0.065 U	0.38 J	0.064 UJ	0.066 U	0.066 U	0.064 U	0.064 U	50 U	2.3 U		0.066 U
Benzo(a)pyrene	0.14		0.13 U	0.066 U	0.064 U	0.065 U	0.065 U	0.065 U	0.38 J	0.064 UJ	0.066 U	0.066 U	0.064 U	0.064 U	50 U	2.3 U		0.066 U
Benzo(b)fluoranthene			0.13 U	0.066 U	0.064 U	0.065 U	0.065 U	0.065 U	0.31 J	0.064 UJ	0.066 U	0.066 U	0.064 U	0.069	50 U	2.3 U		0.066 U
Benzo(g,h,i)perylene		0.095 U													50 U	2.3 U		
Benzo(k)fluoranthene			0.13 U	0.066 U	0.064 U	0.065 U	0.065 U	0.065 U	0.38 J	0.064 UJ	0.066 U	0.066 U	0.064 U	0.064 U	50 U	2.3 U		0.066 U
Benzoic Acid	320000	0.66 U													500 U	12 U		
Benzyl Alcohol		0.33 U													50 U	2.3 U		
Benzyl butyl phthalate		0.066 U													50 U	2.3 U		
bis(2-Chloroethoxy) Methane		0.066 U													50 U	2.3 U		
Bis-(2-Chloroethyl) Ether		0.066 U													50 U	2.3 U		
Bis(2-Ethylhexyl)Phthalate	4.9	0.072													65 U	1.4 J		
Carbazole	50	0.066 U													50 U			
Chrysene			0.13 U	0.74	0.064 U	0.065 U	0.065 U	0.065 U	0.35 J	0.064 UJ	0.066 U	0.066 U	0.064 U	0.064 U	69	2.3 U		0.066 U
Dibenz(a,h)anthracene			0.13 U	0.066 U	0.064 U	0.065 U	0.065 U	0.065 U	0.064 UJ	0.064 UJ	0.066 U	0.066 U	0.064 U	0.064 U	50 U	2.3 U		0.066 U
Dibenzofuran	160	0.066 U													50 U	2.3 U		
Diethylphthalate		0.066 U													50 U	2.3 U		
Dimethylphthalate		0.066 U													50 U	2.3 U		
Di-N-Butylphthalate		0.066 U													65 U	2.3 U		
Di-n-Octyl phthalate	1600	0.066 U													50 U	2.3 U		
Fluoranthene	89	0.091													50 U	2.3 U		
Fluorene	553	0.066 U													50 U	1.6 J		
Hexachlorobenzene		0.066 U													50 U	2.3 U		

TABLE 16
SVOCS IN CHARACTERIZATION AND WASTE PROFILE SOIL SAMPLES
INTERIM ACTION REPORT - AMERON HULBERT SITE
PORT OF EVERETT, WASHINGTON

	Area ID:	J	J	J	J	J	J	J	J	J	J	J	J	J	J	J	M	M
	Sample Name:	Chamber-4	J-GC-1 (a)	J-GC-1 (a)	J-GC-2	J-GC-3	J-GC-4	J-GC-6	J-GC-6	J-GC-6	J-GC-7	J-GC-8	J-GC-9	J-GC-10	J-MSRC	KFI-WP-Comp	ECI-N-1	M-1
	Depth Range:		(0.5-1)	(0.5-1)	(0-0.5)	(0-0.5)	(1.5-2)	(1.1-1.6)	(2-2.7)	(3.1-4.1)	(0.7-1.2)	(2.1-2.6)	(1.4-1.9)	(0-0.5)				(0.3-0.8)
	Date Collected:	8/11/2006	1/14/2005	1/14/2005	3/2/2005	3/2/2005	3/3/2005	7/15/2005	7/15/2005	7/15/2005	7/15/2005	7/15/2005	7/15/2005	7/14/2005	5/23/2007	9/30/1993	10/7/1991	1/18/2005
	Sample Type:	Excavation	Boring	Boring	Boring	Boring	Boring	Boring	Boring	Boring	Boring	Boring	Boring	Boring	Excavation	Stock Pile	Surface Soil	Boring
	Cleanup Levels (b)																	
Hexachlorobutadiene															50 U	2.3 U		
Hexachlorocyclopentadiene		0.33 U													250 U	2.3 U		
Hexachloroethane		0.066 U													50 U	2.3 U		
Indeno(1,2,3-cd)pyrene			0.13 U	0.066 U	0.064 U	0.065 U	0.065 U	0.065 U	0.15 J	0.064 UJ	0.066 U	0.066 U	0.064 U	0.064 U	50 U	2.3 U		0.066 U
Isophorone		0.066 U													50 U	2.3 U		
Naphthalene	140														50 U	1.8 J		
Nitrobenzene		0.066 U													50 U	2.3 U		
N-Nitrosodimethylamine															50 U	2.3 U		
N-Nitroso-Di-N-Propylamine		0.33 U													50 U	2.3 U		
N-Nitrosodiphenylamine		0.066 U													250 U	2.3 U		
Pentachlorophenol		0.33 U													250 U	2.3 U		
Phenanthrene	12000	0.11													50 U	3.4		
Phenol		0.066 U													50 U	2.3 U		
Pyrene	2400	0.082													84	2.3 U		
Pyridine															100 U			

TABLE 16
SVOCS IN CHARACTERIZATION AND WASTE PROFILE SOIL SAMPLES
INTERIM ACTION REPORT - AMERON HULBERT SITE
PORT OF EVERETT, WASHINGTON

	Area ID:	M	M	M	M	M	M	M	M	M	M	M	M	M
	Sample Name:	M-2	M-2	M-2B	M-2D	M-2.1S	M-2.1W	M-3	M-4	M-GC-1	M-GC-2	M-GC-3	M-GC-4	M-GC-5
	Depth Range:	(1.5-2)	(2-3)	(1-1.5)	(0.9-1.4)	(1-1.5)	(1-1.5)	(0-0.5)	(0.8-1.3)	(1.6-2.1)	(1.5-2)	(1-1.5)	(1.5-2)	(1-1.5)
	Date Collected:	1/18/2005	1/18/2005	7/15/2005	7/15/2005	3/1/2006	3/1/2006	1/18/2005	1/17/2005	3/3/2005	3/2/2005	3/3/2005	3/2/2005	3/2/2005
	Sample Type:	Boring	Boring	Boring	Boring	Boring	Boring	Boring	Boring	Boring	Boring	Boring	Boring	Boring
	Cleanup Levels (b)													
SVOCs (mg/kg)														
EPA Method 8270/8270SIM														
1,2,4-Trichlorobenzene														
1,2-Dichlorobenzene														
1,3-Dichlorobenzene														
1,4-Dichlorobenzene														
1-Methylnaphthalene	24													
2,2'-Oxybis(1-Chloropropane)														
2,3,4,6-Tetrachlorophenol														
2,4,5-Trichlorophenol														
2,4,6-Trichlorophenol														
2,4-Dichlorophenol														
2,4-Dimethylphenol														
2,4-Dinitrophenol														
2,4-Dinitrotoluene														
2,6-Dichlorophenol														
2,6-Dinitrotoluene														
2-Chloronaphthalene														
2-Chlorophenol														
2-Methylnaphthalene	320													
2-Methylphenol														
2-Nitroaniline														
2-Nitrophenol														
3,3'-Dichlorobenzidine														
3-Nitroaniline														
4,6-Dinitro-2-Methylphenol														
4-Bromophenyl-Phenylether														
4-Chloro-3-Methylphenol														
4-Chloroaniline														
4-Chlorophenyl-Phenylether														
4-Methylphenol	--													
4-Nitroaniline														
4-Nitrophenol														
Acenaphthene	66													
Acenaphthylene														
Aniline														
Anthracene	12000													
Azobenzene														
Benzidine														
Benzo(a)anthracene		0.13	0.064 UJ	0.064 U	0.065 U	0.064 U	0.064 U	0.064 U	0.062 UJ	0.063 U	0.062 U	0.065 U	0.065 U	0.064 U
Benzo(a)pyrene	0.14	0.18	0.064 UJ	0.064 U	0.065 U	0.064 U	0.064 U	0.064 U	0.062 UJ	0.063 U	0.062 U	0.065 U	0.065 U	0.064 U
Benzo(b)fluoranthene		0.12	0.064 UJ	0.064 U	0.065 U	0.064 U	0.064 U	0.064 U	0.062 UJ	0.063 U	0.062 U	0.065 U	0.065 U	0.064 U
Benzo(g,h,i)perylene														
Benzo(k)fluoranthene		0.12	0.064 UJ	0.064 U	0.065 U	0.064 U	0.064 U	0.064 U	0.062 UJ	0.063 U	0.062 U	0.065 U	0.065 U	0.064 U
Benzoic Acid	320000													
Benzyl Alcohol														
Benzyl butyl phthalate														
bis(2-Chloroethoxy) Methane														
Bis-(2-Chloroethyl) Ether														
Bis(2-Ethylhexyl)Phthalate	4.9													
Carbazole	50													
Chrysene		0.21	0.064 UJ	0.064 U	0.065 U	0.064 U	0.064 U	0.064 U	0.062 UJ	0.063 U	0.062 U	0.065 U	0.065 U	0.064 U
Dibenz(a,h)anthracene		0.064	0.064 UJ	0.064 U	0.065 U	0.064 U	0.064 U	0.064 U	0.062 UJ	0.063 U	0.062 U	0.065 U	0.065 U	0.064 U
Dibenzofuran	160													
Diethylphthalate														
Dimethylphthalate														
Di-N-Butylphthalate														
Di-n-Octyl phthalate	1600													
Fluoranthene	89													
Fluorene	553													
Hexachlorobenzene														

TABLE 16
SVOCS IN CHARACTERIZATION AND WASTE PROFILE SOIL SAMPLES
INTERIM ACTION REPORT - AMERON HULBERT SITE
PORT OF EVERETT, WASHINGTON

	Area ID:	M	M	M	M	M	M	M	M	M	M	M	M	M
	Sample Name:	M-2	M-2	M-2B	M-2D	M-2.1S	M-2.1W	M-3	M-4	M-GC-1	M-GC-2	M-GC-3	M-GC-4	M-GC-5
	Depth Range:	(1.5-2)	(2-3)	(1-1.5)	(0.9-1.4)	(1-1.5)	(1-1.5)	(0-0.5)	(0.8-1.3)	(1.6-2.1)	(1.5-2)	(1-1.5)	(1.5-2)	(1-1.5)
	Date Collected:	1/18/2005	1/18/2005	7/15/2005	7/15/2005	3/1/2006	3/1/2006	1/18/2005	1/17/2005	3/3/2005	3/2/2005	3/3/2005	3/2/2005	3/2/2005
	Sample Type:	Boring	Boring	Boring	Boring	Boring	Boring	Boring	Boring	Boring	Boring	Boring	Boring	Boring
	Cleanup Levels (b)													
Hexachlorobutadiene														
Hexachlorocyclopentadiene														
Hexachloroethane														
Indeno(1,2,3-cd)pyrene		0.095	0.064 UJ	0.064 U	0.065 U	0.064 U	0.064 U	0.064 U	0.062 UJ	0.063 U	0.062 U	0.065 U	0.065 U	0.064 U
Isophorone														
Naphthalene	140													
Nitrobenzene														
N-Nitrosodimethylamine														
N-Nitroso-Di-N-Propylamine														
N-Nitrosodiphenylamine														
Pentachlorophenol														
Phenanthrene	12000													
Phenol														
Pyrene	2400													
Pyridine														

U = the analyte was not detected in the sample at the given reporting limit
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 reporting limit is an estimate
Shaded cells indicate an exceedance of the site cleanup levels.

(a) Sample analyzed using both EPA Method 8270SIM and standard EPA Method 8270. Lower reporting limits achieved using EPA Method 8270SIM
(b) Development of the cleanup levels is presented in Table 4.

TABLE 17
PCBs in CHARACTERIZATION AND WASTE PROFILE SOIL SAMPLES
INTERIM ACTION REPORT - AMERON HULBERT SITE
PORT OF EVERETT, WASHINGTON

	Cleanup Screening Levels (b)																
Area ID:		G	G	G	J	J	J	J	J	J	J	J	J	I	I	I	I
Sample Name:		G-3	PZ-10 (a)	STOCKPILE	Chamber-1	Chamber-2	Chamber-3	Chamber-4	J-MSRC	KFI-WP01	KFI-WP02	KFI-WP03	KFI-WP04	ECI-G-1	I-X	I-Y	I2-WP
Depth Range:		(3-3)	(3-3)											(0-0.5)			(1.5-2.5)
Date Collected:		2/11/2004	2/11/2004	11/12/2004	8/11/2006	8/11/2006	8/11/2006	8/11/2006	5/23/2007	9/30/1993	9/30/1993	9/30/1993	9/30/1993	7/9/1987	2/12/2004	2/12/2004	5/8/2006
Sample Type:		Boring	Boring	Stock Pile	Excavation	Excavation	Excavation	Excavation	Excavation	Stock Pile	Stock Pile	Stock Pile	Stock Pile	Surface Soil	Boring	Boring	boring
PCBs (mg/kg) **SW8082**																	
Aroclor 1016		0.047 U	0.036 UJ	0.024 UJ	0.033 U	0.032 U	0.033 U	0.032 U	0.1 U	1.4 U	2.8 U	1.5 U	2.4 U		0.067 U	0.04 U	0.033 U
Aroclor 1221		0.047 U	0.036 U	0.024 UJ	0.033 U	0.032 U	0.033 U	0.032 U	0.1 U	1.4 U	2.8 U	1.5 U	2.4 U		0.067 U	0.04 U	0.033 U
Aroclor 1232		0.047 U	0.036 U	0.024 UJ	0.033 U	0.032 U	0.033 U	0.032 U	0.1 U	1.4 U	2.8 U	1.5 U	2.4 U		0.067 U	0.04 U	0.033 U
Aroclor 1242		0.047 U	0.036 U	0.024 UJ	0.033 U	0.032 U	0.033 U	0.032 U	0.1 U	1.4 U	2.8 U	1.5 U	2.4 U		0.067 U	0.04 U	0.033 U
Aroclor 1248		0.047 U	0.036 U	0.095 J	0.033 U	0.032 U	0.033 U	0.032 U	0.1 U	1.4 U	2.8 U	1.5 U	2.4 U		0.067 U	0.04 U	0.033 U
Aroclor 1254	1	0.110	0.036 U	0.14 J	0.033 U	0.032 U	0.033 U	0.032 U	0.1 U	1.4 U	2.8 U	1.5 U	2.4 U		0.067 U	0.04 U	0.033 U
Aroclor 1260		0.094 U	0.036 U	0.061 J	0.033 U	0.032 U	0.033 U	0.032 U	0.1 U	1.4 U	2.8 U	1.5 U	2.4 U		0.067 U	0.04 U	0.033 U
Total PCBs	1	0.110	0.036 U	0.296	0.033 U	0.032 U	0.033 U	0.032 U	0.1 U	1.4 U	2.8 U	1.5 U	2.4 U	1 U	0.067 U	0.04 U	0.033 U

U = the analyte was not detected in the sample at the given reporting limit
UJ = The analyte was not detected in the sample; the reported sample reporting limit is an estimate
Shaded cells indicate an exceedance of the site cleanup levels.

(a) PZ-10 is located at P-10. PZ-10 was taken during the drilling for the P-10 monitoring well.
(b) Development of the cleanup levels is presented in Table 3.

TABLE 18
cPAHs IN CHARACTERIZATION WATER SAMPLES
INTERIM ACTION REPORT - AMERON HULBERT SITE
PORT OF EVERETT, WASHINGTON

Sample Name	Date Collected	Area ID	Sample Type	cPAHs (µg/L) SW8270/8270SIM Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Indeno(1,2,3-cd)pyrene	cPAH TEQ
			Cleanup Screening Levels (a)	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
G-1	12/22/2003	G	Boring	0.019	0.018	0.012	0.012	0.025	0.011 U	0.011 U	0.02255
G-2	12/22/2003	G	Boring	0.042	0.052	0.034	0.034	0.059	0.012	0.031	0.06789
G-3	2/11/2004	G	Boring	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
G-FA-4 (b)	1/20/2005	G	Boring	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
	1/20/2005	G	Boring	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
G-FA-7(b)	1/20/2005	G	Boring	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
	1/20/2005	G	Boring	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
P10	2/18/2004	G	Monitoring Well	0.01 UJ	0.01 UJ	0.01 UJ	0.01 UJ	0.01 UJ	0.01 UJ	0.01 UJ	0.01 UJ
P11	2/19/2004	I	Monitoring Well	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
P12	2/19/2004	I	Monitoring Well	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
J-1	2/12/2004	J	Boring	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
J-2	2/12/2004	J	Boring	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U

U = the analyte was not detected in the sample at the given reporting limit.
UJ = The analyte was not detected in the sample; the reported sample reporting limit is an estimate

(a) Development of the cleanup levels is presented in Table 3.
(b) Sample analyzed using both EPA Method 8270SIM and standard EPA Method 8270. Lower reporting limits achieved using EPA Method 8270SIM

TABLE 19
SVOCS IN CHARACTERIZATION GROUNDWATER SAMPLES
INTERIM ACTION REPORT -
AMERON HULBERT SITE ORT OF EVERETT, WASHINGTON

Area ID:		G	G	G	G	G	G	G	G	G	G	I	I	J	J	M	M	M	M	M
Sample Name:		ECI-D-1	ECI-MW-2	G-1	G-2	G-3	G-FA-4 (a)	G-FA-4 (a)	G-FA-7 (a)	G-FA-7 (a)	P10	P11	P12	J-1	J-2	ECI-MW-3	M-1	M-2	M-3	M-4
Date Collected:		10/7/1991	10/7/1991	12/22/2003	12/22/2003	2/11/2004	1/20/2005	1/20/2005	1/20/2005	1/20/2005	2/18/2004	2/19/2004	2/19/2004	2/12/2004	2/12/2004	10/7/1991	1/18/2005	1/18/2005	1/18/2005	1/17/2005
Sample Type:	Cleanup Screening Levels (b)	Concrete Settling Basin Sump	Monitoring Well	Boring	Boring	Boring	Boring	Boring	Boring	Boring	Monitoring Well	Monitoring Well	Monitoring Well	Boring	Boring	Monitoring Well	Boring	Boring	Boring	Boring
SVOCs (µg/L)																				
EPA Method 8270/8270SIM																				
1,2,4-Trichlorobenzene				0.5 U	0.5 U	1.1 U	1 U		1 U			1 U	1.1 U	1.1 U	1.1 U		5 U	5 U	5 U	5 U
1,2-Dichlorobenzene		1 U	1 U	0.2 U	0.2 U	1.1 U	1 U		1 U			1 U	1.1 U	1.1 U	1.1 U	1 U	1 U	1 U	1 U	1 U
1,3-Dichlorobenzene		1 U	1 U	0.2 U	0.2 U	1.1 U	1 U		1 U			1 U	1.1 U	1.1 U	1.1 U	1 U	1 U	1 U	1 U	1 U
1,4-Dichlorobenzene		1 U	1 U	0.2 U	0.2 U	1.1 U	1 U		1 U			1 U	1.1 U	1.1 U	1.1 U	1 U	1 U	1 U	1 U	1 U
2,2'-Oxybis(1-Chloropropane)						1.1 U	1 U		1 U			1 U	1.1 U	1.1 U	1.1 U	1 U	1 U	1 U	1 U	1 U
2,4,5-Trichlorophenol						5.6 U	5 U		5 U			5.2 U	5.3 U	5.6 U	5.5 U					
2,4,6-Trichlorophenol						5.6 U	5 U		5 U			5.2 U	5.3 U	5.6 U	5.5 U					
2,4-Dichlorophenol						3.4 U	5 U		5 U			3.1 U	3.2 U	3.3 U	3.3 U					
2,4-Dimethylphenol						3.4 U	1 U		1 U			3.1 U	3.2 U	3.3 U	3.3 U					
2,4-Dinitrophenol						28 U	10 U		10 U			26 U	26 U	28 U	27 U					
2,4-Dinitrotoluene						5.6 U	5 U		5 U			5.2 U	5.3 U	5.6 U	5.5 U					
2,6-Dinitrotoluene						5.6 U	5 U		5 U			5.2 U	5.3 U	5.6 U	5.5 U					
2-Chloronaphthalene						1.1 U	1 U		1 U			1 U	1.1 U	1.1 U	1.1 U					
2-Chlorophenol						1.1 U	1 U		1 U			1 U	1.1 U	1.1 U	1.1 U					
2-Methylnaphthalene	--					1.1 U	1.5		1 U			1 U	1.1 U	1.1 U	1.1 U					
2-Methylphenol						1.1 U	1 U		1 U			1 U	1.1 U	1.1 U	1.1 U					
2-Nitroaniline						5.6 U	5 U		5 U			5.2 U	5.3 U	5.6 U	5.5 U					
2-Nitrophenol						5.6 U	5 U		5 U			5.2 U	5.3 U	5.6 U	5.5 U					
3,3'-Dichlorobenzidine						5.6 U	5 U		5 U			5.2 U	5.3 U	5.6 U	5.5 U					
3-Nitroaniline						6.7 U	5 U		5 U			6.2 U	6.3 U	6.7 U	6.6 U					
4,6-Dinitro-2-Methylphenol						17 U	10 U		10 U			16 U	16 U	17 U	16 U					
4-Bromophenyl-phenylether						1.1 U	1 U		1 U			1 U	1.1 U	1.1 U	1.1 U					
4-Chloro-3-methylphenol						2.2 U	5 U		5 U			2.1 U	2.1 U	2.2 U	2.2 U					
4-Chloroaniline						3.4 U	5 U		5 U			3.1 U	3.2 U	3.3 U	3.3 U					
4-Chlorophenyl-phenylether						1.1 U	1 U		1 U			1 U	1.1 U	1.1 U	1.1 U					
4-Methylphenol						1.1 U	1 U		1 U			1 U	1.1 U	1.1 U	1.1 U					
4-Nitroaniline						5.6 U	5 U		5 U			5.2 U	5.3 U	5.6 U	5.5 U					
4-Nitrophenol						5.6 U	5 U		5 U			5.2 U	5.3 U	5.6 U	5.5 U					
Acenaphthene						1.1 U	1 U		1 U			1 U	1.1 U	1.1 U	1.1 U					
Acenaphthylene						1.1 U	1 U		1 U			1 U	1.1 U	1.1 U	1.1 U					
Anthracene						1.1 U	1 U		1 U			1 U	1.1 U	1.1 U	1.1 U					
Benzo(a)anthracene	0.1			0.019	0.042	1.1 U	1 U	0.1 U	1 U	0.1 U	0.01 UJ	1 U	1.1 U	1.1 U	1.1 U					
Benzo(a)pyrene	0.1			0.018	0.052	1.1 U	1 U	0.1 U	1 U	0.1 U	0.01 UJ	1 U	1.1 U	1.1 U	1.1 U					
Benzo(b)fluoranthene	0.1			0.012	0.034	1.1 U	1 U	0.1 U	1 U	0.1 U	0.01 UJ	1 U	1.1 U	1.1 U	1.1 U					
Benzo(g,h,i)perylene						1.1 U	1 U		1 U			1 U	1.1 U	1.1 U	1.1 U					
Benzo(k)fluoranthene	0.1			0.012	0.034	1.1 U	1 U	0.1 U	1 U	0.1 U	0.01 UJ	1 U	1.1 U	1.1 U	1.1 U					
Benzoic Acid						11 U	10 U		10 U			10 U	11 U	11 U	11 U					
Benzyl Alcohol						5.6 U	5 U		5 U			5.2 U	5.3 U	5.6 U	5.5 U					
Benzyl butyl phthalate						1.1 U	1 U		1 U			1 U	1.1 U	1.1 U	1.1 U					
bis(2-Chloroethoxy) Methane						1.1 U	1 U		1 U			1 U	1.1 U	1.1 U	1.1 U					
Bis-(2-Chloroethyl) Ether						2.2 U	1 U		1 U			2.1 U	2.1 U	2.2 U	2.2 U					
bis(2-Ethylhexyl)phthalate	2.2					1.1 U	2.2 U		26			1 U	1.1 U	1.1 U	1.1 U					
Carbazole						1.1 U	1 U		1 U			1 U	1.1 U	1.1 U	1.1 U					
Chrysene	0.1			0.025	0.059	1.1 U	1 U	0.1 U	1 U	0.1 U	0.01 UJ	1 U	1.1 U	1.1 U	1.1 U					
Dibenz(a,h)anthracene	0.1			0.011 U	0.012	1.1 U	1 U	0.1 U	1 U	0.1 U	0.01 UJ	1 U	1.1 U	1.1 U	1.1 U					
Dibenzofuran						1.1 U	1 U		1 U			1 U	1.1 U	1.1 U	1.1 U					
Diethylphthalate						1.1 U	1 U		1 U			1 U	1.1 U	1.1 U	1.1 U					
Dimethylphthalate						1.1 U	1 U		1 U			1 U	1.1 U	1.1 U	1.1 U					
Di-n-Butylphthalate						1.1 U	1 U		1 U			1 U	1.1 U	1.1 U	1.1 U					
Di-n-Octyl phthalate						1.1 U	1 U		1 U			1 U	1.1 U	1.1 U	1.1 U					
Fluoranthene						1.1 U	1 U		1 U			1 U	1.1 U	1.1 U	1.1 U					
Fluorene						1.1 U	1 U		1 U			1 U	1.1 U	1.1 U	1.1 U					
Hexachlorobenzene						1.1 U	1 U		1 U			1 U	1.1 U	1.1 U	1.1 U					
Hexachlorobutadiene				0.5 U	0.5 U	2.2 U	1 U		1 U			2.1 U	2.1 U	2.2 U	2.2 U		5 U	5 U	5 U	5 U
Hexachlorocyclopentadiene						5.6 U	5 U		5 U			5.2 U	5.3 U	5.6 U	5.5 U					
Hexachloroethane						2.2 U	1 U		1 U			2.1 U	2.1 U	2.2 U	2.2 U					
Indeno(1,2,3-cd)pyrene	0.1			0.011 U	0.031	1.1 U	1 U	0.1 U	1 U	0.1 U	0.01 UJ	1 U	1.1 U	1.1 U	1.1 U					
Isophorone						1.1 U	1 U		1 U			1 U	1.1 U	1.1 U	1.1 U					
Naphthalene	4900			0.5 U	0.5 U	1.1 U	1 U		1 U			1 U	1.1 U	1.1 U	1.1 U		5 U	5 U	5 U	5 U
Nitrobenzene						1.1 U	1 U		1 U			1 U	1.1 U	1.1 U	1.1 U					
N-Nitroso-Di-N-Propylamine						2.2 U	5 U		5 U			2.1 U	2.1 U	2.2 U	2.2 U					
N-Nitrosodiphenylamine						1.1 U	1 U		1 U			1 U	1.1 U	1.1 U	1.1 U					
Pentachlorophenol						5.6 U	5 U		5 U			5.2 U	5.3 U	5.6 U	5.5 U					
Phenanthrene						1.1 U	1 U		1 U			1 U	1.1 U	1.1 U	1.1 U					
Phenol						2.2 U	1 U		1 U			2.1 U	2.1 U	2.2 U	2.2 U					
Pyrene						1.1 U	1 U		1 U			1 U	1.1 U	1.1 U	1.1 U					

U = the analyte was not detected in the sample at the given reporting limit
UJ = The analyte was not detected in the sample; the reported sample reporting limit is an estimate

(a) Sample analyzed using both EPA Method 8270SIM and standard EPA Method 8270
Lower reporting limits achieved using EPA Method 8270SIM
(b) Development of the cleanup levels is presented in Table 3.

TABLE 20
INTERIM ACTION CHARACTERIZATION SAMPLE DESCRIPTIONS

Sample ID	Cleanup Action Area	Description
I1-AC-1	I-1	Soil stockpile composite sample
I2-AC-1A	I-2	Dark gray fine to medium sand with wood debris and creosote odor
I2-AC-1	I-2	Multi-colored apparent concrete-like material
I2-AC-2	I-2	Multi-colored apparent concrete-like material
I3a-AC-1A	I-3a	Black granular material (apparent sandblast grit)
I3a-AC-2A	I-3a	Black granular material (apparent sandblast grit)
I3b-AC-1	I-3b	Black granular material (apparent sandblast grit)
I3b-AC-2	I-3b	Black granular material (apparent sandblast grit)
I4-AC-2	I-4	Fine to medium sand with crushed gravel
I5-AC-1	I-5	Multi-colored concrete-like material with white to gray binding matrix
I5-AC-2	I-5	Black granular material (apparent sandblast grit)
I5-AC-3	I-5	Black granular material (apparent sandblast grit)
I5-AC-4	I-5	Mostly grey concrete-like material with multi-colored spots
I5-AC-5	I-5	Black sandblast-type material in deeper re-excavation in I-5 - near G-1 boundary
I5-AC-N Wall A	I-5	Black granular sandblast-like material
I5-AC-N Wall B	I-5	White and grey-brown concrete-like material
G1-AC-1	G-1	White/grey concrete-like material at north end of G-1
G1-AC-2	G-1	Green concrete-like material at north end of G-1
G1-AC-3	G-1	Grey clay-like material with concrete odor northeast corner of G-1
G1-AC-4	G-1	Grey clay-like material with concrete odor northeast corner of G-1
G1-AC-5	G-1	Grey clay-like material with concrete odor northeast corner of G-1
G1-AC-6	G-1	Multi-colored fine-grained material in soil matrix in north portion of G-1
G1-AC-7	G-1	Freshly placed, gray concrete-like residue placed in area with dessication crack in northeast corner of G-1
G1-AC-8	G-1	Black granular material (apparent sandblast grit) at south end of G-1
G1-AC-9	G-1	Black granular material (apparent sandblast grit) at south end of G-1

TABLE 21
INDICATOR HAZARDOUS SUBSTANCE EVALUATION FOR CHEMICALS DETECTED IN SOIL
AMERON HULBERT SITE, PORT OF EVERETT, WASHINGTON

Analyte (a)	Number of Soil Samples Analyzed	Number of Samples with Detected Concentrations	Frequency of Detection (%)	Number of Soil Samples with Concentrations Exceeding Cleanup Levels	Units	Cleanup Level	Min Reporting Limit (b)	Max Reporting Limit (b)	Min Detection	Max Detection	Chemical Selected As an IHS?	Rationale Inclusion or Exclusion as IHS
cPAHs												
Method 8270-SIM												
Benzo[a]anthracene	115	24	20.9	--	mg/kg	TEQ	0.060	50.000	0.011	0.380	Yes	Analyte is used in the cPAH TEQ, which exceeds the cleanup level
Benzo[a]pyrene	115	27	23.5	9	mg/kg	0.14	0.060	50.000	0.009	0.530	Yes	Analyte exceeded the cleanup level
Benzo[b]fluoranthene	115	33	28.7	--	mg/kg	TEQ	0.060	50.000	0.010	1.100	Yes	Analyte is used in the cPAH TEQ, which exceeds the cleanup level
Benzo[k]fluoranthene	115	24	20.9	--	mg/kg	TEQ	0.060	50.000	0.010	0.590	Yes	Analyte is used in the cPAH TEQ, which exceeds the cleanup level
Chrysene	115	36	31.3	--	mg/kg	TEQ	0.060	2.300	0.019	69.000	Yes	Analyte is used in the cPAH TEQ, which exceeds the cleanup level
Dibenz[a,h]anthracene	115	5	4.3	--	mg/kg	TEQ	0.007	50.000	0.064	0.120	Yes	Analyte is used in the cPAH TEQ, which exceeds the cleanup level
Indeno[1,2,3-cd]pyrene	115	16	13.9	--	mg/kg	TEQ	0.007	50.000	0.010	0.390	Yes	Analyte is used in the cPAH TEQ, which exceeds the cleanup level
cPAH TEQ	115	38	33.0	16	mg/kg	0.14	---	---	0.00069	0.794	Yes	Analyte exceeded the cleanup level
Metals												
Method 6000-7000 Series												
Aluminum	4	4	100.0	0	mg/kg	55,000	1	500	3	53000	No	Analyte did not exceed the cleanup level
Antimony	22	5	22.7	3	mg/kg	32	2.7	100	8.2	580	Yes	Analyte exceeded the cleanup level
Arsenic	204	178	87.3	84	mg/kg	20	0.1	20	2.4	6650	Yes	Analyte exceeded the cleanup level
Barium	54	54	100.0	0	mg/kg	1650	---	---	0.6	418	Yes	Analyte exceeded the cleanup level
Beryllium	19	1	5.3	0	mg/kg	160	0.1	10	0.45	0.45	Yes	Analyte exceeded the cleanup level
Boron	1	1	100.0	0	mg/kg	16,000	1	1	5	5	Yes	Analyte exceeded the cleanup level
Cadmium	173	38	22.0	0	mg/kg	80	0.1	12	0.2	25.2	Yes	Analyte exceeded the cleanup level
Calcium	1	1	100.0	---	mg/kg	---	1	1	5	5	No	Analyte did not exceed the cleanup level
Chromium	94	92	97.9	---	mg/kg	120000	0.1	0.1	7	1210	No	Analyte did not exceed the cleanup level
Cobalt	1	1	100.0	---	mg/kg	---	NA	NA	1.7	1.7	No	Analyte did not exceed the cleanup level
Copper	135	135	100.0	57	mg/kg	3,000 / 36 (c)	---	---	0.6	3430	Yes	Analyte exceeded the cleanup level
Iron	4	4	100.0	---	mg/kg	---	1	50	136	22000	No	Analyte did not exceed the cleanup level
Lead	177	159	89.8	24	mg/kg	250	0.1	200	1.1	4150	Yes	Analyte exceeded the cleanup level
Manganese	3	3	100.0	0	mg/kg	11,000	50	50	230	290	Yes	Analyte exceeded the cleanup level
Mercury	167	45	26.9	0	mg/kg	24	0.04	20	0.04	22.8	Yes	Analyte exceeded the cleanup level
Nickel	30	27	90.0	0	mg/kg	1,600	0.1	10	13	1120	Yes	Analyte exceeded the cleanup level
Selenium	74	2	2.7	0	mg/kg	400	0.05	50	0.89	2	Yes	Analyte exceeded the cleanup level
Silicon	1	1	100.0	---	mg/kg	---	1	1	7	7	No	Analyte did not exceed the cleanup level
Silver	79	15	19.0	0	mg/kg	400	0.1	20	1.6	15	Yes	Analyte exceeded the cleanup level
Sodium	1	1	100.0	0	mg/kg	---	1	1	43	43	Yes	Analyte exceeded the cleanup level
Sulfur	3	3	100.0	---	mg/kg	---	50	50	1100	3100		
Thallium	19	1	5.3	0	mg/kg	5.9	0.26	1	0.45	0.45	Yes	Analyte exceeded the cleanup level
Vanadium	1	1	100.0	0	mg/kg	560	NA	NA	22.7	22.7	Yes	Analyte exceeded the cleanup level
Zinc	135	135	100.0	0	mg/kg	24,000	---	---	1.1	15400	Yes	Analyte exceeded the cleanup level
Tributyl Tin (TBT)												
TBT Ion by SIM												
Butyl Tin Ion	19	1	5.3	---	mg/kg	---	0.0037	0.0041	0.093	0.093	No	Analyte did not exceed the cleanup level
Butyl Tin Trichloride	1	1	100.0	---	mg/kg	---	---	---	0.01	0.01	No	Analyte did not exceed the cleanup level
Dibutyl Tin Dichloride	1	1	100.0	---	mg/kg	---	---	---	0.038	0.038	No	Analyte did not exceed the cleanup level
Dibutyl Tin Ion	19	1	5.3	---	mg/kg	---	0.0053	0.0058	0.3	0.3	No	Analyte did not exceed the cleanup level
Tributyl Tin Chloride	1	1	100.0	---	mg/kg	---	---	---	0.069	0.069	No	Analyte did not exceed the cleanup level
Tributyl Tin Ion	19	1	5.3	---	mg/kg	7	0.0035	0.0038	0.95	0.95	No	Analyte did not exceed the cleanup level

TABLE 21
INDICATOR HAZARDOUS SUBSTANCE EVALUATION FOR CHEMICALS DETECTED IN SOIL
AMERON HULBERT SITE, PORT OF EVERETT, WASHINGTON

Analyte (a)	Number of Soil Samples Analyzed	Number of Samples with Detected Concentrations	Frequency of Detection (%)	Number of Soil Samples with Concentrations Exceeding Cleanup Levels	Units	Cleanup Level	Min Reporting Limit (b)	Max Reporting Limit (b)	Min Detection	Max Detection	Chemical Selected As an IHS?	Rationale Inclusion or Exclusion as IHS
Petroleum Hydrocarbons												
Method NWTPH-Dx, NWTPH-Gx												
Diesel-Range Organics	134	91	67.9	7	mg/kg	2000	5	58	0.94	390000	Yes	Analyte exceeded the cleanup level
Lube Oil	109	86	78.9	4	mg/kg	2000	10	120	3.7	410000	Yes	Analyte exceeded the cleanup level
Mineral Oil	7	7	100.0	---	mg/kg	4000	0	0	53	240	No	Analyte did not exceed the cleanup level
Petroleum Hydrocarbons												
Method NWTPH-HCID												
Diesel	73	31	42.5	---	mg/kg	2000	50	60	50	500	No	Analyte did not exceed the cleanup level
Lube Oil	73	35	47.9	---	mg/kg	2000	100	160	100	1000	No	Analyte did not exceed the cleanup level
Gasoline-Range Organics	88	1	1.1	---	mg/kg	100/30 (d)	10	200	21	21	No	Analyte did not exceed the cleanup level
BTEX												
Method 8020/8015/8021/8260												
Benzene	46	1	2.2	---	mg/kg	0.29	0.0008	0.18	0.18	0.18	No	Analyte did not exceed the cleanup level
Toluene	46	3	6.5	---	mg/kg	110	0.0008	0.18	0.18	0.18	No	Analyte did not exceed the cleanup level
Ethylbenzene	46	3	6.5	---	mg/kg	18	0.0008	0.41	0.2	0.41	No	Analyte did not exceed the cleanup level
m, p-Xylene	11	2	18.2	---	mg/kg	15	0.0009	1.3	0.0011	1.3	No	Analyte did not exceed the cleanup level
o-Xylene	11	1	9.1	---	mg/kg	150	0.0008	0.94	0.94	0.94	No	Analyte did not exceed the cleanup level
Xylenes, Total	39	4	10.3	---	mg/kg	15	0.005	2.3	0.028	2.3	No	Analyte did not exceed the cleanup level
Volatile Organic Compounds (VOCs)												
VOCs by 8260B												
Acetone	15	7	46.7	---	mg/kg	3.2	0.0044	0.05	0.0077	2.3	No	Analyte did not exceed the cleanup level
Naphthalene	10	4	40.0	---	mg/kg	140	0.0039	50	0.0044	1.8	No	Analyte did not exceed the cleanup level
m, p-Xylene	7	2	28.6	---	mg/kg	15	0.0009	0.034	0.0011	1.3	No	Analyte did not exceed the cleanup level
Ethylbenzene	14	2	14.3	---	mg/kg	18	0.0008	0.017	0.2	0.41	No	Analyte did not exceed the cleanup level
1,2,4-Trimethylbenzene	7	2	28.6	---	mg/kg	4000	0.0008	0.0088	0.0034	0.3	No	Analyte did not exceed the cleanup level
Isopropylbenzene	7	2	28.6	---	mg/kg	8000	0.0008	0.0088	0.0037	0.17	No	Analyte did not exceed the cleanup level
4-Isopropyltoluene	7	2	28.6	---	mg/kg	---	0.0008	0.0088	0.0018	0.05	No	Analyte did not exceed the cleanup level
Tetrachloroethene	24	2	8.3	---	mg/kg	1.9	0.0008	0.07	0.0019	0.079	No	Analyte did not exceed the cleanup level
Toluene	14	1	7.1	---	mg/kg	110	0.0008	0.07	0.18	0.18	No	Analyte did not exceed the cleanup level
o-Xylene	7	1	14.3	---	mg/kg	150	0.0008	0.017	0.94	0.94	No	Analyte did not exceed the cleanup level
1,1,1-Trichloroethane	24	1	4.2	---	mg/kg	3400	0.0008	0.07	0.003	0.003	No	Analyte did not exceed the cleanup level
1,3,5-Trimethylbenzene	7	1	14.3	---	mg/kg	4000	0.0008	0.0088	0.3	0.3	No	Analyte did not exceed the cleanup level
2-Butanone	15	1	6.7	---	mg/kg	48000	0.0039	0.7	0.028	0.028	No	Analyte did not exceed the cleanup level
Methylene Chloride	15	2	13.3	---	mg/kg	2.6	0.0016	0.35	0.01	0.01	No	Analyte did not exceed the cleanup level
n-Butylbenzene	7	1	14.3	---	mg/kg	---	0.0008	0.0088	0.0051	0.0051	No	Analyte did not exceed the cleanup level
n-Propylbenzene	7	1	14.3	---	mg/kg	---	0.0008	0.0088	0.19	0.19	No	Analyte did not exceed the cleanup level

TABLE 21
INDICATOR HAZARDOUS SUBSTANCE EVALUATION FOR CHEMICALS DETECTED IN SOIL
AMERON HULBERT SITE, PORT OF EVERETT, WASHINGTON

Analyte (a)	Number of Soil Samples Analyzed	Number of Samples with Detected Concentrations	Frequency of Detection (%)	Number of Soil Samples with Concentrations Exceeding Cleanup Levels	Units	Cleanup Level	Min Reporting Limit (b)	Max Reporting Limit (b)	Min Detection	Max Detection	Chemical Selected As an IHS?	Rationale Inclusion or Exclusion as IHS
Semivolatile Organic Compounds (SVOCs)												
SVOCs by 8270												
Acenaphthene	14	1	7.1	---	mg/kg	---	0.064	50	0.15	0.15	No	Analyte did not exceed the cleanup level
Anthracene	14	1	7.1	---	mg/kg	12000	0.064	50	0.097	0.097	No	Analyte did not exceed the cleanup level
Benzoic Acid	14	1	7.1	0	mg/kg	320000	0.064	500	1.2	1.2		
Di-n-Octyl phthalate	14	1	7.1	---	mg/kg	---	0.064	50	0.075	0.075	No	Analyte did not exceed the cleanup level
Fluorene	14	3	21.4	---	mg/kg	553	0.064	50	0.08	1.6	No	Analyte did not exceed the cleanup level
Fluoranthene	14	5	35.7	---	mg/kg	89	0.064	50	0.091	0.17	No	Analyte did not exceed the cleanup level
Naphthalene	11	4	36.4	---	mg/kg	140	0.064	50	0.024	1.8	No	Analyte did not exceed the cleanup level
Pyrene	14	7	50.0	---	mg/kg	2400	0.064	2.3	0.07	84	No	Analyte did not exceed the cleanup level
2-Methylnaphthalene	14	7	50.0	---	mg/kg	320	0.064	50	0.13	8.8	No	Analyte did not exceed the cleanup level
Bis(2-Ethylhexyl)Phthalate	14	7	50.0	---	mg/kg	4.9	0.064	65	0.072	1.4	No	Analyte did not exceed the cleanup level
Phenanthrene	14	9	64.3	---	mg/kg	---	0.064	50	0.076	3.4	No	Analyte did not exceed the cleanup level
PCBs												
SW8082												
Total PCBs	17	2	11.8	0	mg/kg	1	---	---	0.110	0.300	No	Analyte did not exceed the cleanup 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.

(a) Only detected compounds are presented in this table.
(b) Copper soil cleanup level is 36 when using the cleanup level protective of groundwater.
(c) Minimum and maximum reporting limits include only samples with results that are below laboratory reporting limits.
(d) TPH-G cleanup level is 100 mg/kg in areas where benzene is not present and 30 mg/kg where benzene is present.
NA= not available

TABLE 22
INDICATOR HAZARDOUS SUBSTANCE EVALUATION FOR CHEMICALS DETECTED IN GROUNDWATER
AMERON HULBERT SITE, PORT OF EVERETT, WASHINGTON

Analyte (a)	Number of Water Samples Analyzed	Number of Samples with Detected Concentrations	Frequency of Detection (%)	Number of Water Samples with Concentrations Exceeding Cleanup Levels	Units	Cleanup Level	Min Reporting Limit	Max Reporting Limit	Min Detection	Max Detection	Chemical Selected As an IHS?	Rationale Inclusion or Exclusion as IHS
SVOCs												
EPA Method 8270/8270SIM												
2-Methylnaphthalene	7	1	14.3	0	µg/L	--	1	1.1	1.5	1.5	No	Analyte did not exceed cleanup level
bis(2-Ethylhexyl)phthalate	7	1	14.3	1	µg/L	2.2	1	2.2	26	26	Yes	Analyte exceeded cleanup level
Dibenz(a,h)anthracene	12	1	8.3	0	µg/L	0.1	0.01	1.1	0.012	0.012	No	Analyte did not exceed cleanup level
Indeno(1,2,3-cd)pyrene	12	1	8.3	0	µg/L	0.1	0.01	1.1	0.031	0.031	No	Analyte did not exceed cleanup level
Benzo(a)anthracene	12	2	16.7	0	µg/L	0.1	0.01	1.1	0.019	0.042	No	Analyte did not exceed cleanup level
Benzo(a)pyrene	12	2	16.7	0	µg/L	0.1	0.01	1.1	0.018	0.052	No	Analyte did not exceed cleanup level
Benzo(b)fluoranthene	12	2	16.7	0	µg/L	0.1	0.01	1.1	0.012	0.034	No	Analyte did not exceed cleanup level
Benzo(k)fluoranthene	12	2	16.7	0	µg/L	0.1	0.01	1.1	0.012	0.034	No	Analyte did not exceed cleanup level
Chrysene	12	2	16.7	0	µg/L	0.1	0.01	1.1	0.025	0.059	No	Analyte did not exceed cleanup level
VOCs												
Method 8260												
1,2-Dichloroethane	25	1	4.0	0	µg/L	1600	0.2	1	1	1	No	Analyte did not exceed cleanup level
Benzene	23	1	4.3	0	µg/L	51	0.2	1	6.4	6.4	No	Analyte did not exceed cleanup level
Chloroform	25	1	4.0	0	µg/L	470	0.2	1	4	4	No	Analyte did not exceed cleanup level
Ethylbenzene	23	1	4.3	0	µg/L	2100	0.2	1	4.3	4.3	No	Analyte did not exceed cleanup level
m, p-Xylene	15	1	6.7	0	µg/L	1600	0.4	1	17	17	No	Analyte did not exceed cleanup level
o-Xylene	15	1	6.7	0	µg/L	16000	0.2	1	4.1	4.1	No	Analyte did not exceed cleanup level
Vinyl Chloride	21	1	4.8	1	µg/L	2.4	0.2	1	13	13	Yes	Analyte exceeded cleanup level
Acetone	21	2	9.5	0	µg/L	800	1	20	2.8	3.7	No	Analyte did not exceed cleanup level
Toluene	23	4	17.4	0	µg/L	15000	0.2	1	0.4	2.3	No	Analyte did not exceed cleanup level
BETX												
Method 8021/8260B												
Benzene	27	1	3.7	0	µg/L	51	0.2	5	6.4	6.4	No	Analyte did not exceed cleanup level
Ethylbenzene	27	1	3.7	0	µg/L	2100	0.2	10	4.3	4.3	No	Analyte did not exceed cleanup level
Toluene	27	7	25.9	0	µg/L	15000	0.2	10	0.4	9.1	No	Analyte did not exceed cleanup level
m, p-Xylene	15	1	6.7	0	µg/L	1600	0.4	1	17	17	No	Analyte did not exceed cleanup level
o-Xylene	15	1	6.7	0	µg/L	16000	0.2	1	4.1	4.1	No	Analyte did not exceed cleanup level
Xylenes, Total	14	3	21.4	0	µg/L	1600	1	10	0.72	3.1	No	Analyte did not exceed cleanup level
PAHs												
Method 8270-SIM												
Benzo(a)anthracene	12	2	16.7	0	µg/L	0.1	0.01	1.1	0.019	0.042	No	Analyte did not exceed cleanup level
Benzo(a)pyrene	12	2	16.7	0	µg/L	0.1	0.01	1.1	0.018	0.052	No	Analyte did not exceed cleanup level
Benzo(b)fluoranthene	12	2	16.7	0	µg/L	0.1	0.01	1.1	0.012	0.034	No	Analyte did not exceed cleanup level
Benzo(k)fluoranthene	12	2	16.7	0	µg/L	0.1	0.01	1.1	0.012	0.034	No	Analyte did not exceed cleanup level
Chrysene	12	2	16.7	0	µg/L	0.1	0.01	1.1	0.025	0.059	No	Analyte did not exceed cleanup level
Dibenz(a,h)anthracene	12	1	8.3	0	µg/L	0.1	0.01	1.1	0.012	0.012	No	Analyte did not exceed cleanup level
Indeno(1,2,3-cd)pyrene	12	1	8.3	0	µg/L	0.1	0.01	1.1	0.031	0.031	No	Analyte did not exceed cleanup level
cPAH TEQ	12	2	16.7	0	µg/L	0.1	0.01	1.1	0.02255	0.06789	No	Analyte did not exceed cleanup level
Metals (b)												
Method 6000-7000 Series												
Arsenic	19	11	57.9	5	µg/L	5	1	10	0.8	14	Yes	Analyte exceeded cleanup level
Cadmium (c)	19	0	0.0	0	µg/L	8.8	0.2	6	---	---	No	Analyte did not exceed cleanup level
Chromium	13	2	15.4	0	µg/L	240,000	5	20	7	11	No	Analyte did not exceed cleanup level
Copper	19	8	42.1	5	µg/L	2.4	0.5	20	0.6	38	Yes	Analyte exceeded cleanup level
Lead	19	1	5.3	0	µg/L	8.1	1	6	6.6	6.6	No	Analyte did not exceed cleanup level
Mercury (c)	19	0	0.0	0	µg/L	0.1	0.1	1	---	---	No	Analyte did not exceed cleanup level
Nickel (c)	7	0	0.0	0	µg/L	50	0.1	1	---	---	No	Analyte did not exceed cleanup level
Zinc	19	4	21.1	0	µg/L	81	4	10	12	16	No	Analyte did not exceed cleanup level

(a) Only detected chemicals are presented in this table

(b) Only dissolved metals analyses are presented in this table

(c) Analyte is included in the table because of a detect in total metals analysis.

TABLE 23
CATCH BASIN SEDIMENT SAMPLE RESULTS
INTERIM ACTION REPORT - AMERON HULBERT SITE PORT OF EVERETT, WASHINGTON

		SMS Crieria		
			Area ID:	G
			Sample Name:	CB-3
			Date Collected:	3/26/2008
			Sample Type:	stormwater catch basin
	TCLP (a)	SQS (b)	CSL (c)	
TOTAL METALS (mg/kg)				
Method 6010/7470/200.8				
Antimony				300
Arsenic		57	93	1,700
Beryllium		--	--	0.4
Cadmium		5.1	6.7	10.2
Chromium		260	270	338
Copper		390	390	1,700
Lead		450	530	1,510
Mercury		0.41	0.59	0.08
Nickel		--	--	185
Selenium		--	--	1.3
Silver		6.1	6.1	3
Thallium		--	--	0.7
Zinc		410	960	8,110
TCLP METALS (mg/L)				
Method 6010B				
Arsenic	5.0			2.0
Lead	5.0			0.6
SEMIVOLATILES (µg/kg)				
SW8270				
Phenol				260 U
Bis-(2-Chloroethyl) Ether				260 U
2-Chlorophenol				260 U
1,3-Dichlorobenzene				260 U
1,4-Dichlorobenzene				260 U
Benzyl Alcohol				1,300 U
1,2-Dichlorobenzene				260 U
2-Methylphenol				260 U
2,2'-Oxybis(1-Chloropropane)				260 U
4-Methylphenol				260 U
N-Nitroso-Di-N-Propylamine				1,300 U
Hexachloroethane				260 U
Nitrobenzene				260 U
Isophorone				260 U
2-Nitrophenol				1,300 U
2,4-Dimethylphenol				260 U
Benzoic Acid				2,600 U
bis(2-Chloroethoxy) Methane				260 U
2,4-Dichlorophenol				1,300 U
1,2,4-Trichlorobenzene				260 U
Naphthalene				260 U
4-Chloroaniline				1,300 U
Hexachlorobutadiene				260 U
4-Chloro-3-methylphenol				1,300 U
2-Methylnaphthalene				260 U
Hexachlorocyclopentadiene				1,300 U
2,4,6-Trichlorophenol				1,300 U
2,4,5-Trichlorophenol				1,300 U
2-Chloronaphthalene				260 U

TABLE 23
CATCH BASIN SEDIMENT SAMPLE RESULTS
INTERIM ACTION REPORT - AMERON HULBERT SITE PORT OF EVERETT, WASHINGTON

		SMS Crieria		
			Area ID:	G
			Sample Name:	CB-3
			Date Collected:	3/26/2008
			Sample Type:	stormwater catch basin
	TCLP (a)	SQS (b)	CSL (c)	
2-Nitroaniline				1,300 U
Dimethylphthalate				260 U
Acenaphthylene				260 U
3-Nitroaniline				1,300 U
Acenaphthene				260 U
2,4-Dinitrophenol				2,600 U
4-Nitrophenol				1,300 U
Dibenzofuran				260 U
2,6-Dinitrotoluene				1,300 U
2,4-Dinitrotoluene				1,300 U
Diethylphthalate				260 U
4-Chlorophenyl-phenylether				260 U
Fluorene				260 U
4-Nitroaniline				1,300 U
4,6-Dinitro-2-Methylphenol				2,600 U
N-Nitrosodiphenylamine				260 U
4-Bromophenyl-phenylether				260 U
Hexachlorobenzene				260 U
Pentachlorophenol				1,300 U
Phenanthrene		100000	480000	340
Carbazole				260 U
Anthracene				260 U
Di-n-Butylphthalate				260 U
Fluoranthene		160000	1200000	440
Pyrene		1000000	1400000	510
Butylbenzylphthalate				260 U
3,3'-Dichlorobenzidine				1,300 U
Benzo(a)anthracene				260 U
bis(2-Ethylhexyl)phthalate		47000	78000	10,000
Chrysene		110000	460000	280
Di-n-Octyl phthalate		58000	4500000	700
Benzo(b)fluoranthene		230000	450000	270
Benzo(k)fluoranthene				260 U
Benzo(a)pyrene				260 U
Indeno(1,2,3-cd)pyrene				260 U
Dibenz(a,h)anthracene				260 U
Benzo(g,h,i)perylene				260 U
1-Methylnaphthalene				260 U
NWTPH-DxSG (mg/kg)				
Diesel-Range Hydrocarbons		--	--	1,800
Motor Oil		--	--	3,000

Shaded value indicates exceedance of SQS
Boxed value indicates exceedance of CSL
U = the analyte was not detected in the sample at the given reporting limit

(a) TCLP Dangerous Waste Criteria. Maximum concentration of contaminants for the toxicity characteristics as set forth in WAC 173-303-090.
(b) SMS Sediment Quality Standard (Chapter 173-204 WAC).
(c) CSL Cleanup Screening Level (Chapter 173-204 WAC).

TABLE 24
INTERIM ACTION AREA EXCAVATION DESIGN INFORMATION

Contaminated Soil Area Designation	Approximate Area (SF)	Overburden Excavation Depth (ft)	Contamianted Soil Excavation Depth (ft)	Estimated Excavation Volume (yd^3)	Mass Excavated (tons)	Disposal Designation
G-1	17,168	0.0	Elevation 15 ft MLLW		2,701	Solid Waste
I-1	10,947	0.0	0.5	200	563	Solid Waste
I-2	35,307	0.5	3.5	3900	7,965	Solid Waste
I-3a	8,870	0.0	2.5	1200	3,654	Solid Waste
I-3b	9,774	0.0	1.0	-- (a)	--(b)	Solid Waste
I-4	13,575	0.0	1.0	300	610/168	Inert Waste/Solid Waste
I-5	6,646	0.0	6.5	2500	3,813	Solid Waste
I-6	12,580	0.0	2.5	1050	3,237	Inert Waste
I-7	22,320	0.0	1.0	300	2,495	Inert Waste
I-8	2,754	0.0	2.5	250	3,263	Inert Waste
I-9	8,301	0.0	1.5	460	--(c)	Inert Waste
I-10	3,689	0.0	2.5	340	--(c)	Inert Waste
I-11	14,173	0.0	1.5	790	--(c)	Inert Waste
J-1	4,190	1.0	2.5		403/150	Inert Waste/Solid Waste
J-3	1,730	0.5	-6.0		2,563	Solid Waste
M-1	3,380	0.5	2.0		396	Inert Waste

Notes:
a) Planned soil removal volume for Areas I-3a and I-3b not separately tallied. Soil removal volume presented for Area I-3a represents entire Area I-3 area.
b) Soil mass for Areas I-3a and I-3b not separately tallied. Soil mass presented for Area I-3a represents entire Area I-3 area.
c) Soil mass for Areas I-8 through I-11 not separately tallied. Soil mass presented for Area I-8 represents entire mass for these areas.

TABLE 25
FINAL COMPLIANCE MONITORING SAMPLE RESULTS - REPRESENTS SOIL REMAINING
INTERIM ACTION REPORT - AMERON HULBERT SITE
PORT OF EVERETT, WASHINGTON

	Area ID:	I	I	I	I	I	G	G	G	G	G	G	G	G	G
	Sample Name:	G1A-100507-B1	G1A-100507-B2	G1A-100507-S1	G1A-100507-S2	G1A-100507-S3	G1-B1	G1-B3	G1-B5	G1-B6	G1-B8	G1-B7	G1-B9A	G1-B10	G1-B11
	Depth Range:														
	Date Collected:	10/5/2007	10/5/2007	10/5/2007	10/5/2007	10/5/2007	6/30/2006	6/30/2006	6/30/2006	6/30/2006	6/30/2006	6/30/2006	9/27/2006	9/19/2006	9/25/2006
	Sample Type:	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation
	Cleanup Screening Levels (a)														
NWTPH-Dx (mg/kg)															
Diesel-Range Organics	2000						5.6 U	20	5.4 U	6.1 U	7.7	7			
Lube Oil	2000						11	30	11 U	12 U	20	13 U			
Metals (mg/kg)															
SW6000-7000 Series															
Arsenic	20	6	42	8	40	600	18	350	6	8	46	8	8	13	5 U
Barium	1650														
Cadmium	80	0.2 U	0.2 U	0.2 U	0.2 U	0.6 U	0.2 U	0.9	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.3 U	0.2 U
Chromium	120000	27.5	35	33.2	25.8	44	33.5	44	28.9	30.6	31.4	33.9	36.7	33.3	28
Copper	36	21.3	53.9	27	47.5	470	31	487	17.4	19.8	28.7	24.3	27.6	34.2	17.7
Lead	250	5	41	9	36	473	15	312	6	3	13	3	5	17	5
Mercury	24	0.04 U	0.07	0.06	0.04 U	0.04 U	0.05 U	0.04 U	0.05 U	0.04 U	0.05 U	0.05	0.05	0.05 U	0.05 U
Selenium	400														
Silver	400														
Zinc	24000	44	143	58	160	1470	72.2	797	44.5	44.3	76.4	46.3	49.7	78.4	42
cPAHs (mg/kg)															
8270/8270SIM															
Benzo(a)anthracene		0.064 U	0.064 U	0.078	0.063 U	0.065 U	0.065 U	0.066 U	0.063 U	0.065 U	0.064 U	0.066 U			
Benzo(a)pyrene	0.14	0.064 U	0.064 U	0.074	0.063 U	0.065 U	0.065 U	0.066 U	0.063 U	0.065 U	0.064 U	0.066 U			
Benzo(b)fluoranthene		0.064 U	0.064 U	0.063 U	0.063 U	0.065 U	0.065 U	0.066 U	0.063 U	0.065 U	0.064 U	0.066 U			
Benzo(k)fluoranthene		0.064 U	0.064 U	0.063 U	0.063 U	0.065 U	0.065 U	0.066 U	0.063 U	0.065 U	0.064 U	0.066 U			
Chrysene		0.064 U	0.064 U	0.12	0.063 U	0.065 U	0.071	0.066 U	0.063 U	0.065 U	0.064 U	0.066 U			
Dibenz(a,h)anthracene		0.064 U	0.064 U	0.063 U	0.063 U	0.065 U	0.065 U	0.066 U	0.063 U	0.065 U	0.064 U	0.066 U			
Indeno(1,2,3-cd)pyrene		0.064 U	0.064 U	0.063 U	0.063 U	0.065 U	0.065 U	0.066 U	0.063 U	0.065 U	0.064 U	0.066 U			
cPAH TEQ	0.14	0.064 U	0.064 U	0.083	0.063 U	0.065 U	0.00071	0.066 U	0.063 U	0.065 U	0.064 U	0.066 U			

TABLE 25
FINAL COMPLIANCE MONITORING SAMPLE RESULTS - REPRESENTS SOIL REMAINING
INTERIM ACTION REPORT - AMERON HULBERT SITE
PORT OF EVERETT, WASHINGTON

	Area ID:	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I
	Sample Name:	I-10-A	I-10-B	I-11-A	I-11-B	I-11-C	I-11-D	I-11-E	I-11-F	I-11-G	I1-B1A	I1-B2A	I1-S1	I1-S2	I2-B1	I2-B2	I2-B3
	Depth Range:	(2.5-2.75)	(2.5-2.75)	(2.5-3)	(1.5-1.75)	(1.5-1.75)	(1.5-1.75)	(1.5-1.75)	(1.5-1.75)	(1.5-1.75)							
	Date Collected:	10/7/2005	10/7/2005	10/13/2005	10/7/2005	10/10/2005	10/10/2005	10/10/2005	10/10/2005	10/10/2005	7/26/2006	7/26/2006	7/11/2006	7/11/2006	7/14/2006	7/14/2006	9/15/2006
	Sample Type:	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation
	Cleanup Screening Levels (b)																
Metals (mg/kg)																	
SW6000-7000 Series																	
Arsenic	20	12	19	12	19	12	12	11	8	9	5 U	8	9	15	6.3	4.3	6 U
Barium	1650																
Cadmium	80	0.2 U	0.5	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	0.5 U	0.5 U	0.2 U
Chromium	120000										21.6	22.7	27.8	24.3	35	30	30.7
Copper	36	24.3	36.7	28.3	33.4	20.7	20.5	21.3	18.2	18.5	9.6	12.4	27.2	67.9	23	15	16.8
Lead	250	4	7	4	15	10	10	8	2	2	2	3	24	61	3	3	3
Mercury	24	0.06 U	0.08	0.05 U	0.06 U	0.05 U	0.04 U	0.04 U	0.04 U	0.05 U	0.05 U	0.04 U	0.08	0.16	0.06	0.04 U	0.04 U
Selenium	400																
Silver	400																
Zinc	24000	43.6	68.6	47.4	100	68.5	72.8	44.4	31.8	35.8	38.8	29.4	53.4	71.7	60	40	37.1
cPAHs (mg/kg)																	
8270/8270SIM																	
Benzo(a)anthracene		0.066 U	0.064 U		0.064 U	0.064 U	0.064 U	0.064 U	0.065 U	0.064 U							
Benzo(a)pyrene	0.14	0.066 U	0.064 U		0.064 U	0.064 U	0.064 U	0.064 U	0.065 U	0.064 U							
Benzo(b)fluoranthene		0.066 U	0.064 U		0.064 U	0.064 U	0.064 U	0.064 U	0.065 U	0.064 U							
Benzo(k)fluoranthene		0.066 U	0.064 U		0.064 U	0.064 U	0.064 U	0.064 U	0.065 U	0.064 U							
Chrysene		0.066 U	0.064 U		0.064 U	0.064 U	0.064 U	0.064 U	0.065 U	0.064 U							
Dibenz(a,h)anthracene		0.066 U	0.064 U		0.064 U	0.064 U	0.064 U	0.064 U	0.065 U	0.064 U							
Indeno(1,2,3-cd)pyrene		0.066 U	0.064 U		0.064 U	0.064 U	0.064 U	0.064 U	0.065 U	0.064 U							
cPAH TEQ	0.14	0.066 U	0.064 U		0.064 U	0.064 U	0.064 U	0.064 U	0.065 U	0.064 U							

TABLE 25
FINAL COMPLIANCE MONITORING SAMPLE RESULTS - REPRESENTS SOIL REMAINING
INTERIM ACTION REPORT - AMERON HULBERT SITE
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	Cleanup Screening Levels (b)																	
Area ID:		I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I
Sample Name:		I2-B4	I2-B5	I2-B6	I2-B7	I2-B8	I2-B9	I2-B10	I2-B11A	I2-B12	I2-B13	I2-B14	I2-B15	I2-S3	I2-S4	I2-S5A	I2-S6	I2-S7
Depth Range:																		
Date Collected:		7/14/2006	7/14/2006	7/14/2006	9/15/2006	10/2/2006	9/15/2006	9/15/2006	9/25/2006	9/15/2006	9/15/2006	9/22/2006	10/2/2006	9/15/2006	10/2/2006	11/14/2006	10/2/2006	10/2/2006
Sample Type:		Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation
Metals (mg/kg)																		
SW6000-7000 Series																		
Arsenic	20	4.4	3.7	6.6	6 U	7	20	7	5 U	6 U	6	6	7	5 U	7	6 U	8	7
Barium	1650																	
Cadmium	80	0.5 U	0.5 U	0.5 U	0.2 U	0.2 U	0.2 U	0.3 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
Chromium	120000	34	25	34	35.2	34.3	27.9	32.6	22.2	22.8	21.8	24.7	32.9	44.1	31.5	24.2	29.2	21.5
Copper	36	19	10	22	23.4	24.8	36.6	22.4	11	12	11	11.5	23.6	20.3	23.5	12.5	20.6	16.2
Lead	250	3	2 U	6	4	5	18	3	2	2 U	2 U	3	5	2	7	2 U	19	13
Mercury	24	0.04	0.04 U	0.04 U	0.1	0.05 U	0.05 U	0.07	0.05 U	0.04 U	0.05 U	0.04 U	0.05	0.05 U	0.05 U	0.05 U	0.05	0.04
Selenium	400																	
Silver	400																	
Zinc	24000	40	30	50	43.2	39.3	76.9	39.9	27	32.3	30.6	33.7	35.8	35.1	40	33	66	47.2
cPAHs (mg/kg)																		
8270/8270SIM																		
Benzo(a)anthracene																		
Benzo(a)pyrene	0.14																	
Benzo(b)fluoranthene																		
Benzo(k)fluoranthene																		
Chrysene																		
Dibenz(a,h)anthracene																		
Indeno(1,2,3-cd)pyrene																		
cPAH TEQ	0.14																	

TABLE 25
FINAL COMPLIANCE MONITORING SAMPLE RESULTS - REPRESENTS SOIL REMAINING
INTERIM ACTION REPORT - AMERON HULBERT SITE
PORT OF EVERETT, WASHINGTON

	Area ID:	I	I	I	I	I	I	I	I	I	I	I	I	I	I
	Sample Name:	I3A-B1A	I3A-B2	I3A-B3	I3A-B4	I3A-B5	I3A-B6	I3A-B7	I3B-B1	I3B-B2	I3B-B3A	I3B-B4	I4-B1	I4-B2	I4-B3
	Depth Range:														
	Date Collected:	7/13/2006	7/5/2006	7/5/2006	7/7/2006	7/7/2006	7/7/2006	7/26/2006	7/7/2006	7/7/2006	7/13/2006	7/7/2006	7/28/2006	7/28/2006	10/3/2006
	Sample Type:	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation
	Cleanup Screening Levels (b)														
Metals (mg/kg)															
SW6000-7000 Series															
Arsenic	20	6.3	5 U	8	7	6	9	7	7	5	4.6	6	7	8	5 U
Barium	1650														
Cadmium	80	0.5 U	0.2 U	0.3 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.5 U	0.2 U	0.2 U	0.2 U	0.2 U
Chromium	120000	27	27.3	36.9	28	31	29.5	24.7	26.8	22.5	30	33.8	29.9	33.9	45.8
Copper	36	16	16.3	28.8	15.4	29.6	17.8	11.5	14.1	11.8	13	26.6	22.1	25.3	19.6
Lead	250	3	3	4	3	4	3	3	3	2	3 U	6	6	7	4
Mercury	24	0.04 U	0.05 U	0.06	0.05 U	0.05	0.05	0.04 U	0.05 U	0.04 U	0.04 U	0.04 U	0.04	0.05	0.05 U
Selenium	400														
Silver	400														
Zinc	24000	40	44.5	55.8	35.4	39.6	34.6	34.9	67.3	29	40	53	45.3	51.6	32.1
cPAHs (mg/kg)															
8270/8270SIM															
Benzo(a)anthracene		0.064 U	0.066 U	0.064 U	0.065 U	0.065 U	0.065 U	0.064 U	0.064 U	0.063 U		0.064 U	0.065 U	0.066 U	0.063 U
Benzo(a)pyrene	0.14	0.064 U	0.066 U	0.064 U	0.065 U	0.065 U	0.065 U	0.064 U	0.064 U	0.063 U		0.064 U	0.065 U	0.066 U	0.063 U
Benzo(b)fluoranthene		0.064 U	0.066 U	0.064 U	0.065 U	0.065 U	0.065 U	0.064 U	0.064 U	0.063 U		0.064 U	0.065 U	0.066 U	0.063 U
Benzo(k)fluoranthene		0.064 U	0.066 U	0.064 U	0.065 U	0.065 U	0.065 U	0.064 U	0.064 U	0.063 U		0.064 U	0.065 U	0.066 U	0.063 U
Chrysene		0.064 U	0.066 U	0.064 U	0.065 U	0.065 U	0.065 U	0.064 U	0.064 U	0.063 U		0.064 U	0.065 U	0.066 U	0.063 U
Dibenz(a,h)anthracene		0.064 U	0.066 U	0.064 U	0.065 U	0.065 U	0.065 U	0.064 U	0.064 U	0.063 U		0.064 U	0.065 U	0.066 U	0.063 U
Indeno(1,2,3-cd)pyrene		0.064 U	0.066 U	0.064 U	0.065 U	0.065 U	0.065 U	0.064 U	0.064 U	0.063 U		0.064 U	0.065 U	0.066 U	0.063 U
cPAH TEQ	0.14	0.064 U	0.066 U	0.064 U	0.065 U	0.065 U	0.065 U	0.064 U	0.064 U	0.063 U		0.064 U	0.065 U	0.066 U	0.063 U

TABLE 25
FINAL COMPLIANCE MONITORING SAMPLE RESULTS - REPRESENTS SOIL REMAINING
INTERIM ACTION REPORT - AMERON HULBERT SITE
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	Cleanup Screening Levels (b)	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I
Area ID:		I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I
Sample Name:		I4-S1	I4-S2A	I5-AC-N.WALL.A	I5-AC-N.WALL.B	I5-B1	I5-B2A	I5-B3	I5-B4	I5-B5	I5-B6	I5-B7	I5-S3H	I5-S3I	I5-S3D	I5-S3G	I5-S4
Depth Range:																	
Date Collected:		7/28/2006	10/3/2006	7/10/2006	7/10/2006	6/29/2006	7/17/2006	6/29/2006	6/29/2006	7/26/2006	9/14/2006	9/14/2006	9/14/2006	9/14/2006	7/26/2006	9/14/2006	6/29/2006
Sample Type:		Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation
Metals (mg/kg)																	
SW6000-7000 Series																	
Arsenic	20	6	11	1730	130	13	2.9	9	8	5 U	5 U	5 U	10	14	208	8	19
Barium	1650																
Cadmium	80	0.2 U	0.2	5	1 U	0.2 U	0.5 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.6	0.2 U	0.2 U
Chromium	120000	27.7	28.1	66	39	31.5	25	22.7	25.1	22.6	27.6	23.8	26	28.6	32.1	33.3	29.8
Copper	36	20.3	49.4	3070	164	26.5	14	12.3	12.5	11.5	17.9	11.2	38.8	64.4	283	44	40.8
Lead	250	16	14	2270	100	8	3 U	3	2	2	3	2	16	15	157	16	15
Mercury	24	0.04 U	0.05	0.04 U	0.07 U	0.07	0.04 U	0.04 U	0.05 U	0.05 U	0.04 U	0.04 U	0.04 U	0.05	0.05 U	0.05 U	0.05 U
Selenium	400																
Silver	400																
Zinc	24000	57	64.6	5730	531	44.1	40	29.7	31.3	30.7	39.6	33.2	77.2	122	499	72.7	134
cPAHs (mg/kg)																	
8270/8270SIM																	
Benzo(a)anthracene		0.064 U	0.064 U														
Benzo(a)pyrene	0.14	0.064 U	0.077														
Benzo(b)fluoranthene		0.064 U	0.089														
Benzo(k)fluoranthene		0.064 U	0.094														
Chrysene		0.064 U	0.12														
Dibenz(a,h)anthracene		0.064 U	0.064 U														
Indeno(1,2,3-cd)pyrene		0.064 U	0.064 U														
cPAH TEQ	0.14	0.064 U	0.0965														

TABLE 25
FINAL COMPLIANCE MONITORING SAMPLE RESULTS - REPRESENTS SOIL REMAINING
INTERIM ACTION REPORT - AMERON HULBERT SITE
PORT OF EVERETT, WASHINGTON

	Cleanup Screening Levels (b)																
Area ID:		I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I
Sample Name:		I5-S1A	I5-S2A	I6-B1	I6-B4	I6-B5	I6-B6A	I6-B7	I6-B8	I6-B9	I6-B10	I6-B11	I6-B12	I6-B13	I6-B14	I6-B15	I6-B16A
Depth Range:																	
Date Collected:		7/17/2006	7/17/2006	7/28/2006	7/28/2006	7/28/2006	8/9/2006	7/28/2006	7/28/2006	7/28/2006	7/28/2006	7/28/2006	8/9/2006	8/9/2006	8/9/2006	8/9/2006	9/28/2006
Sample Type:		Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation
Metals (mg/kg)																	
SW6000-7000 Series																	
Arsenic	20	18.1	5.6	10	5 U	13	12	6	7	7	5 U	6	13	8	7	11	4.7
Barium	1650																
Cadmium	80	0.5 U	0.5 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	0.3	0.2 U	0.2 U	0.2 U	0.2 U	0.5 U
Chromium	120000	31	25	29.2	32.1	24.8	36.9	32.3	32.5	33.7	31.7	36.1	27.8	25.8	23	45.3	25
Copper	36	30	13	16.6	24.6	13.3	30.5	21.2	23.1	24.9	22.3	34.6	27	14.2	11.8	39.2	20
Lead	250	16	2 U	3	4	4	4	4	4	4	4	4	10	5	2	6	3
Mercury	24	0.04 U	0.04 U	0.04 U	0.05 U	0.04 U	0.06	0.06	0.05 U	0.05	0.04	0.06	0.05 U	0.04 U	0.04 U	0.04 U	0.05 U
Selenium	400																
Silver	400																
Zinc	24000	70	40	40.4	38.8	32.7	53.5	42.5	45.7	45.2	37.5	49.2	72.7	37	33.4	60.7	50
cPAHs (mg/kg)																	
8270/8270SIM																	
Benzo(a)anthracene				0.064 U	0.064 U	0.066 U	0.064 U	0.066 U	0.066 U	0.063 U	0.065 U	0.065 U	0.066 U	0.066 U	0.065 U	0.064 U	
Benzo(a)pyrene	0.14			0.064 U	0.064 U	0.066 U	0.064 U	0.066 U	0.066 U	0.063 U	0.065 U	0.065 U	0.066 U	0.066 U	0.065 U	0.064 U	
Benzo(b)fluoranthene				0.064 U	0.064 U	0.066 U	0.064 U	0.066 U	0.066 U	0.063 U	0.065 U	0.065 U	0.066 U	0.066 U	0.065 U	0.064 U	
Benzo(k)fluoranthene				0.064 U	0.064 U	0.066 U	0.064 U	0.066 U	0.066 U	0.063 U	0.065 U	0.065 U	0.066 U	0.066 U	0.065 U	0.064 U	
Chrysene				0.064 U	0.064 U	0.066 U	0.064 U	0.066 U	0.066 U	0.063 U	0.065 U	0.065 U	0.066 U	0.066 U	0.065 U	0.064 U	
Dibenz(a,h)anthracene				0.064 U	0.064 U	0.066 U	0.064 U	0.066 U	0.066 U	0.063 U	0.065 U	0.065 U	0.066 U	0.066 U	0.065 U	0.064 U	
Indeno(1,2,3-cd)pyrene				0.064 U	0.064 U	0.066 U	0.064 U	0.066 U	0.066 U	0.063 U	0.065 U	0.065 U	0.066 U	0.066 U	0.065 U	0.064 U	
cPAH TEQ	0.14			0.064 U	0.064 U	0.066 U	0.064 U	0.066 U	0.066 U	0.063 U	0.065 U	0.065 U	0.066 U	0.066 U	0.065 U	0.064 U	

TABLE 25
FINAL COMPLIANCE MONITORING SAMPLE RESULTS - REPRESENTS SOIL REMAINING
INTERIM ACTION REPORT - AMERON HULBERT SITE
PORT OF EVERETT, WASHINGTON

	Area ID:	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I
	Sample Name:	I6-B17	I6-S2	I6-S3	I6-S4B	I6-S5B	I7-B1A	I7-B2	I7-B3	I7-B4	I7-B5	I7-B6	I7-B7	I7-B8	I7-B9	I7-B10	I7-B11	I7-S2
	Depth Range:																	
	Date Collected:	9/22/2006	7/12/2006	7/12/2006	8/22/2006	8/22/2006	8/9/2006	7/31/2006	7/31/2006	7/31/2006	7/31/2006	7/31/2006	7/31/2006	7/31/2006	7/31/2006	7/31/2006	7/31/2006	7/31/2006
	Sample Type:	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation
	Cleanup Screening Levels (b)																	
Metals (mg/kg)																		
SW6000-7000 Series																		
Arsenic	20	6 U					5	15	5 U	5 U	5	5 U	5 U	7	7	20	9	9
Barium	1650																	
Cadmium	80	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	1.8	0.2 U	0.2 U
Chromium	120000	26.2					24.6	25.7	29.9	20	22.5	46.1	31.2	24.2	26.3	24	39.3	31.1
Copper	36	13.6					21.6	29.9	23.3	11.8	15.4	22.6	23.4	21.1	22	33.8	43.9	35.1
Lead	250	3					14	11	23	11	26	3	6	17	16	10	19	15
Mercury	24	0.04 U					0.04 U	0.05 U	0.05 U	0.05 U	0.04 U	0.05 U	0.04 U	0.04	0.05 U	0.04 U	0.04	0.06
Selenium	400																	
Silver	400																	
Zinc	24000	34.1					58.5	109	53.6	40.7	77	33.7	47.7	69.1	65.2	59	115	87.4
cPAHs (mg/kg)																		
8270/8270SIM																		
Benzo(a)anthracene		0.065 U	0.065 U	0.069	0.065 U	0.066 U												
Benzo(a)pyrene	0.14	0.065 U	0.066	0.069	0.065 U	0.068												
Benzo(b)fluoranthene		0.065 U	0.1	0.14	0.13	0.096												
Benzo(k)fluoranthene		0.065 U	0.071	0.078	0.065 U	0.066 U												
Chrysene		0.065 U	0.086	0.14	0.097	0.094												
Dibenz(a,h)anthracene		0.065 U	0.065 U	0.065 U	0.065 U	0.066 U												
Indeno(1,2,3-cd)pyrene		0.065 U	0.065 U	0.065 U	0.065 U	0.066 U												
cPAH TEQ	0.14	0.065 U	0.08396	0.0991	0.01397	0.07854												

TABLE 25
FINAL COMPLIANCE MONITORING SAMPLE RESULTS - REPRESENTS SOIL REMAINING
INTERIM ACTION REPORT - AMERON HULBERT SITE
PORT OF EVERETT, WASHINGTON

	Cleanup Screening Levels (b)	I	I	I	I	I	I	I	I	I	I	I
Sample Name:		I7-S5	I7-S7	I7-S8	I7-S9	I-8-A	I-8-B	I-9-A	I-9-B	I-9-C	I-9-D	I-9-E
Depth Range:						(2.5-3)	(2.5-3)	(1.5-2)	(1.5-2)	(1.5-2)	(2.5-3)	(2.5-3)
Date Collected:		7/31/2006	7/31/2006	7/31/2006	7/31/2006	10/7/2005	10/7/2005	10/7/2005	10/7/2005	10/7/2005	10/13/2005	10/13/2005
Sample Type:		Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation
Metals (mg/kg)												
SW6000-7000 Series												
Arsenic	20	8	6	5 U	10 U	12	14	8	10	10	15	10
Barium	1650											
Cadmium	80	0.2 U	0.2 U	0.2 U	0.5 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Chromium	120000	51.2	23.7	13	43							
Copper	36	77.1	17.9	10.6	65.9	31.8	33.4	14.1	16	14.9	33	15.9
Lead	250	51	10	9	69	10	16	2	2	2	5	2
Mercury	24	0.04 U	0.04 U	0.04 U	0.04 U	0.05 U	0.06	0.05 U	0.05 U	0.05 U	0.06 U	0.05 U
Selenium	400											
Silver	400											
Zinc	24000	251	46.6	31.3	143	52.7	69.4	33.2	33.9	33.5	56.8	55.5
cPAHs (mg/kg)												
8270/8270SIM												
Benzo(a)anthracene						0.065 U	0.064 U	0.065 U	0.066 U	0.066 U		
Benzo(a)pyrene	0.14					0.065 U	0.064 U	0.065 U	0.066 U	0.066 U		
Benzo(b)fluoranthene						0.065 U	0.064 U	0.065 U	0.066 U	0.066 U		
Benzo(k)fluoranthene						0.065 U	0.064 U	0.065 U	0.066 U	0.066 U		
Chrysene						0.065 U	0.064 U	0.065 U	0.066 U	0.066 U		
Dibenz(a,h)anthracene						0.065 U	0.064 U	0.065 U	0.066 U	0.066 U		
Indeno(1,2,3-cd)pyrene						0.065 U	0.064 U	0.065 U	0.066 U	0.066 U		
cPAH TEQ	0.14					0.065 U	0.064 U	0.065 U	0.066 U	0.066 U		

TABLE 25
FINAL COMPLIANCE MONITORING SAMPLE RESULTS - REPRESENTS SOIL REMAINING
INTERIM ACTION REPORT - AMERON HULBERT SITE
PORT OF EVERETT, WASHINGTON

	Area ID:	J	J	J	J	J	J	J	J	J	J	J	J	J	J	J	J	J
	Sample Name:	I7-S1B	I7-S3A	J1-B1	J1-B2	J1-B3	J1-B5	J1-B6	J1-B7	J1-B8	J1-S1	J1-S2	J1-S3	J1-S4	J1-S5	J1-S6	J1-TB1	J1-TB2
	Depth Range:																	
	Date Collected:	8/18/2006	8/9/2006	8/2/2006	8/2/2006	8/2/2006	8/2/2006	8/2/2006	8/2/2006	8/2/2006	8/2/2006	8/2/2006	8/2/2006	8/2/2006	8/2/2006	8/2/2006	10/2/2006	10/2/2006
	Sample Type:	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation
	Cleanup Screening Levels (b)																	
NWTPH-Dx (mg/kg)																		
Diesel-Range Organics	2000																	
Lube Oil	2000																	
BTEX(mg/kg) Method 8021																		
Benzene	0.29																	
Ethylbenzene	18																	
m, p-Xylene	15																	
o-Xylene	150																	
Toluene	110																	
Xylenes, Total	15																	
Metals (mg/kg) SW6000-7000 Series																		
Arsenic	20	12	5 U	8	5 U	6	5 U	5 U	5 U	6 U	6	6	7	5	5 U	5 U	7	6 U
Barium	1650																	
Cadmium	80	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	0.2 U	0.3 U	0.2 U
Chromium	120000	35.7	37.4	46	35.3	24.8	32	24.8	36.5	23.3	27	27.2	30.7	42.4	28.3	30.3	26.7	27.1
Copper	36	36	21.7	30	18.8	15.3	16	15	21.9	18.7	17.9	14.2	17.4	20.3	15.3	19.1	19.7	18.5
Lead	250	20	5	16	3	5	3	4	9	16	7	6	5	5	3	5	5	6
Mercury	24	0.08	0.04 U	0.08	0.04 U	0.04 U	0.04 U	0.05 U	0.05	0.09	0.04 U	0.04 U	0.04 U	0.04 U	0.05 U	0.04 U	0.05 U	0.05
Selenium	400																	
Silver	400																	
Zinc	24000	104	42.6	64.5	37	45.7	35.8	32.2	42.7	79.3	44.1	53.5	44	46	33.3	49.5	38.8	40.6
cPAHs (mg/kg) 8270/8270SIM																		
Benzo(a)anthracene																	0.065 UJ	0.063 UJ
Benzo(a)pyrene	0.14																0.065 UJ	0.063 UJ
Benzo(b)fluoranthene																	0.065 UJ	0.063 UJ
Benzo(k)fluoranthene																	0.065 UJ	0.063 UJ
Chrysene																	0.065 UJ	0.063 UJ
Dibenz(a,h)anthracene																	0.065 UJ	0.063 UJ
Indeno(1,2,3-cd)pyrene																	0.065 UJ	0.063 UJ
cPAH TEQ	0.14																0.065 UJ	0.063 UJ

TABLE 25
FINAL COMPLIANCE MONITORING SAMPLE RESULTS - REPRESENTS SOIL REMAINING
INTERIM ACTION REPORT - AMERON HULBERT SITE
PORT OF EVERETT, WASHINGTON

	Cleanup Screening Levels (b)									
Area ID:		J	J	J	J	J	J	J	J	J
Sample Name:		J1-TS1	J1-TS2	J1-TS3	J3-S1	J3-S2	J3-S3	J3-S4	J3-S5	J3-S6
Depth Range:										
Date Collected:		10/2/2006	10/2/2006	10/2/2006	9/22/2006	9/22/2006	9/22/2006	9/22/2006	9/22/2006	8/3/2006
Sample Type:		Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation
NWTPH-Dx (mg/kg)										
Diesel-Range Organics	2000									
Lube Oil	2000									
BTEX(mg/kg) Method 8021										
Benzene	0.29									
Ethylbenzene	18									
m, p-Xylene	15									
o-Xylene	150									
Toluene	110									
Xylenes, Total	15									
Metals (mg/kg) SW6000-7000 Series										
Arsenic	20	7	8	6	33	5 U	7	5 U	9	6
Barium	1650									
Cadmium	80	0.2 U	0.2 U	0.2 U	0.3	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Chromium	120000	24.4	27.4	24.9	32.3	21.1	27.2	24.4	27.2	26.7
Copper	36	19.7	20.4	17.9	52	12.2	16.5	18.3	17.3	22.4
Lead	250	10	8	6	28	7	4	5	4	8
Mercury	24	0.36	0.09	0.17	0.07	0.04 U	0.06 U	0.04 U	0.05 U	0.05 U
Selenium	400									
Silver	400									
Zinc	24000	68.6	47.8	80.3	97.6	26.5	38.1	37.7	41	40.9
cPAHs (mg/kg) 8270/8270SIM										
Benzo(a)anthracene		0.071 J	0.066 UJ	0.069 J	0.064 U	0.064 U	0.066 U	0.065 U	0.066 U	
Benzo(a)pyrene	0.14	0.074 J	0.066 UJ	0.064 UJ	0.064 U	0.064 U	0.066 U	0.065 U	0.066 U	
Benzo(b)fluoranthene		0.074 J	0.066 UJ	0.064 UJ	0.064 U	0.064 U	0.066 U	0.065 U	0.066 U	
Benzo(k)fluoranthene		0.064 UJ	0.066 UJ	0.064 UJ	0.064 U	0.064 U	0.066 U	0.065 U	0.066 U	
Chrysene		0.1 J	0.066 UJ	0.086 J	0.064 U	0.064 U	0.066 U	0.065 U	0.066 U	
Dibenz(a,h)anthracene		0.064 UJ	0.066 UJ	0.064 UJ	0.064 U	0.064 U	0.066 U	0.065 U	0.066 U	
Indeno(1,2,3-cd)pyrene		0.064 UJ	0.066 UJ	0.064 UJ	0.064 U	0.064 U	0.066 U	0.065 U	0.066 U	
cPAH TEQ	0.14	0.0895 J	0.066 UJ	0.00776 J	0.064 U	0.064 U	0.066 U	0.065 U	0.066 U	

Area ID:	J	J	J	J	J	J	J	J
Sample Name:	KFI-SS01	KFI-SS03	KFI-SS05	KFI-SS06	KFI-SS08	KFI-SS09	KFI-SS10	KFI-SS13
Depth Range:	(8-8)	(7-7)	(6-6)	(8-8)	(6-6)	(4-4)	(4-4)	(8-8)
Date Collected:	10/1/1993	10/1/1993	10/1/1993	10/1/1993	10/1/1993	10/1/1993	10/1/1993	10/20/1993
Sample Type:	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation
NWTPH-Dx (mg/kg)								
Diesel-Range Organics	160	65	13	11 U	13 U	87	13 U	10 U
Lube Oil	110	33	23 U	22 U	26 U	25 U	26 U	10 U

TABLE 25
FINAL COMPLIANCE MONITORING SAMPLE RESULTS - REPRESENTS SOIL REMAINING
INTERIM ACTION REPORT - AMERON HULBERT SITE
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	Area ID:	J	J	J	J	J	J	J	J	J	J	J	J	J	J	J	M
	Sample Name:	KFI-SS15	KFI-SS16	KFI-SS18	KFI-SS19	KFI-SS20	KFI-SS21	KFI-SS23	KFI-SS24	KFI-SS25	PofE Bottom of hole	PofE Center Bottom	PofE Center of Tank	PofE North Wall	PofE South Wall	PofE West Wall	PofE East Wall
	Depth Range:	(10-10)	(8-8)	(16-16)	(8-8)	(10-10)	(7-7)	(8-8)	(20-20)	(22-22)							
	Date Collected:	10/20/1993	10/20/1993	10/20/1993	10/20/1993	10/20/1993	10/20/1993	10/20/1993	10/20/1993	10/20/1993	6/23/1991	6/23/1991	6/23/1991	6/23/1991	6/23/1991	6/23/1991	6/23/1991
	Sample Type:	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation
	Cleanup Screening Levels (b)																
NWTPH-Dx (mg/kg)																	
Diesel-Range Organics	2000	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	2.5 U	2.5 U	0.01 U	2.5 U	2.5 U	2.5 U	2.5 U
Lube Oil	2000	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U							
BTEX(mg/kg)																	
Method 8021																	
Benzene	0.29										0.01 U	0.025 U	0.001 U	0.025 U	0.025 U	0.025 U	0.025 U
Ethylbenzene	18										0.01 U	0.025 U	0.001 U	0.025 U	0.025 U	0.025 U	0.025 U
m, p-Xylene	15																
o-Xylene	150																
Toluene	110										0.01 U	0.025 U	0.001 U	0.025 U	0.025 U	0.025 U	0.025 U
Xylenes, Total	15										0.01 U	0.025 U	0.001 U	0.025 U	0.025 U	0.025 U	0.025 U
Metals (mg/kg)																	
SW6000-7000 Series																	
Arsenic	20																
Barium	1650																
Cadmium	80																
Chromium	120000																
Copper	36																
Lead	250																
Mercury	24																
Selenium	400																
Silver	400																
Zinc	24000																
cPAHs (mg/kg)																	
8270/8270SIM																	
Benzo(a)anthracene																	
Benzo(a)pyrene	0.14																
Benzo(b)fluoranthene																	
Benzo(k)fluoranthene																	
Chrysene																	
Dibenz(a,h)anthracene																	
Indeno(1,2,3-cd)pyrene																	
cPAH TEQ	0.14																

TABLE 25
FINAL COMPLIANCE MONITORING SAMPLE RESULTS - REPRESENTS SOIL REMAINING
INTERIM ACTION REPORT - AMERON HULBERT SITE
PORT OF EVERETT, WASHINGTON

	Area ID:	M	M	M	M	M	M	M	M	M	M	M
	Sample Name:	M1-B1	M1-B2	M1-B3	M1-B4	M1-S1	M1-S2	M1-S3	M1-S4	M1-S5	M1-S6	M1-S7
	Depth Range:											
	Date Collected:	8/3/2006	8/3/2006	8/3/2006	8/3/2006	8/3/2006	8/3/2006	8/3/2006	8/3/2006	8/3/2006	8/3/2006	8/3/2006
	Sample Type:	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation
	Cleanup Screening Levels (b)											
cPAHs (mg/kg) 8270/8270SIM												
Benzo(a)anthracene		0.063 U	0.065 U	0.064 U	0.067 U	0.53	0.065 U	0.066 U	0.066 U	0.067 U	0.066 U	0.066 U
Benzo(a)pyrene	0.14	0.063 U	0.065 U	0.064 U	0.067 U	0.76	0.065 U	0.066 U	0.066 U	0.067 U	0.066 U	0.066 U
Benzo(b)fluoranthene		0.063 U	0.065 U	0.064 U	0.067 U	0.7	0.065 U	0.066 U	0.066 U	0.067 U	0.066 U	0.066 U
Benzo(k)fluoranthene		0.063 U	0.065 U	0.064 U	0.067 U	0.58	0.065 U	0.066 U	0.066 U	0.067 U	0.066 U	0.066 U
Chrysene		0.063 U	0.065 U	0.064 U	0.067 U	0.89	0.065 U	0.066 U	0.066 U	0.067 U	0.066 U	0.066 U
Dibenz(a,h)anthracene		0.063 U	0.065 U	0.064 U	0.067 U	0.09	0.065 U	0.066 U	0.066 U	0.067 U	0.066 U	0.066 U
Indeno(1,2,3-cd)pyrene		0.063 U	0.065 U	0.064 U	0.067 U	0.48	0.065 U	0.066 U	0.066 U	0.067 U	0.066 U	0.066 U
cPAH TEQ	0.14	0.063 U	0.065 U	0.064 U	0.067 U	1.01	0.065 U	0.066 U	0.066 U	0.067 U	0.066 U	0.066 U

U = the analyte was not detected in the sample at the given reporting limit.
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 reporting limit is an estimate.
Shaded cells indicate an exceedance of the site cleanup levels.

(a) Development of the cleanup levels is presented in Table 12.
(b) Development of the cleanup levels is presented in Table 4.

TABLE 26
FAILED COMPLIANCE MONITORING SAMPLE RESULTS - REPRESENTING SOIL REMOVED
INTERIM ACTION REPORT - AMERON HULBERT SITE
PORT OF EVERETT, WASHINGTON

	Area ID:	G	G
	Sample Name:	G1-B4	G1-B9
	Depth Range:		
	Date Collected:	6/30/2006	9/19/2006
	Sample Type:	Excavation	Excavation
	Cleanup Levels (a)		
NWTPH-Dx (mg/kg)			
Diesel-Range Organics	2000	19	
Lube Oil	2000	43	
Metals (mg/kg)			
SW6000-7000 Series			
Arsenic	20	430	64
Barium	1650		
Cadmium	80	1.1	0.4
Chromium	120000	47	34.3
Copper	36	454	70.5
Lead	250	400	61
Mercury	24	0.05 U	0.04 U
Selenium	400		
Silver	400		
Zinc	24000	1360	215
cPAHs (mg/kg)			
8270/8270SIM			
Benzo(a)anthracene		0.065 U	
Benzo(a)pyrene	0.14	0.065 U	
Benzo(b)fluoranthene		0.065 U	
Benzo(k)fluoranthene		0.065 U	
Chrysene		0.07	
Dibenz(a,h)anthracene		0.065 U	
Indeno(1,2,3-cd)pyrene		0.065 U	
cPAH TEQ	0.14	0.0007	

TABLE 26
FAILED COMPLIANCE MONITORING SAMPLE RESULTS - REPRESENTS SOIL REMOVED
INTERIM ACTION REPORT - AMERON HULBERT SITE
PORT OF EVERETT, WASHINGTON

	Area ID:	I	I	I	I	I	I	I	I	I	I	I	I
	Sample Name:	I-11-A	I1-B1	I1-B2	I2-B11	I2-S10	I2-S5	I3A-B1	I3A-S1	I3A-S2	I3B-B3	I4-S2	I5-B2
	Depth Range:	(1.5-1.75)											
	Date Collected:	10/7/2005	7/11/2006	7/11/2006	9/15/2006	9/15/2006	10/2/2006	7/5/2006	7/18/2006	7/18/2006	7/7/2006	7/28/2006	6/29/2006
	Sample Type:	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation
	Cleanup Levels (a)												
Metals (mg/kg)													
SW6000-7000 Series													
Arsenic	20	22	80	210	75	36	39	1930	48.6	63	60	26	94
Barium	1650												
Cadmium	80	0.2	0.5 U	0.5	0.7	0.2 U	0.4	4	0.5 U	0.5 U	0.3	0.2 U	0.2 U
Chromium	120000		36	39	76.7	23.5	32.3	57	26	26	23.8	31.3	29.8
Copper	36	47.3	277	220	190	62.8	44.2	1410	77	61	109	143	54.4
Lead	250	37	69	139	103	42	17	1490	32	46	88	39	8
Mercury	24	0.06	0.29	0.17	0.19	0.05 U	0.06	0.04 U	0.05 U	0.04 U	0.04 U	0.32	0.05
Selenium	400												
Silver	400												
Zinc	24000	128	560	714	719	152	120	4200	160	180	311	100	51.2
cPAHs (mg/kg)													
8270/8270SIM													
Benzo(a)anthracene		0.065 U						0.22	0.065 U	0.066 U	0.063 U	0.13	
Benzo(a)pyrene	0.14	0.065 U						0.26	0.13	0.066 U	0.063 U	0.09	
Benzo(b)fluoranthene		0.065 U						0.42	0.17	0.066 U	0.063 U	0.19	
Benzo(k)fluoranthene		0.065 U						0.35	0.13	0.066 U	0.063 U	0.19	
Chrysene		0.065 U						0.42	0.18	0.066 U	0.063 U	0.33	
Dibenz(a,h)anthracene		0.065 U						0.064 U	0.097	0.066 U	0.063 U	0.064 U	
Indeno(1,2,3-cd)pyrene		0.065 U						0.2	0.37	0.066 U	0.063 U	0.094	
cPAH TEQ	0.14	0.065 U						0.3832	0.2085	0.066 U	0.063 U	0.1537	

TABLE 26
FAILED COMPLIANCE MONITORING SAMPLE RESULTS - REPRESENTS SOIL REMOVED
INTERIM ACTION REPORT - AMERON HULBERT SITE
PORT OF EVERETT, WASHINGTON

	Cleanup Levels (a)	I5-S1	I5-S2	I5-S3	I5-S3A	I5-S3B	I5-S3C	I5-S3E	I5-S3F	I6-B6	I6-B16	I6-S1	I6-S4	I6-S4A	I6-S5	I6-S5A
Area ID:		I	I	I	I	I	I	I	I	I	I	I	I	I	I	I
Sample Name:		I5-S1	I5-S2	I5-S3	I5-S3A	I5-S3B	I5-S3C	I5-S3E	I5-S3F	I6-B6	I6-B16	I6-S1	I6-S4	I6-S4A	I6-S5	I6-S5A
Depth Range:																
Date Collected:		6/29/2006	6/29/2006	6/29/2006	7/17/2006	7/26/2006	7/26/2006	8/22/2006	8/22/2006	7/28/2006	9/22/2006	7/28/2006	7/28/2006	8/9/2006	7/28/2006	8/9/2006
Sample Type:		Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation
Metals (mg/kg)																
SW6000-7000 Series																
Arsenic	20	1610	70	330	95.2	125	510	80	23	24	41	20	12	7	87	10
Barium	1650															
Cadmium	80	2.8	0.2 U	0.9	0.5	0.3	1.1	0.5 U	0.2 U	0.2 U	0.2 U	0.2 U	0.4	0.2 U	0.8	0.2 U
Chromium	120000	54	28.9	41	31	29.4	41	29	32.2	32	22.7	30.9	42.6	25.2	30.5	27.9
Copper	36	1180	69.4	260	155	133	476	982	89	24.7	12.1	43.5	38	16	220	39.9
Lead	250	1310	60	228	75	99	402	100	13	5	4	24	34	13	86	133
Mercury	24	0.05 U	0.06	0.05 U	0.05 U	0.05	0.04 U	0.07	0.05 U	0.04	0.04 U	0.05	0.06	0.04 U	0.11	0.05 U
Selenium	400															
Silver	400															
Zinc	24000	3770	214	662	260	287	1060	1210	162	43.7	33.7	130	107	45.3	658	452
cPAHs (mg/kg)																
8270/8270SIM																
Benzo(a)anthracene										0.065 U	0.066 U	7.8	0.097	0.12	0.15	0.27
Benzo(a)pyrene	0.14									0.065 U	0.066 U	5.1	0.14	0.14	0.21	0.25
Benzo(b)fluoranthene										0.065 U	0.066 U	6	0.13	0.18	0.29	0.34
Benzo(k)fluoranthene										0.065 U	0.066 U	6	0.13	0.16	0.29	0.25
Chrysene										0.065 U	0.066 U	15	0.18	0.22	0.25	0.36
Dibenz(a,h)anthracene										0.065 U	0.066 U	0.92	0.065 U	0.065 U	0.065 U	0.066 U
Indeno(1,2,3-cd)pyrene										0.065 U	0.066 U	1.9	0.11	0.081	0.087	0.092
cPAH TEQ	0.14									0.065 U	0.066 U	7.512	0.1885	0.1963	0.2942	0.3488
Tributyl Tins (mg/kg)																
KRONE 1989																
Butyl Tin Ion								0.0039 UJ								
Dibutyl Tin Ion								0.0088 J								
Tributyl Tin Ion	7							0.014 J								

TABLE 26
FAILED COMPLIANCE MONITORING SAMPLE RESULTS - REPRESENTS SOIL REMOVED
INTERIM ACTION REPORT - AMERON HULBERT SITE
PORT OF EVERETT, WASHINGTON

	Area ID:	I	I	I	I	I	I	I	I	I	I	I	I
	Sample Name:	I6-S9	I7-B1	I7-S1	I7-S1A	I7-S3	I7-S4	I7-S4A	I7-S6	I7-S6A	I7-S6B	I-9-D	I-9-E
	Depth Range:											(1.5-2)	(1.5-2)
	Date Collected:	7/28/2006	7/31/2006	7/31/2006	8/9/2006	7/31/2006	7/31/2006	8/9/2006	7/31/2006	8/22/2006	10/3/2006	10/7/2005	10/7/2005
	Sample Type:	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation	Excavation
	Cleanup Levels (a)												
Metals (mg/kg)													
SW6000-7000 Series													
Arsenic	20	20	50	40	90	30	30	250 U	52	29	100	98	24
Barium	1650												
Cadmium	80	0.2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	10 U	0.2 U	0.2	0.7	0.6	0.2 U
Chromium	120000	38.6	20	40	38	35	45	50	23.2	34.4	24		
Copper	36	22	53.8	133	138	53.6	104	163000	34.4	62	57.9	455	31.6
Lead	250	20	5 U	103	87	29	57	100 U	19	37	40	96	15
Mercury	24	0.04 U	0.04 U	0.6	0.05	0.04 U	0.04	0.04 U	0.04 U	0.04 U	0.05 U	0.06 U	0.05 U
Selenium	400												
Silver	400												
Zinc	24000	130	47	533	571	172	321	320	104	155	190	286	73.7
cPAHs (mg/kg)													
8270/8270SIM													
Benzo(a)anthracene		0.48										0.066 U	0.063 U
Benzo(a)pyrene	0.14	0.49										0.066 U	0.063 U
Benzo(b)fluoranthene		0.47										0.066 U	0.063 U
Benzo(k)fluoranthene		0.47										0.066 U	0.063 U
Chrysene		1										0.066 U	0.063 U
Dibenz(a,h)anthracene		0.12										0.066 U	0.063 U
Indeno(1,2,3-cd)pyrene		0.28										0.066 U	0.063 U
cPAH TEQ	0.14	0.682										0.066 U	0.063 U
Tributyl Tins (mg/kg)													
KRONE 1989													
Butyl Tin Ion													
Dibutyl Tin Ion													
Tributyl Tin Ion	7												

TABLE 26
FAILED COMPLIANCE MONITORING SAMPLE RESULTS - REPRESENTS SOIL REMOVED
INTERIM ACTION REPORT - AMERON HULBERT SITE
PORT OF EVERETT, WASHINGTON

	Area ID:	J
	Sample Name:	J1-B4
	Depth Range:	
	Date Collected:	8/2/2006
	Sample Type:	Excavation
	Cleanup Levels (a)	
Metals (mg/kg)		
SW6000-7000 Series		
Arsenic	20	10
Barium	1650	
Cadmium	80	0.6
Chromium	120000	21
Copper	36	42
Lead	250	50
Mercury	24	3.4
Selenium	400	
Silver	400	
Zinc	24000	153

Shaded cells indicate an exceedance of the site cleanup levels.
U = The analyte was not detected in the sample at the given reporting limit
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 reporting limit is an estimate

(a) Development of the cleanup levels is presented in Table 12.

TABLE 27
pH IN CHARACTERIZATION AND WASTE PROFILE SOIL SAMPLES
INTERIM ACTION REPORT - AMERON HULBERT SITE
PORT OF EVERETT, WASHINGTON

Sample Name	Date Collected	Area ID	Sample Type	pH (SU) EPA 150.1
G1-AC-1	6/22/2006	G	Surface Soil	12.29
G1-AC-2	6/22/2006	G	Surface Soil	12.35
G1-AC-3	6/22/2006	G	Surface Soil	12.33
G1-AC-4	6/22/2006	G	Surface Soil	11.56
G1-AC-5	6/22/2006	G	Surface Soil	12.18
G1-AC-6	6/26/2006	G	Surface Soil	11.94
G1-AC-7	6/27/2006	G	Surface Soil	8.06
G1-AC-9	6/23/2006	G	Surface Soil	8.39
I1-AC-1	6/21/2006	I	Surface Soil	7.22
I2-AC-1	7/13/2006	I	excavation	12.35
I2-AC-2	7/13/2006	I	excavation	12.31
I3B-AC-1	7/7/2006	I	Surface Soil	8.70
I3B-AC-2	7/7/2006	I	Surface Soil	7.99
I4-AC-2	7/12/2006	I	Surface Soil	7.79
I5-AC-4	6/28/2006	I	Surface Soil	8.38
I5-AC-5	7/14/2006	I	Surface Soil	7.61
I5-AC-1	6/27/2006	I	Surface Soil	12.27

TABLE 28
BACKFILL SOIL SAMPLE RESULTS
INTERIM ACTION REPORT - AMERON HULBERT SITE
PORT OF EVERETT, WASHINGTON

	Area ID:	I	I	I	I	I
	Sample Name:	BF-TP-1	BF-TP-2	BF-TP-3	BF-TP-4	BF-TP-5
	Date Collected:	10/23/2006	10/23/2006	10/23/2006	10/23/2006	10/23/2006
	Sample Type:	Backfill	Backfill	Backfill	Backfill	Backfill
	Cleanup Screening Levels (a)					
TOTAL METALS (mg/kg)						
Method 200.8						
Arsenic	20	7.2	9.1	54.8	126	61.3

Shaded cells indicate an exceedance of the site cleanup levels.

(a) Development of the cleanup levels is presented in Table 12.

TABLE 29
SVOCS IN FINAL COMPLIANCE MONITORING SOIL SAMPLES
INTERIM ACTION REPORT - AMERON HULBERT SITE
PORT OF EVERETT, WASHINGTON

	Area ID:	J		J		J		J		J	
	Sample Name:	J1-TB1		J1-TB2		J1-TS1		J1-TS2		J1-TS3	
	Date Collected:	10/2/2006		10/2/2006		10/2/2006		10/2/2006		10/2/2006	
	Sample Type:	Excavation		Excavation		Excavation		Excavation		Excavation	
	Cleanup Screening Levels (a)										
SVOCs (mg/kg)											
EPA Method 8270											
2,2'-Oxybis(1-Chloropropane)		0.065	UJ	0.063	UJ	0.064	UJ	0.066	UJ	0.064	UJ
2,4,5-Trichlorophenol		0.33	UJ	0.32	UJ	0.32	UJ	0.33	UJ	0.32	UJ
2,4,6-Trichlorophenol		0.33	UJ	0.32	UJ	0.32	UJ	0.33	UJ	0.32	UJ
2,4-Dichlorophenol		0.33	UJ	0.32	UJ	0.32	UJ	0.33	UJ	0.32	UJ
2,4-Dimethylphenol		0.065	UJ	0.063	UJ	0.064	UJ	0.066	UJ	0.064	UJ
2,4-Dinitrophenol		0.65	UJ	0.63	UJ	0.64	UJ	0.66	UJ	0.64	UJ
2,4-Dinitrotoluene		0.33	UJ	0.32	UJ	0.32	UJ	0.33	UJ	0.32	UJ
2,6-Dinitrotoluene		0.33	UJ	0.32	UJ	0.32	UJ	0.33	UJ	0.32	UJ
2-Chloronaphthalene		0.065	UJ	0.063	UJ	0.064	UJ	0.066	UJ	0.064	UJ
2-Chlorophenol		0.065	UJ	0.063	UJ	0.064	UJ	0.066	UJ	0.064	UJ
2-Methylnaphthalene	320	0.065	UJ	0.063	UJ	0.064	UJ	0.066	UJ	0.064	UJ
2-Methylphenol		0.065	UJ	0.063	UJ	0.064	UJ	0.066	UJ	0.064	UJ
2-Nitroaniline		0.33	UJ	0.32	UJ	0.32	UJ	0.33	UJ	0.32	UJ
2-Nitrophenol		0.33	UJ	0.32	UJ	0.32	UJ	0.33	UJ	0.32	UJ
3,3'-Dichlorobenzidine		0.33	UJ	0.32	UJ	0.32	UJ	0.33	UJ	0.32	UJ
3-Nitroaniline		0.33	UJ	0.32	UJ	0.32	UJ	0.33	UJ	0.32	UJ
4,6-Dinitro-2-Methylphenol		0.65	UJ	0.63	UJ	0.64	UJ	0.66	UJ	0.64	UJ
4-Bromophenyl-phenylether		0.065	UJ	0.063	UJ	0.064	UJ	0.066	UJ	0.064	UJ
4-Chloro-3-methylphenol		0.33	UJ	0.32	UJ	0.32	UJ	0.33	UJ	0.32	UJ
4-Chloroaniline		0.33	UJ	0.32	UJ	0.32	UJ	0.33	UJ	0.32	UJ
4-Chlorophenyl-phenylether		0.065	UJ	0.063	UJ	0.064	UJ	0.066	UJ	0.064	UJ
4-Methylphenol	--	0.28	J	0.063	UJ	0.064	UJ	0.066	UJ	0.064	UJ
4-Nitroaniline		0.33	UJ	0.32	UJ	0.32	UJ	0.33	UJ	0.32	UJ
4-Nitrophenol		0.33	UJ	0.32	UJ	0.32	UJ	0.33	UJ	0.32	UJ
Acenaphthene	66	0.065	UJ	0.063	UJ	0.064	UJ	0.066	UJ	0.064	UJ
Acenaphthylene		0.065	UJ	0.063	UJ	0.064	UJ	0.066	UJ	0.064	UJ
Anthracene	12000	0.065	UJ	0.063	UJ	0.064	UJ	0.066	UJ	0.064	UJ
Benzo(g,h,i)perylene		0.065	UJ	0.063	UJ	0.064	UJ	0.066	UJ	0.064	UJ
Benzoic Acid	320000	0.65	UJ	0.63	UJ	0.64	UJ	0.66	UJ	0.64	UJ
Benzyl Alcohol		0.33	UJ	0.32	UJ	0.32	UJ	0.33	UJ	0.32	UJ
Benzyl butyl phthalate		0.065	UJ	0.063	UJ	0.064	UJ	0.066	UJ	0.064	UJ
bis(2-Chloroethoxy) Methane		0.065	UJ	0.063	UJ	0.064	UJ	0.066	UJ	0.064	UJ
Bis-(2-Chloroethyl) Ether		0.065	UJ	0.063	UJ	0.064	UJ	0.066	UJ	0.064	UJ
bis(2-Ethylhexyl)phthalate	4.9	0.065	UJ	0.063	UJ	0.064	UJ	0.066	UJ	0.064	UJ
Carbazole	50	0.065	UJ	0.063	UJ	0.064	UJ	0.066	UJ	0.064	UJ
Dibenzofuran	160	0.065	UJ	0.063	UJ	0.064	UJ	0.066	UJ	0.064	UJ
Diethylphthalate		0.065	UJ	0.063	UJ	0.064	UJ	0.066	UJ	0.064	UJ
Dimethylphthalate		0.065	UJ	0.063	UJ	0.064	UJ	0.066	UJ	0.064	UJ
Di-n-butylphthalate		0.065	UJ	0.063	UJ	0.064	UJ	0.066	UJ	0.064	UJ
Di-n-Octyl phthalate	1600	0.065	UJ	0.063	UJ	0.064	UJ	0.066	UJ	0.064	UJ
Fluoranthene	89	0.065	UJ	0.063	UJ	0.13	J	0.066	UJ	0.064	UJ
Fluorene	553	0.065	UJ	0.063	UJ	0.064	UJ	0.066	UJ	0.064	UJ
Hexachlorobenzene		0.065	UJ	0.063	UJ	0.064	UJ	0.066	UJ	0.064	UJ
Hexachlorocyclopentadiene		0.33	UJ	0.32	UJ	0.32	UJ	0.33	UJ	0.32	UJ
Hexachloroethane		0.065	UJ	0.063	UJ	0.064	UJ	0.066	UJ	0.064	UJ
Isophorone		0.065	UJ	0.063	UJ	0.064	UJ	0.066	UJ	0.064	UJ
Nitrobenzene		0.065	UJ	0.063	UJ	0.064	UJ	0.066	UJ	0.064	UJ
N-Nitroso-Di-N-Propylamine		0.33	UJ	0.32	UJ	0.32	UJ	0.33	UJ	0.32	UJ
N-Nitrosodiphenylamine		0.065	UJ	0.063	UJ	0.064	UJ	0.066	UJ	0.064	UJ
Pentachlorophenol		0.33	UJ	0.32	UJ	0.32	UJ	0.33	UJ	0.32	UJ
Phenanthrene	12000	0.065	UJ	0.063	UJ	0.064	UJ	0.066	UJ	0.064	UJ
Phenol		0.065	UJ	0.063	UJ	0.064	UJ	0.066	UJ	0.064	UJ
Pyrene	2400	0.065	UJ	0.063	UJ	0.11	J	0.066	UJ	0.064	UJ

U = the analyte was not detected in the sample at the given reporting limit.
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 reporting limit is an estimate.
Shaded cells indicate an exceedance of the site cleanup levels.

(a) Development of the cleanup levels is presented in Table 12.

APPENDIX A

Historical Aerial Photographs

Source: S:\Projects\147\029\500\Filerm\T\Aerial Photos

LANDAU ASSOCIATES

Ameron/Hulbert Site
Port of Everett, Washington

Aerial Photo - 1961

Figure
A-1

Source: S:\Projects\147\029\500\Filerm\T\Aerial Photos

LANDAU ASSOCIATES

Ameron/Hulbert Site
Port of Everett, Washington

Aerial Photo - 1985

Figure
A-2

Source: S:\Projects\147\029\500\Filerm\T\Aerial Photos

LANDAU ASSOCIATES

Ameron/Hulbert Site
Port of Everett, Washington

Aerial Photo - 1992

Figure
A-3

LANDAU ASSOCIATES

Ameron/Hulbert Site
Port of Everett, Washington

Aerial Photo – September 2006

Figure
A-4

Landau Associates

Ameron/Hulbert Site
Port of Everett, Washington

Aerial Photo – December 2006

Figure
A-5

APPENDIX B

Investigation Sampling Methods

APPENDIX B
INVESTIGATION SAMPLING METHODS

This document describes the soil and groundwater sampling methods used for obtaining environmental characterization data for the West End Site (Site). The sampling methods were used during the following investigations:

- A Phase II Environmental Site Assessment (ESA) conducted in late 2003 and early 2004 (Landau Associates 2004)
- The Data Gaps Investigation (DGI) conducted in late 2004 and early 2005 (Landau Associates 2005a)
- The investigation of an area of oil-affected soil encountered during repair of the stormwater trunk line on the north Ameron leasehold boundary (Landau Associates 2005b)
- The Supplemental DGI conducted in late 2005 (Landau Associates 2006a)
- The Cleanup Action Plan Addendum (Landau Associates 2006b)
- Additional soil characterization conducted between February and July 2006 during interim action design (not previously reported)
- An additional investigation conducted in June 2006 and October 2007 during interim action implementation (not previously reported).
- Characterization of soil and groundwater encountered during excavation for the Craftsman District sanitary sewer system in May 2007 (not previously reported).

These investigations were conducted under, or consistent with, sampling and analysis plans reviewed by the Washington State Department of Ecology (Ecology) under its Voluntary Cleanup Program (VCP), except for the Phase II ESA work plan (Landau Associates 2003), which was conducted prior to the Port's entry into the VCP. The remainder of this document summarizes soil sampling methods, groundwater sampling methods, and equipment decontamination methods employed during these investigations. The work plans for the various investigations should be reviewed for a more detailed description of investigation sampling methods.

SOIL SAMPLING METHODS

Soil samples were obtained from borings installed using a truck-mounted direct-push drilling rig. Soil recovered from the borings was described using the Unified Soil Classification System (USCS) and were field screened for potential contamination. Field screening was accomplished by examining the soil for discoloration, anthropogenic materials (e.g., sandblast grit), and sheen or non-aqueous phase liquid (NAPL). A photo-ionization detector (PID) reading was obtained if field observations indicated the presence of petroleum hydrocarbons and was recorded for each 1-ft interval. If obvious signs of contamination were observed, a discrete sample was collected from the area with the greatest level of observed contamination. For the purposes of these investigations, "significant contamination" was defined as the presence of:

- Free-phase petroleum product
- Soil or groundwater with moderate to heavy visible product film
- Soil with moderate to heavy sheen produced during sheen test. The sheen test consisted of the addition of deionized water to a portion of the soil sample that was not submitted for chemical analysis, and agitation of the soil/water mixture. If a moderate to heavy sheen was visible on the surface of the water, then the soil was considered to have significant levels of petroleum-related contamination.
- Soil with visible staining
- Soil with a strong petroleum odor
- Soil with PID readings of volatile organic compounds (VOCs) at or above 20 parts per million (ppm).

Field observations, including soil type classification and field screening results, were recorded on a log of exploration field form. Following the completion of soil classification and field screening, samples were collected for analytical testing or for laboratory archive. The soil core was divided into the planned sample intervals [e.g., 0 to 0.5 ft, 1 to 2 ft, and 2 to 3 ft below ground surface (BGS)] and the sample intervals were individually homogenized using decontaminated stainless-steel bowls and spoons. The homogenized sample volumes were placed into the appropriate laboratory-supplied sample containers. Between samples, all down-hole drilling and sampling equipment was decontaminated, as specified below in the Equipment Decontamination Methods section.

The U.S. Environmental Protection Agency (EPA) 5035A soil sampling procedures were used to collect soil samples planned for VOCs; gasoline-range petroleum hydrocarbons (TPH-G); and benzene, toluene, ethylbenzene, and xylene (BTEX) analyses. The EPA 5035A soil sampling method is intended to reduce volatilization and biodegradation of samples. The EPA 5035A procedure for soil sample collection is as follows:

- Collect soil "cores" using coring devices (i.e., EnCore® sampler, EasyDraw Syringe®, or a Terra Core ™ sampling device). Each "core" will consist of approximately 5 grams of soil. Collect three discrete "cores" from each sampling location. One EasyDraw Syringe® or Terra Core ™ device will be used to collect the three discrete "cores"; however, if the EnCore® samplers are used, three sampling devices are required.
- Remove excess soil from the coring device. If the EasyDraw Syringe® or Terra Core ™ sampling device are used for sample collection, place the "cored" soil directly into unpreserved 40 ml vials with a stirbar. If the EnCore® sampler is used, close the sampler for transport to the laboratory.
- Collect one 2-oz soil jar of representative soil for moisture content and laboratory screening purposes. Fill the jar to minimize headspace.
- Samples will be placed in a shipping cooler at 4^0C. Samples will be transported to laboratory within 24 hours of sample collection, and will be stored at the laboratory at -7^0C.

GROUNDWATER SAMPLING METHODS

Groundwater samples were collected from direct-push soil borings and monitoring wells during the above-referenced environmental investigations. Groundwater samples from direct-push borings were collected using a temporary well screen advanced through the drill rods and were located within the upper 2 ft of the water table. Water was purged and sampled through the temporary well screen or monitoring well screen using new polyethylene tubing and a peristaltic pump. Low-flow sampling techniques were employed to minimize turbidity and the potential disturbance of VOCs in groundwater. The following field parameters were measured during purging and sample collection:

- pH
- Conductivity
- Temperature.

The purging was continued until the parameters stabilized and turbidity dissipated. Immediately following purging, the groundwater samples were collected into the appropriate laboratory-supplied sample containers. Samples collected for dissolved metals were field filtered using an inline 0.45 µm disposable field filter. Between samples, all down-hole drilling and sampling equipment was decontaminated, as specified below in the Equipment Decontamination Methods section.

EQUIPMENT DECONTAMINATION METHODS

The decontamination procedures described below were used by field personnel to decontaminate sampling, drilling, and related field equipment.

Sampling Equipment

All sampling equipment used (e.g., stainless-steel bowls, stainless-steel spoons, hand augers, direct-push core samplers, etc.) was cleaned using a three-step process, as follows:

1. Scrub surfaces of equipment that contact the sample with brushes using an Alconox solution.
2. Rinse and scrub equipment with clean tap water.
3. Rinse equipment a final time with deionized water to remove tap water impurities.

Decontamination of the reusable sampling devices was completed between collection of each sample. Sampling equipment that exhibited a visible sheen was decontaminated using a hexane rinse (or other appropriate solvent) prior to the tap water rinse.

Heavy Equipment

Heavy equipment (e.g., the drilling rigs and drilling equipment that were used downhole, or that contacted material and equipment going downhole) was cleaned by a hot water, high pressure wash before each use and at completion of the project. Potable tap water was used as the cleansing agent.

REFERENCES

Landau Associates. 2006a. *Ecology Review Draft Report, Supplemental Data Gaps Investigation, North Marina Redevelopment Site, Everett, Washington*. February 28.

Landau Associates 2006b. *Technical Memorandum, Cleanup Action Plan Addendum, Port of Everett, Washington*. September 25.

Landau Associates. 2005a. *Ecology Review Draft, Data Gaps Investigation, North Marina Redevelopment Site, Everett, Washington*. Prepared for the Port of Everett. May 13.

Landau Associates. 2005b. *Ameron International Leasehold Environmental Investigation of Oil-Affected Area*, Prepared for Port of Everett. .

Landau Associates. 2004. *Phase II Environmental Site Assessment Report, North Marina Area, Port of Everett, Everett, Washington.* April 13.

Landau Associates. 2003. *Work Plan, Phase II Environmental Site Assessment, North Marina Redevelopment Site, Port of Everett, Everett, Washington. December 29.*

APPENDIX C

Topographic Map (2004) and Site Survey Data

Source: September 2004DAVID EVANS & ASSOCIATES, INC

Port Of Everett | V:\1471029\520\Interim Action Report\Fig C1.dwg (A) "Figure C1" 4/6/2010

LANDAU ASSOCIATES

Ameron/Hulbert Site
Interim Action Report
Port of Everett, Washington

2004 Elevation Survey Data

Figure
C-1

N

Legend

Planned Excavation Area

Actual Excavation Boundary

Internal area boundary with elevation difference greater than 1 ft

0 30 60
Scale in Feet

Ameron/Hulbert Site
Interim Action Report
Port of Everett, Washington

Areas G, I, and J
Post Interm Action Survey Data

Figure
C-2

LANDAU ASSOCIATES

N

Legend

Planned Excavation Area

Actual Excavation Boundary

LANDAU ASSOCIATES

0 30 60

Scale in Feet

Ameron/Hulbert Site
Interim Action Report
Port of Everett, Washington

Area M
Post Interm Action Survey Data

Figure
C-3

APPENDIX D

Terrestrial Ecological Exclusion Form

Washington State Department of Ecology
Toxics Cleanup Program

Terrestrial Ecological Evaluation Process - Primary Exclusions

Documentation Form

Exclusion #	Exclusion Detail	Yes or No?	Are Institutional Controls Required If The Exclusion Applies?
1	Will soil contamination be located at least 6 feet beneath the ground surface and less than 15 feet?	Yes / No	No
	Will soil contamination be located at least 15 feet beneath the ground surface?	Yes / No	No
	Will soil contamination be located below the conditional point of compliance?	Yes / No	Yes
2	Will soil contamination be covered by buildings, paved roads, pavement, or other physical barriers that will prevent plants or wildlife from being exposed?	Yes / No	Yes
3	Is there less than 1.5 acres of contiguous undeveloped land on the site, or within 500 feet of any area of the site affected by hazardous substances **other than** those listed in the table of Hazardous Substances of Concern? And Is there less than 0.25 acres of contiguous undeveloped land on or within 500 feet of any area of the site affected by hazardous substances **listed in** the table of Hazardous Substances of Concern?	**Yes** **Yes**	Other factors determine
4	Are concentrations of hazardous substances in the soil less than or equal to natural background concentrations of those substances at the point of compliance	Yes / No	No

APPENDIX E

Plans and Specifications

Shallow Soil VCP Cleanup Action

Port of Everett
North Marina Redevelopment

Bid Package: Shallow Soil VCP Cleanup Action

Specifications

TABLE OF CONTENTS

PORT OF EVERETT
NORTH MARINA REDEVELOPMENT
SHALLOW SOIL VCP CLEANUP ACTION

DIVISION 0 – BIDDING REQUIREMENTS AND CONTRACT DOCUMENTS

(Provided by GC/CM)

TECHNICAL SPECIFICATIONS

NOTE: The Shallow Soil VCP Cleanup Action will be conducted as a supplement to the existing Early Site Package (ESP) Contract. As such, only certain technical specifications are being revised or added to more specifically address the requirements for implementation of the soil cleanup action by the selected Contractor.

DIVISION 1 – GENERAL REQUIREMENTS

01011 SUMMARY OF WORK (REPLACES EXISTING ESP SECTION 01010)
01020 MEASUREMENT AND PAYMENT
01041 COORDINATION (REPLACES EXISTING ESP SECTION 01040)
01201 MEETINGS (PER EXITING ESP SPECIFICATION)
01300 SUBMITTALS (PER EXITING ESP SPECIFICATION)
01350 HEALTH AND SAFETY (REPLACES EXISTING ESP SECTION 01900)
01355 ENVIRONMENTAL PROTECTION
01400 QUALITY CONTROL (PER EXITING ESP SPECIFICATION)
01500 TEMPORARY FACILITIES
01550 TRAFFIC CONTROL
01560 UTILITY PROTECTION
01563 WELL PROTECTION
01564 EQUIPMENT DECONTAMINATION
01565 AIR EMISSIONS CONTROL
01566 TEMPORARY EROSION AND SEDIMENTATION CONTROL (REPLACES EXISTING ESP SECTION 02371)
01567 SPILL PREVENTION AND POLLUTION CONTROL
01700 CONTRACT CLOSEOUT (PER EXITING ESP SPECIFICATION)

DIVISION 2 – SITE WORK

02220 SITE DEMOLITION (PER EXITING ESP SPECIFICATION)
02315 SOIL EXCAVATION, HANDLING, AND DISPOSAL (REPLACES EXISTING ESP SECTION 01901)
02300 EARTHWORK (PER EXITING ESP SPECIFICATION)

DRAWING SHEETS

(SEE SHALLOW SOIL VCP CLEANUP ACTION DRAWINGS, WHICH REPLACE EXISTING ESP SHEET CS1.1)

EXHIBITS

A. CLEANUP ACTION PLAN
B. SWPPP SUPPLEMENT
C. WASTE ACCEPTANCE DOCUMENTS

PORT OF EVERETT
NORTH MARINA REDEVELOPMENT
SHALLOW SOIL VCP CLEANUP ACTION

The engineering Drawings and Technical Specifications associated with the Shallow Soil VCP Cleanup Action project contained in these Contract Documents were prepared under the supervision and direction of the undersigned, whose seals as a registered professional engineer are affixed below.

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100% DESIGN REVIEW SUBMITTAL

CIP NO. 3-0-003-09

PROJECT NO. PD-NM-2005-03

PART 1 - GENERAL

1.01 PROJECT BACKGROUND AND WORK INCLUDED

A. This section provides a brief summary of the soil cleanup action work and selected project background for informational purposes and for the convenience of the Contractor. In the event that information provided in this section conflicts in any way with the requirements of any other section of the Contract Documents, those other sections shall prevail.

B. The Port of Everett (Port) is implementing a soil cleanup action as part of the North Marina Redevelopment project. The soil cleanup action is being conducted under the provisions of the Washington State Department of Ecology (Ecology) Model Toxics Control Act cleanup regulations (MTCA, WAC 173-340) and Ecology's Voluntary Cleanup Program (VCP).

C. Maritime Trust Company (MTC), in conjunction with the Port, is redeveloping the Site into a mixed residential, retail, commercial and light industrial development. The redevelopment of the Site necessitates environmental cleanup to the degree necessary for the site to conform to current environmental regulations, taking into consideration the nature of planned site uses.

D. Based on previous field investigations, hazardous substances above MTCA soil cleanup levels for unrestricted site use for carcinogenic polycyclic aromatic hydrocarbons (cPAHs), total petroleum hydrocarbons (TPH) in the diesel and oil ranges, and heavy metals are known to exist in site soil. Details regarding past site investigations and planned soil cleanup activities at the site are presented in the Cleanup Action Plan (Exhibit A).

E. Generally, the Shallow Soil VCP Cleanup Action project includes, but is not limited to: removal of existing asphalt pavement in certain soil removal areas; removal, stockpiling, and reuse of a limited amount of clean base course material as excavation backfill material; excavation, handling, transport, and offsite disposal of contaminated soil and debris; stormwater management within and adjacent to the soil removal areas; utility protection (and replacement as needed); excavation backfilling, and site restoration. Personnel engaged in hazardous materials work shall be Hazmat, OSHA, and WISHA certified. The extent of the shallow soil cleanup action under this Contract is shown on the Drawings.

F. Previous Site reports, including the Phase I and Phase II ESAs (Landau Associates 2001 and Landau Associates 2004), the Data Gaps Investigation Report (Landau Associates 2005) and Supplemental Data Gaps Investigation Report (Landau Associates 2006), were submitted to Ecology for review and comment. It is the intent of the Port and MTC that Site cleanup be adequate to meet MTCA requirements and to obtain a no further action (NFA) determination from Ecology.

1.02 SITE LOCATION AND RELATED PROPERTY INFORMATION

A. The project site is located on Port property west of West Marine View Drive between the 12th Street Marina and 14th Street, as indicated on the Drawings.

B. The Port or GM/CM will make available for review pertinent information that it may have as to subsurface conditions, existing utilities, surface topography, and other existing conditions at the site. This information is offered as supplementary information only. Contractor is responsible for determining and verifying existing conditions at work locations as necessary to perform the work under this Contract

C. The Port or GM/CM will make available for review pertinent information regarding planned North Marina Redevelopment activities as they may impact the work under this Contract.

1.03 SITE ACCESS

A. Contractor shall have access to the site and the designated soil removal area via 13th Street, as indicated on the Drawings.

B. The access point(s) may change over the term of the Contract. Comply with such changes as directed by the GC/CM.

C. The designated soil removal areas under this Contract are indicated on the Drawings. Onsite areas available for Contractor use will be as designated by the GC/CM. Contractor may be required to relocate work and access areas as required by the GC/Cm and Port Operations due to other ongoing site redevelopment activities being conducted under separate contract(s).

D. All Contractor's employee cars and other private vehicles shall be parked within construction parking areas as designated by the GC/CM

1.04 EXISTING SITE FEATURES AND CONDITIONS

A. Existing site features near the work areas are generally shown on the Drawings. Additional information on site features, utilities, and topography in and near the work areas are available from a separate set of Drawings by David Evans and Associates (DEA).

B. Based on the results of previous investigations, soil is the primary affected medium that requires cleanup. Groundwater contamination is present, but limited in extent. Soil analytical results indicate that contamination is largely limited to the upper 3 ft of soil, and arsenic and cPAHs are the primary constituents of concern. A few areas of deeper soil contamination are present and analytical results for groundwater samples collected at these locations indicate groundwater has been impacted by contaminants in the soil. Additional information is presented in the Cleanup Action Plan.

C. In general, Site geologic conditions encountered within the depth range of environmental explorations consisted primarily of a pavement section or a granular fill trafficking layer overlying hydraulic fill. The hydraulic fill is typically a loose to medium dense, poorly graded fine to course sand with silt or silty sand; this fill layer is about 20 ft thick throughout most of the Site, but appears to thicken to 30 ft or more toward the western end. Organic material in the form of wood chips, bark, and related material was encountered in the hydraulic fill at many of the boring locations. Native marine sediment consisting of soft to loose silt to silty sand directly underlies the hydraulic fill. Glacial soil, consisting of dense, granular soil of variable composition, underlies the marine sediment unit.

D. The depth to water typically ranges from about 3 to 7.5 ft below ground surface (BGS). The depth to water generally appears to be shallower toward the center of the Site and deeper in the vicinity of the shoreline, which is consistent with groundwater flow toward marine surface water. It is intended that the shallow soil removal activities be conducted above the water surface during dry site conditions, and that any stormwater within the excavations be allowed to infiltrate into the hydraulic fill unit.

1.05 GENERAL SCOPE OF WORK

A. The following provides a general summary of the primary elements of the project. The specific details and construction requirements for the work under this Contract are specified in the Technical Specifications, Drawings, and other parts of the Contract Documents.

B. Mobilization/Demobilization and Work Area Preparation.

C. Removal/Disposal of Existing Pavement.

D. Utility Protection (Including Restoration as Required).

E. Stormwater Management (Including Water Treatment/Disposal as Required)

F. Health & Safety, Decontamination, and Residuals Management.

G. Excavation and Stockpiling Onsite Clean Soil.

H. Excavation and Stockpiling Impacted Soil.

I. Load and Transport Impacted Soil to Designated Disposal Facilities.

J. Place and Compact Clean Imported Backfill Material and Onsite Clean Soil.

K. Site Restoration.

1.06 CONTRACTOR WORK HOURS

A. Contractor's work hours shall be limited to the periods designated by the Port and the GC/CM.

1.07 WORK TO BE PERFORMED BY OTHERS

A. The Port and the GC/CM will perform certain work and oversight activities at the site during this Contract, including but not limited to the following:

1. Coordination of the soil cleanup activities with other ongoing site preparation and infrastructure work.
2. Providing solid waste approvals from the designated disposal facilities, and making payment to the disposal facilities for the impacted soil and debris removed from the designated soil cleanup areas.
3. Providing direction to the Contractor regarding the lateral extent and depth of soil excavation to be conducted under this Contract.
4. Conducting soil sampling and analysis activities to confirm that impacted soil has been adequately removed from the excavation areas.
5. Administer the Contract; monitor, observe, approve, and accept the work; coordinate with Ecology and other regulatory agencies; provide required direction for the work when Contractor requests clarification of the intent of the Contract Documents; and generally ensure that the execution and completion of the work meets design, construction, and other requirements of the Contract Documents.

1.08 PROTECTION OF SITE FEATURES AND ADJACENT PROPERTY USES

A. Take such precautions and develop a construction approach for the project that limits adverse impacts to the Port's tenants, the existing facilities and utilities, the existing access streets and parking areas, and the ongoing site preparation and infrastructure work.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION – NOT USED

END OF SECTION

PART 1 - GENERAL

1.01 DESCRIPTION

A. This Section specifies requirements for measurement of and payment for completed work under this Contract. The scope of work in the Contract is divided into 12 base bid pay items, as shown on the Proposal Form, for purposes of measurement and payment. Any work required by the Contract Documents that is not specifically described in the pay item descriptions shall be considered incidental to other items of work and shall not be specifically measured for payment.

B. Contractor shall measure completed work as defined in these Contract Documents and shall compute all quantities required for measuring tasks and subtasks for the pay item division of work; these quantities will be verified by the Port and/or the GC/CM. Agreement between the Port and Contractor shall be reached on invoiced quantities and amounts prior to submittal of each invoice.

C. Payments will be made at the respective lump-sum and unit prices for each pay item of work in the Contract Price. All work specified in this Contract is included within the pay items listed in the Proposal Form and Article 1.04 of this Section. Payment shall be considered full compensation for furnishing all labor, materials and equipment to complete the work in accordance with the requirements and intent of the Contract Documents, including the Technical Specifications, Drawings, and Exhibits. Unless otherwise stated, each pay item shall include all direct and indirect costs necessary to complete the subject work of that pay item.

1.02 MEASUREMENT OF WORK

A. Lump Sum Pay Items

1. Items of work for which payment is made by a "lump sum" shall be measured as a complete unit. Labor, materials, or equipment used in lump-sum price pay items will not be measured or paid for separately.

2. The lump sum pay items described in Article 1.04 shall not be adjusted as a result of change orders or extra work. The negotiated Contract Price for change orders or extra work shall include additional provisions for any work that may be described as part of an existing lump sum pay item.

3. For lump sum or incidental pay item descriptions that do not include estimated quantities, Contractor shall be responsible for estimating the pay quantities based on information provided in the Contract Documents, or other means as deemed appropriate by Contractor.

B. Unit Price Pay Items.

1. Items of work for which payment is made by a "unit price" shall be measured according to the methods and units described below and the applicable requirements of the Contract Documents.
2. Measurement Standards: All work to be paid for at a Contract Price per unit of measurement shall be measured in accordance with United States Standard Measures
3. Measurement by Weight: Unless otherwise specified in the pay items of work, earthwork materials from onsite activities, offsite suppliers, and similar items to be paid for by weight shall be measured by certified scales. Certified copies of supplier receipt invoices shall be provided specifying the type and quantity of material actually furnished/received.
4. Measurement by Volume: Measurement by volume will be by the cubic dimension listed in the Contract Price. Method of volume measurement will be by either the method of surveyed cross-sectional average end-areas or the method of computed cross-sectional areas from lines, grades, and elevations determined by the Port or GC/CM to adequately represent the work, or computer-aided methods approved by the Port.
5. Measurement by Area: Measurement by area will be by the square dimension listed in the Contract Price. Method of square measurement will be based on either horizontal or vertical planer projections, whichever is greater, unless otherwise specified.
6. Linear Measurement: Linear measurement will be by the linear dimension listed or indicated in the Contract Price. Unless otherwise specified, components of work to be measured will be measured at the centerline of the work in place.
7. Time Measurement: Measurement by time will be by the time period listed in the Contract Price, based on an 8-hour workday. All time measurements will be based on an hourly log which shall be agreed upon and signed daily between Contractor and the Port. The log will be used to allocate between operating and standby time for the pay item of work. Operating time shall be logged as specified.

1.03 INCREASED OR DECREASED QUANTITIES

A. Payment to Contractor will only be made for the actual quantities of the work performed and accepted in conformance with the Contract. When the accepted quantities of work vary from the original bid quantities, payment will be at the unit contract prices for accepted work unless the total quantity of any pay item increases or decreases by more than 25 percent relative to the original bid quantity. In that case, that part of the increase or decrease exceeding 25 percent will be adjusted in accordance with Section 1-04.6 of the 2006 WSDOT Standard Specifications.

1.04 PAY ITEMS OF WORK

A. ITEM NO. 1: MOBILIZATION/DEMOBILIZATION AND WORK AREA PREPARATION

1. Mobilization includes preparatory work and operations including, but not limited to, those necessary for the movement of personnel, equipment and supplies to the project site; and for all other associated work, submittals, and operations which must be performed, permits to be obtained, or costs incurred prior to beginning work on the various items of the project.
2. Demobilization includes site cleanup and demobilization of personnel, equipment and excess materials and supplies from the project site.
3. Work area preparation includes: documenting existing conditions in the work areas by photographs, measurements, and other appropriate means; establishing work zones and traffic control provisions; removing existing fencing within the work area and installing temporary fencing around the work zones; and providing temporary construction facilities needed by Contractor.
4. Payment for mobilization/demobilization and work area preparation shall be on the basis of the lump sum price stated in the Contractor's bid price for this pay item. Measurement for this pay item shall be estimated on the basis of the percent complete, relative to the overall bid price and the actual progress toward project completion.
5. The lump sum price for this work is all inclusive, and includes all overhead and profit.

B. ITEM NO. 2: REMOVAL/DISPOSAL OF EXISTING PAVEMENT

1. Work under this item includes saw cutting, removal, loading, transportation, and recycling/disposal of existing asphalt or concrete pavement and any existing curbing to be removed from the work area.
2. Payment for removal/disposal of existing pavement shall be on the basis of tons of pavement and curbing transported and recycled/disposed at an appropriate offsite facility, at the unit price stated in the Contractor's bid price for this pay item. Measurement for this pay item shall be determined on the basis of legible copies of certified weight receipts or other documentation of weight from the recycling/disposal facility.
3. The unit price for this work is all inclusive, and includes all overhead and profit.

C. ITEM NO. 3: UTILITY PROTECTION/RESTORATION

1. Work under this item includes locating, marking, protecting, and physically supporting existing active utilities within and near the work area that could potentially be damaged by the Contractor's work under this Contract, and any restoration/repair of onsite utilities within or near the work area needed to restore the utilities to their pre-existing conditions.
2. Payment for utility protection/restoration shall be on the basis of the lump sum price stated in the Contractor's bid price for this pay item. Measurement for this pay item shall be estimated on the basis of the percent complete, relative to the overall bid price and the actual progress toward project completion.
3. The lump sum price for this work is all inclusive, and includes all overhead and profit.

D. ITEM NO. 4: STORMWATER MANAGEMENT

1. Work under this item includes: diverting stormwater from adjacent areas to limit runoff from entering the excavation(s); installing catch basin filters and temporary plugs into existing storm drain lines that are located within or near the work area; installing all necessary temporary sedimentation and erosion control measures needed to protect partially completed work and prevent sediment transport from exposed soil surfaces and temporary stockpiles to surface water or adjacent non-work areas; and management of stormwater in accordance with the Specifications and the SWPPP Supplement.
2. Payment for stormwater management shall be on the basis of the lump sum price stated in the Contractor's bid price for this pay item. Measurement for this pay item shall be estimated on the basis of the percent complete, relative to the overall bid price and the actual progress toward project completion.
3. The lump sum price for this work is all inclusive, and includes all overhead and profit.

E. ITEM NO. 5: HEALTH & SAFETY, DECONTAMINATION, AND RESIDUALS MANAGEMENT

1. Work under this item includes: developing and implementing a Site-Specific Health and Safety Plan that meets the requirements of the Technical Specifications; monitoring work activities for compliance with Plan requirements and providing personnel training and required documentation; maintaining flagging and staking of work zone boundaries and controlling personnel and equipment access to contaminated zones; furnishing, installing, operating, and maintaining all required health and safety equipment and facilities, including personnel decontamination

facilities and equipment decontamination facilities; furnishing all required worker protection gear and equipment for Contractor and subcontractor personnel; decontaminating construction equipment and personnel health and safety equipment, and collecting and disposal of all decontamination water, contaminated solid wastes, and residual materials.

2. Payment for health & safety, decontamination, and residuals management shall be on the basis of the lump sum price stated in the Contractor's bid price for this pay item. Measurement for this pay item shall be estimated on the basis of the percent complete, relative to the overall bid price and the actual progress toward project completion.
3. The lump sum price for this work is all inclusive, and includes all overhead and profit.

F. ITEM NO. 6: EXCAVATION AND STOCKPILING ONSITE CLEAN SOIL

1. Work under this item includes excavating and stockpiling of onsite clean overburden soil as designated by the Port; and protecting such soil from cross-contamination until reused as clean backfill material for the site excavations.
2. Payment for excavating and stockpiling of onsite clean soil shall be on the basis of cubic yards of such material as designated by the Port, at the unit price stated in the Contractor's bid price for this pay item. Measurement for this pay item shall be determined on the basis of onsite surveys made and volume estimates agreed to by Contractor and the GC/CM or the Port.
3. The unit price for this work is all inclusive, and includes all overhead and profit.

G. ITEM NO. 7: EXCAVATION AND STOCKPILING CONTAMINATED SOIL

1. Work under this item includes: excavating contaminated soil within the designated soil removal areas; segregating inert waste from solid waste materials; and stockpiling and protecting these materials in separate lined, bermed, and covered stockpiles until loaded for offsite disposal at either an inert waste landfill or a solid waste landfill.
2. Payment for excavating and stockpiling of contaminated soil shall be on the basis of cubic yards of such material as designated by the Port, at the unit price stated in the Contractor's bid price for this pay item. Measurement for this pay item shall be determined on the basis of onsite surveys made and volume estimates agreed to by Contractor and the GC/CM or the Port.
3. The unit price for this work is all inclusive, and includes all overhead and profit.

H. ITEM NO. 8: LOAD AND TRANSPORT CONTAMINATED SOIL TO INERT WASTE DISPOSAL FACILITY

1. Work under this item includes loading and transporting designated inert waste to the Rinker Materials disposal facility in Everett, Washington. This item also includes proper manifesting of the material, obtaining documentation certifying the total weight of material treated and disposed at the facility, and submitting such documentation to the GC/CM or the Port.
2. Payment for loading and transporting contaminated soil for inert waste disposal shall be on the basis of tons of soil transported and disposed at the designated facility, at the unit price stated in the Contractor's bid price for this pay item. Measurement for this pay item shall be determined on the basis of legible copies of certified weight receipts or other documentation of weight from the disposal facility. Costs associated with material disposal are excluded from this pay item and will be paid by the Port under separate contract with the disposal facility (GC/CM to manage).
3. The unit price for this work is all inclusive, and includes all overhead and profit.

I. ITEM NO. 9: LOAD AND TRANSPORT CONTAMINATED SOIL TO SOLID WASTE DISPOSAL FACILITY

1. Work under this item includes loading and transporting contaminated soil to Rabanco's transfer station for subsequent rail car transfer to the Roosevelt Regional Landfill. This item also includes proper manifesting of the material, obtaining documentation from the disposal facility certifying the total weight of material disposed at the landfill, and submitting such documentation to the GC/CM or the Port.
2. Payment for loading and transporting contaminated soil for disposal shall be on the basis of tons of material transported and disposed at the designated facility, at the unit price stated in the Contractor's bid price for this pay item. Measurement for this pay item shall be determined on the basis of legible copies of certified weight receipts or other documentation of weight from the disposal facility. Costs associated with material disposal are excluded from this pay item and will be paid by the Port under separate contract with the disposal facility (GC/CM to manage).
3. The unit price for this work is all inclusive, and includes all overhead and profit.

J. ITEM NO. 10: PLACE AND COMPACT ONSITE CLEAN SOIL

1. Work under this item includes moisture conditioning and loading of onsite clean overburden soil from the designated stockpile(s) constructed under Pay Item No. 6, and placement/compaction of the backfill within areas of the excavation(s) as designated by the Port.

2. Payment for placing and compacting onsite clean soil shall be on the basis of cubic yards of such material placed as excavation backfill, at the unit price stated in the Contractor's bid price for this pay item. Measurement for this pay item shall be determined on the basis of onsite surveys made and volume estimates agreed by Contractor and the GC/CM or the Port.
3. The unit price for this work is all inclusive, and includes all overhead and profit.

K. ITEM NO. 11: PLACE AND COMPACT CLEAN IMPORTED MATERIAL

1. Work under this item includes importing, moisture conditioning, placing, and compacting imported fill materials as backfill within areas of the excavation(s) as designated by the Port.
2. Payment for placing and compacting clean imported material shall be on the basis of cubic yards of such material placed as excavation backfill, at the unit price stated in the Contractor's bid price for this pay item. Measurement for this pay item shall be determined on the basis of onsite surveys made and volume estimates agreed by Contractor and the GC/CM or the Port.
3. The unit price for this work is all inclusive, and includes all overhead and profit.

L. ITEM NO. 12: SITE RESTORATION

1. Work under this item includes: restoration of site areas disturbed by the Contractor's activities; repair of any damage to existing site facilities caused by the Contractor; and replacement of any site features intended to remain that were removed by Contractor to facilitate soil cleanup activities.
2. Payment for site restoration shall be on the basis of the lump sum price stated in the Contractor's bid price for this pay item. Measurement for this pay item shall be estimated on the basis of the percent complete, relative to the overall bid price and the actual progress toward project completion.
3. The lump sum price for this work is all inclusive, and includes all overhead and profit.

END OF SECTION

PART 1 - GENERAL

1.01 DESCRIPTION

A. This section covers Contractor's responsibilities and coordination requirements associated with project planning and implementation, project management, and certain other elements of the work.

1.02 SUBMITTALS

A. All project submittals shall be submitted to the Port in accordance with the provisions of Section 01300.

1.03 COORDINATION

A. Coordinate site access, occupancy, and use of space made available by the Port to accommodate storage and staging of materials and equipment and the orderly completion of the work while concurrently minimizing adverse effects of Contractor's construction activities on the Port's ongoing commercial activities and others working at and near the site.

B. Determine the effect of site access requirements and construction activity by the Port's personnel and other contractors retained by the Port to perform work that is not part of this Contract. Requests for additional compensation to provide site access to other contractors, or for delays caused by other contractors or the Port's personnel will not be considered.

C. Utility purveyors serving the work area shall be identified and contacted as required to carry out the work under this Contract. These utilities shall be notified immediately if conflicts or emergencies arise during the progress of the work. Contractor shall be responsible for calling to obtain utility location assistance, as required, during the work.

D. Coordinate with the City of Everett regarding obtaining approval for any proposed discharge of construction water to the sanitary sewer system.

PART 2 - PRODUCTS

2.01 DESIGNATION OF PROJECT MANAGEMENT PERSONNEL

A. Contractor shall submit upon award of Contract the name and qualifications of its project manager, project superintendent, and health and safety officer. Each shall have demonstrated experience completing contaminated soil remediation projects of similar size and complexity.

2.02 CONSTRUCTION SCHEDULES

A. Contractor shall submit upon award of Contract a detailed construction schedule for review and approval by the Port. The construction schedule shall clearly show each element of work to be performed under this Contract, and all items involved in overall sequencing of the work, including submittals and Port review time.

B. The construction schedule shall be kept current, taking into account the actual progress of the work. The schedule shall record the actual time required to accomplish the various activities included therein and include Contractor's projections of the time it anticipates will be required to complete unfinished tasks. The schedule shall be revised and updated weekly and submitted to the Port and GC/CM for review and comment.

2.03 CONSTRUCTION PLAN

A. Contractor shall submit upon award of Contract a construction plan that addresses each of the primary elements of the work. The construction plan shall demonstrate that the work is thoroughly planned with adequate staffing, equipment, and management control, and that suitable construction methods and equipment are planned to meet the technical requirements of the work.

B. Contractor shall obtain the Port’s approval of the construction plan prior to initiating the elements of work covered in the plan. The Port’s approval of Contractor’s construction plan shall in no way eliminate Contractor’s responsibility to carry out the work in accordance with the Contract Documents; nor shall such approval, in any way, cause the Port to take responsibility for substandard or defective work that may result from construction methods proposed by Contractor.

PART 3 - EXECUTION

3.01 MANAGEMENT OF THE WORK

A. Manage the work in compliance with the technical, procedural, reporting, and scheduling requirements of this Contract. Provide the necessary management, technical, and administrative personnel and sufficient project management systems and equipment to carry out the work in compliance with these requirements.

B. Provide and maintain a listing of required and completed reviews and submittals. Manage the preparation, submittal, review, and approval of same to the Port in a timely manner.

C. Manage contract administration and cost accounting to maintain responsive, accurate, and thorough reporting, documentation, and invoicing of the work in compliance with applicable provisions of the Contract Documents.

3.02 MANAGEMENT PERSONNEL

A. Contractor’s project manager shall have responsible charge of the work and have complete authority to direct the work, including negotiation of all issues affecting Contract Price, Contract Time, personnel, and quality of workmanship.

B. Contractor’s project superintendent shall have authority to direct and to manage all aspects of the work for Contractor. The project superintendent shall be experienced in the prosecution of the work and the management of trades and subcontractors required to accomplish the work. The project superintendent shall be present at the site at all times while work is actually in progress on the Contract, or shall have designated an alternate during low work periods. During any periods when work is suspended, arrangements acceptable to the Port shall be made for accomplishing any required stormwater management, maintenance, or emergency work.

C. Contractor’s health and safety officer shall have the authority to administer and implement the health and safety provisions for the work as specified in Contractor’s project-specific health and safety plan.

3.03 COOPERATION WITH OWNER AND PROSECUTION OF THE WORK

A. Contractor shall work cooperatively with the Port and its representatives, making all reasonable efforts to provide labor, equipment, supplies, and related support to facilitate the collection of data required by the Port and its representatives to carry out environmental monitoring, quality assurance, and collection of other data required for soil cleanup action documentation and reporting.

END OF SECTION

PART 1 – GENERAL

1.01 SUMMARY

A. This section describes health and safety requirements to be implemented in support of Contractor activities associated with excavating, handling, loading, transporting, and disposal of contaminated materials on designated portions of the site. Based on the presence of chemical constituents in soil at the site, Contractor shall prepare and implement a site-specific health and safety plan for the work under this Contract. Additionally, Contractor shall exercise due caution when excavating and handling impacted soil and construction water to minimize the potential health hazard to persons on the site, adjacent properties, and the general public.

B. The work is located within the North Marina Redevelopment site, which is listed on the Washington State Department of Ecology's (Ecology) Confirmed and Suspected Contaminated Sites List.

C. Based on field investigations, hazardous substances above Model Toxics Control Act (MTCA) soil cleanup levels for unrestricted site use for carcinogenic polycyclic aromatic hydrocarbons (cPAHs), total petroleum hydrocarbons (TPH) in the diesel and oil ranges, and heavy metals are known to exist in site soil. In the areas designated for shallow soil cleanup excavation on the Plans, the maximum concentrations of these hazardous substances detected in soil during previous site investigations are:

Constituent	Maximum Detected Concentration (mg/kg)
cPAH	1,074
TPH – diesel range	8,800
TPH – oil range	3,700
Arsenic	3,690
Lead	19,700
Copper	12,300

D. Based on field investigations, hazardous substances above MTCA groundwater cleanup level for protection of surface water for TPH in the diesel and oil ranges, and heavy metals are known to exist in site groundwater. Although the locations where these exceedances occur may not be within the area of planned soil cleanup activities, Contractor shall assume that groundwater contains the following maximum concentrations of these hazardous substances for health and safety purposes:

Constituent	Maximum Concentration (mg/l)
TPH – diesel range	4.6
TPH – oil range	0.92
Arsenic	0.07

E. Because the work is located within a listed site and the presence of cPAHs, TPH, and heavy metals are present above regulatory cleanup levels in shallow soil, Contractor shall comply with, at a minimum, the provisions of 29 CFR 1926, WAC 296-155, and the Contractor's site-specific health and safety plan throughout the duration of the work. Additionally, Contractor shall exercise due caution when excavating soil in any location to minimize the potential health hazard all project participants.

F. Contractor shall at all times conduct its activities with appropriate precautions to avoid the risk of bodily harm to persons or the risk of damage to any property or the environment. Contractor shall continuously inspect all work, materials, and equipment and shall be solely responsible for discovery, determination, and correction of any conditions that may involve such risks.

G. Contractor shall supply all equipment, materials, and personnel necessary to meet the requirements of this Section and all applicable codes and regulations for safe handling and disposal of contaminated soil and construction water.

H. The Port will be responsible for the health and safety protection of their personnel and will conduct their activities in accordance with their own health and safety plan(s).

1.02 SUBMITTALS

A. Within 21 days of the issuance of the Notice to Proceed and prior to starting the work, submit the following:

1. A site-specific health and safety plan meeting applicable regulatory requirements. Obtain Port's concurrence with the plan before conducting the work.

2. Submit to the Port the name and qualifications of Contractor's health and safety officer for the work. Contractor shall not replace this person without prior written approval by the Port.

3. Submit proof of appropriate WAC 296-62 Part P training for site workers and supervisory personnel who are authorized by the Contractor to engage in work associated with hazardous materials and potentially hazardous materials. In addition, for onsite supervisory personnel, submit current certification of WAC 296-62 Part P onsite management or supervisor training and American Red Cross first aid and cardiopulmonary resuscitation (CPR) training.

B. Written approval from the City of Everett for discharging decontamination rinse water to the sanitary sewer.

1.03 REGULATORY REQUIREMENTS AND APPLICABLE PUBLICATIONS

A. It is not the intent of the Port to list and identify all applicable safety codes, standards, and/or regulations requiring compliance by Contractor. Contractor shall be responsible for identifying and determining all safety codes, standards, and regulations that are applicable to the work. These include, but are not limited to, the following:

1. 29 CFR 1910.120, Hazardous Waste Operations and Emergency Response
2. 29 CFR 1926, Safety and Health Regulations for Construction
3. 49.17 RCW, Washington Industrial Safety and Health Act
4. WAC 296-24, General Safety and Health Standards
5. WAC 296-155, Safety Standards for Construction
6. WAC 296-62, Part P, Hazardous Waste Operations and Emergency Response
7. American Conference of Governmental Industrial Hygienists (ACGIH), Threshold Limit Values and Biological Exposure Indices for 1991-1992, or most recent version
8. NIOSH/OSHA/USCG/EPA, Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities, DHHS Publication No. 85-115, October 1985.

1.04 SCOPE OF HAZARDOUS MATERIALS WORK

A. Hazardous materials work shall include, but not be limited to, activities involving personnel or equipment in contact with contaminated or potentially contaminated soil, construction water, or groundwater. Such work shall include, but not limited to, excavating, handling, stockpiling, loading, transporting, and disposal of contaminated soil, and any other intrusive activities in areas containing contaminated soil or groundwater. Contractor shall be responsible for monitoring hazardous materials and conditions and determining when work involves hazardous materials and when conditions are present that require conformance with specified regulatory requirements. Contractor shall be responsible for the planning and scheduling of hazardous material work with all other work under the Contract and shall conduct all hazardous material work in strict accordance with its site-specific health and safety plan.

B. Contractor shall plan for and carry out all portions of the work that include contact or potential contact with existing contaminated site soil with a minimum level of personal protection of Modified Level D per applicable regulatory requirements. Contractor shall apply higher levels of personal protection, if warranted by encountered conditions or specified in Contractor's health and safety plan.

1.05 EQUIPMENT DECONTAMINATION

A. Conform to the provisions of Section 01564.

PART 2 – PRODUCTS

2.01 HEALTH AND SAFETY PLAN

A. Prepare and maintain for the duration of this Contract a site-specific health and safety plan to promote the health and protection of all onsite personnel and the environment. The plan shall be consistent with the requirements of Part 1 of this Section.

B. Assess the potential risks to onsite personnel and the environment and develop its site-specific health and safety plan to safely execute the work under this Contract. Contractor shall submit the health and safety plan to the Port for review and general concurrence. The Port's review and concurrence with Contractor's health and safety plan shall not in any way relieve Contractor of its responsibility for health and safety, nor shall the Port's concurrence be construed as limiting in any manner Contractor's obligation to undertake actions that may be necessary or required to establish and maintain safe working conditions at the site, including conditions not related to hazardous materials, nor shall the Port's concurrence be construed as establishing the Port in a position of responsibility for implementation or administration of Contractor's health and safety plan.

C. Contractor and subcontractors shall comply with the site-specific health and safety plan for the duration of this Contract. Contractor shall coordinate with the Port and with all of its subcontractors on health and safety matters. Contractor shall furnish all necessary first-aid, safety, personal protective and decontamination equipment and facilities and enforce the use of such equipment and facilities by its employees and its subcontractors of any tier.

D. As a minimum, Contractor's site-specific health and safety plan shall include:

1. A description of the site activities to be performed.

2. A listing of hazardous substances known to be, or suspected of being, present at the site.

3. A description of the site chemical hazards (e.g., toxicity, flammability, stability, reactivity, etc.), including the nature of each chemical; its physical properties; OSHA, WISHA, or ACGIH standards, where established; and physical hazards (e.g., noise, heavy equipment, heat stress, etc.).

4. A map of the site showing the known and possible locations of the chemical substances, and the proposed work activity locations and evacuation routes.

5. General health and safety directives regarding onsite conduct, including levels of protection and contingency plans.

6. Site-specific health and safety directives for potentially hazardous activities. These directives shall specify the equipment and safety procedures to be used by personnel engaged in the work activities.

7. Establishment of the work area definitions associated with potential contact with hazardous materials. Planned changes in boundaries during the work shall be identified.

8. Requirements for personal protective equipment. The plan shall include a listing of the health and safety equipment that will be available onsite and required for intrusive site activities during the work under this Contract.

9. Personal decontamination facilities and procedures. Provide decontamination facilities for personnel, as necessary, for conformance with the health and safety plan.

10. Emergency procedures in case of hazardous waste spillage or exposure to personnel, personal injury, fire, explosion, etc. This section of the plan shall include emergency telephone numbers and specific procedures for immediate removal to a hospital or doctor's care of any person who may be injured on the job site.

11. Field monitoring equipment and procedures. This section of the plan shall specify when and how monitoring will be performed (e.g., visual monitoring for airborne dust), what data reporting procedures will be used, and how the data will be used onsite to determine appropriate personal protective equipment.

12. Names and responsibilities of personnel assigned to implement, administer, and supervise the health and safety plan.

13. Names, firms, and staff positions of personnel authorized to work at the site.

14. An employee signature page on which each of Contractor's employees whose activities involve contact with contaminated materials and each employee of each subcontractor of any tier whose activities involve contact with contaminated materials will acknowledge receipt of the plan, an understanding of the plan, and an agreement to comply with plan provisions.

15. Recordkeeping requirements and all necessary reporting to cover the implementation of the Contractor's site-specific health and safety plan.

16. Handling and disposal procedures for personal protective gear, decontamination residuals, and other potentially contaminated construction waste generated by Contractor and other site personnel during the course of the work.

E. As conditions change or if new operations are to be performed, Contractor's health and safety plan shall be modified or amended, or a new health and safety plan shall be developed.

PART 3 – EXECUTION

3.01 HEALTH AND SAFETY

A. Site activities involving hazardous or potentially hazardous materials shall be conducted in accordance with Contractor's site-specific health and safety plan.

B. Designate a qualified representative as Health and Safety Officer whose responsibility will be health and safety monitoring and oversight. The designated qualified health and safety representative shall be onsite at all times when contact with hazardous materials is anticipated.

C. Contractor shall be responsible for providing safety training and shall require its subcontractors and all Contractor-authorized visitors to have this training, if appropriate for the work to be conducted by these personnel. Documentation of this training shall be available at the site. Provide appropriate personal protective equipment for Contractor's employees, as specified in the health and safety plan, and require subcontractors to provide this equipment for subcontractor's employees.

D. Provide for decontamination of Contractor's and subcontractor's personnel and equipment that contact hazardous or potentially hazardous materials, in conformance with the requirements of the health and safety plan.

E. Provide for the proper disposal of disposable safety gear and equipment used by Contractor's employees, the Port, federal and state agency representatives, and all site visitors. Such disposal shall conform to all applicable federal and local hazardous waste disposal regulations. Waste material from Contractor's onsite decontamination facilities shall be properly containerized, labeled, and disposed of by Contractor. Rinse water may be drained onto site soil within areas designated by the Port, but shall not be discharged to storm sewers. Disposal of rinse water via the sanitary sewer requires written approval by the City of Everett Department of Public Works.

F. Maintain accurate accident and injury reports and furnish the Port a copy of the reports within 24 hours of the reported incident.

G. Provide proper illumination of construction activity, as necessary, to allow all workers and oversight personnel to safely execute their responsibilities and tasks.

H. Promptly comply with any specific instructions or directions given to Contractor by the Port unless overriding health and safety concerns dictate another course of action.

I. Health and safety plans, emergency procedures, and first-aid procedures shall be conspicuously posted at the site and Contractor shall hold regularly scheduled meetings, as necessary, to instruct its personnel and its subcontractors on health and safety practices and proper use of personal protective equipment.

3.02 MATERIAL HANDLING AND DISPOSAL

A. Handle and dispose of contaminated soil, water, and other materials consistent with these Specifications and directives issued by the Port, and in conformance with all applicable federal, state, and local waste disposal regulations.

B. Contaminated materials shall be contained within designated areas and shall not, at any time, be placed directly on or otherwise allowed to contaminate the surface of designated uncontaminated areas, except as approved in writing by the Port.

C. Transport contaminated soil, water, and other materials from the point of removal to the point of temporary storage or loading in such a manner that contaminated material is not placed on and does not spill or fall on designated uncontaminated areas. Install and maintain chemically resistant liner and containment berm materials and clearly stake and mark temporary storage locations for contaminated materials at all times.

D. Assist the Port whenever they elect to acquire confirmational samples. Assist the Port to the maximum extent practicable and facilitate the removal of contaminated materials within the limits specified by the Port, subject to contractual provisions related to changes in the scope of work.

END OF SECTION

PART 1 - GENERAL

1.01 SUMMARY

A. This section describes the overall requirements for environmental protection during implementation of the shallow soil cleanup action at the site.

B. Perform the work in a manner to minimize the polluting of air, water, or land, and control noise and the disposal of solid waste materials, as well as any other pollutants.

1.02 PRECONSTRUCTION SURVEY

A. Prior to start of any onsite soil cleanup activities, Contractor and the GC/CM shall make a joint condition survey (including photographs), after which Contractor shall prepare a brief report indicating on a layout plan the condition of work areas, assigned storage areas, access routes, and other pertinent site features. This report will be signed by both parties upon mutual agreement of its accuracy and completeness.

1.03 PROTECTION OF LAND AREAS

A. Except for work and storage areas and access routes specifically assigned by the GC/CM for the use of Contractor, land areas outside the limits of the work performed under this Contract shall be preserved in their present condition. Contractor shall confine its construction activities to onsite areas defined on the Drawings or specifically assigned by the GC/CM for its use.

1.04 PROTECTION OF WATER RESOURCES

A. Control the disposal of fuels, oils, bitumens, calcium chloride, acids or other harmful materials, both on and off the site and comply with applicable federal, state, county, and municipal laws concerning pollution of rivers, streams, and other surface waters while performing the work under this Contract. Special measures shall be taken to prevent chemicals and other hazardous or deleterious substances, including but not limited to fuels, oil, greases, bituminous materials, herbicides, and insecticides from entering public waters. Construction water and other waste waters shall not be allowed to enter natural surface water bodies without adequate treatment.

1.05 WASTE DISPOSAL

A. As part of Contractor’s construction plan, submit a description of Contractor’s scheme for disposing of waste materials resulting from the work under this Contract. If any waste material is spilled or dumped in unauthorized areas, completely remove the material to the Port’s satisfaction and restore the area to the condition of the adjacent undisturbed areas. Where directed, ground contaminated by such activities shall be excavated, disposed of as approved by the Port, and replaced with suitable fill material, all at the expense of Contractor.

1.06 BURNING

A. No burning will be permitted.

1.07 AIR EMISSIONS CONTROL

A. Maintain all excavations, fill areas, stockpiles, material and equipment storage areas, waste areas, borrow areas, and all other work areas free from excess dust to such reasonable degree as to avoid causing a hazard or nuisance to others. Air emissions control shall be performed as the work proceeds and whenever a dust nuisance or hazard occurs, in accordance with Section 01565.

1.08 DRAINAGE AND EROSION CONTROL

A. Surface water control, management, and disposal within all work areas shall be the responsibility of Contractor. Surface water disposal shall comply with all applicable federal, state, county, and local laws, statutes, ordinances, and regulations. Surface drainage from work areas shall be contained and surfaces shall be graded as appropriate to control erosion. Temporary control measures shall be provided and maintained until permanent drainage measures are completed. Temporary erosion control measures shall be installed to control the movement of erodible soil by surface water drainage. Drainage and erosion control measures shall be carried out in accordance with Section 01566 and the SWPPP Supplement included in Exhibit B.

1.09 CORRECTIVE ACTION

A. Upon receipt of a notice in writing of any noncompliance with the foregoing provisions, take immediate corrective action. If Contractor fails or refuses to comply promptly, the Port may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No part of the time lost due to a stop work order shall be made the subject of a claim for extension of time or for excess costs of damages by Contractor unless it was later determined that the Contractor was in compliance.

1.10 POST-CONSTRUCTION CLEANUP OR OBLITERATION

A. Unless otherwise instructed in writing by the Port, obliterate all signs of temporary construction facilities such as work areas, temporary stockpiles of excess or waste materials, and other vestiges of construction prior to final acceptance of the work. The disturbed areas shall be filled as necessary to restore original grades, and graded to promote proper stormwater runoff.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Selection of the types, capacities, and materials of products and equipment needed to execute the work and to provide the required environmental protection is the responsibility of Contractor. Materials, tools, and equipment shall be suitable for the intended purpose and shall conform to the requirements of the Specifications and applicable codes and standards for safety.

B. Decontaminate equipment and materials prior to transporting the equipment or materials to the site, as appropriate, and decontaminate and/or clean equipment and materials prior to removing them from the site in conformance with Section 01564.

C. Select suitable environmental protection products and equipment to facilitate the work, including, but not limited to, absorbent pads and booms, straw bales, ecology blocks, silt fencing, pressure washers, pumps and hoses, filter media, tanks, shield systems, small tools, plastic (polyethylene) sheeting, and all other required facilities and equipment.

PART 3 - EXECUTION

3.01 CONDUCT OF THE WORK

A. Conduct the work in a manner that protects the environment as specified in this section and elsewhere in the Contract Documents. Failure to protect the environment may result in the Port issuing a stop work order, the duration of which shall extend until conditions that threaten the environment are corrected to the satisfaction of the Port. Costs incurred as a result of such a stop work order shall be at the sole expense of Contractor.

END OF SECTION

PART 1 - GENERAL

1.01 DESCRIPTION

A. This section specifies requirements for certain temporary facilities to be provided and maintained by Contractor. Unless otherwise indicated by the GC/CM, no temporary facilities or utilities will be provided by the Port.

B. Temporary facilities include water, sanitary, and electrical utilities, parking areas, material and equipment storage areas, and other temporary site improvements determined by Contractor as necessary for execution of the work under this Contract.

C. Available areas for temporary facilities within and around the site are limited. Final arrangements and layouts for temporary facilities shall be proposed by Contractor and approved by the Port and the GC/CM.

PART 2 - PRODUCTS

2.01 TEMPORARY CONSTRUCTION FACILITIES

A. Provide and maintain temporary berms and lining/cover materials as required to prevent movement of waste materials, spills, etc. resulting from the work under this Contract.

B. Maintain construction, staging, and storage areas in a neat, orderly condition.

C. Provide barricades, temporary fencing, warning lights, and other devices required by law or regulation, or as necessary to protect people on or near the site.

2.02 MATERIAL STORAGE

A. Construct temporary material and equipment storage areas, as required, to secure and protect materials and equipment against damage, loss, theft, and vandalism.

B. Provide shelters, as required, for material storage to protect goods and supplies against the elements, theft, vandalism, or other damage.

2.03 ELECTRICAL

A. Provide temporary electric supply as needed for completion of the work.

2.04 DRINKING WATER

A. Provide drinking water for all personnel connected with the work. Water shall be transported in sanitary containers to provide clean and fresh water.

B. Provide drinking water for consumption in the exclusion zone(s). Contractor shall devise a method for water consumption that does not pose a health and safety risk for site workers.

2.05 TEMPORARY TOILETS

A. Provide adequate chemical toilet facilities for all individuals connected with the work, in numbers as required by federal and state safety and occupational standards.

B. Provide regular service of each chemical toilet facility to maintain sanitary conditions. Remove units at the completion of the site work.

2.06 WATER FOR CONSTRUCTION PURPOSES, DECONTAMINATION, DUST CONTROL, AND FIRE PROTECTION

A. Provide clean, potable water and necessary storage, as required, for the work, including storage requirements for dust emissions control in accordance with Section 01565. Water may be transported to the site by tanker truck or by connections to a nearby fire hydrant or other water source, whichever is more feasible and cost-effective, as approved by the Port and the City of Everett.

B. Make connections and provide piping, hoses, nozzles, and other accessories required to supply water to the site and support zones for accomplishing the work and providing necessary fire protection, and provide and maintain the necessary equipment to meet the requirements of Sections 01564 and 01565.

PART 3 - EXECUTION

3.01 GENERAL

A. Install and maintain all necessary temporary facilities for the duration of the project, consistent with applicable codes and regulations and the requirements of these Specifications.

3.02 REMOVAL

A. Temporary facilities subject to contamination in the exclusion and contamination reduction zones shall be decontaminated in accordance with Section 01564 before being removed from the site.

B. Upon removal of temporary facilities from the site, restore areas occupied by those facilities to a condition similar to those that existed prior to the Contract or as acceptable to the Port.

C. Remove all rubbish, debris, and other accumulations that may result from work under this Contract. Dispose of nonhazardous and nondangerous wastes, rubbish, debris, and construction waste materials at approved offsite locations on a weekly basis.

END OF SECTION

PART 1 - GENERAL

1.01 WORK INCLUDED

A. This section specifies requirements for control of onsite and offsite vehicle and equipment traffic, equipment staging, and site security during implementation of the shallow soil cleanup action activities.

1.02 GENERAL REQUIREMENTS

A. Use of existing access roads shall be carried out in a manner that prevents movement of contaminated materials outside the designated work areas; minimizes dust emissions; and is consistent with Contractor's site-specific health and safety plan and equipment decontamination procedures. Maintain site access roads and control traffic as required to complete the work in an orderly and safe manner. Coordinate with the GC/CM and designate appropriate truck traffic routes within the site.

B. Coordinate the work in a manner that minimizes the number of vehicle trips through the site or adjacent to areas occupied by the Port's tenants, and emphasize the need for safe vehicular use at all times by Contractor's employees, subcontractors, suppliers, materialmen, and vendors. Contractor's and subcontractor's traffic within and near the site shall not interfere with the reasonable use of public streets by the general public.

C. Manage and implement the work in a manner that reduces the adverse impacts of equipment traffic, including noise and dust. Vehicle speed limits on all public streets and private roadways shall be strictly observed at all times. Vehicle speeds in the project vicinity shall be controlled to minimize the generation of fugitive dust and to promote the safety of workers and others present in the area.

D. Equipment accessing exclusion zones shall be properly decontaminated before exiting the exclusion zones, and wastes or materials spilled or released from vehicles or equipment shall be cleaned up immediately.

E. Existing pavements to remain shall be: protected from damage due to vehicular traffic; maintained in a safe manner at all times or, when approved by the GC/CM, temporarily closed and suitably marked during the period of closure; and kept free of standing liquids and accumulated dust, soil, or other deleterious materials that may cause injury to personnel or cause environmental harm.

F. The Port and the GC/CM do not maintain security forces on the site. Therefore, take full responsibility for the safety and security of Contractor's materials and equipment delivered to the site. Provide personnel and facilities that are reasonably required to adequately protect Contractor's offices, materials, and equipment from theft and vandalism and prevent unauthorized access to the work areas.

G. Provide security, as required by Contractor's site-specific health and safety plan, for control of personnel and equipment traffic between contaminated and uncontaminated work areas.

1.03 AVAILABLE SPACES AND RESTRICTIONS ON ACCESS

A. Available areas for staging of construction equipment and material transfer/storage within or near the work areas shall be limited to areas designated by the GC/CM.

B. The primary roadways within and near the site are the only regular access routes by which the Port's tenants, their employees, and their customers, as well as police, fire, and other emergency vehicular traffic, can access certain businesses within the project site. Coordinate the work to provide reasonable access for these people to the businesses within and near the site. Contractor shall coordinate with the Port and the GC/CM regarding any required full or partial roadway closings in order to provide reasonable notice to these businesses.

C. Contractor will be granted access to and use of the site as required to complete the work, subject to the following limitations and restrictions:

1. Contractor shall schedule and sequence the work in a manner that minimizes the adverse effect and duration of construction activities on the Port's tenants, their employees, and their customers.
2. Contractor shall provide all necessary controls, including fencing, gates, and appropriate signage to prevent access to, and to ensure the safety of, public individuals and tenants and their employees and customers in the vicinity of the work areas. This includes Contractor's requirement to install temporary fencing around the work areas as appropriate, and to maintain and adjust fencing and gates as required as work areas are closed to and re-opened for use by others.
3. Contractor shall prevent any contaminated soil, water, or other contaminants from spilling onto the ground beyond the exclusion zone or entering existing stormwater management facilities. Equipment and personnel leaving the exclusion zone shall be decontaminated if involved with handling of contaminated materials.

PART 2 - PRODUCTS

2.01 MATERIALS AND EQUIPMENT

A. Provide necessary labor, materials, and equipment to adequately designate areas and to control onsite and offsite vehicle and equipment movement and parking.

B. Provide and maintain in acceptable condition and effectiveness all necessary barricades, signs, warning lights, flaggers and spotters, and other devices needed or required by law or regulation or the site-specific health and safety plan.

C. Site security will be acceptable if theft and vandalism is prevented, ingress and egress to the work areas and to any offsite staging and storage areas is controlled during work hours and prevented at other times, and access to contaminated areas is controlled in accordance with the site-specific health and safety plan.

PART 3 - EXECUTION

3.01 TRAFFIC CONTROL

A. Implement traffic control requirements specified in the Contract Documents and as otherwise directed by the Port or the GC/CM.

B. Exercise strict control of vehicle and equipment movement from exclusion to support zones, including mandatory decontamination.

C. Coordinate the arrival and departure of vehicles transporting supplies, materials, and subcontractors throughout the work day to minimize the potential for accidents, damage to equipment, vehicles, and real or personal property, and injury to personnel at or near the site.

3.02 ACCESS ROADS

A. Maintain all site and offsite access roads in a clean condition as required or as specifically directed by the Port or the GC/CM for the duration of the work under this Contract. Provide street cleaning and provide air emission control during periods of hauling of materials to and from the site.

B. Control vehicular traffic and stage work areas in a manner that minimizes adverse impacts to the Port and its tenants, their businesses, and their customers; parking areas; rights-of-way; roadways; and access points.

C. When necessary because of construction activity adjacent to existing streets, erect barricades or temporarily assign laborers to flag traffic through an affected area to provide protection to individuals and vehicles using the public rights-of-way.

3.03 PROTECTION OF SITE FACILITIES

A. Control construction traffic so that existing site facilities are protected from damage. Repair any damage caused by Contractor’s activities at no additional cost to the Port.

3.04 JOB SITE SECURITY

A. Restrict work area access points to locations designated by the GC/CM. Post signs directing persons to approved site access locations.

B. Install temporary fencing as needed to accomplish the work. Temporary fencing shall be installed, relocated as required for closing and reopening of specific work areas, and maintained in satisfactory condition in accordance with industry-recognized methods using materials approved by the Port. Lock all access gates during nonworking hours.

3.05 WORK ZONES

A. Provide stakes and flagging boundaries for the various site work zones (exclusion zones, contamination reduction zones, and support zones) in accordance with Contractor's site-specific health and safety plan. Prevent people and equipment from exiting the exclusion zone without proper decontamination at a contamination reduction zone.

B. All Contractor personnel and visitors to the designated work areas shall be briefed on site work zone boundaries, relevant site security procedures, and required levels of health and safety protection for the work zones.

3.06 DISPOSAL

A. Unless otherwise approved by the Port, provide for offsite disposal of existing fencing and other materials removed to accommodate the shallow soil cleanup action tasks.

END OF SECTION

PART 1 - GENERAL

1.01 WORK INCLUDED

A. This section specifies general requirements for protection of existing utilities at and near the site. Evaluate requirements for protection of utilities as necessary to accomplish the work and provide, install, and maintain the required protection of utilities as part of the work.

B. Utility lines present at and near the site include surface and subsurface utilities. Certain active utilities in the areas of the work have been identified on the Drawings. However, the Port neither guarantees the exact location of the utilities identified on the Drawings nor guarantees that all utilities that may be affected by the work under this Contract have been identified. Contractor shall refer to the latest version of the site utilities map prepared by David Evans and Associates (DEA), and shall be responsible for the identification and location of all utilities that require protection during implementation of the shallow soil cleanup action.

1.02 SUBMITTALS

A. As part of Contractor's construction plan submittal, provide plans and methods for identification and protection of active utilities encountered within or near the soil excavation areas.

PART 2 - PRODUCTS

2.01 MATERIAL AND EQUIPMENT

A. Provide all necessary equipment and materials required by law or regulation, or as necessary to safely maintain protection of utilities and to protect site personnel.

PART 3 - EXECUTION

3.01 GENERAL

A. Install and maintain necessary protection of utilities for the duration of the project in accordance with applicable codes and regulations, these Specifications, and the requirements of the applicable utility purveyor and the Port.

3.02 COORDINATION AND SUPERVISION

A. Provide notification to the applicable utility purveyor and the Port a minimum of 72 hours prior to excavation, backfilling, or other work that is in the area of, and could potentially damage, any active utility.

B. The utility purveyor and the Port shall be allowed to have representatives present to supervise the work during times of potential impact to any utility. If these representatives identify work methods or conditions that potentially threaten the integrity of the utilities, then upon request, Contractor shall halt the work. Work may resume only upon approval from that representative.

C. Supervision by a representative of the utility purveyor or the Port or in no way absolves Contractor of the requirements of these Specifications or any other portion of the Contract Documents.

D. Construction activities shall be conducted in a safe manner, in conformance with all applicable federal, state, and local safety requirements as well as the requirements of the utility purveyor and the Port.

E. Promptly notify the Port and applicable utility purveyor in the event an unknown utility line is encountered or a line is encountered that conflicts with completion of the work. Do not abandon, remove, relocate, or replace any utility line without prior approval from the Port and applicable utility purveyor.

3.03 PROTECTION OF UTILITIES

A. Protect existing utility lines, poles, wires, cables, transformers, risers, junction and meter boxes, vaults, and other utility appurtenances during the entire Contract period. Establish a zone of protection around each surface feature located near Contractor's work areas and delineate each zone with brightly colored flags, signs, cautionary tape, or equivalent. Delineators shall be readily visible from the operator's position of motorized equipment. To the extent practical, establish equipment travel routes that are not in close proximity to surface features, and place physical barriers (e.g. concrete barriers, etc.) between the utility feature and travel or work zones to prevent damage due to anticipated construction activities. Maintain adequate cover or install equivalent protective measures to prevent damage to utilities from traffic loads and construction activities. Provide adequate physical support of active utilities within or near the soil excavation area.

B. Protection shall be maintained throughout the duration of the work. Periodically inspect protection and reinstall, repair, or replace the protection as necessary. Protection shall be modified as needed to accommodate work in progress. Protection shall be appropriate to the anticipated construction activities and shall be installed and maintained in such a manner as to not cause any damage or distress to completed portions of the work.

C. Prior to conducting excavation, grading, trenching, or other intrusive activities that have the potential to uncover, expose, or damage an existing utility, excavate using a small backhoe and hand shovel equipment, or other equipment approved by the Port, to expose the top surface of the utility at a sufficient number of locations to adequately verify its location and depth. Coordinate with the Port and record the utility's location and elevation on the project drawings.

D. Make any necessary adjustments to the elevations of utility vaults and surface monuments as needed to maintain flush conditions with the final surfaces in the work areas.

END OF SECTION

PART 1 - GENERAL

1.01 WORK INCLUDED

A. This section specifies the general requirements for protection of existing groundwater monitoring wells within and near the site and, in the event of their damage by Contractor, requirements for their repair or replacement.

B. The locations of existing groundwater monitoring wells within and near the site are shown on the Drawings. These groundwater monitoring wells have been completed with flush-mount monuments with concrete surface seals and locking well caps. Construction details and lithologic logs for the existing groundwater monitoring wells are available for Contractor review. The Port may elect to abandon certain groundwater monitoring wells prior to or during the work under this Contract.

C. In the event that an existing groundwater monitoring well is damaged by Contractor's activities, including those activities performed by Contractor's subcontractors, vendors, or suppliers, Contractor shall be liable for all repair or replacement costs for the damaged well.

D. The repair or replacement of any damaged well shall be performed by a well driller designated by the Port and licensed by the State of Washington, along with any other trades and services required to complete the repair. The Port will contract for services required to repair, replace and/or abandon any damaged well. Expenses incurred, including oversight of the work by the Port, shall be set off against amounts due Contractor under this Contract.

E. In the event that a groundwater monitoring well is damaged, immediately notify the Port and, at no additional cost to the Port, provide assistance (such as, but not limited to, coordination of activities, passage of equipment, and minor earthwork required to gain access to or to provide a stable work platform for necessary equipment) to the Port in the repair or replacement of the damaged well.

1.02 SUBMITTALS

A. As part of the construction plan submittal, provide plans and methods for protection of existing groundwater monitoring wells during implementation of the work under this Contract.

PART 2 - PRODUCTS

2.01 MATERIALS AND EQUIPMENT

A. Provide all necessary equipment and materials needed to protect the existing groundwater monitoring wells, including, but not limited to, construction fencing, traffic cones, stakes, flagging, and physical barriers.

B. Materials and equipment required to accomplish any necessary repairs to damaged wells shall be at the discretion of the Port. In the event the Port requests that the repaired or replacement item be constructed with improved physical characteristics, Contractor shall be liable only for the costs of repair or replacement equal, or comparable, to the originally constructed item.

PART 3 - EXECUTION

3.01 PROTECTIVE MEASURES

A. Protect existing groundwater monitoring wells from damage by Contractor’s activities during the Contract period. Establish a zone of protection around each well located near Contractor’s work areas and delineate each zone with brightly colored flags, signs, cautionary tape, or equivalent. Delineators shall be readily visible from the operator's position of motorized equipment. To the extent practical, establish equipment travel routes that are not in close proximity to the wells and place physical barriers (e.g. steel plates, concrete barriers, etc.) between the well and travel or work zones to prevent damage due to anticipated construction activities.

B. Protection shall be maintained throughout the duration of the work. Periodically inspect protection and reinstall, repair, or replace zone delineators and barriers as necessary. Protection shall be modified as needed to accommodate work in progress. Protection shall be appropriate to the anticipated construction activities and shall be installed and maintained in such a manner as to not cause any damage or distress to completed portions of the work.

C. Notify the Port immediately if a well is damaged or made inoperable by virtue of Contractor's operations or the operations of its subcontractors, vendors, or suppliers, and coordinate Contractor’s activities with those of the Port’s repair contractor to facilitate the prompt repair or replacement.

D. Certain wells may be in close proximity to potential excavation areas. Conduct earthwork operations in a carefully controlled manner and as required to prevent damage to the existing wells. All soil within 1 foot of the existing wells shall be hand excavated. Protection shall be maintained until immediately prior to excavation around or above these facilities, and the appropriate protection shall be reestablished following completion of such earthwork operations.

END OF SECTION

PART 1 - GENERAL

1.01 WORK INCLUDED

A. This section specifies requirements for decontaminating construction equipment at contamination reduction zones during the work. Equipment decontamination shall be conducted in compliance with Contractor's site-specific health and safety plan.

1.02 SUBMITTALS

A. As part of Contractor's site-specific health and safety plan, submit a construction equipment decontamination plan. The plan shall address the decontamination of equipment and vehicles exiting the designated work areas and temporary exclusion zones that Contractor will have to establish from time to time during the work. The plan shall include the following details:

1. Layout of contamination reduction zones and decontamination zones.
2. Details of decontamination equipment and supplies available in each of the zones to facilitate the decontamination of personnel and equipment.
3. Procedures for decontaminating hand-held non-powered and powered equipment, vehicles, and construction equipment.
4. Procedures for obtaining water for decontamination equipment, containing and handling water generated by decontamination activities, and disposal of solids and liquids resulting from decontamination activities.

PART 2 - PRODUCTS

2.01 DECONTAMINATION WORK PAD AND EQUIPMENT

A. Conditions permitting, dry decontamination methods are encouraged. However, water decontamination methods shall be used when appropriate during the soil cleanup action.

B. Provide cleaning tools and equipment, all necessary electrical power and water, storage tanks, pumps, and all other equipment and supplies required to accomplish equipment decontamination.

C. Provide materials and equipment as needed to collect, contain, and store decontamination rinse water until disposal.

D. Provide a water pressure washer for equipment decontamination, as needed.

PART 3 - EXECUTION

3.01 DECONTAMINATION OF EQUIPMENT

A. All equipment such as heavy earthwork equipment, hand tools, and other hand-carried items that have been taken into the exclusion zone or have been in contact with contaminated or potentially contaminated soil or water shall be decontaminated in accordance with Contractor’s site-specific health and safety plan.

B. Personnel conducting decontamination activities shall comply with all applicable provisions of Contractor's site-specific health and safety plan.

C. Decontaminate haul vehicles and other equipment used for transporting contaminated soil prior to loading same equipment with clean backfill material, and prior to demobilizing from the site.

3.02 WASTE COLLECTION AND DISPOSAL

A. Decontamination solids and liquids shall be collected, contained, and properly disposed by Contractor in conformance with all applicable federal, state, and local waste disposal regulations.

B. Remove debris and soil clumps from the decontamination area and dispose of the material at an appropriate disposal facility. The surface of the decontamination area shall be cleaned and pressure washed periodically, as necessary.

3.03 DEACTIVATION

A. Remove all Contractor-supplied equipment, materials, and supplies, disposing of these components consistent with applicable federal and state laws.

B. All work pads, sumps, tanks, pumps, hoses, and other ancillary equipment shall be decontaminated and removed by Contractor as part of the work required to complete the Contract.

END OF SECTION

PART 1 - GENERAL

1.01 SUMMARY

A. This section specifies air emissions control required for the work. Air emissions control practices shall be an integral part of the work under this Contract that has a potential for generation of airborne particulate matter and for release of airborne contaminants. Additionally, sources of noxious odors shall be controlled as required by applicable laws and regulations. Potential sources of air emissions include, but are not limited to:

1. Vehicle traffic on access roadways.
2. Vehicle traffic in contaminated work areas.
3. Excavation and handling of contaminated soil and debris.
4. Stockpiling of soil and other construction materials.
5. Material handling and transfer operations.
6. Decontamination activities.
7. Wind erosion.
8. Excavation backfilling activities.

B. Provide equipment, materials, and personnel necessary to meet the requirements of this section and to control air and odor emissions during the work.

1.02 CONTRACTOR RESPONSIBILITY

A. Conduct air quality monitoring during the work as needed to demonstrate compliance with the requirements of this section and Contractor's site-specific health and safety plan. Air quality monitoring shall include visual observations and, if appropriate, monitoring using sampling instrumentation. Modify emissions control techniques, as needed, to maintain compliance with the requirements of this section. Work methods, equipment, and procedures shall be continuously monitored, and shall be modified when the Port's Representatives determines that air quality compliance can be enhanced with changes to methods, equipment, or procedures. The Port's Representative may conduct supplemental air quality monitoring at or near the perimeter of ongoing construction operations, the results of which will be communicated to Contractor.

B. To the maximum extent practicable, air emissions control measures shall be implemented so that construction activities do not create onsite dust emissions that persist or are frequent and do not result in visible dust leaving the work area, and so that the release of dust, odors, and airborne contaminants is minimized and air and odor emissions are limited to acceptable levels.

1.03 STANDARDS

A. Ambient air quality standards applicable to the work include, but are not necessarily limited to, the following:

1. The ambient air quality standard for dust at the site is defined in WAC173-470, *Ambient Air Quality Standards for Particulate Matter*, and WAC 173-400, *General Regulations for Air Pollution Sources*. The acceptable level of the 24-hour ambient air quality standard for total suspended particulate is 150 micrograms per cubic meter, 24-hour average concentration. The acceptable level of the 24-hour ambient air quality standard for PM-10 is 150 micrograms per cubic meter, 24-hour average concentration.
2. The ambient air quality standard for odors at the site is defined in WAC 173-400, *General Regulations for Air Pollution Sources*. WAC 173-400-040 sets forth the general standards for maximum emissions, including odors. The maximum emission level for odors is:

   > "Odors. Any person who shall cause or allow the generation of any odor from any source which may unreasonably interfere with any other property owner's use and enjoyment of his property must use recognized good practice and procedures to reduce these odors to a reasonable minimum."

PART 2 - PRODUCTS

2.01 WATER

A. Water used for air emission control at the site shall be supplied by Contractor.

2.02 OTHER PRODUCTS

A. Submit to the Port for review data and information on other products or equipment proposed for use to control fugitive dust or odor emissions prior to the use of the products. Indicate how the products or equipment will be applied or used.

PART 3 - EXECUTION

3.01 COMMON PRACTICES

A. Implement air emissions control measures during all phases of the work, including those measures designated in Table 01565-1, as necessary to limit fugitive dust emissions and minimize the generation of odors.

B. Work methods, equipment, and procedures shall be continuously monitored by Contractor and shall be modified, at no additional cost to the Port, when the Port or Contractor determines that air quality compliance can be enhanced with changes to Contractor's methods, equipment, or procedures.

TABLE 01565-1

AIR EMISSIONS CONTROL MEASURES

Activity	Control Measures
Soil Excavation, Handling, Loading, Disposal, and Other Site Earthwork	1) Apply water to work and traffic areas, as necessary, to minimize fugitive dust emissions. 2) Cover exposed soil and temporary stockpiles, as necessary and appropriate, to minimize wind or stormwater erosion. 3) Move and load soil for offsite disposal in a manner that limits free-fall of material and is least likely to generate dust emissions; cover and tarp loads prior to exiting the site. 4) Limit or halt dust-generating work during very windy conditions. 5) Limit the size of open excavations or the duration an excavation is left open in areas where odor generating constituents are found.
Movement of Equipment	1) Water traffic areas, as required, to minimize dust emissions. 2) Designate equipment traffic patterns to minimize travel distance and vehicular dust emissions. 3) Limit vehicle speed to minimize dust emissions.
Equipment Decontamination	1) Cover traffic areas to and from the decontamination work pad with clean gravel, as appropriate. 2) Clean equipment with a pressure washer to remove soil and contamination, as necessary.
Wind Erosion	1) Apply water, as necessary, to minimize dust emissions. 2) Cover exposed materials with properly weighted polyethylene sheeting.
Demolition, Debris Size Reduction, and Debris Loading	1) Demolish, cut and break up debris in a controlled manner that minimizes dust emissions. 2) Collect loose dirt and debris from surfaces prior to and following demolition. 3) When required, dampen surfaces with water prior to and as required during demolition, debris size reduction, and loading activities. 4) Move and load debris for offsite disposal in a manner that limits free-fall of material and is least likely to generate dust emissions; cover and tarp loads prior to exiting the site as appropriate. 5) Limit or halt dust-generating work during very windy conditions. 6) Cover temporary debris and material stockpiles and work areas, if necessary and appropriate, to minimize wind and/or stormwater erosion.

END OF SECTION

PART 1 - GENERAL

1.01 SUMMARY

A. This section specifies requirements for temporary erosion and sedimentation control and management of stormwater during the shallow soil cleanup action. These requirements are specified to protect environmental quality and to minimize the potential for surface movement of contaminants during the work. This section includes:

1. Procedures for infiltration of stormwater.

2. Temporary stormwater runoff control.

3. Collection and temporary storage of accumulated stormwater runoff.

4. Requirements for erosion control.

B. Plan, field design, and implement stormwater management and erosion and sedimentation control measures appropriate to activities associated with the work. A site-wide stormwater pollution prevention plan (SWPPP) was prepared for general construction activities (Reid Middleton 2006), and the SWPPP Supplement provided in Exhibit B provides procedures to be followed for stormwater management during implementation of the shallow soil cleanup action.

C. If the Port or the GC/CM or any governmental agency determines that Contractor's erosion and sedimentation control measures are inadequate to meet the intent of applicable regulatory programs or the Contract Documents with regard to the control of surface water runoff or erosion or the prevention of environmental degradation as a result surface water runoff or erosion, Contractor shall field design and implement additional surface water runoff or erosion control measures that address the deficiencies at no additional cost to the Port.

D. Protect the work from damage caused by surface water, including damage due to ponding, erosion, or contamination as a result of the lack of adequate surface water control measures. Damaged work shall be repaired or replaced by Contractor to the satisfaction of the Port at no additional cost to the Port. Protect adjacent properties and water bodies from physical or environmental damage proximately caused by surface water runoff, erosion, soil instability, migration of contaminants, filling, or other earthwork activities associated with the work.

E. Stormwater and construction water shall be managed, treated, and discharged in accordance with all applicable federal, state, county, and local laws, statutes, ordinances, and regulations.

1.02 REFERENCES

A. City of Everett Standards.

B. WSDOT Standard Specifications - Washington State Department of Transportation 2006 Standard Specifications for Road, Bridge, and Municipal Construction.

C. Stormwater Management Manual for Western Washington (SWMMWW), Volume II, Construction Stormwater Pollution Prevention.

D. Construction Stormwater General Permit (CSWGP)– Washington State Department of Ecology (DOE), Effective Date: December 16, 2005.

E. Site-wide SWPPP prepared for general construction activities (Reid Middleton 2006), and the SWPPP Supplement provided in Exhibit B.

1.03 DESCRIPTION OF STORMWATER MANAGEMENT

A. Stormwater management during implementation of the soil cleanup action shall comply with the requirements of the site-wide SWPPP and the SWPPP Supplement.

B. Limiting Excavation to Periods of Dry Weather:

1. The primary method for managing stormwater in contaminated soil areas is by avoiding the disturbance or excavation of contaminated soil areas during periods of rainfall or prior to periods of anticipated rainfall. Because of the potential for stormwater runoff from disturbed contaminated surfaces to contaminate clean soil surfaces, excavation shall not be initiated in a contaminated soil area unless it is anticipated that the entire excavation area can be completed prior to the start of a significant rainfall event.

2. The storm intensity that would dictate stop-work for exposed contaminated soil may be adjusted by Contractor in the field with the concurrence of the Port, based on the observed stormwater infiltration rate, but is generally considered to be a storm event that has produced, or is forecast to produce 0.25 inches or more of rainfall within a 24-hour period. However, any rainfall that causes ponding of stormwater, or results in heavy rutting to contaminated or disturbed soil within contaminated soil areas, shall be considered sufficient to stop work

C. Stormwater Containment and Infiltration:

1. Excavations in areas of contaminated soil shall be completed in a manner that allows collection, containment, and infiltration of all stormwater within the excavation area to the maximum extent practicable.

2. The drainage area, topography, and excavation depth shall be considered in the ability to contain runoff for the ten-year 24-hour storm event (2.25 inches of rainfall in 24 hours).

3. Drainage from non-contaminated areas shall be diverted from entering contaminated soil excavations.

D. Pumps and Storage Tanks:

1. In the event that infiltration of stormwater occurs at a rate insufficient to ensure containment, pumps shall be provided by Contractor to remove the stormwater from the excavation.

2. At no time shall accumulated stormwater in areas of contaminated soil be allowed to accumulate to within six inches of overflowing the excavation.

3. Storage tanks shall be provided by Contractor as necessary to temporarily contain the stormwater that is removed. Adequate tank storage capacity shall be provided to allow containment of stormwater until such time as it can be infiltrated in the same contaminated soil excavation from which the stormwater was removed or infiltrated within other contaminated soil excavation area.

4. Under no conditions shall contaminated stormwater be infiltrated in excavation areas that are not identified as contaminated soil areas, or infiltrated in contaminated soil areas where clean backfill has already been placed.

1.04 SUBMITTALS

A. Comply with Section 01300.

B. Prepare and submit for Port approval a modified site plan that indicates Contractor’s planned means and methods for management of stormwater runoff, containment of potentially contaminated surface water, and prevention of erosion during the contaminated soil removal activities.

C. Records for Disposal of Accumulated Sediment: Sediment that is settled in excavation areas or in stormwater holding tanks shall be combined with other excavated contaminated soil that is transported for offsite disposal at a permitted solid waste landfill. Provide records of disposal and weigh tickets for all material disposed offsite.

D. Records and logs: Submit copies of written records at substantial completion.

1.05 REGULATORY REQUIREMENTS

A. Comply with City of Everett Standards.

B. Comply with State of Washington Department of Ecology NPDES Construction Stormwater General Permit for Construction.

1.06 SEQUENCING AND SCHEDULING

A. Install drainage and erosion control measures in work areas before initiating any site grading and contaminated soil removal and handling activities. Install and remove erosion control measures at various times throughout the duration of the project in coordination with sequencing of the work.

B. Complete contaminated soil excavation, handling, and disposal activities, as well as excavation backfilling, in a manner that limits the amount of time that contaminated soil is exposed to the elements.

C. Do not apply contaminated stormwater (for infiltration) to excavation areas that are not identified as contaminated soil areas, and do not apply contaminated stormwater to excavated contaminated soil areas where clean backfill has already been placed.

D. As part of excavation backfilling, place and compact onsite crushed surfacing material on bare ground in areas not to be seeded.

1.07 QUALITY ASSURANCE

A. Contractor shall provide a site inspector that is a Certified Erosion and Sediment Control Lead (CESCL), per Ecology requirements as stated in the Construction Stormwater General Permit S4. MONITORING REQUIREMENTS, B. Site Inspections, item 3.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Provide storage tanks, sump pumps and hoses, temporary berms and ditches, temporary straw bale walls, polyethylene sheeting and sandbags, silt fencing, sediment retention measures, and all other materials necessary to control surface water, erosion, and sediment transport during the work.

B. Polyethylene (PE) Sheeting: Per WSDOT Standard Specifications Section 9-14.5(3).

C. Erosion Control Blanket: Per WSDOT Standard Specifications Section 9-14.5(2).

D. Crushed Surfacing Material: Reuse clean, onsite crushed surfacing material removed from existing pavement sections to the extent practicable. Supplement as needed with crushed surfacing per WSDOT Standard Specifications Section 9-03.9(3), with less than 5 percent passing the #200 Sieve based on the fraction passing the ¾-inch sieve.

2.02 EQUIPMENT

A. Pumps and Temporary Storage Tanks: As specified in this section.

B. Wheel Wash: As specified in BMP C106 of Volume II of the SWMMWW, or equivalent setup to prevent tracking contaminated soil onto roadways and offsite.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify survey benchmarks, property corners, horizontal control and intended elevations for the work are as indicated.

B. Identify existing survey monuments, benchmarks, and survey control points that may be disturbed by the work.

3.02 MINIMUM EROSION AND SEDIMENT CONTROL REQUIREMENTS

A. Ensure that provisions for the following minimum requirements for drainage, erosion, and sediment controls are implemented and maintained throughout the duration of the contaminated soil removal work.

1. Exposed and unworked soil shall be stabilized by suitable and timely application of best management practices (BMPs).
2. Property adjacent to the work area shall be protected from stormwater runoff and from sediment deposition.
3. Excavate and temporarily stockpile and protect excavated soil in separate lined, bermed, and covered stockpiles, as necessary.
4. Sediment traps, berms, and other BMPs intended to trap sediment shall be installed and functional prior to initiating earthwork activities.
5. Stormwater drain inlets within the work area shall be temporarily plugged so that potentially contaminated stormwater runoff will not enter the conveyance system.
6. Wherever construction vehicle access routes intersect paved roads, provisions shall be made to minimize the transport of dust, soil, or mud onto the paved road.
7. Temporary BMPs shall be maintained and repaired, as needed, to assure continued performance consistent with their intended function.

3.03 CONSTRUCTION

A. Diversion Swales and Berms: Construct in a manner to intercept, divert, and channel runoff to sediment trap. Any locations indicated on the Drawings are schematic. Field adjust, move, and reconstruct as necessary during construction to maintain drainage to sediment trap and allow construction to proceed. Provide rock check dams at maximum 100-foot spacing.

B. Polyethylene (PE) Sheeting:

1. Polyethylene sheeting shall be used to cover and line temporary soil stockpiles, as well as to stabilize soil berms installed at the perimeter of the contaminated soil excavation, where such soil berms are placed to prevent inflow of clean stormwater or runoff of contaminated stormwater.

2. Overlap joints minimum 28 inches. Overlap in direction of drainage and prevent water from draining onto material being protected.

3. Secure sheeting in place to prevent movement and damage.

4. Provide sandbags at 2.5 feet spacing and tie the sand bags together with rope on slopes greater than 3H:1V.

5. Minimize driving stakes through plastic.

C. Erosion Control Blanket:

1. Erosion control blankets may be used as an alternate to polyethylene sheeting to stabilize soil berms installed at the perimeter of the contaminated soil excavation, where such soil berms are placed to prevent inflow of clean stormwater or runoff of contaminated stormwater.

2. Comply with manufacturer’s installation instructions and recommendations.

3. Comply with WSDOT Standard Specifications Section 8-01.3(3).

4. Overlap joints minimum 12 inches.

5. Secure blanket in place to prevent movement and damage.

6. Extend blanket onto adjacent vegetation minimum 24 inches.

D. Temporary Sump, Pump, Power, and Piping:

1. Provide sumps, pumps, power, and piping required to collect and convey stormwater and any extracted groundwater for appropriate treatment prior to discharge.

2. Ensure that size and capacity of pumps, discharge hose/pipe pipe, and storage tanks will prevent overflow and not allow untreated water to leave the site.

3. Provide spare pumps, power supplies, and parts required to ensure continuous operation of system.

4. Inspect, maintain, and clean system to ensure proper operation.

3.04 FIELD QUALITY CONTROL

A. Site Inspections

1. Comply with the requirements of the CSWGP, the site-wide SWPPP, and the SWPPP Supplement.

B. Reporting and Recordkeeping

1. Comply with CSWGP requirements.

2. Create and maintain log book recording information related to stormwater infiltration and site inspections.

C. Maintain a Current Erosion Control Plan

1. Update erosion control plan to show revisions.

2. Maintain copies of previous plans in chronological order.

3.05 ADJUSTMENTS AND REVISIONS

A. Adjust or move swales and berms as necessary during construction to prevent silt-laden water from leaving the excavation area and to prevent clean stormwater from entering the excavation area.

B. Relocate pumps and storage tanks as necessary to contain stormwater.

3.06 PROTECTION AND MAINTENANCE

A. Protection:

1. Prevent stormwater from leaving the contaminated soil excavation area and from entering offsite storm sewer systems.

2. Stabilize all slopes, cut, or fill areas where work has stopped for more than 14 days by covering with PE sheeting, or other method to prevent erosion and sediment transport.

3. For earthwork equipment exiting contaminated soil excavation areas, use a wheel wash per BMP C106 of the SWMMWW, or equivalent, to prevent tracking contaminated soil onto roadways and offsite.

4. Keep all off-site parking areas and streets clean from construction activities. Paved surfaces shall be kept clean using mechanical sweeping equipment, hand shovels and brooms, or other accepted methods suitable of removing dirt, rock, silt, and sand. No street washing will be allowed.

5. Contractor shall bear the cost of managing contaminated and uncontaminated stormwater originating from areas occupied or disturbed by Contractor during performance of the work, and shall employ such additional measures as may be required to prevent environmental harm or physical damage to the work, the work area, or adjacent property

B. Inspections:

1. Inspect excavations in contaminated soil areas to ensure proper containment of stormwater a minimum of twice per week, during and after storms, and before and after weekends and holidays.

3.07 CLEAN UP

A. Sediment that remains from infiltration of contaminated stormwater or sediment that is accumulated in the bottom of temporary stormwater storage tanks shall be disposed offsite at a solid waste landfill along with other excavated contaminated soil.

END OF SECTION

PART 1 - GENERAL

1.01 WORK INCLUDED

A. This section specifies requirements for protection of land and surface water from spills that may occur during the work, and describes the minimum requirements of Contractor's spill prevention and pollution control plan. Work shall be performed and containment structures shall be provided to ensure the protection of the environment from any spills associated with the work under this Contract.

B. Requirements of this section apply to Contractor work areas, including construction support facilities, personnel parking areas, equipment and material storage/laydown areas, and other areas required by Contractor to complete the work under this Contract.

1.02 SUBMITTALS AND APPROVALS

A. Spill Prevention and Pollution Control Plan. Prepare and submit for Port approval a brief spill prevention and pollution control plan. The plan shall, as a minimum, address the following subjects:

1. Best Management Practices. Describe the best management practices (BMPs) to be used to prevent and control spills during the work. State which work elements are contingent upon complete installation of spill containment structures.
2. Material Storage. At each location that Contractor proposes to use to store materials, identify the material to be stored, the size and construction materials of all containers, the containment structures provided, and the procedures to drain stormwater from any containment area.
3. Material Transfer Procedures. Summarize the methods to be employed to prevent and control any spills during transfer activities at the site where spills from such transfer activities could directly or indirectly enter adjacent water bodies. These transfer activities may include, but are not limited to: handling of equipment fuels and oils; hauling of materials to or from the site by truck; temporary stockpiling of contaminated soil, and loading such material for offsite disposal; and transfer of potentially contaminated decontamination water, excavation water, and stormwater runoff to appropriate treatment and disposal locations.
4. Emergency Response Procedures. Establish appropriate emergency notification, response, and reporting procedures for the work under this Contract.
5. Sketches or Drawings. Supplement the text of the plan with sketches or drawings as necessary to show Contractor’s plans for placement of berms, work pads, straw bales, absorbent booms and pads, and other containment structures.

B. Identify the name of the individual and provide a 24-hour emergency telephone number that will enable the Port and the GC/CM to contact the individual responsible for the spill prevention and pollution control features installed by Contractor.

PART 2 - PRODUCTS

2.01 MATERIALS AND EQUIPMENT

A. Provide all necessary absorbent pads and booms, storage tanks, containment structures, sump pumps and hoses, temporary berms, drainage ditches, polyethylene sheeting and sandbags, silt fencing, sediment retention measures, oil absorbent materials, small tools, and any other materials and equipment required to control spills during the work.

PART 3 - EXECUTION

3.01 GENERAL

A. In the event of a spill or release of material, immediately notify the Port and the GC/CM and follow the emergency response procedures, as set forth in Contractor’s spill prevention and pollution control plan, to minimize the effect of any spill or release. In coordination with the Port and the GC/CM, contact emergency response providers and other agencies, as necessary and appropriate. Perform cleanup activities and disposal of cleanup materials in accordance with applicable federal, state, and local regulations.

3.02 MINIMUM REQUIREMENTS

A. Ensure that provisions incorporated into Contractor's spill prevention and pollution control plan are implemented and maintained throughout the duration of the work. These provisions include the requirements of Article 1.02 and the following requirements:

1. Establish who to notify in the event of a spill, particularly if it involves hazardous materials.
2. Provide specific cleanup instructions for different products handled onsite.
3. Identify a person to be in charge of cleanup assistance.
4. Identify procedures for containment of spills as quickly as possible.
5. If there is a chance that the spill could enter a storm drain or sewer, plug the inlet and turn off or divert any incoming water.
6. Construct and maintain containment berms and other containment structures as appropriate.
7. Protect properties adjacent to the site from spills and releases.

8. Handle contaminated materials in such a manner that such materials are not placed on and do not spill or fall on designated uncontaminated areas. Clearly stake and mark temporary stockpiles of contaminated material with documented identification at all times. Transport and handle clean site and imported soil in a manner that prevents cross-contamination by potentially contaminated soil and water.
9. Convey potentially contaminated water to appropriate storage, treatment and disposal locations in a manner that prevents spill onto uncontaminated areas.
10. Remove temporary containment structures after they are no longer needed.

END OF SECTION

PART 1 – GENERAL

1.01 SUMMARY

A. This section specifies the general earthwork requirements for excavation, handling, and disposal of contaminated onsite soil during implementation of the shallow soil cleanup action. Requirements for demolition and disposal of existing asphalt or concrete pavement in certain designated soil removal areas are provided in Section 02220. Requirements for stockpiling clean overburden soil, and for backfilling excavations with imported backfill and/or the clean overburden soil, are provided in Section 02300.

B. The following soil cleanup levels have been established for the work. Soil at or above these concentrations shall be considered “contaminated site soil.” Soil below these levels shall be considered “non-contaminated site soil” and may be used as appropriate on the site, but shall not be removed from the site for use elsewhere. These provisions and soil cleanup levels apply only to existing soil on the project site. Materials imported from off site locations shall not contain contaminated soil above Method B unrestricted soil cleanup levels as described in WAC 173-340-740 - Model Toxics Control Act (MTCA). Site soil shall not be exported from the site without the express written consent of the Port.

Constituent	Cleanup Level (mg/kg)
cPAH	137
TPH – diesel range	2,000
TPH – oil range	2,000
Arsenic	20
Lead	250
Copper	2,960

C. Contaminated soil is present in the areas designated on the Drawing for the Shallow Soil VCP Cleanup Action. Analytical laboratory data indicate that the potentially contaminated zones vary in depth and thickness, as indicated on the Drawings.

D. Contractor shall conduct contaminated soil excavation and handling activities in a carefully controlled manner that will minimize the volume of contaminated soil to be excavated and transported for offsite disposal. Excavation beyond the allowable overexcavation limits specified in Article 1.06(A) of this section is prohibited, unless otherwise directed by the Port based on revised depths or extents of soil excavation.

E. Clean overburden soil (primarily pavement base course materials) present within the designated soil removal areas shall be carefully excavated and segregated from the underlying contaminated site soil and be stockpiled for reuse as clean backfill material.

1.02 REGULATORY REQUIREMENTS AND APPLICABLE PUBLICATIONS

A. WAC 173-340 - Model Toxics Control Act (MTCA)

B. 29 CFR 1926 - Safety and Health Regulations for Construction

C. 29 CFR 1910 - Occupational Safety and Health Regulations.

D. WAC 296-155, Part N, Excavations, Trenches, and Shoring.

E. Any references to WSDOT shall refer to *2006 Standard Specifications for Road, Bridge, and Municipal Construction* of the Washington State Department of Transportation

1.03 QUALIFICATIONS

A. Personnel engaged in hazardous materials work shall be Hazmat, OSHA, and WISHA certified. Conduct earthwork associated with known or potentially contaminated materials in accordance with Contractor's site-specific health and safety plan prepared in accordance with Section 01350.

B. Contaminated soil transportation work shall be performed by properly licensed, insured, and registered waste haulers that are acceptable to the Port. Transportation contractor(s) shall submit documentation that demonstrates it is properly licensed and in compliance with applicable DOT regulations, as well as a copy of its contingency and spill control plans describing measures to be implemented in the event of spills or discharges during material handling and transporting.

1.04 CONTRACTOR RESPONSIBILITY

A. Furnish all labor, equipment, supplies, and materials necessary to perform the soil excavation, handling, and disposal activities, as well as all associated earthwork.

B. Provide traffic control in accordance with Section 01550; protect all utilities in accordance with Section 01560 and all monitoring wells in accordance with Section 01563; provide construction equipment decontamination in accordance with Section 01564; provide air emissions control in accordance with Section 01565; provide drainage and erosion control in accordance with Section 01566; and provide spill prevention and pollution control in accordance with Section 01567.

1.05 SUBMITTALS

A. Within 14 days of the issuance of the Notice to Proceed and prior to starting the contaminated soil cleanup work, submit a construction plan that includes a detailed description of the proposed means and methods and construction sequencing to perform the work. This plan shall be subject to review and approval by the Port, and shall include, as a minimum, drawings indicating: the proposed material and equipment storage areas and haul routes; the proposed location and size of the stockpiles for contaminated soil and clean overburden soil, and details regarding:

1. Excavating contaminated soil and associated clean overburden soil, including:
    a) Survey control to achieve design grades and meet overexcavation limits
    b) Excavation equipment and procedures
2. Handling, loading, and transporting contaminated site soil to the designated offsite disposal facilities (see the waste acceptance documents included in Exhibit C).
3. Drainage and erosion control provisions for the contaminated soil work areas
4. Cleanup, equipment decontamination, and disposal of residual materials.

B. Upon completion of the work, submit an as-built report documenting the shallow soil cleanup action activities, including daily logs and summary forms, as-built drawings and surveyed locations for contaminated soil excavations, and certified weight receipts documenting the weight of materials transported to and disposed at the designated offsite disposal facilities.

1.06 EXCAVATION PERFORMANCE CRITERIA

A. The excavation performance criteria for removal of clean overburden soil and contaminated site soil are as follows:

1. Overexcavation is the removal of any clean overburden soil and removal of contaminated site soil below or beyond the grades, lines, and limits shown on the Drawings or as specified by the Port during implementation of the shallow soil cleanup action. The allowable overexcavation depth for contaminated soil and associated clean overburden soil is 0.2 ft below the required excavation depth shown on the Drawings. The allowable overexcavation lateral limit is 0.5 ft beyond the excavation limits shown on the Drawings.

PART 2 – PRODUCTS

2.01 MATERIALS

A. Clean overburden soil removed from the surface of the designated soil excavation areas shall be stockpiled at onsite areas approved by the Port and reused for excavation backfilling and grading activities.

B. Clean imported material to be used as excavation backfill shall conform to the requirements of Section 02300.

C. Temporary chain link fencing shall be provided for a minimum period of 12 months, and shall be made of prefabricated portable galvanized chain link fence panels including fabric, posts, top and bottom rails, and driven posts with rolled fabric and wire ties for areas of uneven terrain. Temporary chain link fencing shall be constructed using:

1. New materials or, if approved by the Port, previously used salvaged chain link fencing in good condition, minimum of 7 ft high.

2. Prefabricated portable fence panels shall be a minimum of 7 feet high by maximum 10 feet wide.

3. Posts: Minimum 2-inch diameter Schedule 40 galvanized steel pipe. Posts shall be suitable for setting in concrete footings, driving into ground, anchoring with base plates, or inserting into pre-cast concrete blocks.

4. Post Bases: Minimum 12 inches by 12 inches by 8 inches high concrete pier with sleeve for post, or as approved.

5. Fabric: Minimum 11 gauge galvanized 2-inch diamond mesh steel wire interwoven with knuckled or twisted selvage. Provide in continuous lengths to be wire tied to fence posts or prefabricated into modular pipe-framed fence panels.

6. Gates: Provide personnel and vehicle gate at location identified by Port. Gates shall be 20 feet wide (two prefabricated panels) and fabricated from same material as fencing. Hinged sides of each operating panel shall include double bracketing.

7. Bracing: Provide additional panels or outriggers as necessary to provide a rigid, stable run of fence.

PART 3 – EXECUTION

3.01 GENERAL

A. Conduct all required clean and contaminated soil earthwork activities in accordance with the requirements of the Contract Documents, Contractor's approved construction plan(s), and as otherwise directed by the Port to successfully complete the shallow soil cleanup action. Coordinate the work with representatives of the Port and the GC/CM to limit adverse effects of the work on the Port's tenants and other site contractors retained by the Port.

B. Contractor operations will require work in a potentially hazardous environment. Ensure adequate protection for all personnel, comply with all health and safety requirements of Contractor's site-specific health and safety plan, and perform construction equipment decontamination as specified. For the purpose of estimating costs, modified Level D protection may be assumed for intrusive work associated with excavation and handling of contaminated site soil and other activities with a potential for exposure to contaminated materials.

C. Implement traffic control, utility and monitoring well protection, air emissions control, drainage and erosion control, spill prevention and pollution control, equipment decontamination, and all other controls needed to protect environmental quality during the work.

3.02 EXISTING PAVEMENT AND VEGETATION REMOVAL AND DISPOSAL

A. Comply with the pavement demolition requirements of Section 02220 and dispose of asphalt and concrete pavement debris in a manner consistent with the Early Site Package work.

B. Comply with the clearing and grubbing requirements of Section 02230. Cut any existing vegetation present in the contaminated soil areas near ground surface and dispose of cut vegetation at an appropriate offsite location. Strip the remaining sod and root matter as part of soil excavation and dispose of the vegetative material as solid waste.

3.03 SOIL EXCAVATION AND HANDLING

A. Survey and stake the limits of contaminated soils to be removed. As certain excavation areas may be undergoing additional delineation, coordinate with the Port to confirm the lateral extent and depth of soil removal within each contaminated soil area.

B. Establish an excavation plan for each contaminated soil area identified for excavation and disposal. Excavation vertical control shall be established by Contractor in the following manner:

1. Survey and mark the boundary for each excavation area, based on the coordinates provided on the Drawings.

2. Survey the elevation of all excavation area boundary coordinates for each excavation area, based on the coordinates provided on the Drawings. These elevations shall be the baseline of soil removal to the specified depth below ground surface (BGS).

3. Carefully remove any existing asphalt pavement within the excavation area, leaving the base course material in place.

4. Carefully excavate clean overburden from the contaminated soil areas, if identified on the Drawings as present in a specific area, adjusting the excavation depths and limits based on the Port's observations and directions provided by the Port during the work. Following completion of clean overburden removal, resurvey the excavation at each boundary coordinate.

5. Excavate contaminated soil to the depth indicated on the Drawings, adjusting the excavation depth based on the Port's ongoing observations and directions. Following completion of contaminated soil removal, resurvey the excavation at each boundary

coordinate and at other spot locations within the excavation as needed for as-built documentation purposes.

C. Excavate all clean overburden and contaminated soil within the designated soil removal areas using an excavator with a smooth blade bucket, or equivalent equipment, such that a smooth and regular excavation surface is obtained and soil being removed is prevented from being mixed with the underlying soil.

D. Conduct all soil excavation and handling activities in a manner that prevents the movement, spillage, or other deposition of contaminated soil material or associated stormwater runoff on uncontaminated areas of the site, portions of the excavation completed to final excavation depth, or into the site-wide stormwater drainage system.

E. Excavate onsite soil in a carefully controlled manner that achieves the excavation performance criteria specified in Article 1.06A.

F. Clean overburden soil from designated locations shall be segregated and stockpiled onsite for reuse as backfill material in accordance with Section 02300. Protect such clean soil from exposure to the elements and from cross-contamination until reused as backfill material at the site.

G. Contaminated soil shall be segregated and temporarily stockpiled within the excavation area as appropriate for subsequent loading and transportation to the designated offsite disposal facilities. Carefully segregate and stockpile contaminated soil designated for disposal at an offsite inert waste landfill from contaminated soil designated for disposal at an offsite solid waste landfill. Construct temporary material processing/stockpile areas at locations within each work area at locations approved by the Port. Line, berm, and cover material processing/stockpile areas as necessary to protect the environment and prevent the spread of contaminated soil and water during material handling activities.

H. Soil disposed at the inert waste facility must be free of wood debris and other wood waste. Segregate any contaminated soil containing appreciable amounts of sawdust or wood debris encountered in any excavation area designated for inert waste disposal in a separate stockpile for disposal at a solid waste landfill.

I. Excavated contaminated soil that contains free liquids shall be stabilized as required prior to loading for offsite disposal. Wet soil stabilization shall be accomplished by mixing with drier excavated soil and/or allowing the soil to drain back into the excavation and dry until the material is acceptable for transportation and disposal. Stabilization by adding non-biodegradable sorbent materials to wet soil to be loaded for offsite disposal shall be subject to approval by the Port and be conducted at no additional cost to the Port.

J. If site soil outside the designated excavation areas is encountered during the shallow soil cleanup work that visually appears to be contaminated (e.g., discolored soil, soil with oily residue, soil with strong petroleum odor, etc.), Contractor shall notify the Port immediately. Upon approval by the Port, the soil shall be excavated, segregated from clean soil, and stockpiled for testing by the Port. If the level of contamination in the soil is determined to be below the site cleanup levels, the soil may remain onsite and be used onsite as clean fill, as appropriate.

3.04 CONFIRMATION SOIL SAMPLING AND ANALYTICAL TESTING

A. The Port will collect and analyze soil samples from the exposed surface within each soil excavation area following removal of contaminated soil to determine whether site cleanup levels have been achieved. Laboratory testing will require approximately 1 to 2 weeks to obtain and evaluate results for analyzed samples, and Contractor shall sequence and schedule its work accordingly. Contaminated soil excavation areas shall be protected from disturbance and shall not be backfilled until the Port informs Contractor that cleanup levels have been achieved.

B. If cleanup levels are not achieved at one or more excavation sample locations, the Port may direct Contractor to excavate additional soil for offsite disposal.

C. Any re-excavated areas shall be re-surveyed by Contractor and will be re-sampled and tested by the Port, as described above, and backfilling of such areas is subject to the same requirements described above.

3.05 INERT WASTE LOADING AND TRANSPORT TO DISPOSAL FACILITY

A. Load and transport contaminated soil designated as inert waste material to Rinker Materials' disposal facility in Everett, Washington, unless otherwise designated by the Port. Coordinate with the GC/CM and the Port regarding transport of inert waste material to Rinker Materials' disposal facility. Cover and tarp loads prior to exiting the site, unless otherwise approved by the Port.

B. Provide proper manifesting of the material, and provide legible copies of certified weight receipts or other documentation certifying the total weight of material transported to the inert waste disposal facility.

3.06 SOLID WASTE LOADING AND TRANSPORT TO DISPOSAL FACILITY

A. Load and transport contaminated soil designated as solid waste to Rabanco's transfer station for subsequent rail car transfer to the Roosevelt Regional Landfill, unless otherwise designated by the Port. Coordinate with the GC/CM and the Port regarding transport of solid waste material to the Roosevelt Regional Landfill. Cover and tarp loads prior to exiting the site, unless otherwise approved by the Port.

B. Provide proper manifesting of the material, and provide legible copies of certified weight receipts or other documentation certifying the total weight of material transported to the solid waste disposal facility.

3.07 EXCAVATION BACKFILLING

A. Obtain the Port's approval prior to placing backfill material in any of the excavations. Place and compact backfill material as directed by the Port. Certain excavations will not require backfilling, as indicated on the Drawings or as directed by the Port during the work.

3.08 TEMPORARY FENCING

A. Install temporary construction fencing as indicated on the Drawings. Temporary chain link fence panels shall:

1. Be connected mechanically by means of pre-fabricated, bolted bracket manufactured specifically for the purpose. Fencing shall not be wired together.

2. Incorporate sufficient out-rigging in long straight runs to maintain fencing upright. Use only pre-manufactured outriggers or additional fence panels. Out-riggers shall be placed on the interior side of the fence unless approved by the Port.

3. Use driven posts where uneven terrain will not allow the use of pre-manufactured portable fence panels, or where otherwise directed by the Port. Drive posts directly into the earth plumb and a maximum of 10 ft on center along the approved alignment. It is the Contractor’s responsibility to perform a complete utility locate for underground utilities in any area to receive driven posts. Drive posts to sufficient depth to assure stability and durability for the life of the installation, maintaining a minimum of 6 ft above grade. Reset loose posts at the direction of the Port.

END OF SECTION

PORT OF EVERETT

NORTH MARINA REDEVELOPMENT
SHALLOW SOIL VCP CLEANUP ACTION

PORT COMMISSIONERS:

PHILIP B. BANNAN
DON HOPKINS, JR.
CONNIE NIVA

EXECUTIVE DIRECTOR:

JOHN M. MOHR

DIRECTOR OF PROPERTY DEVELOPMENT

ERIC RUSSELL

DIRECTOR OF ENGINEERING AND PLANNING:

JOHN KLEKOTKA, P.E., S.E.
(425) 388-0715

PROJECT MANAGER:

POLI LUIS, P.E.
(425) 388-0630

ENVIRONMENTAL/GEOTECHNICAL ENGINEER:

LANDAU ASSOCIATES
CONTACT: LARRY BEARD, P.E., L.G.
130 2ND AVENUE SOUTH
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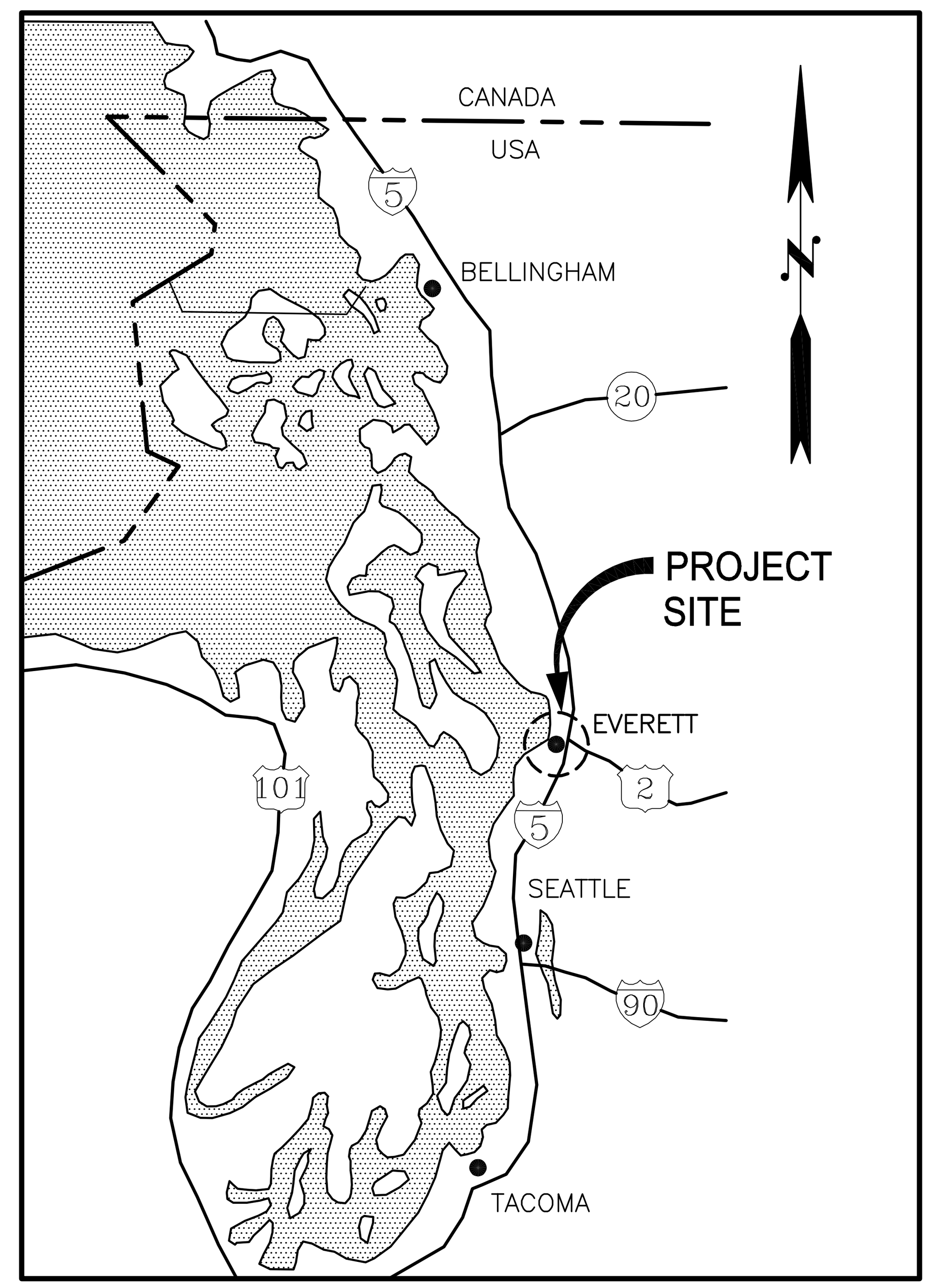
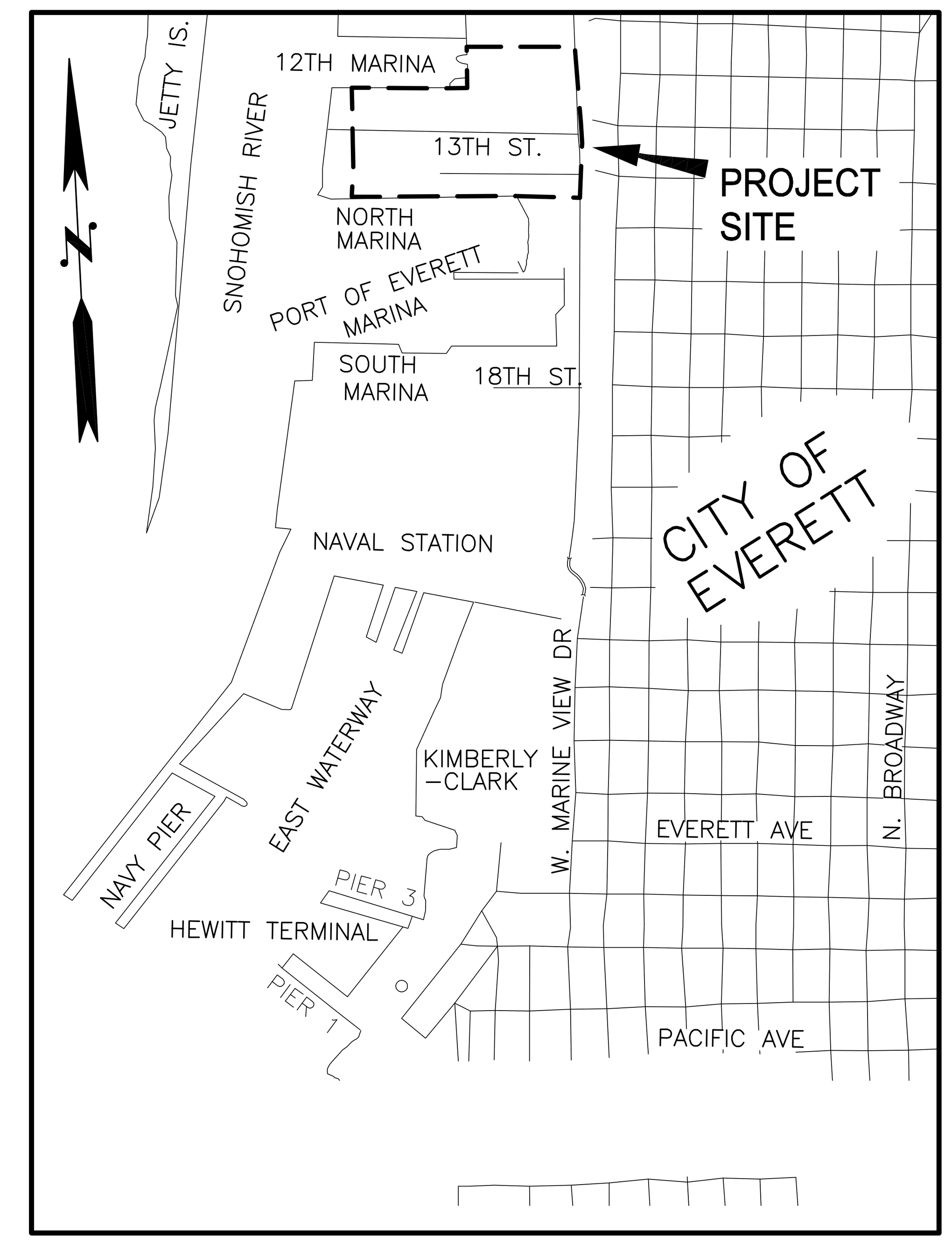
(425) 778-0907

CIVIL ENGINEER:

REID MIDDLETON
CONTACT: HUGH KUYPER, P.E.
728 134TH STREET SW
SUITE 200
EVERETT, WA 98204
(425) 741-3800



LOCATION MAP
NOT TO SCALE



VICINITY MAP
NOT TO SCALE

DWG NO.	SHT. NO.	SHEET TITLE
		GENERAL
G1.0	1	TITLE SHEET, VICINITY MAP, LOCATION MAP
G1.1	2	GENERAL SYMBOLS
G1.2	3	PROJECT CONTROL AND ALIGNMENT PLAN
		EROSION CONTROL
CE1.1	4	TEMPORARY EROSION CONTROL NOTES AND DETAILS
		CONTAMINATED SOIL CLEANUP ACTION
CS1.1	5	CONTAMINATED SOIL LOCATION AND EXCAVATION PLAN
CS1.2	6	SOIL CLEANUP ACTION - DETAILS
CS1.3	7	SOIL CLEANUP ACTION - DETAILS
CS1.4	8	SOIL CLEANUP ACTION - DETAILS
CS1.5	9	SOIL CLEANUP ACTION - DETAILS
CS1.6	10	SOIL CLEANUP ACTION - DETAILS
CS1.7	11	SOIL CLEANUP ACTION - DETAILS

100% DESIGN REVIEW SUBMITTAL

NOTE: "L"
IF "L" DOES NOT MEASURE 1" ADJUST SCALES ACCORDINGLY.

Port of Everett
P.O. BOX 538
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NO.	DATE	BY	REVISION	NO.	DATE	BY	REVISION

DAVID A. PISCHER, STATE OF WASHINGTON, 19777, REGISTERED PROFESSIONAL ENGINEER
EXPIRES: 7/18/2006

PROJECT ENGINEER: D. PISCHER	SCALE: AS NOTED
DESIGNED BY: L. BEARD	DATE: MAY 5, 2006
DRAWN BY: C. BATCHELOR	CHECKED BY: D. PISCHER
APPROVED BY:	

PORT OF EVERETT
NORTH MARINA REDEVELOPMENT
SHALLOW SOIL VCP CLEANUP ACTION
TITLE SHEET, VICINITY MAP, LOCATION MAP

DWG. NO. G1.0
CIP NO. 3-0-003-09
PROJECT NO. PD-NM-2006-03
SHEET NO. 1 OF 11

CIVIL SYMBOLS

SURVEY

SYMBOL: THEOR./EXIST. | FOUND/PROP. — DESCRIPTION (ABBR)

- ANGLE POINT
- BENCH MARK
- REBAR/IRON PIPE
- MONUMENT (IN CASE)
- MONUMENT (SURFACE)
- TAX LOT/PARCEL NUMBER (?_______)
- OWNERSHIP TIE
- SPOT ELEVATION (× ELEV)
- COORDINATE POINT (N367536.70 E1302438.80)
- MATCHLINE (SEE SHEET X.XX)
- SECTION CENTER
- SECTION CORNER
- QUARTER CORNER
- SIXTEENTH CORNER
- CLOSING CORNER
- MEANDER CORNER (MC)
- NORTH (N)

SH-DATUM (USGS 1982)

SCALE IN FEET: 20 0 20 40

UTILITY

SYMBOL: EXIST. | PROP. — DESCRIPTION (ABBR)

- CAP/PLUG
- DOMESTIC WATER SERVICE AND FIRE SERVICE (DS/FS)
- REDUCER
- THRUST BLOCK
- FIRE HYDRANT
- BUTTERFLY VALVE
- GATE VALVE
- BLOW-OFF ASSEMBLY
- SAN SEWER MANHOLE TYPE 1 (SSMH)
- MANHOLE TYPE 2
- CATCHBASIN, TYPE A
- CATCH BASIN, TYPE 2, SUMP
- STORM DRAIN CULVERT
- WATER LINE (W)
- NATURAL GAS (G)
- SANITARY SEWER LINE (SS)
- SANITARY SIDE SEWER (SS 6"Ø)
- STORM DRAIN LINE (SD)
- PRESSURE SANITARY SEWER (PSS)
- CONDUIT (SIG)
- SANITARY SEWER CLEANOUT (CO)
- TRENCH DRAIN
- GROUNDWATER MONITORING WELL

CHANNELIZATION

SYMBOL: EXIST. | PROP. — DESCRIPTION

- DISABLED SYMBOL
- STOP LEGEND
- TRAFFIC ARROW
- STOP LINE
- PARALLEL PARKING SPACE

SIGNING

SYMBOL: EXIST. | PROP. — DESCRIPTION

- TRAFFIC SIGN

SURFACE & LANDSCAPING

SYMBOL: EXIST. | PROP. — DESCRIPTION

- EMBANKMENT
- RIP RAP
- SHRUB
- TREE (Conifer)
- TREE (Deciduous)
- YARD OR STREET LIGHT
- SOIL BORING (NO; SEE BORING PLAN)
- LANDSCAPE STRIP

GENERAL

- SOIL
- GRAVEL
- MATCHLINE (SEE SHEET X.XX)
- ELEVATION POINT (TOP OF ELEMENT INDICATED) ([-14½"])
- SLOPE

DEMOLITION

- DEMOLITION LIMITS
- ASPHALT PAVEMENT

TITLES

PLAN TITLE
SCALE: 1/8" = 1'-0"

A / S1.1 SECTION/ELEVATION TITLE
SCALE: 3/4" = 1'-0"

1 / S2.1 DETAIL/VIEW TITLE
SCALE: 3/4" = 1'-0"

SECTION/ELEVATION/DETAIL/VIEW LABELS

SECTION/ELEVATION LETTER OR DETAIL/VIEW NUMBER
SHEET NUMBER WHERE DRAWN
SEE 1/S2.1 FOR ADDITIONAL INFO
TEXT NOTATION
INDICATES DIRECTION OF CUTTING PLANE
LETTER INDICATES SECTION OR ELEVATION
S / S3.2 SECTION
SHEET NUMBER WHERE SECTION IS SHOWN
E / S2.1 ELEVATION
2 / S2.2 DETAIL
NUMBER INDICATES DETAIL OR VIEW
SHEET NUMBER WHERE DETAIL/ELEVATION IS SHOWN

SECTION/ELEVATION/DETAIL/VIEW IDENTIFIERS

TEXT

⊖	ANGLE
Ø	PHASE, DIAMETER
&	AND
'	FEET, MINUTES
"	INCHES, SECONDS
°	DEGREE
@	AT
℄	CENTERLINE
ℙ	PROPERTY LINE
#	NUMBER
%	PERCENT

NOTE: "L" — IF "L" DOES NOT MEASURE 1" ADJUST SCALES ACCORDINGLY.

100% DESIGN REVIEW SUBMITTAL

Port of EVERETT
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EVERETT, WA 98206
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LANDAU ASSOCIATES
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Edmonds, Washington 98020
Ph: 425 778-0907

NO.	DATE	BY	REVISION	NO.	DATE	BY	REVISION

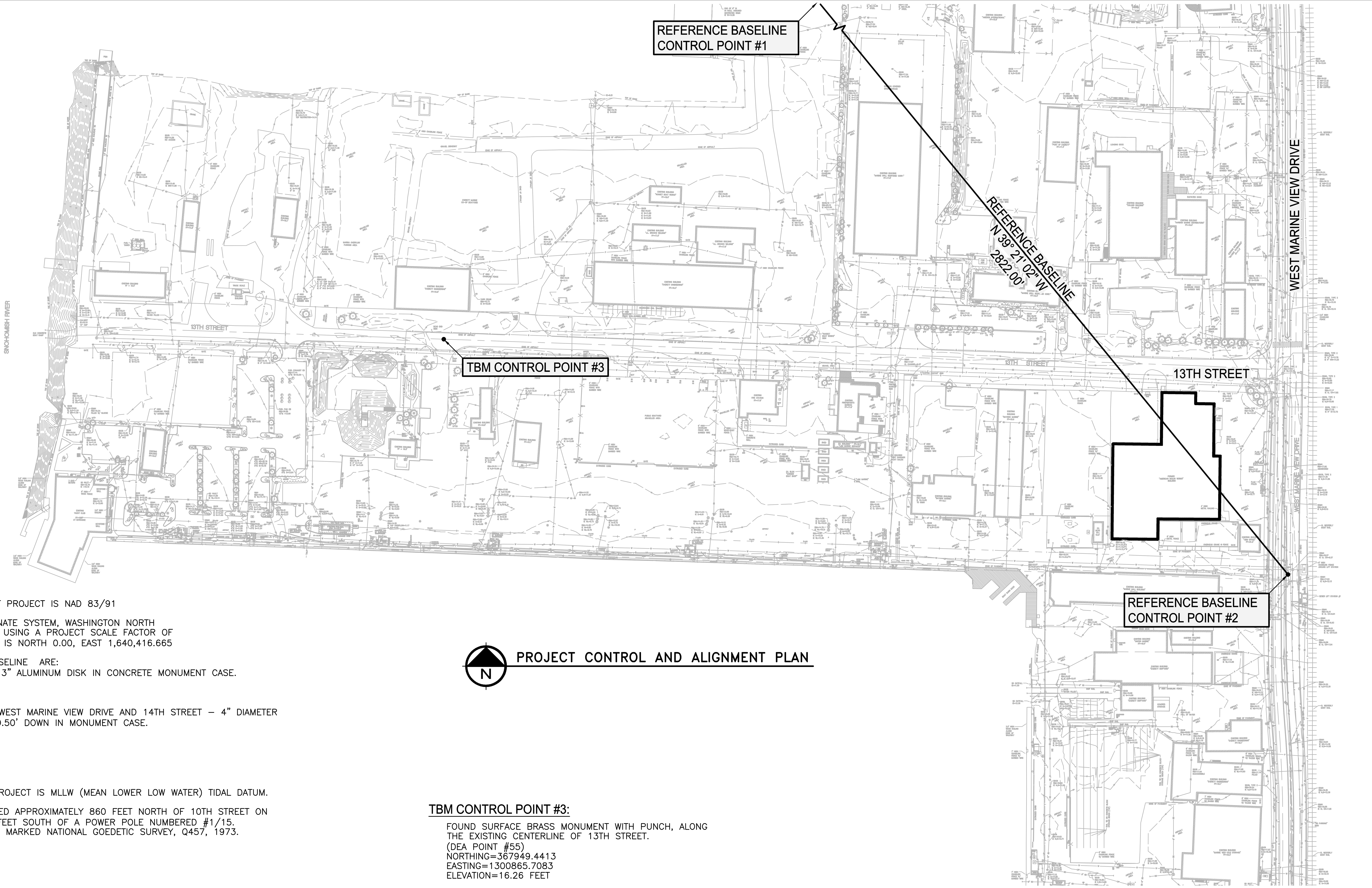
DAVID A. PISCHER — STATE OF WASHINGTON — 19777 — REGISTERED PROFESSIONAL ENGINEER — EXPIRES: 7/18/2006

PROJECT ENGINEER: D. PISCHER	SCALE: AS NOTED
DESIGNED BY: L. BEARD	DATE: MAY 5, 2006
DRAWN BY: C. BATCHELOR	CHECKED BY: D. PISCHER
APPROVED BY:	

PORT OF EVERETT
NORTH MARINA REDEVELOPMENT
SHALLOW SOIL VCP CLEANUP ACTION
GENERAL SYMBOLS

DWG. NO. G1.1
CIP NO. 3-0-003-09
PROJECT NO. PD-NM-2006-03
SHEET NO. 2 OF 11

PORT OF EVERETT | V:\1147\020\182\F\SSV Cleanup Action-Final\G1_1.dwg (A) "" 5/5/2006



PROJECT CONTROL AND ALIGNMENT PLAN

SCALE IN FEET
100 0 100 200

HORIZONTAL DATUM:

THE HORIZONTAL DATUM FOR THE NORTH MARINA REDEVELOPMENT PROJECT IS NAD 83/91

THE PROJECT COORDINATE SYSTEM IS STATE PLANE GRID COORDINATE SYSTEM, WASHINGTON NORTH ZONE, PROJECTED TO STATE PLANE GROUND COORDINATE VALUES USING A PROJECT SCALE FACTOR OF 1.000051777 (0.999948425). THE ORIGIN FOR THIS PROJECTION IS NORTH 0.00, EAST 1,640,416.665

TWO SURVEY CONTROL POINTS TO BE USED AS A REFERENCE BASELINE ARE:

#1) CITY OF EVERETT CONTROL MONUMENT "E009 1991" – 3" ALUMINUM DISK IN CONCRETE MONUMENT CASE.
NORTHING: 369693.2637
EASTING: 1300649.3977

#2) CENTERLINE R/W MONUMENT AT THE INTERSECTION OF WEST MARINE VIEW DRIVE AND 14TH STREET – 4" DIAMETER CONCRETE MONUMENT WITH LEAD AND COPPER TACK, 0.50' DOWN IN MONUMENT CASE.
NORTHING: 367511.0631
EASTING: 1302438.7269

VERTICAL DATUM:

THE VERTICAL DATUM FOR THE NORTH MARINA REDEVELOPMENT PROJECT IS MLLW (MEAN LOWER LOW WATER) TIDAL DATUM.

THE PROJECT BENCHMARK IS THE NGS BENCHMARK Q457, LOCATED APPROXIMATELY 860 FEET NORTH OF 10TH STREET ON THE EAST SIDE OF WEST MARINE VIEW DRIVE, APPROXIMATELY 2 FEET SOUTH OF A POWER POLE NUMBERED #1/15. THIS BENCHMARK IS A CONCRETE MONUMENT WITH A BRASS DISK MARKED NATIONAL GOEDETIC SURVEY, Q457, 1973.

BM ELEVATION = 17.72 FEET, MLLW DATUM

EQUATIONS TO OTHER DATUMS

CITY OF EVERETT DATUM (NAVD 1988)=PROJECT DATUM (MLLW)–2.25'

USEFUL TIDEWATER ELEVATIONS (MLLW)

MEAN HIGHER HIGH WATER (MHHW) 11.11 FEET
MEAN HIGH WATER (MHW) 10.25 FEET
MEAN LOW WATER (MLW) 2.80 FEET
MEAN LOWER LOW WATER (MLLW) 0.00 FEET

TBM CONTROL POINT #3:

FOUND SURFACE BRASS MONUMENT WITH PUNCH, ALONG THE EXISTING CENTERLINE OF 13TH STREET.
(DEA POINT #55)
NORTHING=367949.4413
EASTING=1300865.7083
ELEVATION=16.26 FEET

NOTE:

FOR ADDITIONAL HORIZONTAL AND VERTICAL CONTROLS, SEE NORTH MARINA REDEVELOPMENT SITE TOPOGRAPHIC SURVEY BY DEA, DECEMBER 2005 AND SEE SURVEY CONTROL FOR NORTH MARINA REDEVELOPMENT BY DEA, APRIL 6, 2004

100% DESIGN REVIEW SUBMITTAL

NOTE: IF "L" DOES NOT MEASURE 1" ADJUST SCALES ACCORDINGLY.

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NO.	DATE	BY	REVISION	NO.	DATE	BY	REVISION

DAVID A. PISCHER, STATE OF WASHINGTON, REGISTERED PROFESSIONAL ENGINEER, 19777, EXPIRES:7/18/2006

PROJECT ENGINEER: D. PISCHER	SCALE: 1"=100'
DESIGNED BY: L. BEARD	DATE: MAY 5, 2006
DRAWN BY: C. BATCHELOR	CHECKED BY: D. PISCHER
APPROVED BY:	

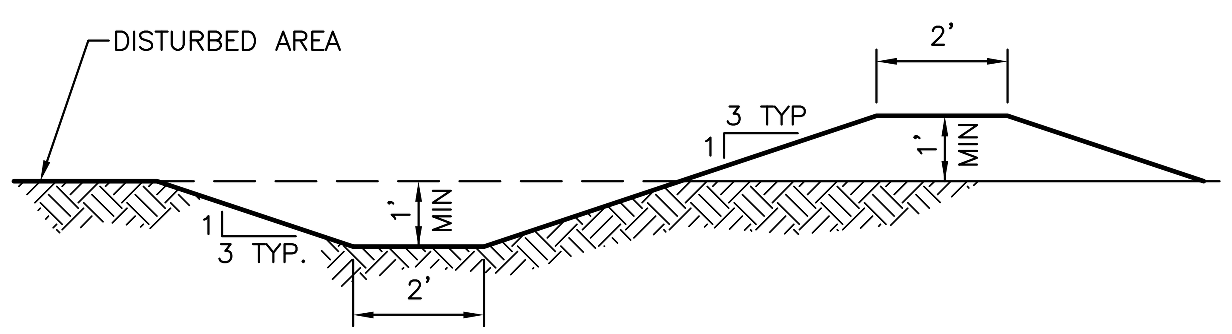
PORT OF EVERETT
NORTH MARINA REDEVELOPMENT
SHALLOW SOIL VCP CLEANUP ACTION
PROJECT CONTROL AND ALIGNMENT PLAN

DWG. NO. G1.2
CIP NO. 3-0-003-09
PROJECT NO. PD-NM-2006-03
SHEET NO. 3 OF 11

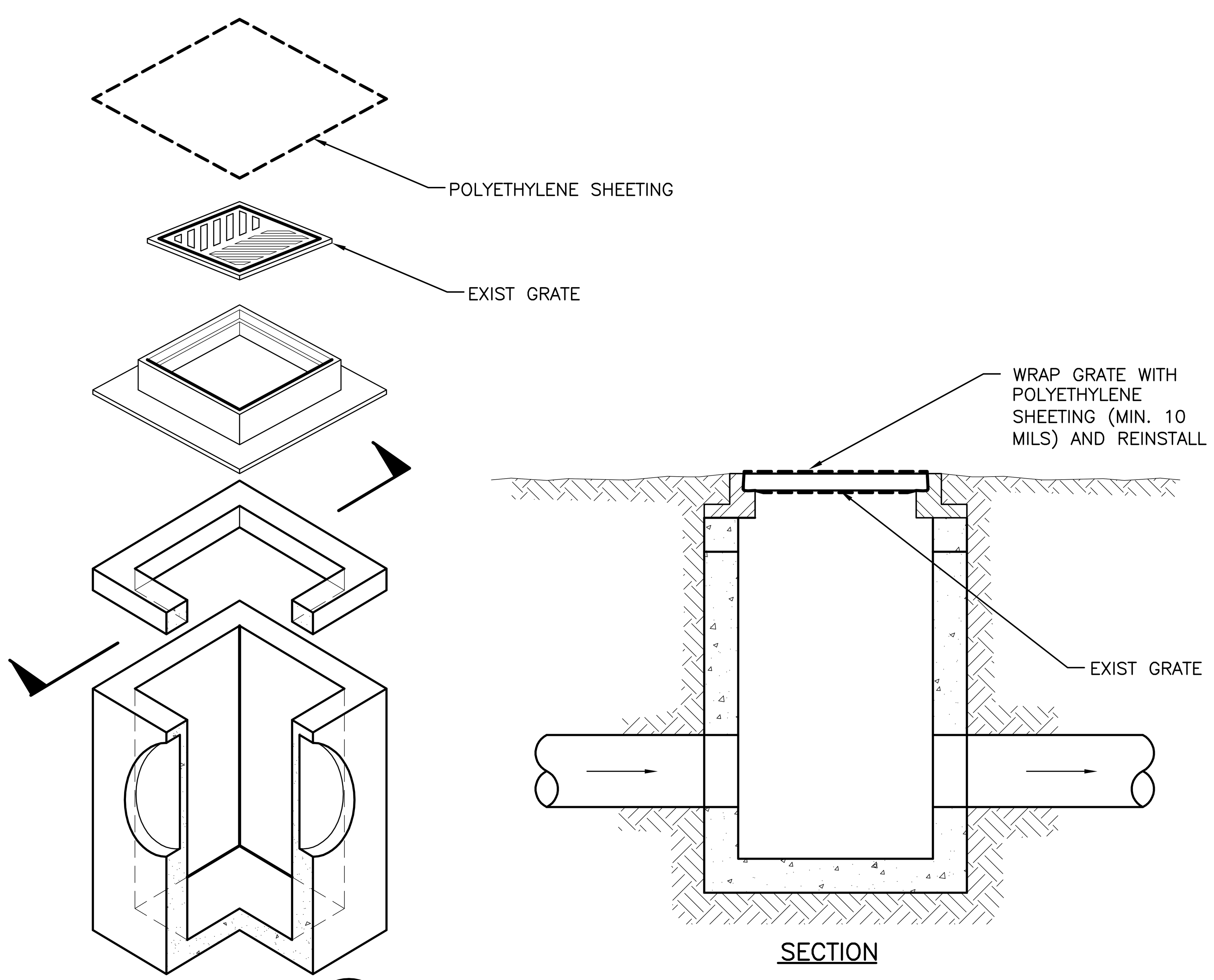
PORT OF EVERETT | V:\147\020\182\F\SSV Cleanup Action-Final\G1_2.dwg (A) "" 5/5/2006

EROSION CONTROL NOTES:

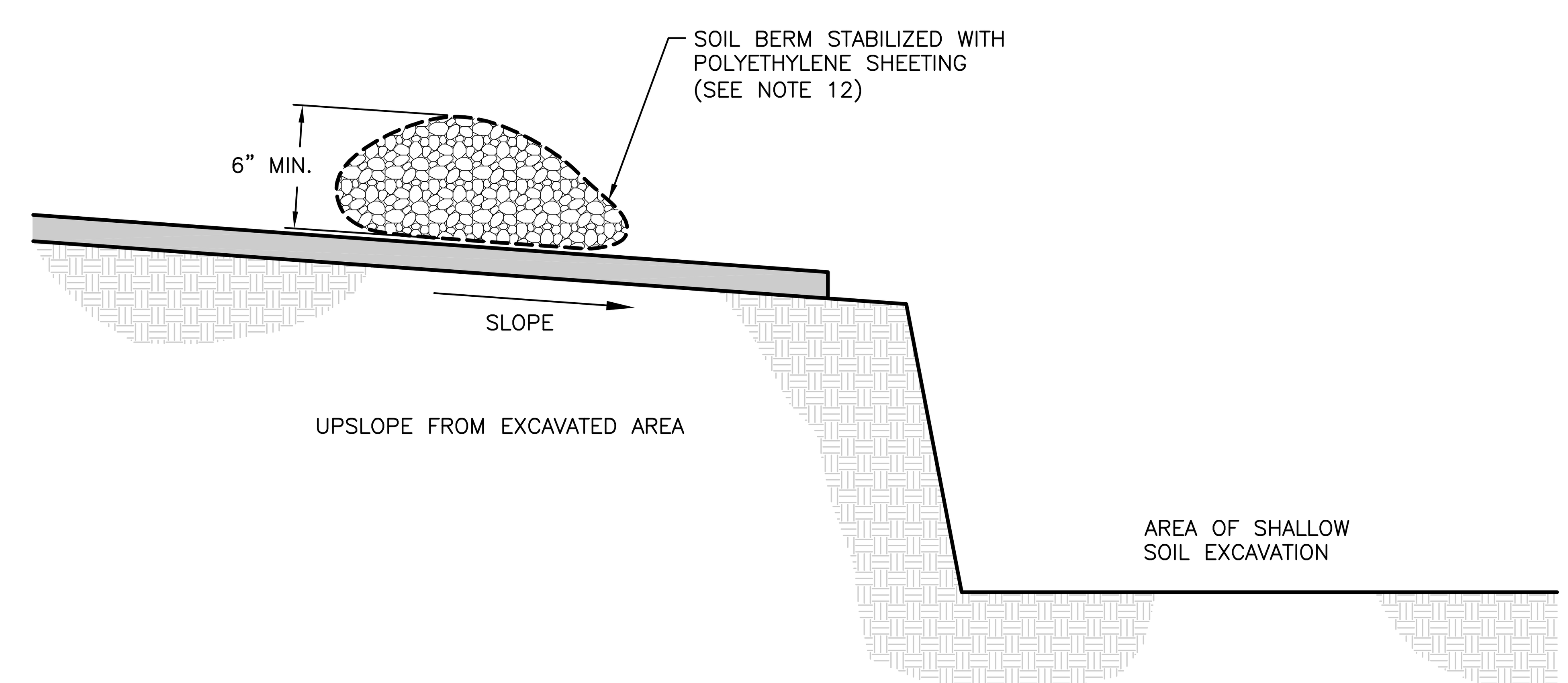
1. THE IMPLEMENTATION OF THE TEMPORARY EROSION AND SEDIMENTATION CONTROL (TESC) PLAN AND THE CONSTRUCTION, MAINTENANCE, REPLACEMENT, AND UPGRADING OF THE TESC FACILITIES IS THE RESPONSIBILITY OF THE CONTRACTOR UNTIL ALL CONSTRUCTION IS APPROVED.
2. THE BOUNDARIES OF THE CLEARING LIMITS SHALL BE CLEARLY FLAGGED IN THE FIELD PRIOR TO CONSTRUCTION. DURING THE CONSTRUCTION PERIOD, NO DISTURBANCE BEYOND THE FLAGGED CLEARING LIMITS SHALL BE PERMITTED. THE FLAGGING SHALL BE MAINTAINED BY THE CONTRACTOR FOR THE DURATION OF CONSTRUCTION.
3. THE TESC FACILITIES SHALL BE CONSTRUCTED PRIOR TO ALL CLEARING AND EXCAVATION ACTIVITIES, AND IN SUCH A MANNER AS TO ENSURE THAT SEDIMENT LADEN WATER DOES NOT ENTER THE DRAINAGE SYSTEM OR VIOLATE APPLICABLE WATER STANDARDS.
4. THE TESC FACILITIES ARE THE MINIMUM REQUIREMENTS FOR ANTICIPATED SITE CONDITIONS. DURING THE CONSTRUCTION PERIOD, THE TESC FACILITIES SHALL BE UPGRADED (E.G., ADDITIONAL SUMPS, PUMPS, STORAGE TANKS, ETC.) AS NEEDED FOR UNEXPECTED STORM EVENTS.
5. THE TESC FACILITIES SHALL BE INSPECTED DAILY BY THE CONTRACTOR DURING ACTIVE WORK AND MAINTAINED AS NECESSARY TO ENSURE THEIR CONTINUED FUNCTIONING.
6. ANY AREA STRIPPED OF VEGETATION, WHERE NO FURTHER WORK IS ANTICIPATED FOR A PERIOD OF 15 DAYS, SHALL BE IMMEDIATELY STABILIZED WITH AN APPROVED TESC METHOD (E.G., SEEDING, MULCHING, NETTING, EROSION BLANKETS, ETC.)
7. ANY AREA NEEDING TESC MEASURES, NOT REQUIRING IMMEDIATE ATTENTION, SHALL BE ADDRESSED WITHIN 15 DAYS.
8. THE TESC FACILITIES ON INACTIVE SITES SHALL BE MAINTAINED A MINIMUM OF ONCE A MONTH OR WITHIN THE 48 HOURS FOLLOWING A STORM EVENT.
9. AT NO TIME SHALL MORE THAN ONE FOOT OF SEDIMENT BE ALLOWED TO ACCUMULATE WITHIN A CATCH BASIN. ALL CATCH BASINS AND CONVEYANCE LINES WITHIN AND NEAR AREAS OF CONTAMINATED SOIL SHALL BE BLOCKED OR PLUGGED PER DETAIL 2.
10. STABILIZED CONSTRUCTION ENTRANCES AND EQUIPMENT DECONTAMINATION FACILITIES SHALL BE INSTALLED AT THE BEGINNING OF CONSTRUCTION AND MAINTAINED FOR THE DURATION OF THE PROJECT. ADDITIONAL MEASURES MAY BE REQUIRED TO ENSURE THAT ALL PAVED AREAS ARE KEPT CLEAN FOR THE DURATION OF THE PROJECT.
11. CONTRACTOR SHALL MARKUP AND RESUBMIT DRAWINGS CS1.2 THROUGH CS1.7 INDICATING LOCATIONS OF BMPS TO BE INSTALLED.
12. POLYETHYLENE SHEETING OR AN EROSION CONTROL BLANKET SHALL BE APPLIED TO STABILIZE SOIL BERMS. PLASTIC SHEETING SHALL HAVE MINIMUM THICKNESS OF 6 MILS PER WSDOT 9-14.5 (3). AN EROSION CONTROL BLANKET SHALL MEET WSDOT SPECIFICATION 9-14.5 (2).
13. THE CONTRACTOR SHALL DESIGNATE A PERSON TO BE TESC SUPERVISOR. THE TESC SUPERVISOR SHALL BE RESPONSIBLE FOR MAINTENANCE AND REVIEW OF TESC MEASURES AND FOR COMPLIANCE WITH ALL PERMIT CONDITIONS RELATING TO TESC. THE TESC SUPERVISOR MUST BE AVAILABLE FOR RAPID RESPONSE TO TESC PROBLEMS. THE CONTRACTOR SHALL PROVIDE THE NAME AND PHONE NUMBERS TO REACH THE TESC SUPERVISOR AT ALL TIMES.
14. SHOULD TESC MEASURES NOT BE PROPERLY INSTALLED AND MAINTAINED, THE PORT OR PUBLIC WORKS DEPARTMENT MAY STOP ALL WORK NOT PERTAINING TO THE CORRECTION OF TESC PROBLEMS UNTIL TESC IS RETURNED TO THE PROPER OPERATION.
15. NATURAL VEGETATION SHALL BE MAINTAINED FOR EROSION AND SEDIMENT CONTROL WHERE POSSIBLE.
16. ALL TEMPORARY EROSION AND SEDIMENT CONTROL BMPS SHALL BE MAINTAINED IN A SATISFACTORY CONDITION UNTIL SUCH TIME THAT CLEARING AND/OR CONSTRUCTION IS COMPLETED, PERMANENT DRAINAGE FACILITIES ARE OPERATIONAL, AND THE POTENTIAL FOR EROSION HAS PASSED.
17. AT A MINIMUM, EROSION AND SEDIMENT CONTROL FACILITIES SHALL BE MAINTAINED MONTHLY, OR FOLLOWING EACH RUNOFF PRODUCING STORM, TO ENSURE PROPER OPERATION OF ALL EROSION AND SEDIMENT CONTROL FACILITIES.
18. APPROVAL OF CONTRACTOR'S TESC PLAN DOES NOT CONSTITUTE AN APPROVAL OF DESIGN, SIZE, OR LOCATION OF PERMANENT PIPES, RESTRICTORS, OR DETENTION FACILITIES; BUT IS AN APPROVAL OF EROSION AND SEDIMENT CONTROL BMPS ONLY.
19. THE PUBLIC RIGHT-OF-WAY SHALL BE KEPT CLEAN. TRACKING OF MUD AND DEBRIS FROM THE SITE WILL NOT BE ALLOWED. FAILURE TO COMPLY WITH THIS CONDITION WILL RESULT IN ALL WORK ON THE SITE BEING STOPPED.
20. THE WASHINGTON STATE CLEAN AIR ACT REQUIRES THE USE OF ALL KNOWN, AVAILABLE, AND REASONABLE MEANS OF CONTROLLING AIR POLLUTION, INCLUDING DUST. DUST CAN BE CONTROLLED BY WETTING EXPOSED SOILS, WASHING TRUCK WHEELS BEFORE THEY LEAVE THE SITE, AND INSTALLING AND MAINTAINING ROCK CONSTRUCTION ENTRANCES. CONSTRUCTION VEHICLE TRACK-OUT IS A MAJOR SOURCE OF DUST AND ANY EVIDENCE OF TRACK-OUT CAN TRIGGER FINES FROM THE DEPARTMENT OF ECOLOGY OR THE PUGET SOUND AIR POLLUTION CONTROL AGENCY.



3 / CE1.1 INTERCEPTOR DITCH DETAIL
NOT TO SCALE



2 / CE1.1 CATCH BASIN PROTECTION
NOT TO SCALE



1 / CE1.1 DIVERSION OF CLEAN STORMWATER
NOT TO SCALE

100% DESIGN REVIEW SUBMITTAL

Port of EVERETT
P.O. BOX 538
EVERETT, WA 98206
(425) 259-3164

LANDAU ASSOCIATES
130 2nd Avenue South
Edmonds, Washington 98020
Ph: 425 778-0907

NO.	DATE	BY	REVISION	NO.	DATE	BY	REVISION

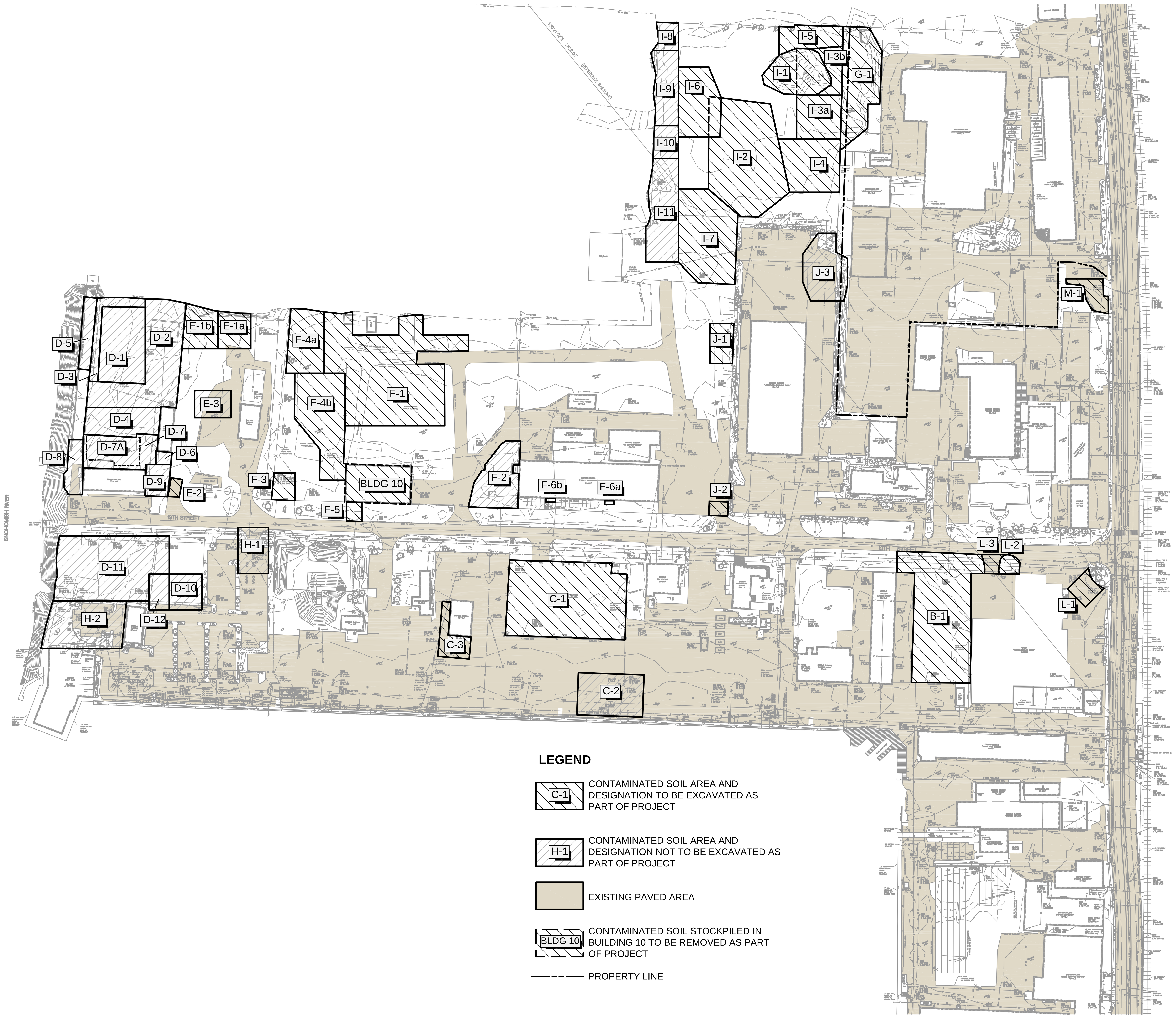
DAVID A. PISCHER, STATE OF WASHINGTON, 19777, REGISTERED PROFESSIONAL ENGINEER
EXPIRES:7/18/2006

PROJECT ENGINEER: D. PISCHER	SCALE: AS SHOWN
DESIGNED BY: J. KALMAR	DATE: MAY 5, 2006
DRAWN BY: C. BATCHELOR	CHECKED BY: L. BEARD
APPROVED BY:	

PORT OF EVERETT
NORTH MARINA REDEVELOPMENT
SHALLOW SOIL VCP CLEANUP ACTION
TEMPORARY EROSION CONTROL NOTES & DETAILS

DWG. NO. CE1.1
CIP NO. 3-0-003-09
PROJECT NO. PD-NM-2006-03
SHEET NO. 4 OF 11

PORT OF EVERETT | V:\147\020\182\F\SSV Cleanup Action-Final\CE1_1.dwg (A) "" 5/5/2006



LEGEND

C-1	CONTAMINATED SOIL AREA AND DESIGNATION TO BE EXCAVATED AS PART OF PROJECT
H-1	CONTAMINATED SOIL AREA AND DESIGNATION NOT TO BE EXCAVATED AS PART OF PROJECT
	EXISTING PAVED AREA
BLDG 10	CONTAMINATED SOIL STOCKPILED IN BUILDING 10 TO BE REMOVED AS PART OF PROJECT
— - - —	PROPERTY LINE

NOTES:

1. INCLUDES ALL CONTAMINATED SOIL AREAS, EXCEPT AREA A.
2. CONTAMINATED SOIL AREAS SHOWN ON THIS SHEET ARE APPROXIMATE. SEE DRAWING CS1.2 THROUGH CS1.7 FOR ADDITIONAL DETAILS.

N

SCALE IN FEET

120 0 120 240

100% DESIGN REVIEW SUBMITTAL

Port of EVERETT
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NO.	DATE	BY	REVISION	NO.	DATE	BY	REVISION

DAVID A. PISCHER
STATE OF WASHINGTON
19777
REGISTERED PROFESSIONAL ENGINEER
EXPIRES:7/18/2006

PROJECT ENGINEER: D. PISCHER	SCALE: 1"=120'
DESIGNED BY: L. BEARD	DATE: MAY 5, 2006
DRAWN BY: C. BATCHELOR	CHECKED BY: D. PISCHER
APPROVED BY:	

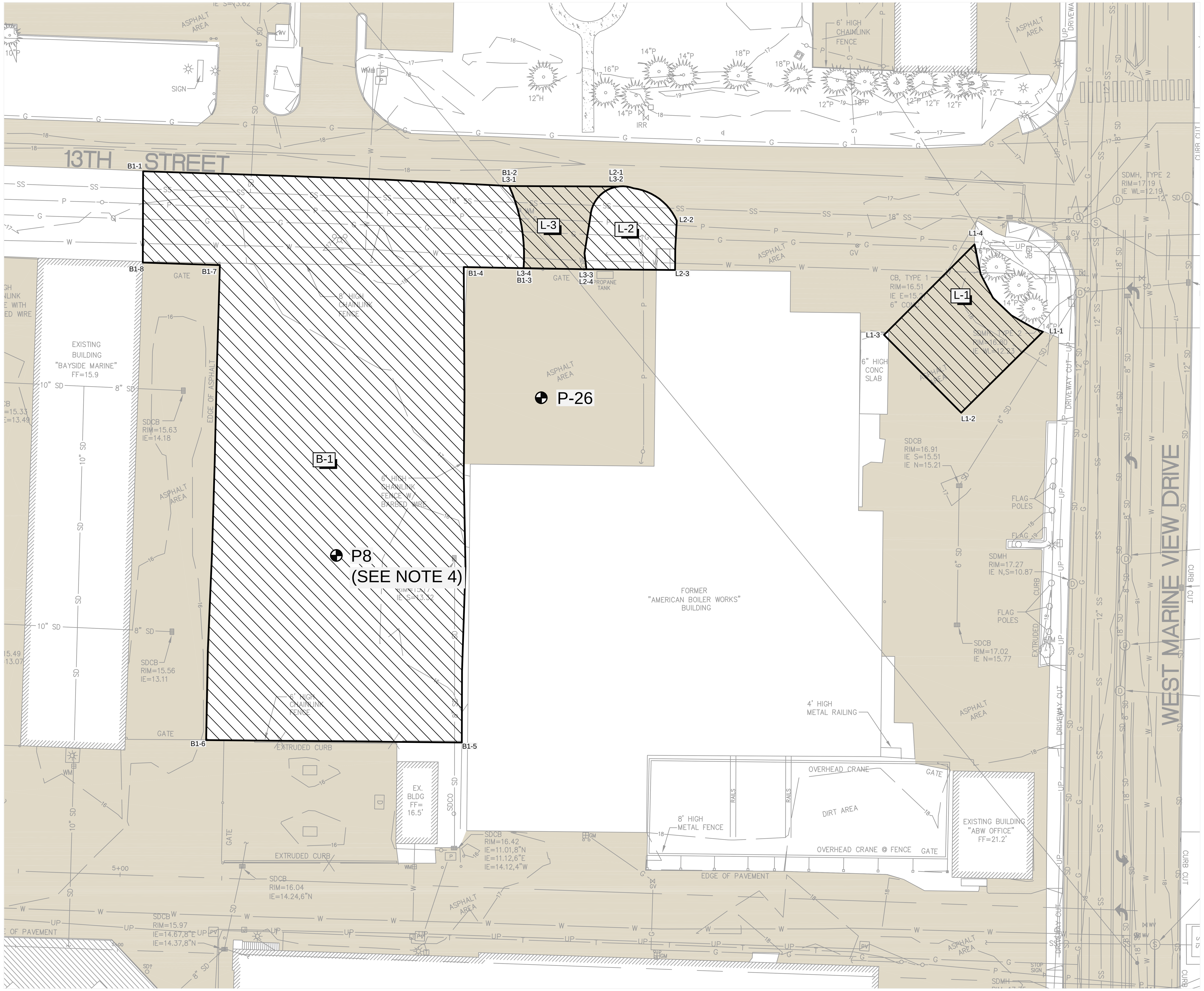
PORT OF EVERETT

NORTH MARINA REDEVELOPMENT
SHALLOW SOIL VCP CLEANUP ACTION

CONTAMINATED SOIL LOCATION PLAN

DWG. NO.	CS1.1
CIP NO.	3-0-003-09
PROJECT NO.	PD-NM-2006-03
SHEET NO.	5 OF 11

PORT OF EVERETT | V:\147\020\182\F\SSV Cleanup Action-Final\CS1_1.dwg (A) "" 5/5/2006



LEGEND

- B-1 — SOIL CLEANUP ACTION AREA AND DESIGNATION TO BE EXCAVATED AS PART OF PROJECT
- EXISTING PAVED AREA
- L2-1 — EXCAVATION REFERENCE POINT DESIGNATION
- MONITORING WELL LOCATION

TABLE A: EXCAVATION AREA COORDINATES (1)

CONTAMINATED SOIL AREA DESIGNATION	REFERENCE POINT DESIGNATION	REFERENCE POINT NORTHING	REFERENCE POINT EASTING
AREA B-1:	B1-1	367900.06	1301950.45
	B1-2	367892.81	1302130.21
	B1-3	367852.46	1302137.33
	B1-4	367853.01	1302107.91
	B1-5	367620.06	1302106.99
	B1-6	367620.55	1301981.40
	B1-7	367853.91	1301988.15
	B1-8	367855.17	1301950.32
AREA L-1:	L1-1	367821.18	1302392.42
	L1-2	367781.40	1302352.27
	L1-3	367819.64	1302314.37
	L1-4	367864.16	1302358.80
AREA L-2:	L2-1	367892.56	1302183.82
	L2-2	367875.67	1302212.59
	L2-3	367851.54	1302211.71
	L2-4	367851.88	1302168.34
AREA L-3:	L3-1	367892.81	1302130.20
	L3-2	367892.56	1302183.82
	L3-3	367851.88	1302168.18
	L3-4	367852.46	1302137.32

TABLE B: EXCAVATION AREA DEPTHS

CONTAMINATED SOIL AREA DESIGNATION	APPROXIMATE AREA (SF)	OVERBURDEN EXCAVATION DEPTH (FT) (2)	CONTAMINATED SOIL EXCAVATION DEPTH (FT) (2)	DISPOSAL DESIGNATION
AREA B-1:	36,752	0	1.0	INERT WASTE
AREA L-1:	2,915	0.25 (3)	1.5	INERT WASTE
AREA L-2:	1,588	0	1.0	INERT WASTE
AREA L-3:	1316	1.5	2.5	SOLID WASTE

NOTES:

1) NORTHINGS AND EASTINGS ARE BASED ON SITE COORDINATE SYSTEM AND CONTROL POINTS AND DO NOT CORRESPOND TO STATE PLANE COORDINATES. EXCAVATION AREA COORDINATES ARE ONLY APPROXIMATE WHEN BASED ON SITE FEATURES SUCH AS FENCE LINES OR EDGE OF PAVEMENT. EXCAVATIONS SHALL BE COMPLETED TO THE SITE FEATURES INDICATED.
2) DEPTH MEASURED FROM ORIGINAL GROUND SURFACE.
3) AREA IS PAVED. CONTAMINATED SOIL EXCAVATION TO COMMENCE IMMEDIATELY BELOW PAVEMENT.
4) EXISTING GROUNDWATER MONITORING WELLS TO BE PROTECTED UNTIL PROPERLY ABANDONED BY PORT REPRESENTATIVE.
5) PROTECT ALL UTILITIES FROM DAMAGE IN ACCORDANCE WITH SPECIFICATION 01560.

N

SCALE IN FEET
30 0 30 60

NOTE: "L" IF "L" DOES NOT MEASURE 1" ADJUST SCALES ACCORDINGLY.

100% DESIGN REVIEW SUBMITTAL

Port of EVERETT
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LANDAU ASSOCIATES
130 2nd Avenue South
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Ph: 425 778-0907

NO.	DATE	BY	REVISION	NO.	DATE	BY	REVISION

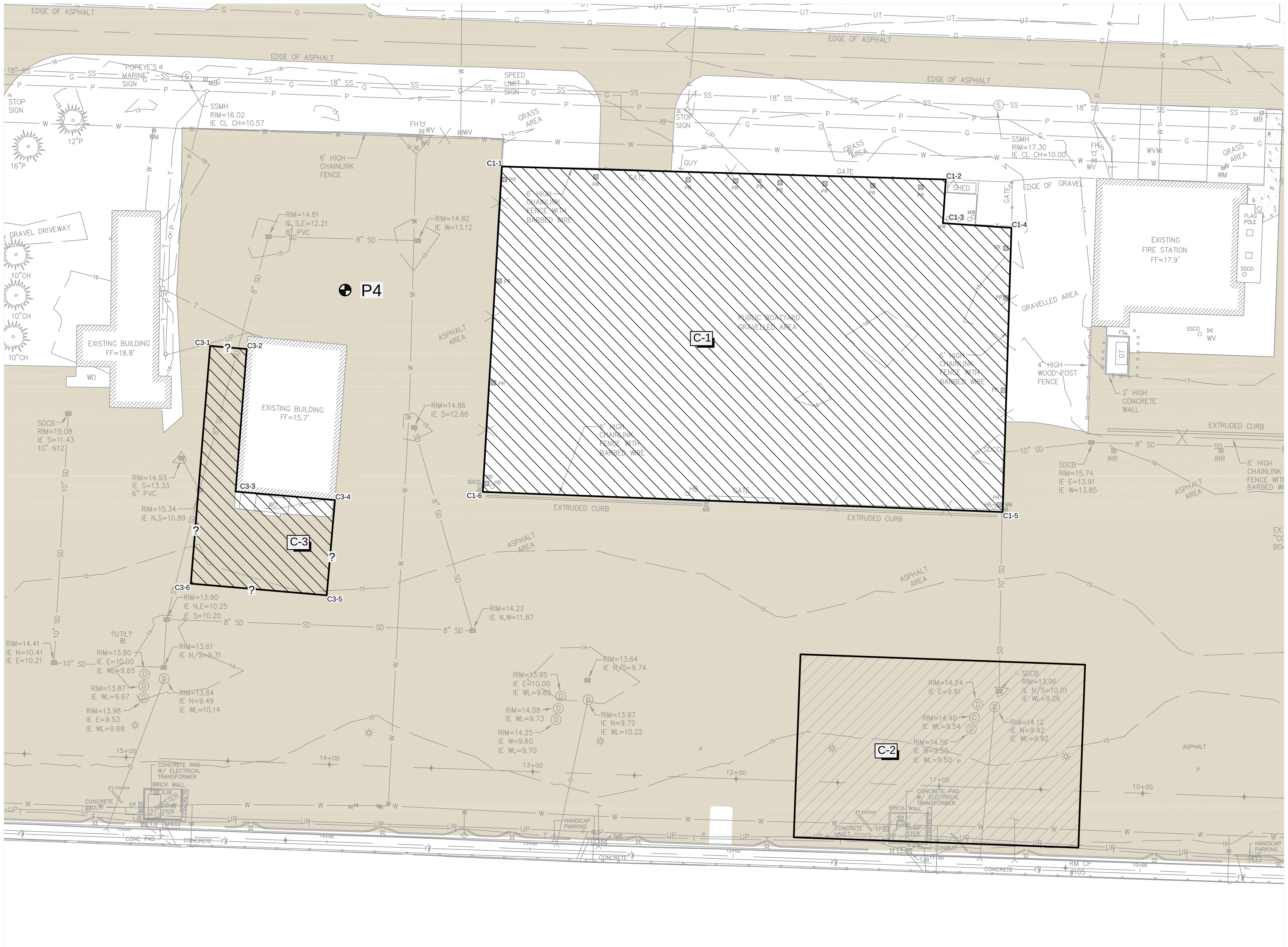
DAVID A. PISCHER — STATE OF WASHINGTON — 19777 — REGISTERED PROFESSIONAL ENGINEER
EXPIRES: 7/18/2006

PROJECT ENGINEER: D. PISCHER	SCALE: 1"=30'
DESIGNED BY: L. BEARD	DATE: MAY 5, 2006
DRAWN BY: C. BATCHELOR	CHECKED BY: D. PISCHER
APPROVED BY:	

PORT OF EVERETT
NORTH MARINA REDEVELOPMENT
SHALLOW SOIL VCP CLEANUP ACTION
SOIL CLEANUP ACTION DETAILS

DWG. NO. CS1.2
CIP NO. 3-0-003-09
PROJECT NO. PD-NM-2006-03
SHEET NO. 6 OF 11

PORT OF EVERETT | V:\147\020\182\FI\SSV Cleanup Action-Final\CS1_2-7.dwg (A) "CS1.2" 5/5/2006



LEGEND

- SOIL CLEANUP ACTION AREA AND DESIGNATION TO BE EXCAVATED AS PART OF PROJECT (C-1)
- SOIL CLEANUP ACTION AREA AND DESIGNATION NOT TO BE EXCAVATED AS PART OF PROJECT (C-2)
- EXISTING PAVED AREA
- C1-1 EXCAVATION REFERENCE POINT DESIGNATION
- MONITORING WELL LOCATION

TABLE A: EXCAVATION AREA COORDINATES (1)

CONTAMINATED SOIL AREA DESIGNATION	REFERENCE POINT DESIGNATION	REFERENCE POINT NORTHING	REFERENCE POINT EASTING
AREA C-1:	C1-1	367881.12	1301124.50
	C1-2	367874.75	1301342.72
	C1-3	367853.30	1301341.24
	C1-4	367850.97	1301374.95
	C1-5	367711.28	1301370.64
	C1-6	367721.20	1301115.08
AREA C-3:(3)	C3-1	367792.96	1300981.07
	C3-2	367791.41	1300999.05
	C3-3	367721.36	1300993.56
	C3-4	367717.16	1301042.38
	C3-5	367670.33	1301038.35
	C3-6	367676.08	1300971.56

TABLE B: EXCAVATION AREA DEPTHS

CONTAMINATED SOIL AREA DESIGNATION	APPROXIMATE AREA (SF)	OVERBURDEN EXCAVATION DEPTH (FT)(2)	CONTAMINATED SOIL EXCAVATION DEPTH (FT)(2)	DISPOSAL DESIGNATION
AREA C-1:	40,170	0.0	0.5	SOLID WASTE
AREA C-1:	40,170	0.0	1.0	INERT WASTE
AREA C-3:	TBD(3)	0.5	2.0	INERT WASTE

NOTES:

1) NORTHINGS AND EASTINGS ARE BASED ON SITE COORDINATE SYSTEM AND CONTROL POINTS AND DO NOT CORRESPOND TO STATE PLANE COORDINATES. EXCAVATION AREA COORDINATES ARE ONLY APPROXIMATE WHEN BASED ON SITE FEATURES SUCH AS FENCE LINES OR EDGE OF PAVEMENT. EXCAVATIONS SHALL BE COMPLETED TO THE SITE FEATURES INDICATED.
2) DEPTH MEASURED FROM ORIGINAL GROUND SURFACE.
3) AREA C-3 TO UNDERGO ADDITIONAL DELINEATION. DO NOT EXCAVATE UNTIL REVISED DRAWING IS ISSUED BY THE PORT.
4) PROTECT ALL UTILITIES FROM DAMAGE IN ACCORDANCE WITH SPECIFICATION 01560.

N

SCALE IN FEET
30 0 30 60

NOTE: IF "L" DOES NOT MEASURE 1" ADJUST SCALES ACCORDINGLY.

100% DESIGN REVIEW SUBMITTAL

Port of EVERETT
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130 2nd Avenue South
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NO.	DATE	BY	REVISION

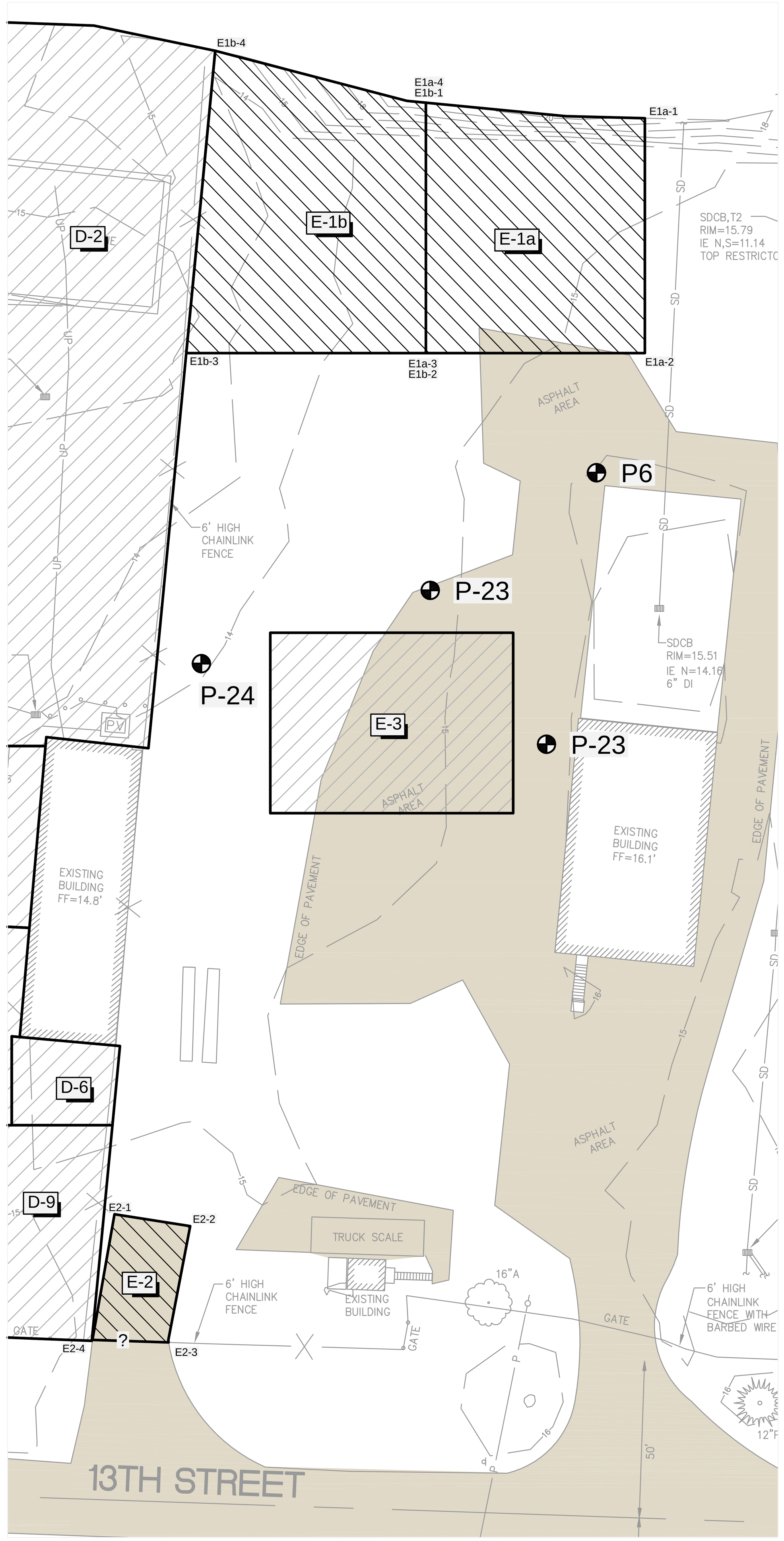
NO.	DATE	BY	REVISION

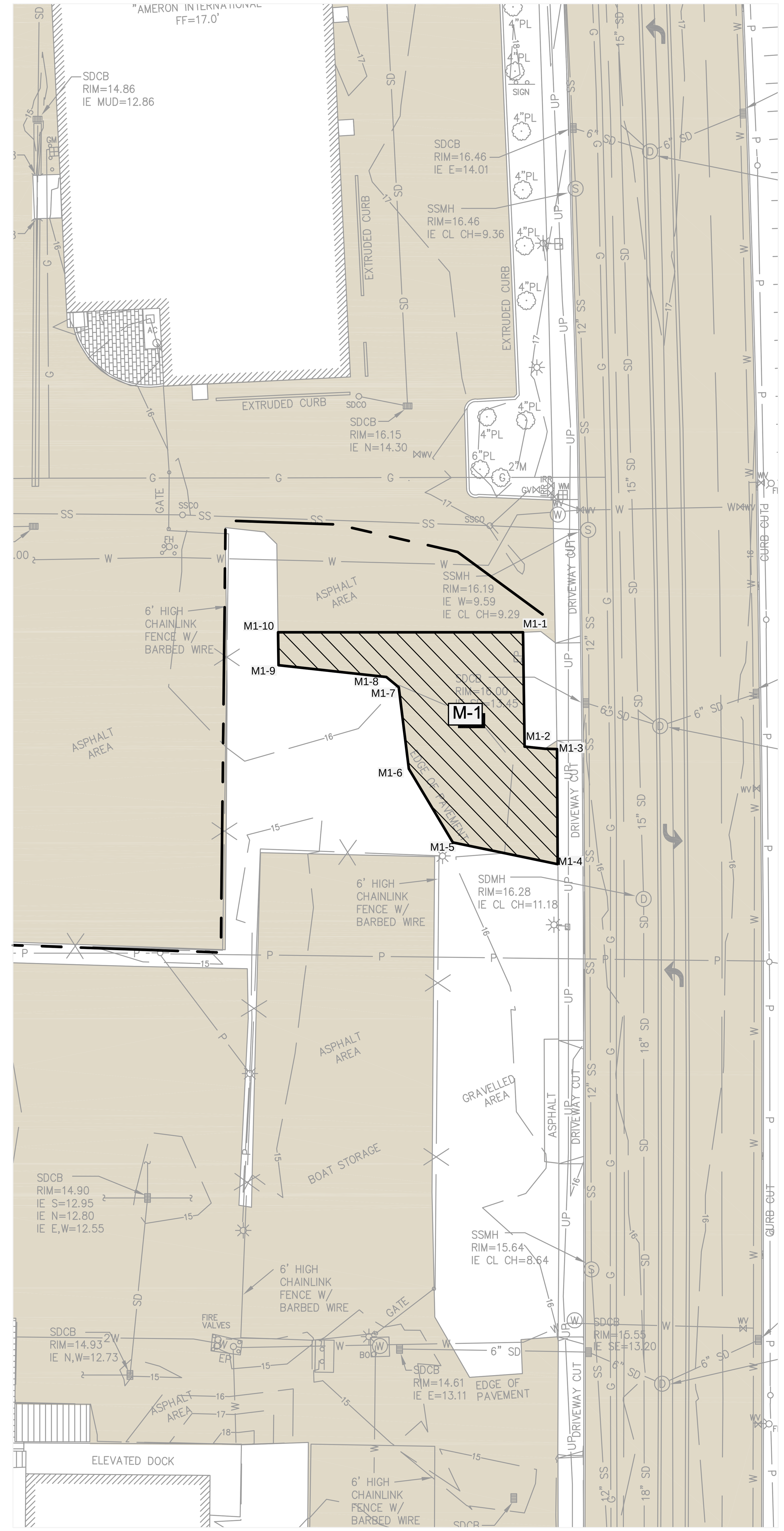
DAVID A. PISCHER — STATE OF WASHINGTON — 19777 — REGISTERED PROFESSIONAL ENGINEER
EXPIRES: 7/18/2006

PROJECT ENGINEER: D. PISCHER	SCALE: 1"=30'
DESIGNED BY: L. BEARD	DATE: MAY 5, 2006
DRAWN BY: C. BATCHELOR	CHECKED BY: D. PISCHER
APPROVED BY:	

PORT OF EVERETT
NORTH MARINA REDEVELOPMENT
SHALLOW SOIL VCP CLEANUP ACTION
SOIL CLEANUP ACTION DETAILS

DWG. NO. CS1.3
CIP NO. 3-0-003-09
PROJECT NO. PD-NM-2006-03
SHEET NO. 7 OF 11





LEGEND

- E-1 — SOIL CLEANUP ACTION AREA AND DESIGNATION TO BE EXCAVATED AS PART OF PROJECT
- E-3 — SOIL CLEANUP ACTION AREA AND DESIGNATION NOT TO BE EXCAVATED AS PART OF PROJECT
- EXISTING PAVED AREA
- E2-1 — EXCAVATION REFERENCE POINT DESIGNATION
- MONITORING WELL LOCATION

TABLE A: EXCAVATION AREA COORDINATES (1)

CONTAMINATED SOIL AREA DESIGNATION	REFERENCE POINT DESIGNATION	REFERENCE POINT NORTHING	REFERENCE POINT EASTING
AREA E-1A:	E1A-1	368406.81	1300572.54
	E1A-2	368331.79	1300572.54
	E1A-3	368331.79	1300502.54
	E1A-4	368411.79	1300502.54
AREA E-1B:	E1B-1	368411.79	1300502.54
	E1B-2	368331.79	1300502.54
	E1B-3	368331.79	1300422.88
	E1B-4	368429.01	1300432.08
AREA E-2:(3)	E2-1	368056.65	1300403.00
	E2-2	368052.84	1300427.23
	E2-3	368015.70	1300420.31
	E2-4	368016.52	1300395.98
AREA M-1:	M1-1	368480.96	1302389.91
	M1-2	368444.16	1302390.43
	M1-3	368443.34	1302400.87
	M1-4	368406.30	1302401.07
	M1-5	368413.32	1302367.32
	M1-6	368437.02	1302353.16
	M1-7	368463.23	1302349.92
	M1-8	368466.56	1302345.92
	M1-9	368470.36	1302311.21
	M1-10	368480.96	1302311.06

TABLE B: EXCAVATION AREA DEPTHS

CONTAMINATED SOIL AREA DESIGNATION	APPROXIMATE AREA (SF)	OVERBURDEN EXCAVATION DEPTH (FT)(2)	CONTAMINATED SOIL EXCAVATION DEPTH (FT)(2)	DISPOSAL DESIGNATION
AREA E-1a:	5,385	0.0	1.0	INERT WASTE
AREA E-1b:	6,659	0.0	2.0	INERT WASTE
AREA E-2:	TBD(3)	1.0	2.5	INERT WASTE
AREA M-1:	3,380	0.5	2.0	INERT WASTE

NOTES:

1) NORTHINGS AND EASTINGS ARE BASED ON SITE COORDINATE SYSTEM AND CONTROL POINTS AND DO NOT CORRESPOND TO STATE PLANE COORDINATES. EXCAVATION AREA COORDINATES ARE ONLY APPROXIMATE WHEN BASED ON SITE FEATURES SUCH AS FENCE LINES OR EDGE OF PAVEMENT. EXCAVATIONS SHALL BE COMPLETED TO THE SITE FEATURES INDICATED.
2) DEPTH MEASURED FROM ORIGINAL GROUND SURFACE.
3) AREA E-2 UNDERGOING ADDITIONAL DELINEATION. DO NOT EXCAVATE UNTIL REVISED DRAWING IS ISSUED BY THE PORT.
4) PROTECT ALL UTILITIES FROM DAMAGE IN ACCORDANCE WITH SPECIFICATION 01560.

N

SCALE IN FEET
30 0 30 60

NOTE: "L" IF "L" DOES NOT MEASURE 1" ADJUST SCALES ACCORDINGLY.

100% DESIGN REVIEW SUBMITTAL

Port of EVERETT
P.O. BOX 538
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LANDAU ASSOCIATES
130 2nd Avenue South
Edmonds, Washington 98020
Ph: 425 778-0907

NO.	DATE	BY	REVISION

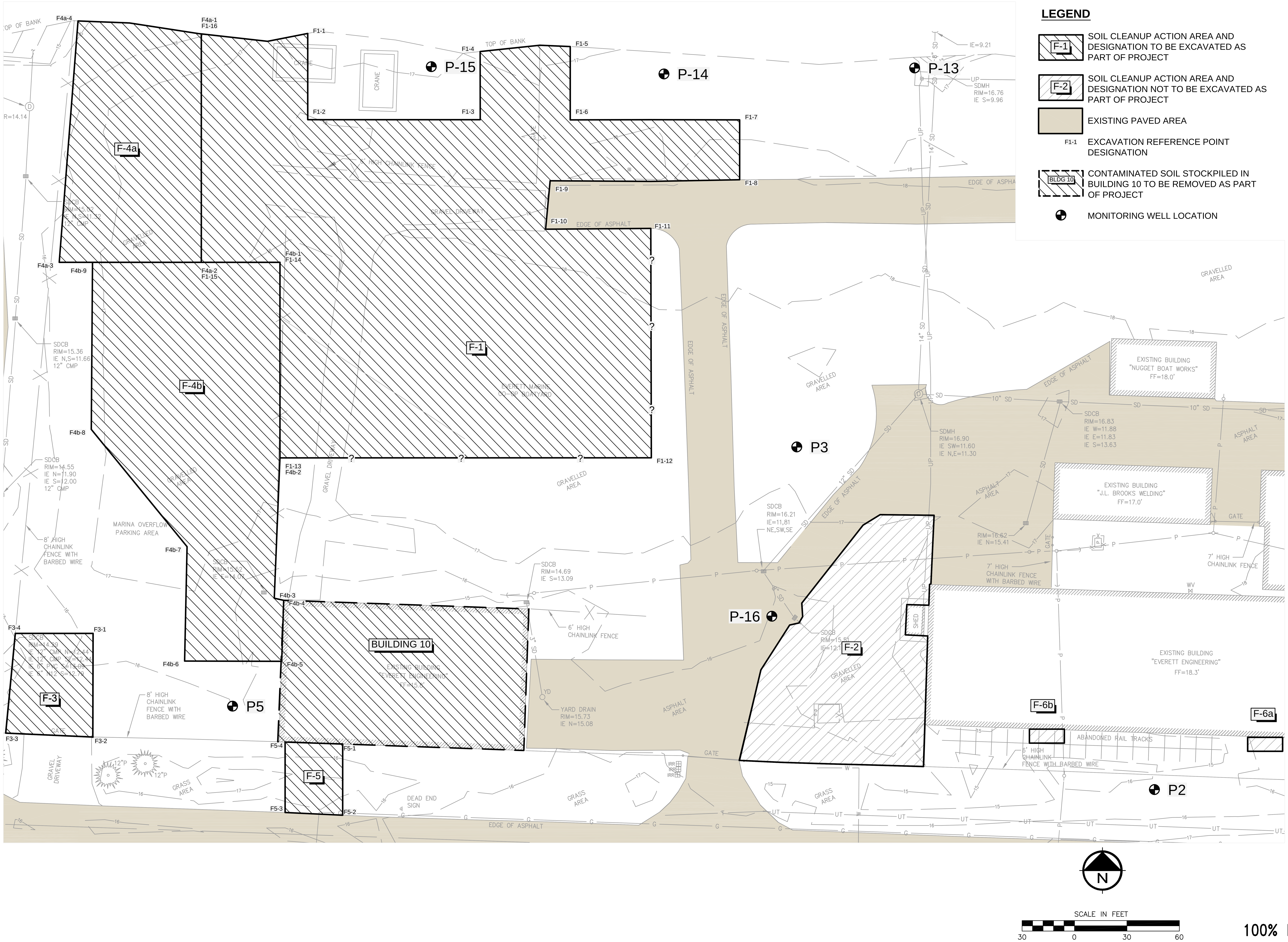
NO.	DATE	BY	REVISION

DAVID A. PISCHER — STATE OF WASHINGTON — 19777 — REGISTERED PROFESSIONAL ENGINEER
EXPIRES: 7/18/2006

PROJECT ENGINEER: D. PISCHER	SCALE: 1"=30'
DESIGNED BY: L. BEARD	DATE: MAY 5, 2006
DRAWN BY: C. BATCHELOR	CHECKED BY: D. PISCHER
APPROVED BY:	

PORT OF EVERETT
NORTH MARINA REDEVELOPMENT
SHALLOW SOIL VCP CLEANUP ACTION
SOIL CLEANUP ACTION DETAILS

DWG. NO. CS1.4
CIP NO. 3-0-003-09
PROJECT NO. PD-NM-2006-03
SHEET NO. 8 OF 11



LEGEND

F-1	SOIL CLEANUP ACTION AREA AND DESIGNATION TO BE EXCAVATED AS PART OF PROJECT
F-2	SOIL CLEANUP ACTION AREA AND DESIGNATION NOT TO BE EXCAVATED AS PART OF PROJECT
	EXISTING PAVED AREA
F1-1	EXCAVATION REFERENCE POINT DESIGNATION
BLDG 10	CONTAMINATED SOIL STOCKPILED IN BUILDING 10 TO BE REMOVED AS PART OF PROJECT
	MONITORING WELL LOCATION

TABLE A: EXCAVATION AREA COORDINATES (1)

CONTAMINATED SOIL AREA DESIGNATION	REFERENCE POINT DESIGNATION	REFERENCE POINT NORTHING	REFERENCE POINT EASTING
AREA F-1: (3)	F1-1	368410.49	1300789.51
	F1-2	368361.13	1300789.51
	F1-3	368361.13	1300888.25
	F1-4	368400.13	1300888.17
	F1-5	368403.00	1300939.72
	F1-6	368361.05	1300939.73
	F1-7	368361.05	1301036.67
	F1-8	368326.77	1301036.67
	F1-9	368326.21	1300928.23
	F1-10	368298.49	1300925.61
	F1-11	368298.92	1300985.81
	F1-12	368167.70	1300986.13
	F1-13	368167.65	1300773.63
	F1-14	368279.54	1300773.63
	F1-15	368279.54	1300728.64
	F1-16	368410.22	1300728.64
AREA F-3:	F3-1	368067.27	1300666.73
	F3-2	368007.94	1300666.62
	F3-3	368010.22	1300616.76
	F3-4	368067.27	1300622.24
AREA F-4a:	F4a-1	368410.22	1300728.64
	F4a-2	368279.54	1300728.64
	F4a-3	368279.54	1300647.35
	F4a-4	368417.66	1300658.10
AREA F-4a:	F4b-1	368279.54	1300773.63
	F4b-2	368167.65	1300773.63
	F4b-3	368087.33	1300770.39
	F4b-4	368086.16	1300775.77
	F4b-5	368051.27	1300774.61
	F4b-6	368051.43	1300719.11
	F4b-7	368116.84	1300720.48
	F4b-8	368183.96	1300665.70
	F4b-9	368279.54	1300666.39
AREA F-5:	F5-1	368003.91	1300809.51
	F5-2	367963.23	1300809.51
	F5-3	367964.75	1300776.57
	F5-4	368005.07	1300776.57

TABLE B: EXCAVATION AREA DEPTHS

CONTAMINATED SOIL AREA DESIGNATION	APPROXIMATE AREA (SF)	OVERBURDEN EXCAVATION DEPTH (FT) (2)	CONTAMINATED SOIL EXCAVATION DEPTH (FT) (2)	DISPOSAL DESIGNATION
AREA F-1:	TBD (3)	0.0	1.0	INERT WASTE
AREA F-3:	2,748	0.0	1.0	TBD (4)
AREA F-4a:	10,290	0.0	3.5	SOLID WASTE
AREA F-4b:	19,140	0.0	1.0	INERT WASTE
AREA F-5:	1,334	2.0	3.5	INERT WASTE
BUILDING 10	11,390	0.0	(5)	INERT WASTE

NOTES:

1) NORTHINGS AND EASTINGS ARE BASED ON SITE COORDINATE SYSTEM AND CONTROL POINTS AND DO NOT CORRESPOND TO STATE PLANE COORDINATES. EXCAVATION AREA COORDINATES ARE ONLY APPROXIMATE WHEN BASED ON SITE FEATURES SUCH AS FENCE LINES OR EDGE OF PAVEMENT. EXCAVATIONS SHALL BE COMPLETED TO THE SITE FEATURES INDICATED.
2) DEPTH MEASURED FROM ORIGINAL GROUND SURFACE.
3) AREA F-1 UNDERGOING ADDITIONAL DELINEATION. DO NOT EXCAVATE UNTIL REVISED DRAWING IS ISSUED BY THE PORT.
4) TO BE DETERMINED. DO NOT EXCAVATE SOIL UNTIL WASTE DETERMINATION IS PROVIDED BY THE PORT.
5) REMOVE AND DISPOSE OF APPROXIMATELY 500 C.Y. OF SOIL STOCKPILED IN BUILDING 10.
6) PROTECT ALL UTILITIES FROM DAMAGE IN ACCORDANCE WITH SPECIFICATION 01560.

NOTE: IF "L" DOES NOT MEASURE 1" ADJUST SCALES ACCORDINGLY.

100% DESIGN REVIEW SUBMITTAL

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Ph: 425 778-0907

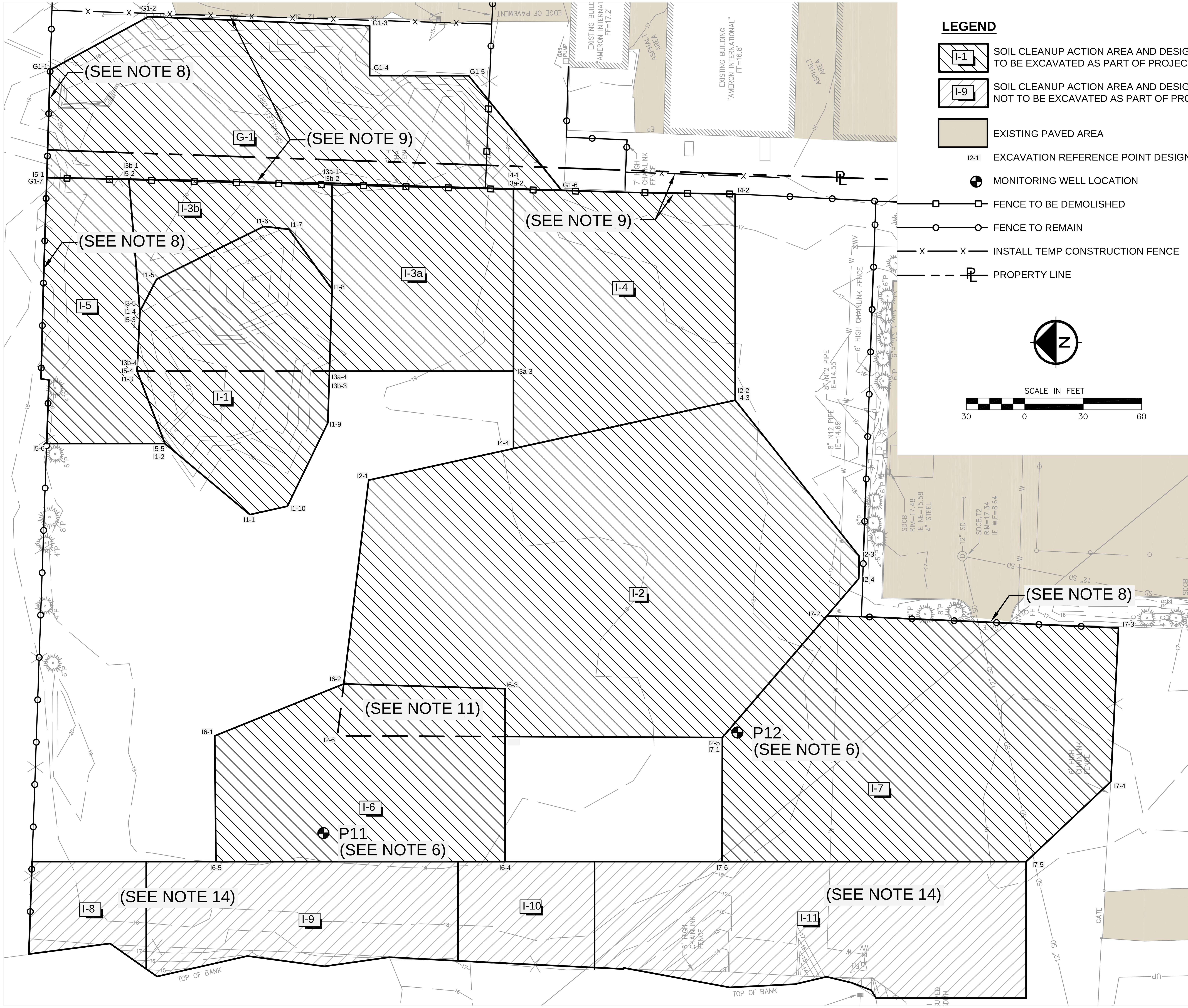
NO.	DATE	BY	REVISION	NO.	DATE	BY	REVISION

DAVID A. PISCHER, STATE OF WASHINGTON, 19777, REGISTERED PROFESSIONAL ENGINEER
EXPIRES: 7/18/2006

PROJECT ENGINEER: D. PISCHER	SCALE: 1"=30'
DESIGNED BY: L. BEARD	DATE: MAY 5, 2006
DRAWN BY: C. BATCHELOR	CHECKED BY: D. PISCHER
APPROVED BY:	

PORT OF EVERETT
NORTH MARINA REDEVELOPMENT
SHALLOW SOIL VCP CLEANUP ACTION
SOIL CLEANUP ACTION DETAILS

DWG. NO. CS1.5
CIP NO. 3-0-003-09
PROJECT NO. PD-NM-2006-03
SHEET NO. 9 OF 11



LEGEND

- I-1 — SOIL CLEANUP ACTION AREA AND DESIGNATION TO BE EXCAVATED AS PART OF PROJECT
- I-9 — SOIL CLEANUP ACTION AREA AND DESIGNATION NOT TO BE EXCAVATED AS PART OF PROJECT
- EXISTING PAVED AREA
- I2-1 — EXCAVATION REFERENCE POINT DESIGNATION
- MONITORING WELL LOCATION
- FENCE TO BE DEMOLISHED
- FENCE TO REMAIN
- INSTALL TEMP CONSTRUCTION FENCE
- PROPERTY LINE

TABLE A: EXCAVATION AREA COORDINATES (1)

CONTAMINATED SOIL AREA DESIGNATION	REFERENCE POINT DESIGNATION	REFERENCE POINT NORTHING	REFERENCE POINT EASTING
AREA I-1:	I1-1	368914.34	1301662.82
	I1-2	368957.92	1301699.25
	I1-3	368972.21	1301736.40
	I1-4	368970.78	1301767.12
	I1-5	368962.21	1301783.55
	I1-6	368907.19	1301810.70
	I1-7	368894.33	1301809.27
	I1-8	368872.19	1301778.55
	I1-9	368874.33	1301709.97
	I1-10	368895.05	1301667.11
AREA I-2:	I2-1	368853.37	1301680.55
	I2-2	368665.30	1301721.53
	I2-3	368601.60	1301641.44
	I2-4	368601.93	1301629.89
	I2-5	368671.85	1301548.44
	I2-6	368869.40	1301549.28
AREA I-3a:	I3a-1	368976.39	1301834.96
	I3a-2	368779.05	1301830.01
	I3a-3	368779.05	1301736.40
	I3a-4	368972.21	1301736.40
AREA I-3b:	I3b-1	368976.39	1301834.96
	I3b-2	368872.19	1301832.91
	I3b-3	368873.50	1301736.40
	I3b-4	368972.21	1301736.40
	I3b-5	368970.78	1301767.12
AREA I-4:	I4-1	368779.05	1301830.01
	I4-2	368665.30	1301827.29
	I4-3	368665.30	1301721.53
	I4-4	368779.05	1301696.74

TABLE A: EXCAVATION AREA COORDINATES (1)

CONTAMINATED SOIL AREA DESIGNATION	REFERENCE POINT DESIGNATION	REFERENCE POINT NORTHING	REFERENCE POINT EASTING
AREA I-5:	I5-1	369018.56	1301835.76
	I5-2	368976.39	1301834.96
	I5-3	368970.78	1301767.12
	I5-4	368972.21	1301736.40
	I5-5	368957.92	1301699.25
	I5-6	369018.62	1301699.25
AREA I-6:	I6-1	368932.37	1301549.28
	I6-2	368866.14	1301575.94
	I6-3	368783.38	1301573.46
	I6-4	368783.38	1301484.75
	I6-5	368931.76	1301484.75
AREA I-7:	I7-1	368671.85	1301548.44
	I7-2	368618.37	1301610.75
	I7-3	368468.60	1301604.65
	I7-4	368472.51	1301525.76
	I7-5	368515.98	1301484.75
	I7-6	368672.01	1301484.75
AREA G-1:	G1-1	369016.84	1301891.05
	G1-2	368966.36	1301918.38
	G1-3	368852.85	1301913.73
	G1-4	368852.85	1301888.12
	G1-5	368802.04	1301888.07
	G1-6	368754.42	1301829.31
	G1-7	369018.56	1301835.76

TABLE B: EXCAVATION AREA DEPTHS

CONTAMINATED SOIL AREA DESIGNATION	APPROXIMATE AREA (SF)	OVERBURDEN EXCAVATION DEPTH (FT) (2)	CONTAMINATED SOIL EXCAVATION DEPTH (FT) (2)	DISPOSAL DESIGNATION
AREA I-1:	10,947	0.0	0.5 (3)	SOLID WASTE
AREA I-2:	35,307	0.5	3.5 (4) (5)	SOLID WASTE
AREA I-3a:	8,870	0.0	2.5	SOLID WASTE
AREA I-3b:	9,774	0.0 (10)	1.0	SOLID WASTE
AREA I-4:	13,575	0.0	1.0	SOLID WASTE
AREA I-5:	6,646	0.0	6.5	SOLID WASTE
AREA I-6:	12,580	0.0	2.5 (6)	INERT WASTE
AREA I-7:	22,320	0.0	1.0 (4) (5) (6)	TBD (7)
AREA G-1:	17,168	0.0	(5) (12)	TBD (7)

NOTES:

1) NORTHINGS AND EASTINGS ARE BASED ON SITE COORDINATE SYSTEM AND CONTROL POINTS AND DO NOT CORRESPOND TO STATE PLANE COORDINATES. EXCAVATION AREA COORDINATES ARE ONLY APPROXIMATE WHEN BASED ON SITE FEATURES SUCH AS FENCE LINES OR EDGE OF PAVEMENT. EXCAVATIONS SHALL BE COMPLETED TO THE EXTENTS INDICATED.
2) DEPTH MEASURED FROM ORIGINAL GROUND SURFACE.
3) SOIL IS PRESENT AS A STOCKPILE ABOVE SURROUNDING SITE GRADES. STOCKPILE TO BE REMOVED AND UNDERLYING GROUND SURFACE TO BE EXCAVATED TO 0.5 FT BELOW SURROUNDING SITE GRADES .
4) EXCAVATION DEPTH AND LATERAL LIMITS ARE APPROXIMATE. EXCAVATION LIMITS TO BE IDENTIFIED BY PORT REPRESENTATIVE BASED ON VISUAL OBSERVATION DURING EXCAVATION. EXCAVATION TO BE PERFORMED SUCH THAT INTEGRITY OF THE EXISTING WATER MAIN IS PROTECTED THROUGHOUT CONSTRUCTION.
5) PROTECT ALL UTILITIES FROM DAMAGE IN ACCORDANCE WITH SPECIFICATION 01560.
6) EXISTING GROUNDWATER MONITORING WELLS TO BE PROTECTED UNTIL PROPERLY ABANDONED BY PORT REPRESENTATIVE.
7) TO BE DETERMINED. DO NOT EXCAVATE SOIL UNTIL WASTE DETERMINATION IS PROVIDED BY THE PORT.
8) EXCAVATE SOIL ADJACENT TO THE EXISTING FENCE IN A MANNER THAT PROTECTS THE FENCE AND FENCE POSTS FROM DAMAGE.
9) DEMOLISH EXISTING FENCE PRIOR TO SOIL EXCAVATION. INSTALL NEW TEMPORARY CONSTRUCTION FENCE (MIN. 7' HIGH) FOLLOWING REMOVAL OF CONTAMINATED SOIL. (ASSUME 12 MONTHS MINIMUM.)
10) AREA I-3b AS SHOWN IS PARTIALLY OVERLAIN BY AREA I-1. AREA I-1 SHALL BE EXCAVATED PRIOR TO AREA I-3b.
11) EXCAVATE THE UPPER 0.5 FT OF THE OVERLAP BETWEEN AREAS I-2 AND I-6 AS PART OF AREA I-6. THE REMAINING EXCAVATION IN THE OVERLAP AREA SHALL BE EXCAVATED AS PART OF AREA I-2.
12) EXCAVATE TO ELEVATION 15 FT, OR AS OTHERWISE DIRECTED BY THE PORT.
13) NO BACKFILL WILL BE REQUIRED IN AREA I, WITH THE EXCEPTION OF PORTIONS OF AREAS I-2 AND I-7. PLACE STRUCTURAL FILL OVER AND ADJUST TO THE EXISTING WATER MAIN IN AREAS I-2 AND I-7 AS NEEDED TO MAINTAIN A MINIMUM OF 3 FT OF FILL OVER THE WATER MAIN.
14) MAINTAIN ACCESS FROM THE EXISTING GATE THROUGH AREAS I-8, I-9, I-10, AND I-11 FOR USE BY OTHER CONTRACTORS IN ACCORDANCE WITH SPECIFICATION 01550.

NOTE: IF "L" DOES NOT MEASURE 1" ADJUST SCALES ACCORDINGLY.

100% DESIGN REVIEW SUBMITTAL

PORT OF EVERETT | V:\147\020\182\FI\SSV Cleanup Action-Final\CS1_2-7.dwg (A) "CS1.6" 5/5/2006

Port of EVERETT
P.O. BOX 538
EVERETT, WA 98206
(425) 259-3164

LANDAU ASSOCIATES
130 2nd Avenue South
Edmonds, Washington 98020
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NO.	DATE	BY	REVISION

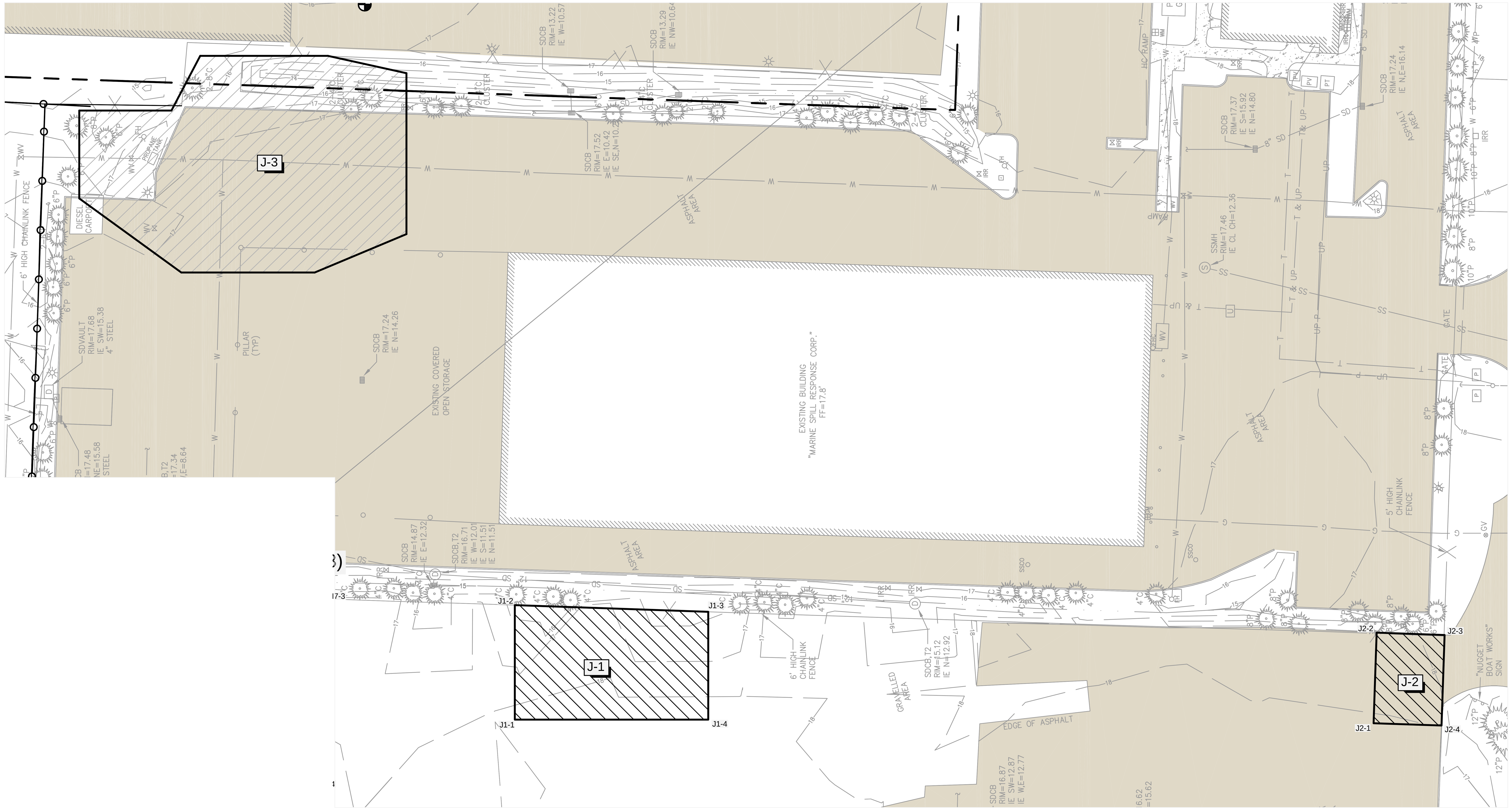
NO.	DATE	BY	REVISION

DAVID A. PISCHER — STATE OF WASHINGTON — 19777 — REGISTERED PROFESSIONAL ENGINEER — EXPIRES: 7/18/2006

PROJECT ENGINEER: D. PISCHER
SCALE: 1"=30'
DESIGNED BY: L. BEARD
DATE: MAY 5, 2006
DRAWN BY: C. BATCHELOR
CHECKED BY: D. PISCHER
APPROVED BY:

PORT OF EVERETT
NORTH MARINA REDEVELOPMENT
SHALLOW SOIL VCP CLEANUP ACTION
SOIL CLEANUP ACTION DETAILS

DWG. NO. CS1.6
CIP NO. 3-0-003-09
PROJECT NO. PD-NM-2006-03
SHEET NO. 10 OF 11



LEGEND

- J-1 — SOIL CLEANUP ACTION AREA AND DESIGNATION TO BE EXCAVATED AS PART OF PROJECT
- J-3 — SOIL CLEANUP ACTION AREA AND DESIGNATION NOT TO BE EXCAVATED AS PART OF PROJECT
- EXISTING PAVED AREA
- J2-1 — EXCAVATION REFERENCE POINT DESIGNATION

TABLE A: EXCAVATION AREA COORDINATES (1)

CONTAMINATED SOIL AREA DESIGNATION	REFERENCE POINT DESIGNATION	REFERENCE POINT NORTHING	REFERENCE POINT EASTING
AREA J-1:	J1-1	368385.65	1301552.03
	J1-2	368385.65	1301602.58
	J1-3	368300.26	1301599.62
	J1-4	368300.26	1301552.03
AREA J-2:	J2-1	368006.64	1301550.99
	J2-2	368006.64	1301590.49
	J2-3	367975.14	1301589.39
	J2-4	367976.44	1301550.99

TABLE B: EXCAVATION AREA DEPTHS

CONTAMINATED SOIL AREA DESIGNATION	APPROXIMATE AREA (SF)	OVERBURDEN EXCAVATION DEPTH (FT)(2)	CONTAMINATED SOIL EXCAVATION DEPTH (FT)(2)	DISPOSAL DESIGNATION
AREA J-1:	4,190	1.0	2.5	INERT WASTE
AREA J-2:	1,200	0.25(3)	1.5	SOLID WASTE

NOTES:

1) NORTHINGS AND EASTINGS ARE BASED ON SITE COORDINATE SYSTEM AND CONTROL POINTS AND DO NOT CORRESPOND TO STATE PLANE COORDINATES. EXCAVATION AREA COORDINATES ARE ONLY APPROXIMATE WHEN BASED ON SITE FEATURES SUCH AS FENCE LINES OR EDGE OF PAVEMENT. EXCAVATIONS SHALL BE COMPLETED TO THE SITE FEATURES INDICATED.
2) DEPTH MEASURED FROM ORIGINAL GROUND SURFACE.
3) AREA IS PAVED. CONTAMINATED SOIL EXCAVATION TO COMMENCE IMMEDIATELY BELOW PAVEMENT.
4) PROTECT ALL UTILITIES FROM DAMAGE IN ACCORDANCE WITH SPECIFICATION 01560.

N

SCALE IN FEET
30 0 30 60

NOTE: "L" IF "L" DOES NOT MEASURE 1" ADJUST SCALES ACCORDINGLY.

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PORT OF EVERETT | V:\147\020\182\FI\SSV Cleanup Action-Final\CS1_2-7.dwg (A) "CS1.7" 5/5/2006

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NO.	DATE	BY	REVISION	NO.	DATE	BY	REVISION

DAVID A. PISCHER — STATE OF WASHINGTON — REGISTERED PROFESSIONAL ENGINEER — 19777 — EXPIRES: 7/18/2006

PROJECT ENGINEER: D. PISCHER	SCALE: 1"=30'
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APPROVED BY:	

PORT OF EVERETT
NORTH MARINA REDEVELOPMENT
SHALLOW SOIL VCP CLEANUP ACTION
SOIL CLEANUP ACTION DETAILS

DWG. NO. CS1.7
CIP NO. 3-0-003-09
PROJECT NO. PD-NM-2006-03
SHEET NO. 11 OF 11

EXHIBIT A

Cleanup Action Plan

This document is available, by request, from the Port of Everett.

EXHIBIT B

SWPPP Supplement

SWPPP SUPPLEMENT
STORMWATER MANAGEMENT DURING SHALLOW SOIL VCP CLEANUP ACTION
NORTH MARINA REDEVELOPMENT
PORT OF EVERETT

April 18, 2006

Prepared for

Port of Everett

100% DESIGN REVIEW SUBMITTAL

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Restricted Work During Storm Events	2
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Prevention of Spread of Contamination	2
Accumulation of CSSWR and Possible Treatment/Offsite Discharge	3
Disposal of Contaminated Soil or Sediment	3

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1	Supplemental SWPPP Inspection Reporting Form

LIST OF APPENDICES

Appendix	Title
A	BMP C200: Interceptor Dike and Swale

INTRODUCTION

This Stormwater Pollution Prevention Plan (SWPPP) supplement provides procedures that will be followed for stormwater management during periods of earthwork in areas of the site with identified contaminated soil, and supplements the SWPPP that was prepared for site-wide construction activities (*Site Work for North Marina Redevelopment, Stormwater Pollution Prevention Plan (SWPPP) for Construction Activities and Monitoring Plan*; Reid Middleton 2006). The work addressed by this supplement is also subject to the SWPPP; in the case of any inconsistencies between the SWPPP and this supplement, the supplement shall take precedence. The Contractor shall also comply with the requirements of Specification Section 01566 - Temporary Erosion and Sedimentation Control, as well as the temporary erosion control notes and details on Drawing CE1.1, during implementation of the shallow soil cleanup action.

The areas with contaminated soil are identified on Drawings CS1.1 through CS1.7. Contaminated soil stormwater runoff (CSSWR) will generally be kept separate from other site runoff waters and will be managed to prevent offsite release of contaminants and to prevent the spread of contaminants to non-impacted areas of the site.

PROCEDURES FOR CSSWR MANAGEMENT

The primary method for managing CSSWR is by avoiding the disturbance or excavation of contaminated soil areas during periods of rainfall or prior to periods of anticipated rainfall. Because of the potential for stormwater runoff from disturbed contaminated surfaces to contaminate clean soil surfaces, excavation will not be initiated in a contaminated soil area unless it is anticipated that the entire excavation area can be completed prior to the start of a significant rainfall event.

INFILTRATION

The primary method for treating CSSWR will be by infiltration within the footprints of excavations created during contaminated soil removal. The primary type of soil at the site, dredged river sediment fill consisting primarily of fine to medium sand, is expected to provide a reasonable rate of infiltration in most areas. However, in some areas, site soil consists of silty sand to sandy silt dredged river sediment, which may not provide a reasonable rate of infiltration.

The site soil that the CSSWR will infiltrate through consists of slightly silty to silty fine to medium sand. Infiltration through site soil will be essentially equivalent to stormwater treatment through a sand filter, and soil will tend to filter out the contaminants in the CSSWR. As a result, infiltration of CSSWR is not anticipated to cause groundwater contamination.

To help ensure that CSSWR can be managed primarily, if not entirely, through infiltration, the procedures described in the following subsections will be followed.

Restricted Work During Storm Events

Excavation in areas of soil contamination or work that exposes or disturbs contaminated soil will not be performed during or in advance of forecast storm events. The storm intensity that would dictate stop-work for exposed contaminated soil may be adjusted somewhat in the field with the concurrence of the Port, based on the observed stormwater infiltration rate, but is generally considered to be a storm event that has produced, or is forecast to produce, 0.25 inches or more of rainfall within a 24-hour period. However, any rainfall that causes ponding of stormwater, or results in heavy rutting to contaminated or disturbed soil within contaminated soil areas, will be considered sufficient to stop work.

Prevention of Stormwater Inflow from Non-Contaminated Areas

Stormwater runoff from higher elevation areas adjacent to a contaminated soil excavation will be diverted around the excavation area to minimize the volume of CSSWR generated and that would need to be infiltrated. Diversion will be accomplished using an interceptor dike and swale. A copy of BMP C200: Interceptor Dike and Swale, from the Stormwater Management Manual for Western Washington, is provided as Appendix A to this SWPPP Supplement. The interceptor dike and swale will be constructed of soil from outside the area of contamination.

Prevention of Spread of Contamination

If it is necessary during construction to remove accumulated stormwater from an excavation area with known contamination, the CSSWR may be pumped out to prevent the spread of contamination. However, efforts will be made to reduce the amount of contaminated soil (suspended solids) in the CSSWR prior to discharging the pumped CSSWR back to the excavation or to another contaminated area. These stormwater management practices will include at least one of the following:

- Pump the CSSWR through a sand filter or cartridge/bag filters prior to discharge into another excavation area

- Pump the CSSWR into a holding tank and provide a minimum of 4 hours settling time prior to discharge into a contaminated soil area.

Infiltration of CSSWR to contaminated areas that have already been excavated to the final excavation depths should only be performed prior to confirmation soil monitoring. Otherwise, confirmation soil monitoring by the Port will be required to confirm that the area has not become re-contaminated. Additional costs for repeating confirmation soil monitoring due to discharge of CSSWR shall be at the Contractor's sole expense.

Under no circumstances should CSSWR be brought for infiltration to areas that are not identified to be contaminated. Similarly, areas of contaminated soil excavation that have been backfilled with clean structural fill are not to be used for CSSWR infiltration.

ACCUMULATION OF CSSWR AND POSSIBLE TREATMENT/OFFSITE DISCHARGE

If infiltration is determined to be inadequate to handle CSSWR, and other contaminated soil areas are not available for infiltration, the Contractor may pump accumulated CSSWR into onsite storage tanks (e.g., "Baker Tanks") for temporary storage. The CSSWR may be held in storage tanks onsite until the level of accumulated stormwater in the excavation has receded and can again accept additional CSSWR for infiltration. Stormwater is not to be pumped into an excavation to the extent that less than 6 inches of freeboard is maintained.

If the Contractor finds it necessary to discharge accumulated CSSWR offsite, an appropriate wastewater discharge permit will be obtained by the Contractor. The Contractor may only discharge CSSWR to the storm sewer or sanitary sewer under the terms and conditions (filtration, pre-treatment, water quality testing, etc.) established in the wastewater discharge permit that is acquired.

DISPOSAL OF CONTAMINATED SOIL OR SEDIMENT

Any sediment that accumulates in settling tanks used for storing CSSWR will be managed, handled, and disposed in the same manner as the contaminated soil generated from the source area, in accordance with Specification Section 02315 - Soil Excavation, Handling, and Disposal. The sediment that accumulates in stormwater settling tanks can be added to the soil taken for offsite disposal to an upland solid waste landfill. Separate testing of this accumulated sediment will not be necessary.

(END OF SWPPP SUPPLEMENT)

TABLE 1
SWPPP SUPPLEMENT – INSPECTION REPORTING FORM
SHALLOW SOIL VCP CLEANUP ACTION
NORTH MARINA REDEVELOPMENT

Inspected By:	**Inspection Date:**
Signature:	**CESCL Certification Date:**

BMPs	**Overall Condition**				**Need Repair?**		G = Good, F = Fair, P = Poor, Y = Yes, N = No, N/A = Not Applicable **Comments**
Berms for Diversion of Clean Stormwater	G	F	P	N/A	Y	N	
Interceptor Trenches	G	F	P	N/A	Y	N	
Stabilization of Berms using Polyethylene Sheeting or Erosion Control Blanket	G	F	P	N/A	Y	N	
Stormwater Adequately Contained within Excavation. Pump out to Storage Tank if within 6” of Overtopping Excavation.	G	F	P	N/A	Y	N	
Storm Drains within Excavation Area are Covered/Plugged.	G	F	P	N/A	Y	N	
Equipment Dry Decontamination Station or Wheel Wash in Place	G	F	P	N/A	Y	N	
Street Sweeping	G	F	P	N/A	Y	N	
Dust Control	G	F	P	N/A	Y	N	
Other BMPs:							
	G	F	P	N/A	Y	N	
	G	F	P	N/A	Y	N	

Weather information since the last inspection was held:

Event	**Date Began**	**Duration (hours)**	**Amount (inches)**		**Event**	**Date Began**	**Duration (hours)**	**Amount (inches)**
1					4			
2					5			
3					6			

Will additional pumps or tanks be required to remove/contain stormwater from excavation? YES NO

Are non-compliance incidents evident? YES NO

If no, sign the following certification: I certify that based on my observations the facility is in compliance with the SWPPP and SWPPP Supplement. ____

If yes, should the SWPPP drawings be modified? YES NO

If yes, the following drawing modifications are to be completed within seven days:

Other Comments:

APPENDIX A

BMP C200: Interceptor Dike and Swale

4.2 Runoff Conveyance and Treatment BMPs

BMP C200: Interceptor Dike and Swale

Purpose

Provide a ridge of compacted soil, or a ridge with an upslope swale, at the top or base of a disturbed slope or along the perimeter of a disturbed construction area to convey stormwater. Use the dike and/or swale to intercept the runoff from unprotected areas and direct it to areas where erosion can be controlled. This can prevent storm runoff from entering the work area or sediment-laden runoff from leaving the construction site.

Conditions of Use

Where the runoff from an exposed site or disturbed slope must be conveyed to an erosion control facility which can safely convey the stormwater.

- Locate upslope of a construction site to prevent runoff from entering disturbed area.
- When placed horizontally across a disturbed slope, it reduces the amount and velocity of runoff flowing down the slope.
- Locate downslope to collect runoff from a disturbed area and direct it to a sediment basin.

Design and Installation Specifications

- Dike and/or swale and channel must be stabilized with temporary or permanent vegetation or other channel protection during construction.
- Channel requires a positive grade for drainage; steeper grades require channel protection and check dams.
- Review construction for areas where overtopping may occur.
- Can be used at top of new fill before vegetation is established.
- May be used as a permanent diversion channel to carry the runoff.
- Sub-basin tributary area should be one acre or less.
- Design capacity for the peak flow from a 10-year, 24-hour storm, assuming a Type 1A rainfall distribution, for temporary facilities. Alternatively, use 1.6 times the 10-year, 1-hour flow indicated by an approved continuous runoff model. For facilities that will also serve on a permanent basis, consult the local government's drainage requirements.

Interceptor dikes shall meet the following criteria:

Top Width	2 feet minimum.
Height	1.5 feet minimum on berm.
Side Slope	2:1 or flatter.
Grade	Depends on topography, however, dike system minimum is 0.5%, maximum is 1%.
Compaction	Minimum of 90 percent ASTM D698 standard proctor.

Horizontal Spacing of Interceptor Dikes:

Average Slope	Slope Percent	Flowpath Length
20H:1V or less	3-5%	300 feet
(10 to 20)H:1V	5-10%	200 feet
(4 to 10)H:1V	10-25%	100 feet
(2 to 4)H:1V	25-50%	50 feet

Stabilization depends on velocity and reach

Slopes <5%	Seed and mulch applied within 5 days of dike construction (*see BMP C121, Mulching*).
Slopes 5 - 40%	**Dependent on runoff velocities and dike materials. Stabilization should be done immediately using either sod or riprap or other measures to avoid erosion.**

- The upslope side of the dike shall provide positive drainage to the dike outlet. No erosion shall occur at the outlet. Provide energy dissipation measures as necessary. Sediment-laden runoff must be released through a sediment trapping facility.
- Minimize construction traffic over temporary dikes. Use temporary cross culverts for channel crossing.

Interceptor swales shall meet the following criteria:

Bottom Width	2 feet minimum; the bottom shall be level.
Depth	1-foot minimum.
Side Slope	2:1 or flatter.
Grade	Maximum 5 percent, with positive drainage to a suitable outlet (such as a sediment pond).
Stabilization	Seed as per *BMP C120, Temporary and Permanent Seeding*, or *BMP C202, Channel Lining*, 12 inches thick of riprap pressed into the bank and extending at least 8 inches vertical from the bottom.

- Inspect diversion dikes and interceptor swales once a week and after every rainfall. Immediately remove sediment from the flow area.
- Damage caused by construction traffic or other activity must be repaired before the end of each working day.

Check outlets and make timely repairs as needed to avoid gully formation. When the area below the temporary diversion dike is permanently stabilized, remove the dike and fill and stabilize the channel to blend with the natural surface.

EXHIBIT C

Waste Acceptance Letters

12th Street Marina Interim Action

PART 1 – GENERAL

1.01 SUMMARY

A. This Section describes health and safety requirements to be implemented in support of Contractor activities associated with intrusive activities associated with upland construction for the 12th Street Marina, including the excavation and management of contaminated soil, construction of underground utilities, and all other associated Work.

B. Related Sections:

1. Section 01901 – Contaminated Soil Excavation, Handling, and Stockpiling

C. The Work is located within the North Marina Redevelopment site, which is listed on the Washington State Department of Ecology's (Ecology) Confirmed and Suspected Contaminated Sites List.

D. Based on field investigations, hazardous substances above Model Toxics Control Act (MTCA) soil cleanup levels for unrestricted site use for carcinogenic polycyclic aromatic hydrocarbons (cPAHs), total petroleum hydrocarbons (TPH) in the diesel and oil ranges, and heavy metals are known to exist in site soil. In the areas designated for excavation on the Plans, the maximum concentrations of these hazardous substances detected in soil during previous site investigations are:

Constituent	Maximum Detected Concentration (mg/kg)
cPAH	0.69
TPH – diesel range	250
TPH – oil range	630
Arsenic	50
Lead	38
Copper	65

Based on field investigations, hazardous substances above MTCA groundwater cleanup level for protection of surface water for TPH in the diesel and oil ranges, and heavy metals are known to exist in site groundwater. Although the locations where these excedances occur are not within the area of planned intrusive activities for the Work, Contractor shall evaluate water quality data for any areas where workers may come into contact with groundwater and implement health and safety precautions, as appropriate, for worker protection.

E. Because the Work is located within a listed site and cPAHs and arsenic are present above regulatory cleanup levels in shallow soil, the Contractor shall comply with, at a minimum, the provisions of WAC 296-155 and the Contractor's health and safety plan throughout the duration of the Work. Additionally, the

Contractor shall exercise due caution when excavating soil in any location to minimize the health hazard posed to all project participants.

F. Contractor shall at all times conduct its activities with appropriate precautions to avoid the risk of bodily harm to persons or the risk of damage to any property or the environment. Contractor shall continuously inspect all Work, materials, and equipment and shall be solely responsible for discovery, determination, and correction of any conditions that may involve such risks.

G. Contractor shall supply all equipment, materials, and personnel necessary to meet the requirements of this Section and all applicable codes and regulations for safe handling and disposal of contaminated soil and groundwater.

H. The Port will be responsible for the health and safety protection of their personnel and will conduct their activities in accordance with their own health and safety plan(s).

1.02 SUBMITTALS

A. Within 10 days of the issuance of the Notice to Proceed and prior to starting the Work, submit the following:

1. A site-specific health and safety plan meeting applicable regulatory requirements. Obtain Port’s concurrence with the plan before conducting the Work.

2. Submit to Port the name and qualifications of Contractor's health and safety officer for the Work. Contractor shall not replace this person without prior written approval by Port.

3. Submit proof of appropriate WAC 296-62 Part P training for site workers and supervisory personnel who are authorized by the Contractor to engage in Work associated with hazardous materials and potentially hazardous materials. In addition, for onsite supervisory personnel, submit current certification of WAC 296-62 Part P onsite management or supervisor training and American Red Cross first aid and cardiopulmonary resuscitation (CPR) training.

B. Written approval from the City of Everett for discharging decontaminating rinse water to the sanitary sewer, if applicable.

1.03 REGULATORY REQUIREMENTS AND APPLICABLE PUBLICATIONS

A. It is not the intent of the Port to list and identify all applicable safety codes, standards, and/or regulations requiring compliance by the Contractor. The Contractor shall be responsible for identifying and determining all safety codes, standards, and regulations that are applicable to the work. These include, but are not limited to, the following:

1. 29 CFR 1910.120, Hazardous Waste Operations and Emergency Response

2. 29 CFR 1926, Safety and Health Regulations for Construction
3. 49.17 RCW, Washington Industrial Safety and Health Act
4. WAC 296-24, General Safety and Health Standards
5. WAC 296-155, Safety Standards for Construction
6. WAC 296-62, Part P, Hazardous Waste Operations and Emergency Response
7. American Conference of Governmental Industrial Hygienists (ACGIH), Threshold Limit Values and Biological Exposure Indices for 1991-1992, or most recent version
8. NIOSH/OSHA/USCG/EPA, Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities, DHHS Publication No. 85-115, October 1985.

1.04 SCOPE OF HAZARDOUS MATERIALS WORK

A. Hazardous materials Work shall include, but not be limited to, activities involving personnel or equipment in contact with contaminated or potentially contaminated soil or groundwater, including but not limited to excavation and stockpiling of contaminated soil, installation of underground utilities and any other intrusive activities in areas containing contaminated soil or groundwater. The Contractor shall be responsible for monitoring hazardous materials and conditions and determining when Work involves hazardous materials and when conditions are present that require conformance with specified regulatory requirements. The Contractor shall be responsible for the planning and scheduling of hazardous material Work with all other Work under the Contract and shall conduct all hazardous material Work in strict accordance with the site-specific health and safety plan.

B. Contractor shall plan for and carry out all portions of the Work that include contact or potential contact with existing site soil with a minimum level of personal protection of Modified Level D per applicable regulatory requirements. Contractor shall apply higher levels of personal protection, if warranted by encountered conditions or specified in Contractor’s health and safety plan.

PART 2 – PRODUCTS

2.01 HEALTH AND SAFETY PLAN

A. Prepare and maintain for the duration of this Contract a site-specific health and safety plan to promote the health and protection of all onsite personnel and the environment. The plan shall be consistent with the requirements of Part 1 of this Section.

B. Contractor shall assess the potential risks to onsite personnel and the environment and develop its site-specific health and safety plan to safely execute the Work under this Contract. Contractor shall submit the health and safety plan to the Port for review and general concurrence. The Port's review and concurrence with the Contractor's health and safety plan shall not in any way relieve Contractor of its responsibility for health and safety, nor shall the Port's concurrence be construed as limiting in any manner Contractor's obligation to undertake actions that may be necessary or required to establish and maintain safe working conditions at the site, including conditions not related to hazardous materials, nor shall the Port's concurrence be construed as establishing Port in a position of responsibility for implementation or administration of Contractor's health and safety plan.

C. Contractor and subcontractors shall comply with the site-specific health and safety plan for the duration of this Contract. Contractor shall coordinate with the Port and with all of the Contractor's subcontractors on health and safety matters. Contractor shall furnish all necessary first-aid, safety, personal protective and decontamination equipment and facilities and enforce the use of such equipment and facilities by its employees and its subcontractors of any tier.

D. As a minimum, the Contractor's health and safety plan shall include:

1. A description of the site activities to be performed.
2. A listing of hazardous substances known to be, or suspected of being, present at the site.
3. A description of the site chemical hazards (e.g., toxicity, flammability, stability, reactivity, etc.), including the nature of each chemical; its physical properties; OSHA, WISHA, or ACGIH standards, where established; and physical hazards (e.g., noise, heavy equipment, heat stress, etc.).
4. A map of the site showing the known and possible locations of the chemical substances, and the proposed Work activity locations and evacuation routes.
5. General health and safety directives regarding onsite conduct, including levels of protection and contingency plans.
6. Site-specific health and safety directives for potentially hazardous activities. These directives shall specify the equipment and safety procedures to be used by personnel engaged in the Work activities.
7. Establishment of the Work area definitions associated with potential contact with hazardous materials. Planned changes in boundaries during the Work shall be identified.
8. Requirements for personal protective equipment. The plan shall include a listing of the health and safety equipment that will be available onsite and required for site activities during Work under this Contract.

9. Personal decontamination facilities and procedures. Provide decontamination facilities for personnel, as necessary, for conformance with the health and safety plan.

10. Emergency procedures in case of hazardous waste spillage or exposure to personnel, personal injury, fire, explosion, etc. This section of the plan shall include emergency telephone numbers and specific procedures for immediate removal to a hospital or doctor's care of any person who may be injured on the job site.

11. Field monitoring equipment and procedures. This section of the plan shall specify when and how monitoring will be performed (e.g., visual monitoring for airborne dust), what data reporting procedures will be used, and how the data will be used onsite to determine appropriate personal protective equipment.

12. Names and responsibilities of personnel assigned to implement, administer, and supervise the health and safety plan.

13. Names, firms, and staff positions of personnel authorized to Work at the site.

14. An employee signature page on which each of Contractor's employees whose activities involve contact with contaminated materials and each employee of each subcontractor of any tier whose activities involve contact with contaminated materials will acknowledge receipt of the plan, an understanding of the plan, and an agreement to comply with plan provisions.

15. Recordkeeping requirements and all necessary reporting to cover the implementation of the Contractor’s site-specific health and safety plan.

16. Handling and disposal procedures for personal protective gear, decontamination residuals, and other potentially contaminated construction waste generated by the Contractor and other site personnel during the course of the Work.

E. As conditions change or if new operations are to be performed, the Contractor's health and safety plan shall be modified or amended, or a new health and safety plan shall be developed.

PART 3 – EXECUTION

3.01 HEALTH AND SAFETY

A. Site activities involving hazardous or potentially hazardous materials shall be conducted in accordance with the Contractor's site-specific health and safety plan.

B. Contractor shall designate a qualified representative as Health and Safety Officer whose responsibility will be health and safety monitoring and oversight. The designated qualified health and safety representative shall be onsite at all times when contact with hazardous materials is anticipated.

C. Contractor shall be responsible for providing safety training and shall require its subcontractors and all Contractor's authorized visitors to have this training, if appropriate for the Work to be conducted by these personnel. Documentation of this training shall be available at the site. Provide appropriate personal protective equipment for Contractor's employees, as specified in the health and safety plan, and require subcontractors to provide this equipment for subcontractor's employees.

D. Provide for decontamination of Contractor's and subcontractor's personnel and equipment that contact hazardous or potentially hazardous materials, in conformance with the requirements of the health and safety plan, as needed.

E. Contractor shall provide for the proper disposal of disposable safety gear and equipment used by Contractor's employees, the Port, federal and state agency representatives, and all site visitors. Such disposal shall conform to all applicable federal and local hazardous waste disposal regulations. Waste material from the Contractor's onsite decontamination facilities shall be properly containerized, labeled, and disposed of by the Contractor. Rinse water may be drained onto site soil, at a location specified by the Port, but shall not be discharged to storm sewers. Disposal of rinse water via the sanitary sewer requires written approval by the City of Everett Department of Public Works.

F. Contractor shall maintain accurate accident and injury reports and shall furnish the Port a copy of the reports within 24 hours of the reported incident.

G. Contractor shall provide proper illumination of construction activity, as necessary, to allow all workers and oversight personnel to safely execute their responsibilities and tasks.

H. Contractor shall promptly comply with any specific instructions or directions given to Contractor by the Port unless overriding health and safety concerns dictate another course of action.

I. Health and safety plans, emergency procedures, and first-aid procedures shall be conspicuously posted at the site and Contractor shall hold regularly scheduled meetings, as necessary, to instruct its personnel and its subcontractors on health and safety practices and proper use of personal protective equipment.

END OF SECTION

PART 1 – GENERAL

1.01 SUMMARY

A. This Section specifies the general requirements for excavation, handling, and stockpiling contaminated onsite soil.

B. Related Sections:

1. Section 01900 – Health and Safety Related to Work in Existing Soils

2. Section 02300 – Earthwork

C. Contaminated soil is present in the areas designated in the Plans and vary in depth below ground surface, as specified in Table CS-1.1b in the Plans

D. Contaminated soil within the designated areas shall be excavated and stockpiled as specified in Part 3 of this section.

E. It is the Port’s intent that the Contractor conduct contaminated soil excavation in a manner that will minimize the volume of contaminated soil. Excessive overexcavation beyond the allowable overexcavation limit specified in Article 1.04(A) is prohibited. The Contractor shall be responsible for all costs associated with managing and disposing of contaminated soil excavated in excess of the performance criteria specified in Article 1.04(A)(2).

1.02 SUBMITTALS

A. Within 10 days of the issuance of the Notice to Proceed and prior to starting the Work, submit a construction plan that includes a detailed description of the proposed means and methods to perform the Work:

1. Excavating contaminated soil, including:

a) Survey control to achieve design grades and meet overexcavation limits

b) Excavation equipment and procedures

2. Transporting and placing contaminated soil in stockpile

3. Repairing the roof leaks in the M-11 Building

1.03 REGULATORY REQUIREMENTS AND APPLICABLE PUBLICATIONS

A. Regulatory requirements applicable to the Work include, but are not limited to, the following:

1. WAC 173-340 – Model Toxic Control Act (MTCA)

1.04 DESIGN AND PERFORMANCE CRITERIA

A. The design and performance criteria for stockpiling contaminated soil are as follows:

1. Overexcavation is the removal of contaminated soil or associated overburden soil below or beyond the grades, lines, and limits shown on the Plans or specified in this Section. The allowable overexcavation depth for contaminated soil and associated overburden is 0.2 ft below the required excavation depth shown on the Plans. The allowable overexcavation lateral limit is 0.5 ft beyond the excavation limits shown on the Plans.

2. The contaminated soil stockpile shall be graded into a stable configuration that achieves an average height of at least 4 ft above the building floor slab.

B. The M-11 Building roof shall be repaired using materials, means and methods that result in a leak-free roof for a minimum of one (1) year from the date of repair.

PART 2 – PRODUCTS

2.01 MATERIALS

A. Soil from the areas identified in the Plans as having contaminant concentrations exceeding the site soil cleanup levels and indicated to be removed shall be excavated and transported to Port M-11 Building for storage.

B. Concrete ecology blocks shall be placed in a continuous line along the inside perimeter of the M-11 Building to prevent contaminated soil from resting against the building siding.

C. Roofing, plastic sheeting, sealants, and/or other materials, as needed shall be used to repair the leak(s) in the M-11 building roof. The materials used for roof repair must prevent leakage for a minimum of 1 year from the date of application.

PART 3 – EXECUTION

3.01 SOIL EXCAVATION

A. Contractor shall survey and stake limits of contaminated soils to be removed. Survey coordinates along the shoreline are provided for staking purposes. It is not intended that rip rap be removed with contaminated soil, and excavation along the west boundary of the excavation area shall be terminated at the point where rip rap or other erosion protection is encountered along the shoreline

B. Contractor shall determine the hazards and risks of handling contaminated soil and incorporate appropriate worker protection and decontamination requirements in the Contractor's Health and Safety Plan identified in Section 01900.

C. Contractor shall establish an excavation plan for the contaminated soil areas identified for excavation and stockpiling. Excavation vertical control shall be established by Contractor in the following manner:

1. Survey the elevation of all excavation area boundary coordinates for each excavation area, based on the locational coordinates provided in the Plans.

2. Excavate contaminated soil using the lowest elevation of the boundary coordinates at each excavation location to establish the finish elevation for excavation of contaminated soil.

D. Contractor shall excavate all soil within the contaminated soil excavation areas shown on the Plans using a toothless bucket, or equivalent equipment that results in a smooth and regular excavation surface and prevents the soil being removed from being mixed with the underlying soil that will remain in place.

E. Contractor shall excavate contaminated soil in a manner that achieves the excavation performance criteria specified in Article 1.04A, and shall provide post-excavation survey data for the completed excavation, at a survey density approved by the Port, that demonstrates achievement of the performance criteria.

F. Contractor shall conduct all soil excavation activities in a manner that prevents the movement, spillage, or other deposition of contaminated soil material or associated stormwater runoff on the uncontaminated areas of the site or the stormwater system.

3.02 HANDLING AND STOCKPILING MATERIALS

A. Excavated soil from the contaminated soil areas identified in the Plans, shall be stockpiled within the M-11 Building, as shown on the Plans

B. Prior to placing any contaminated soil, Contractor shall install a continuous row of ecology blocks along the entire perimeter of the inside of the M-11 Building, except across the entry door for vehicle access. The blocks shall placed flush with the outer wall to extent practical to maximize the available stockpile area.

C. The handling and stockpiling of soil shall be performed consistent with Contractor's approved construction plan specified in Article 1.02.

D. Contractor shall conduct the soil excavation, handling and stockpiling work in a manner that minimizes fugitive dust emissions, odors, contamination of stormwater, and wind or stormwater erosion of the contaminated soil.

E. Excavated soil that contains free liquids shall be stabilized prior to being stockpiled. Stabilization shall be accomplished by mixing with drier excavated soil and/or adding non-biodegradable sorbent materials to the wet soil.

F. Contractor shall stockpile contaminated soil in a manner that minimizes the stockpile area and meets the performance criteria specified in Article 1.04(A)(2).

3.03 ROOF REPAIR

A. Contractor shall locate and repair all leaks in the M-11 Building roof to prevent precipitation from entering the building and contacting contaminated soil.

B. Roof repair shall be executed in conformance with the approved construction plan specified in Article 1.02, and shall meet the performance criteria specified in Article 1.04(B).

3.04 ANALYTICAL TESTING

A. The Port will collect and analyze soil samples from the excavation surface following removal of contaminated soil to determine whether site cleanup levels have been achieved. One (1) week will be required to obtain results for analyzed samples. Contaminated soil excavation areas shall not be backfilled until Port informs Contractor that cleanup levels have been achieved.

B. If cleanup levels are not achieved at one or more excavation sample locations, the Port may direct Contractor to excavate additional soil.

C. Any re-excavated areas will be re-sampled and tested, as described in Article 3.04(A), and backfilling of these areas are subject to the same limits described therein.

3.05 DECONTAMINATION OF EQUIPMENT

A. All equipment such as hand tools and heavy equipment that have been in contact with contaminated soil or groundwater shall be cleaned prior to leaving the site. Decontamination shall conform with Contractor’s health and safety plan, and at a minimum, shall include removal of accumulated dirt and debris from all equipment. Contractor shall provide brushes, brooms, and scrapers for equipment decontamination purposes. Personnel performing equipment decontamination shall comply with all applicable provisions of the Contractor's health and safety plan.

END OF SECTION

Legend

I-8 — Contaminated Soil Area and Designation to be Excavated

A — Excavation Reference Point Designation

Table a: Excavation Reference Point Coordinates

	Northing	Easting
A	369027.50	1301484.75
B	368967.50	1301484.75
C	368807.50	1301484.75
D	368737.50	1301484.75
E	368515.98	1301484.75
F	368515.98	1301414.70
G	368737.50	1301429.64
H	368807.50	1301433.88
I	368967.50	1301429.66
J	369027.50	1301437.34

Table b: Excavation Area Depths

Excavation Area	Excavation Depth (ft BGS)
I-8	2.5
I-9	1.5
I-10	2.5
I-11	1.5

Note:

1. Northings and Eastings are based on site coordinate system and control points and do not correspond to State Plane Coordinates.

N

SCALE IN FEET
60 0 60 120

Port of Everett
P.O. BOX 538
EVERETT, WA 98206
(425) 259-3164

LANDAU ASSOCIATES
130 2nd Avenue South
Edmonds, Washington 98020
Ph: 425 778-0907
JOB No. 147020.150

NO.	DATE	BY	REVISION	NO.	DATE	BY	REVISION

LAWRENCE D. BEARD — STATE OF WASHINGTON — 24755 — REGISTERED PROFESSIONAL ENGINEER — EXPIRES 1/27/06

PROJECT ENGINEER: L. BEARD	SCALE: 1"=60'
DESIGNED BY: L. BEARD	DATE: SEPTEMBER 23, 2005
DRAWN BY: C. BATCHELOR	CHECKED BY: S. WRIGHT
APPROVED BY:	

PORT OF EVERETT

12th STREET MARINA CONTAMINATED SOIL LOCATION AND EXCAVATION PLAN

DWG. NO. CS1.1
CIP NO. 3-0-003-05
PROJECT NO. MR-TW-2005-02.2
SHEET NO. 1 OF 1

APPENDIX F

Construction-Related Photographs

Area G-1

G-1, Additional excavation material west of area with dessication cracks.

Black sand material near G-1-AC-8.

Concrete pole debris at south end of G-1, looking SW.

Sample G-1-AC-8 black sand material.

G-1 looking east at freshly placed material overlying area with dessication cracks.

Black sand material on south sidewall of G-1, looking south.

Concrete-like mud at south end of G-1.

Area G-1a

G-1a, looking north northeast before start of excavation. Note black sand material.

G-1a, looking west-southwest before start of excavation. Note black sand material.

G-1a, looking southwest at purple concrete slab that was removed to access cleanup area.

G-1a, looking west-southwest at southern end of excavation. Note green sand material.

G-1a, multi-colored concrete-like material.

Area I

Colored concrete-like material along I-3a and I-2 boundary.

Profile along I-3a and I-2 boundary showing colored concrete-like material.

Excavating I-3a, notice thick black sand material layer looking west northwest.

I-3a, multi-colored layered piece of concrete-like material.

Colored concrete-like material layer visible in I-3a, looking west.

Looking east at black sand material in Area I-4.

I-5, pieces of concrete-like material, looking southeast.

Concrete-like material layer extending under north fence of I-5 at eastern end, looking north.

Colored concrete-like material overlying black sand material in I-5, looking west.

Sample location I-5-AC-4, western end of I-5.

Area J

South end of J-1 excavation with edge of vault exposed.

Metal debris removed from J-1 chambers.

J-1, ICI jacking open chamber 1, looking east.

Concrete vault in Area J-1, looking west

J-1 concrete vault, looking west.

J-3, Construction debris looking west-northwest.

J-3, looking east along south edge of construction debris

J-3, looking north along excavation bottom.

J-3, looking southwest at south edge of construction debris.