Time-Critical Removal Action Final Report

Terminal 117
Seattle, Washington

Prepared by:

The RETEC Group, Inc.
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RETEC Project Number: PORS5-19754-500

Prepared for:

Port of Seattle
Pier 69
Seattle, Washington 98111

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1 Introduction

The Port of Seattle (Port) completed the Time-Critical Removal Action (TCRA) to remove hazardous substances from the upland property of the Terminal 117 (T-117) in Seattle, Washington in November 2006. The TCRA was performed in accordance with the United States Environmental Protection Agency (EPA) Statement of Work (SOW; EPA, 2006) as part of the T-117 Early Action Area of the Lower Duwamish Waterway (LDW) Superfund Site Administrative Settlement Agreement and Order on Consent. An assessment conducted in January 2006 found elevated concentrations of polychlorinated biphenyls (PCBs) in soil at the upland T-117 property (Windward et al., 2006). As indicated in the SOW, the TCRA involved removal of PCBs from four identified areas in the T-117 upland area. In preparation for the TCRA, the reports titled *T-117 Upland – Draft Removal Action Plan, Terminal 117, Seattle, Washington, dated May 15, 2006* (RETEC, 2006a) report and *Time-Critical Removal Action Work Plan, Terminal 117, Seattle, Washington, dated September 11, 2006* (RETEC, 2006b) were reviewed and approved by EPA. The TRCA Work Plan provides the specifics for the implementation of the TCRA field activities.

This Final Report has been prepared according to the requirements described in the SOW *Section 1.7 Final Report* and meets requirements set forth in 40 CFR Section 300.165. The TCRA field activities began on September 5, 2006 and were completed on November 10, 2006.

1.1 Background

The Duwamish Manufacturing Company reportedly began asphalt manufacturing operations at T-117 around 1937 and continued until 1978 (URS, 1994) at the general location corresponding with the present-day west half (excluding areas north of the North Gate) of T-117. In 1978, the business was sold and came to be known as the Malarkey Asphalt Company and continued roofing asphalt manufacturing operations at T-117 until 1993. A mixture of oils was used in the roofing asphalt manufacturing process. These oils included waste mineral oils to fuel boilers and heaters that are presumed to be the source of PCBs.

The structures associated with the asphalt plant were dismantled in late 1996 and 1997. The dismantled structures included above-ground storage tanks (ASTs), underground storage tanks (USTs) and associated piping; reaction tanks; a diesel fuel dispenser; a hot oil heater and associated shed, transfer pumps and pipes; warehouses at the east side of the plant area, the drum storage shed and a partially buried railroad tank car.

After the asphalt plant closed, portions of the property were occupied by Evergreen West Wholesale (a lumber wholesaler). Port Construction Services (PCS) formerly used the outdoor area near the small office/carport for

miscellaneous material storage. However, these items have since been removed, and PCS no longer uses T-117. International Inspection formerly leased the North Building and a small building south of the North gate, as shown on Figure 1-2. Second Use Materials (Second Use) currently leases the South Building for warehouse space. Second Use's lease with the Port terminates in February 2007. Second Use is expected to vacate the space in March 2007. No additional tenants are planned for the property.

1.2 Property Description

T-117 is located at 8700 Dallas Avenue South in Seattle, Washington (Figure 1-1), within the jurisdiction of King County. The upland T-117 property covers approximately 3 acres, including a 50- to 60-foot-wide section of land adjacent to the shoreline, which is owned by the Port as successor in interest to the King County Commercial Waterway District No. 1. In 1999, the Port acquired the inland parcel between the shoreline parcel and Dallas Avenue South, which was previously owned by the Malarkey Asphalt Company. These properties were consolidated to form the present-day T-117, of which the Port is the sole owner. Adjacent properties include Boeing to the south, the South Park Marina to the north-northwest, and the Basin Oil Company to the west (west of Dallas Avenue South).

1.3 Project Overview

The TCRA objectives for the upland property of T-117 were specified by the EPA Statement of Work (SOW). The TCRA field activities were performed according to the TCRA Work Plan (RETEC, 2006b) approved by EPA on September 15, 2006. The TCRA involved the excavation of four identified areas, designated as Upland Areas B-1, B-2, B-3, containing the highest levels of PCBs at the site, and the Bank Area adjoining Area B-3, which poses the greatest potential for contaminated soil to erode into the Lower Duwamish Waterway. The locations of these proposed excavation areas are shown in Figure 1-2.

In accordance with the SOW, the removal action level in Upland Areas B-1 and B-2 was 25 parts per million (ppm). In the Bank Area and Upland Area B-3, the upper two feet of soils were removed from the prism specified in the SOW and the TCRA Work Plan. The intent of the bank excavation was to remove contaminated soil from the upper 2 feet that have the potential to erode into the adjacent LDW. The upper 2 feet in Upland Area B-3 was also removed because it is directly adjacent to the Bank Area.

The bottom and sidewalls of each of the excavation areas were tested to confirm the removal action levels were achieved (Areas B-1 and B-2) and to document residual soil concentrations (Areas B-3 and Bank). The analytical results were submitted to EPA for review prior to placing the backfill into the excavations. The sampling frequency and analytes were performed in

accordance with the Quality Assurance Project Plan (QAPP) of Appendix B in the TCRA Work Plan (RETEC, 2006b).

An interim asphalt cap was constructed in the four excavation areas after clean backfill and identifier filter fabric were placed and compacted to the existing grade. The stormwater system was cleaned out and restored to pre-TCRA drainage flow patterns.

2 Project Management and Organization

2.1 Project Organization

The Port of Seattle retained The RETEC Group, Inc (RETEC) to prepare the TCRA Removal Action Work Plan (RAWP; RETEC, 2006b) and to provide the TCRA construction oversight. Port Construction Services (PCS) performed the construction work. EPA provided regulatory oversight for the project. Parametrix of Bellevue, Washington was retained by EPA to oversee the construction activities on behalf of EPA.

The Port also retained the following consultants for the TCRA:

- Geomatrix (Seattle, Washington) to conduct the perimeter air monitoring;
- Phoinix Corporation (Lynnwood, Washington) to inspect the stormwater erosion and sedimentation controls during construction; and,
- Analytical Resources, Inc. (ARI) (Tukwila, Washington) to provide chemical analysis of water and soil samples.

RETEC retained Cascade Drilling, Inc. (Woodinville, Washington) to decommission three existing monitoring wells and to perform Upland Area B-1 pre-excavation soil exploration borings.

PCS retained the following subcontractors for various tasks associated with the TCRA activities:

- Hot Mix, Inc (Tukwila, Washington) was retained to complete all the asphalt paving work
- Mayes Testing Engineers, Inc. (Mayes) (Lakewood, Washington) was retained to perform excavation backfill compaction testing
- Clayton Group Services (Seattle, Washington) was retained to perform the initial air monitoring for on-site workers
- Shinn Mechanical (Bellevue, Washington) was retained to reinstall the water connection in the North Building and reconfigure the building rain gutters in the South Building (note: The gutter reconfiguration conveyed roof runoff to the south side of South Building instead of to the TCRA work area to avoid generating additional stormwater to manage)

- Commercial Fence Corporation (Seattle, Washington) was retained to reconfigure the chain link fence for the Upland Area B-1 excavation

- Godwin Pumps (Kent, Washington) was retained to supply and maintain the pumps for on-site stormwater collection

- Del Mar Concrete Cutting (Tacoma, Washington) was retained to saw-cut the asphalt pavement of the excavation areas

- Davidson Macri Sweeping (Bellevue, Washington) was retained to saw-cut the asphalt, clean out the catch basins (pre-construction and post-construction) and sweep Dallas Ave S at the completion of the project

- Emerald Services (Seattle, Washington) was retained to transport the collected stormwater and clean the water storage tanks at the completion of the project

- Marine Vacuum Services (Seattle, Washington) was retained to clean the catch basins during site restoration

- Northwest Traffic (Vancouver, Washington) was retained to install the concrete curbing along the Bank Area new pavement

- Trucking Company (Various companies as indicated on bills of lading and weight tickets)

2.2 Project Coordination

Weekly project meetings were conducted at the site to discuss TCRA construction-related issues. Participants in the meetings included representatives of PCS, Port, RETEC, Parametrix (representing EPA), Geometrix, and Phoinix. Meeting minutes were prepared by RETEC and distributed to the participants within 1 to 2 days after the meetings. Outstanding issues and respective responsible parties were listed in the meeting minutes for following up in the following week's meeting. The project meeting agenda typically included the following items:

- Reviewed and addressed health and safety issues that were raised during construction

- Discussed construction-related problems encountered

- Updated new development and information related to the project to meeting participants

- Reviewed construction schedule for upcoming week.

3 Site Preparation Activities

Site preparation activities performed prior to the excavation and backfill operations at the site included:

- Temporary Site Facilities and Controls
- Temporary Erosion and Sediment Controls (TESC)
- Clearing and Grubbing
- Monitoring Wells Decommissioning
- Upland Area B-1 Pre-Excavation Sampling
- Drainage Basins Preparation
- Catch Basins Cleaning
- Stockpile Cells Construction and Truck Loading Zone
- Dallas Avenue South Unpaved Roadways Sampling
- Background Air Monitoring and Meteorological Monitoring
- Notifications to City of Seattle, Seattle Public Utilities (SPU) and Neighborhood
- Pre-Construction Meeting.

Each of the above pre-construction activities is discussed below.

3.1 Temporary Site Facilities and Controls

Temporary site facilities and controls were provided by PCS. Locations of the temporary facilities are shown on the pre-construction site preparation map on Figure 3-1.

- **On-Site Construction Office:** The North Building was vacated prior to commencement of the TCRA. As a result, the building was provided by the Port for use as construction offices for on-site personnel of PCS, RETEC, and Parametrix. Wash rooms, health and safety supplies, field supplies, and the conference room were also located inside the North Building. Access to the North Building from off-property areas was limited to the west entrance doors located on Dallas Avenue South.

- **Public Access Controls:** Access to T-117 was controlled for the entire TCRA duration. The site was secured with chain link fence on the north, west, and south sides and had three access gates. These gates were closed (but not locked for safety egress) during the daytime when the construction work was active and were locked at the end of each work day. All site workers and visitors were required to check in at the North Building, and sign in at arrival and sign out upon departure from the site. A log book provided and maintained by PCS was located inside the entrance of North Building. These controls sufficiently prevented any public access to the site.

- **Tenant Coordination and Control:** The Port has been leasing the South Building to Second Use Material (tenant) prior to the TCRA. The tenant remained on the T-117 property during the TCRA activities. During the TCRA, the tenant was allowed to access the site via the South Gate and their use of the site was limited to approximately within 50 feet from north side of the South Building. PCS coordinated with the tenant routinely and monitored their activities to ensure the tenant's personnel were not exposed to site contaminants or construction hazards, and that the tenant's activities did not interfere with construction activities.

- **Decontamination Zones Delineation:** Prior to commencement of the TCRA excavation work, the Exclusion Zone and Contamination Reduction Zone (CRZ) were marked with cones, orange plastic fencing, and caution tapes. Warning and Exclusion Zone signs were posted at various locations along the perimeter of the Exclusion Zone and CRZ. The Exclusion Zone and CRZ were moved to active excavation areas as necessary during the course of the TCRA excavation work.

3.2 Temporary Erosion and Sediment Controls

The erosion and sediment controls at the T-117 property prior to the TCRA included a silt fence along the bank area, and filter socks installed in the existing stormwater catch basins. The existing catch basin CB-5 was protected with hay bales around the catch basin. A pre-construction inspection of the site identified additional TESC necessary to facilitate the TCRA activities. Prior to the TCRA excavation activities, the existing silt fence was repaired and extended along the top of the bank to protect the existing gravel area along Upland Area B-3 and Bank Area (Figure 3-1). Hay bales were placed around each on-site catch basin to reduce the amount of fines entering the catch basins. New filter socks were placed in the catch basins (i.e., catch basins CB-4, CB-6, and CB-7) that were not used as sumps for stormwater collection. Sand bags were also placed on the up-gradient side of the

excavation areas, as needed, to prevent stormwater run-on from entering the excavation.

During construction, a Phoinix field representative inspected the TESC and stormwater controls on a daily basis and the findings were documented in Phoinix's daily field report. An electronic copy of the daily field report prepared by Phoinix field representative is included in Appendix B. Findings that required corrective actions were performed by PCS in a timely manner. Phoinix inspected the corrected areas to ensure the actions were adequate.

3.3 Clearing and Grubbing

To facilitate the excavation work, vegetation near the North Gate entrance and a portion of the Bank Area were cleared. The vegetation was cleared only to the aboveground portion and none of the subsurface part of the vegetation was removed or exposed to avoid contact with contaminated soils. The removed vegetation was placed in a storage bin and disposed of at Waste Management construction demolition landfill (CDL). An electronic copy of the vegetation disposal is included in Appendix E.

3.4 Monitoring Well Decommissioning

Three existing monitoring wells MW-4, MW-5, and MW-8 located within the TCRA Bank Area excavation (Figure 3-1) were decommissioned by Cascade Drilling on September 11, 2006 by overdrilling prior to the excavation work. All other monitoring wells were protected during the construction. An electronic copy of the field report prepared by Cascade Drilling and the Ecology notification package is included in Appendix A.

3.5 Upland Area B-1 Pre-Excavation Borings

Before excavation of Upland Area B-1, additional soil investigation was conducted to further delineate the extent of PCB impacted soil. Cascade Drilling performed four test holes (i.e., PES-1, PES-2, PES-3, and PES-4) for subsurface soil sampling at the locations shown on Figure 3-1 using a hollow stem auger drill rig. Depths of the test holes varied from 9 to 11.5 feet below ground surface (bgs). At each test hole location, soil samples were collected from multiple depths. Boring logs of these four test holes are included in Appendix A.

Samples were delivered to ARI for analysis of PCBs using EPA Method 8082. The analytical results are summarized in Table 3-1. As shown in the table, only samples collected from 0.5 to 2 feet bgs at sample locations PES-1, PES-2, and PES-4 were above the action level of 25 ppm.

Based on this investigation, the extent of the excavation was re-delineated. The revised excavation plans for Upland Area B-1 are included in Appendix

A. The revised excavation plan resulted in a reduced excavation quantity of PCB impacted soils in Upland Area B-1.

3.6 Drainage Basin Preparation

The entire T-117 property was hydraulically divided into four separate drainage basins (i.e., Basins A, B, C, and D) by constructing asphalt berm between the drainage basins (Basins). Locations of the Basins and asphalt berms are shown on Figure 3-1. Stormwater occurred within each drainage basin was collected by converting some of the existing catch basins into temporary sumps. The catch basins that were used as sumps included CB-1, CB-2, CB-3, CB-4, and CB-5. The storm drain pipes at catch basins CB-1, CB-2, CB-3, and CB-5 were temporarily capped to prevent discharge of any stormwater from the T-117 property during construction. Water collected at the sump was transferred using pumps to the on-site temporary water storage tanks provided by PCS. The water level at the sumps was controlled to prevent ponding.

No existing catch basins were located within Basin A, therefore, a temporary catch basin/sump CB-8 was installed to collect stormwater runoff from Basin A. The temporary catch basin/sump was constructed of a concrete structure with dimensions of 3 ft by 3 ft by 3 ft. One or more pumps were used in each Basin to transfer surface water to the storage tanks via hosing. Operation of stormwater collection during construction is further discussed in Section 4.2.

3.7 Catch Basin Cleaning

All five onsite catch basins (CB-1 through CB-5) and two off-site catch basins (CB-6 and CB-7) were cleaned out by Emerald Services prior to any excavation work. Cleaning of the catch basins consisted of removing the sediment and water from the catch basins with a vacuum truck and replacing the filter socks. Sediments removed from the catch basins were placed in the Subtitle D materials stockpile and the water was temporarily stored in the on-site storage tanks. One sediment sample from each of the catch basin CB-1 through CB-5 was collected and delivered to ARI for analyses of PCBs and TPH-Dx. Results from this sampling are shown on Table 3-2. As shown in the table, the diesel range hydrocarbons concentrations ranged from 0.33 to 1.8 mg/kg, motor oil range hydrocarbons from 1.7 to 15 mg/kg, and PCB (Aroclor 1260) from 2.7 to 19 mg/kg.

3.8 Stockpile Cells and Truck Loading Zone

Two separate stockpile areas were prepared by PCS prior to the excavation activities, including stockpile area for waste materials in Drainage Basin C and stockpile area for imported clean fill materials in Drainage Basin A.

The impacted material stockpile area in Basin C consisted of two stockpile cells for TSCA and Subtitle D waste materials, respectively. The stockpile

cells were constructed with Ecology blocks by stacking on three sides of the each cell with one side open for stockpiling and loading uses. The size of the stockpile cell for TSCA materials was larger than that of the stockpile cell for Subtitle D materials based on the estimated excavation quantities. The existing grade in the bermed stockpile area sloped easterly towards catch basin CB-2, which was temporarily capped and used as a sump to collect surface runoff from the stockpile area. A 2.5-foot high asphalt ramp was constructed on the eastside of the stockpile area for loading the waste materials into trucks for off-site disposal.

The stockpile area for imported clean fill materials was constructed in the northern end of the site as shown on Figure 3-1. Ecology blocks were placed and stacked on the north and west side of the stockpile area.

A truck loading area for loading and exporting the waste material was constructed adjacent to the stockpile area. An asphalt berm was constructed around the perimeter of the stockpile and truck loading areas. The asphalt berm height varied from a minimum of 6 inches on the upgradient side to approximately 12 inches on the downgradient side of the stockpile area. Additionally, a seal coat was applied to the existing asphalt pavement surface inside the bermed area to minimize infiltration of surface water within the stockpile area.

Additional asphalt was placed in the truck loading zone so that: 1) the grade in the truck loading zone sloped to catch basin CB-2; and, 2) to provide ramps over the asphalt berm for the trucks. The seal coat was applied after the additional asphalt was placed.

3.9 Unpaved Roadway Samples

Soil samples were collected from seven off-site unpaved roadway areas along Dallas Avenue South (Figure 3-2) prior to any subsurface work. These samples were used to establish the background PCB concentration along Dallas Avenue South prior to the TCRA. Roadway samples were also collected at the completion of the project to assess any potential release of PCBs as a result of the TCRA. The post TCRA roadway sampled confirmed no release of PCBs as the result of the TCRA (Section 5.7).

Soil sampling was conducted using the following procedures in each sampling area:

1) Divided each sampling area into three sub-areas

2) Randomly selected one spot within each sub-area, and collected a soil sample from the entire width of the sub-area perpendicular to the roadway

3) Combined all three samples from the three sub-areas to form one composite soil sample representing the sampling area.

Samples were collected using a stainless steel bowl, stainless steel spoon, and sieve.

Most of the unpaved roadway areas were covered with a surficial layer of gravel with a thickness no greater than one (1) inch. In the sampling areas without the surficial gravel layer, soil samples were collected directly from the surface. In areas where there was a surficial gravel layer, a US# 10 sieve was used to collect the fines immediately underneath the gravel. The soil samples were delivered to ARI for analysis of PCB concentrations.

Table 3-3 shows the results of the pre-construction unpaved roadway sampling. As shown, pre-construction PCB concentrations range from 0.089 to 3.6 mg/kg.

3.10 Background Air Quality and Meteorological Monitoring

Prior to the excavation work, Geomatrix performed the background airborne PCB and dust concentrations at three designated locations, including Central Station (C2), North Station (N1), and South Station (S3), on September 13, 2006. In addition to the air monitoring stations, a meteorological station was also installed by Geomatrix on the T-117 property as part of the air monitoring network. The ambient measurements performed on September 13 were intended to establish baseline air quality data. DataRAMs were used to collect dust particles less than 10 microns (PM10) concentrations. Air samples for the PCBs analysis were collected using TE-100 Polyurethane Foam (PUF) samplers. Results of the background air sampling are shown on the summary tables of Appendices A and B of the report titled *Air Quality and Meteorological Monitoring Summary* prepared by Geomatrix, dated December 2006. An electronic copy of the report is included in Appendix B of this report. As shown, all of the background PCBs concentrations were non-detect with a detection limit of 1 µg per filter.

A solar powered meteorological station was installed by Geomatrix along the eastern edge of the property adjacent to the Lower Duwamish Waterway, as shown on Figure 3-1. The meteorological station was used to monitor on-site conditions to identify if there were offsite or local background sources that could be impacting the air quality results. The meteorological monitoring included continuous measurements of windspeed/direction/standard deviation, temperature, barometric pressure, and rainfall. Monitoring began one week before any excavation work and continued throughout the duration of the project. The meteorological data collected at the site are included in the summary report in Appendix B.

3.11 Notification of Ecology, City and SPU and Neighborhood

Washington Department of Ecology (Ecology), Seattle City Light (SCL) and Seattle Public Utility (SPU) were informed of proposed project activities prior to commencement of the TCRA. Copies of the TCRA work plan were distributed to the Ecology, SCL, and SPU. A community meeting hosted by EPA and the Port was conducted on September 12, 2006 to provide information on the TCRA to local residents.

3.12 Pre-Construction meeting

A pre-construction meeting was held on September 12, 2006 to discuss the TCRA. Attendees of the meeting included representatives from Port of Seattle, RETEC, Geomtarix, Phoinix and PCS. The meeting agenda included the following:

- Scope of the TCRA
- Roles and Responsibilities
- Health and Safety Requirements
- Project Management and Coordination
- Stormwater Management
- Weekly Project Meeting
- Reporting to EPA.

4 Remediation Activities

The TCRA activities performed in accordance with the TCRA Work Plan (RETEC, 2006b) included the following:

- Surveying
- Stormwater collection
- Asphalt removal
- Excavation
- Stockpiling
- Confirmation and informational samples
- Backfilling
- Loading
- Disposal
- Air monitoring
- Dust and noise management
- Recordkeeping, project meetings, and reporting.

Each of these activities is described in detail below.

4.1 Surveying

The surveying work performed for the TCRA consisted of the following tasks:

- Surveyed and staked excavation limits based on the control points provided in the Work Plan Drawings
- Locations and elevations of the asphalt berms installed between Drainage Basins
- Locations of Upland Area B-1 pre-excavation soil samples (PES-1 through PES-4)
- Locations and elevations of Upland Areas B-1 and B-2 excavations (bottom and sidewalls)
- Locations of water line and septic drain field encountered in Upland Area B-1 excavation
- Locations and elevations of final as-built asphalt interim cap in the Upland Areas B-1, B-2 and B-3, and the Bank Area.

4.2 Stormwater Management

The objective of stormwater management during the TCRA was to provide full containment of stormwater runoff and other construction-related water on site, and to characterize the water prior to off-site disposal or discharge. The

initial stormwater management plan was presented in the Work Plan considering extreme rainfall scenarios. As described in the Work Plan, the stormwater management plan was subject to modification based on historic rainfall precipitation data and statistical analysis. A modified stormwater management plan was prepared by RETEC in a technical memorandum dated September 27, 2006, and was approved by EPA on September 27, 2006 via an email correspondence. A copy of the memorandum and the cover letter (dated September 29, 2006) is included in Appendix C.

The modified stormwater management plan hydraulically divided the site into four separate drainage basins (i.e., Basins A, B, C, and D) as shown in Figure 3-1. Depending upon the construction activities conducted in each drainage basin, water (e.g., stormwater runoff and decontamination water) was collected separately from each drainage basin and stored in on-site storage tanks temporarily. Analysis of water samples determined the ultimate disposal destinations in accordance with the provisions in the memorandum.

The following paragraphs described the operation of each Basin during the TCRA:

- **Drainage Basin A:** Water collected in Basin A consisted of stormwater from the support zone and clean imported fill stockpile area. The area in Basin A was used for construction equipment/ personnel parking and stockpile. A temporary catch basin, CB-8, was installed by PCS to collect the stormwater runoff in Basin A. A pump was installed in CB-8 to transfer the collected water to the water storage tanks.

- **Drainage Basin B:** Basin B consisted of the Upland Areas B-1, B-2, B-3 and Bank Area. The storm drain pipes at both catch basins CB-1 and CB-3 in Drainage Basin B were temporarily capped. Both CB-1 and CB-3 were used as sumps to collect stormwater. Pumps were installed in the catch basins to transfer the runoff collected in the sumps.

- **Drainage Basin C:** Water collected in Basin C included decontamination water and runoff from the stockpile area for TSCA and Subtitle D materials. The storm drain pipe at catch basin CB-2 was temporarily capped and a pump was installed in the catch basin to transfer the water to storage tanks.

- **Drainage Basin D:** Water collected in Basin D consisted of stormwater from the support zone primarily used for waste disposal hauling trucks access and South Building tenant access. A pump was installed in catch basin CB-5 with hoses connected to the on-site storage tanks. Catch basin CB-4 was not capped

because the water collected in this catch basin discharged to catch basin CB-5.

Water samples were collected from the storage tanks designated for each Basin for laboratory analysis prior to off-site disposal. Samples were analyzed for NWTPH-Dx, PCBs by EPA Method 8082, and PAHs by EPA Method 8270D SIM. In addition, samples from Basin D were analyzed for total suspended solids by EPA Method 160.2. Results of the basin sampling are shown on Table 4-1. All the collected water was transported off-site for treatment and disposal by Emerald Services. An electronic copy of the analytical reports and bill of lading/gallonage tickets is included in Appendix D of this report. As shown in the appendix, a total of 91,742 gallons of wastewater was collected from Basins A through D during the TCRA for off-site treatment and disposal.

4.3 Asphalt Removal

The existing asphalt pavement within the limits of the Upland Area B-1, B-2 and B-3 was saw-cut and removed prior to excavation. A base course under the surficial asphalt layer was encountered in Upland Areas B-2 and B-3, but not in Upland Area B-1. Asphalt and base course samples were collected for laboratory analysis of PCB for determining the proper disposal facility. Results of the asphalt and base coarse sampling are summarized in Table 4-2. As shown in the table, PCBs were detected in the samples but below the TSCA level. All the asphalt and the base course, including the asphalt removed from Upland Area B-2 was disposed of at Waste Management Columbia Ridge Subtitle D facility. An electronic copy of the asphalt debris weight tickets is included in Appendix E of this report.

4.4 Excavation

The TCRA excavation areas consisted of Upland Areas B-1, B-2 and B-3 and Bank Area. Figure 1-2 shows the proposed limits of excavation areas. Criteria for the vertical and lateral extents of the excavation areas are as follows:

- **Upland Areas B-1 and B-2:** Excavation in these two areas was based on the limits staked in accordance with the construction drawings in the Work Plan. After the initial excavation was completed, confirmation samples were collected from the sidewalls and bottoms of the excavation to determine whether the PCB action level was achieved (i.e., below 25 ppm). Additional excavation was performed until the confirmation sampling results indicated the action level was achieved. However, if the excavation encountered physical constraints, e.g., concrete slab or building/structure foundations, then the excavation was terminated at the boundary of such physical constraints. Removal of the underground structures is beyond the scope of TCRA.

- **Upland Area B-3 and Bank Area:** The lateral and vertical extent of Area B-3 and the Bank Area were pre-determined in the Work Plan. Excavation in these two areas consisted of removal of the upper two feet of the surficial soils, including the existing asphalt pavement.

The excavation work was conducted in the following order: (1) Upland Area B-1, (2) Upland Area B-3/Bank Area, and (3) Upland Area B-2. The excavation sequence was implemented considering the removal of the area with the highest PCB impacts (i.e., Upland Area B-1), followed by the area that posed the potential of bank erosion (i.e., Upland Area B-3 and Bank Area), and then Upland Area B-2 with relatively higher PCB concentrations. Surveying of the bottom and sidewalls of the excavations were conducted after the confirmation and/or informational samples were reviewed and approved by EPA before backfilling. A total of 3,108 tons of impacted materials were removed from the Upland Areas B-1, B-2, B-3, and Bank Area, including 3,030 tons of TSCA-regulated soil and 78 tons of non-hazardous Subtitle D material.

Exclusion Zones and Contamination Reduction Zones (CRZs) were adjusted according to the active excavation areas. PCS field health and safety personnel monitored the construction activities daily to ensure the construction areas were properly protected.

Details of the activities associated with the each excavation area are provided in the following subsections.

4.4.1 Upland Area B-1

Excavation Limits Delineation

A pre-excavation exploration was conducted in Upland Area B-1 on September 15, 2006 to refine the vertical extent of TSCA material and Subtitle D material. Four soil test holes were advanced and soil samples were collected for laboratory analysis. Based on the additional soil analytical results, the excavation limits of Upland Area B-1 were re-delineated before the excavation began. A copy of the revised Upland Area B-1 excavation plan is included in Appendix A. The lateral extent of this excavation area was limited to the west by Dallas Avenue South right-of-way, to the south partly by the existing building and underground storage tanks, as indicated on the revised construction drawings in Appendix A.

Temporary Shoring System

Based on the site investigation data, the lateral extent of PCB impacted soil extended to the property line in the North Gate area along Dallas Avenue South. The Area B-1 pre-excavation soil sampling indicated an estimated 5 to 7 feet deep of TSCA material was located immediately adjacent to the Dallas

Avenue South property line. As specified in the Work Plan, trench boxes were proposed to provide temporary shoring support for the Area B-1 excavation. The proposed temporary shoring support system was reviewed by City of Seattle Department of Transportation (SDOT) Street Use Shoring Review prior to performing the trench box excavation and installation. RETEC submitted relevant site geotechnical and analytical data to Mr. Rex Allen of SDOT for review and the shoring plan was approved on September 15, 2006 via email correspondence.

In addition to the shoring review by the SDOT, Puget Sound Energy (PSE) was contacted by RETEC concerning the existing 2-inch gas line along the right-of-way of Dallas Avenue South. The existing gas line was located approximately 6 feet from the property boundary. RETEC submitted the proposed Upland Area B-1 excavation plans to Mr. Ryan Paetz at PSE for review and comment on September 13, 2006. The excavation plans were accepted by PSE on September 18, 2006 via email correspondence. PSE requested notification from the Port if the excavation took place within 5 feet of the gas line during construction. On September 20, 2006, PSE was notified and was on site to observe the excavation along the Dallas Avenue South property line. Since the excavation was not encroaching on the right-of-way, no impact or action was required for protecting the gas line.

Trench boxes were installed after the initial excavation was performed in Area B-1 along the property line adjacent to Dallas Avenue South. The sidewall along Dallas Avenue South right-of-way was monitored for any visible sloughing. No sloughing of the excavated sidewall along Dallas Avenue South was observed. Imported clean fill material was placed in the gaps between the trench boxes and the sidewall to provide additional support to the sidewall. Excavation of Upland Area B-1 was completely within T-117 property without any encroachment on Dallas Avenue South right-of-way. A small portion of asphalt pavement on Dallas Avenue South was removed during excavation and was later repaved during the repaving of Upland Area B-1.

Underground Obstructions

The existing USTs located south of the Area B-1 excavation, as shown on Figure 4-1, were encountered during the excavation. The northern portions of the USTs were exposed but not entirely excavated. The sidewall slope where the USTs were located was maintained at no steeper than 2:1 (H:V). A two-inch diameter metal water pipe was damaged during excavation in Area B-1. The approximate location of the water pipe is indicated on Figure 4-1. The water control valve for the damaged water line was located and immediately shut off by PCS. A temporary water line was installed and rerouted during the remaining excavation to provide water to the site. The damaged water line was restored during the backfilling of Area B-1.

A portion of the North Building septic drain field was encountered during Area B-1 excavation. The location of the drain field is indicated on Figure 4-1. The septic drain field was not damaged; however, the sanitary sewer line was damaged and was restored during the backfilling of Area B-1.

Excavation Confirmation Sampling and Results

Confirmation and informational samples for Area B-1 were collected after the initial excavation. The locations of the Area B-1 bottom and sidewall samples, and analytical data summary are shown in Figures 4-2 and 4-3, and Table 4-3 respectively. No additional excavation was required in Area B-1 since the confirmation results were all below 25 ppm.

As-Built Excavation Survey

The lateral and vertical extents of Upland Area B-1 excavation are shown on Figure 4-1.

4.4.2 Upland Area B-3 and Bank Area

Excavation Limits

The lateral and vertical extent of the excavation was performed in accordance with the proposed limits described in the Work Plan. Two feet of the soil, including the existing asphalt pavement, were removed within the delineated excavation limits.

Underground Metal/Tar Debris

A piece of metal tank debris with tarry material was encountered during excavation in the Bank Area at the approximate location shown on Figure 4-1. The metal debris was initially suspected to be an underground storage tank (UST) which was 32.5 feet long with an unknown diameter. The Port notified EPA upon the metal debris was encountered. At the direction of EPA, additional exploratory excavation was performed by PCS to uncover one end of the suspected UST to determine whether it was a UST. After the additional excavation, it was discovered that it was metal debris rather than a UST. At the request of EPA, RETEC submitted the work plan in a memorandum dated October 5, 2006 for removal of the metal debris and the tarry material. An electronic copy of the memorandum is included in Appendix F. The work plan outlined procedures for the removal of the metal debris and tarry material.

The metal debris was removed using an excavator and was transported to the on-site Subtitle D stockpile cell. The tarry material in or adjacent to the metal debris was removed using an excavator and was placed in the TSCA stockpile cell. The occurrence of the tarry material was localized and extended approximately one foot beneath the metal debris. After removal of the metal debris and tarry material, EPA approved backfilling of the area.

Two sidewall samples and one bottom sample were collected from the location of the metal debris. Analytical results of the samples are presented in Tables 4-4 and 4-5. The metal debris was sent to Emerald Services for surficial cleaning. The cleaned metal debris was disposed of at Seattle Iron and Metals. An electronic copy of the cleaning certificate by Emerald Service and the weight ticket by Seattle Iron and Metals is included in Appendix F. The tarry material was disposed of with TSCA material.

Excavation Informational Sampling

Informational samples were collected after the excavation was completed to 2 feet bgs in Area B-3 and the Bank Area. A total of eight (8) bottom and thirteen (13) sidewall samples were collection in these two excavation areas. These samples were composite samples collected from the approximate sub-areas shown on Figures 4-2 and 4-3. Analytical results of the information samples are summarized in Tables 4-4 and 4-5. As shown in the analytical data summary, the PCB concentrations determined from the samples collected at the bottom of the 2-foot excavation varied from BDL (IS-BA-B2) to 260 mg/kg (IS-B3-B1), and at the sidewalls varied from 3 (IS-B3-S2) to 830 mg/kg (IS-BA-S2).

As-Built Excavation Survey

The lateral and vertical extents of Upland Area B-3 and Bank Area excavation are shown on Figure 4-4.

4.4.3 Upland Area B-2

Excavation Limits and Confirmation/Information Sampling

After the excavation at the Bank Area and Upland Area B-3 was completed, Upland Area B-2 asphalt was saw-cut and removed based on the Work Plan construction drawings. The removed asphalt was disposed as Subtitle D material. Area B-2 was initially excavated to the design depths and lateral extent. However, a building foundation was encountered in the south corner of the excavation, as indicated on Figure 4-1. Confirmation samples were collected on the sidewalls and bottoms of the excavation except the area where the foundation was located. Analytical results of the confirmation and information samples are summarized in Table 4-6. As shown, during the initial excavation, samples that exceeded the TCRA action levels included the following:

- **Sidewall Samples:** CS-B2-S2 (420 mg/kg) and CS-B2-S5 (160 mg/kg)
- **Bottom Samples:** CS-B2-B1 (760 mg/kg) and CS-B2-B2 (77 mg/kg).

Additional excavation was performed to remove impacted soil from the sidewall of CS-B2-S5. Confirmation sample CS-B2-S5B was collected after the additional removal and the PCB concentration was below detection limit. On the sidewall of CS-B2-S2, additional soil removal was performed easterly to the limits of Area B-3. Confirmation sample CS-B2-S2B was collected and the PCB concentration collected from the sidewall was 5.7 mg/kg, below the removal action level of 25 ppm.

In the October 10, 2006 weekly project meeting, the extension of Area B-2 excavation was discussed. EPA approved additional excavation be performed in Area B-2 easterly to the western limits of Area B-3. The excavation would not be deeper than the water table or where moist soils were encountered during excavation. The additional excavation was also limited to the southwest by a concrete foundation. Informational, rather than confirmation, composite samples were collected from the bottom and the sidewalls of the additional excavation area for information only.

Subsurface Objects and Obstructions

A buried metal debris piece similar to the one encountered in the Bank Area was encountered in southern end of the Upland Area B-2 (Figure 4-1). The metal piece extended into the excavation and continued under the asphalt. The EPA was notified. The location of the metal debris was surveyed and will be removed at a later date.

As-Built Excavation Survey

The lateral and vertical extents of Upland Area B-2 excavation are shown on Figure 4-4.

4.5 Stockpiling

Two separate stockpile areas (Figure 3-1) were established on T-117 property for the TSCA impacted materials and clean imported fill materials, respectively.

Impacted Materials Stockpiles

The excavated contaminated materials, including TSCA and non-TSCA (Subtitle D) materials, were temporarily stockpiled within the respective stockpile cells in Basin C. The stockpiles were covered when placement or loading activities were not active or during periods of rain, and at the end of each work day.

Materials removed from the excavation areas were moved to the designated stockpile area using a loader or a dump truck. An excavator removed and placed the impacted materials into the loader (Loader #1) or the dump truck to the stockpile area. Depending on the distance between the excavation area and the stockpile area, the loader was used when the distance was relatively close to the stockpile area (e.g., Upland Areas B-1 and B-2). Otherwise, the

dump truck was used to minimize potential spillage from the loader during the transport.

The loader or dump truck traveled from the excavation area to the edge of the designated stockpile area to unload the impacted materials inside the bermed area. Another loader (Loader #2) staged inside the stockpile area removed the impacted materials transported by Loader #1 and stockpiled according to the characteristics of the source. During the transport of the impacted materials by Loader #1 or dump truck, PCS and RETEC onsite personnel inspected the travel route for any spillage. Any spillage along the travel route from the excavation to the stockpiles cell was swept and placed into the appropriate stockpile as soon as practicable.

Subtitle C (TSCA) soil was pre-defined based on in-place PCB concentrations and was stockpiled before being hauled directly from the site to the disposal landfill (Chemical Waste Management Landfill in Arlington, Oregon). Subtitle D materials was stockpiled on-site, sampled to verify concentrations for disposal, and transported via dump truck to the Alaska Street transfer station.

Clean Imported Fill Material Stockpile

The clean imported backfill material was delivered using dump trucks and was stockpiled in Basin A (Figure 3-1). An electronic copy of the imported fill material weight tickets summary is included in Appendix G of this report. As shown, a total of 2,964 tons of clean gravel was imported during the TCRA. The stockpile was covered with plastic sheeting when inactive and at the end of each work day. .

4.6 Confirmation and Informational Samples

Soil samples were collected from the sidewalls and bottoms of the excavations. These samples consisted of confirmation and informational samples. Confirmation samples were collected to ensure the excavations met the TCRA removal action level in Upland Areas B-1 and B-2. However, it should be noted that informational samples were collected in some of the excavation sidewalls in Areas B-1 and B-2 when excavations were limited due to physical constraints (e.g., foundations, USTs, etc.). In the Bank Area and Upland Area B-3, where the excavation depth was specifically at 2 feet below the existing ground surface, informational samples were collected at the bottoms and sidewalls of these two areas. Locations of the confirmation and information samples are shown on Figures 4-1 and 4-2.

Confirmation and informational samples were performed in accordance with the protocols described in Quality Assurance Project Plan (QAPP) in the Work Plan. All the soil samples collected were composite samples consisting of three grab samples. A minimum of one sample was collected every 50 linear feet of sidewall and 2,500 ft^2 of excavation bottom. Samples were

collected using stainless steel bowls and spoons that were decontaminated with methanol. Samples were delivered to ARI for laboratory analysis of PCBs and TPH-Dx. Analytical results of these confirmation and information samples are presented in Tables 4-3 through 4-6. An electronic copy of the laboratory reports is included in Appendix H of this report.

The analytical reports for the confirmation and informational samples were prepared by ARI. ARI certified hardcopy and Electronic Data Deliverables (EDDs) were submitted to RETEC's Data Validator. The Data Validator was responsible for: (1) Evaluating conformance of the analyses with the specifications of the QAPP; (2) Verifying the reported results with the raw data; (3) Qualifying data after assessment; (4) Ensuring the EDDs of the analytical data match the hard copies; and (5) Preparing validation report. An electronic copy of the validation report titled *Organic and Inorganic Data Validation Report, Port of Seattle, Terminal 117*, dated January 9, 2007, is included in Appendix H.

4.7 Backfilling and Asphalt Paving

The excavation areas were backfilled with clean granular fill imported from Glacier Northwest. Prior to the delivery of the fill material, samples were collected from the proposed pit and were delivered to ARI for analysis of PCBs (EPA Method 8082), NWTPH-Gx, NWTPH-Dx, and RCRA metals. Results of the analyses are presented in Table 4-7.

A non-woven black polypropylene geotextile fabric was installed at the bottom of each excavation area prior to backfilling. The fabric was used to separate the remaining site soil from the clean imported backfill and sued as an identifying layer.

The backfill was placed in several lifts from the bottom of excavation to within three inches below the top of the surrounding asphalt pavement. The backfill was compacted to 95 to 100 percent of maximum dry density as determined by ASTM D-1557. Compaction testing was preformed by Mayes. An electronic copy of the laboratory report and the field density measurements is provided in Appendix I of this report.

The asphalt pavement that was disturbed in Upland Areas B-1 and B-2 during construction activities was re-paved to the original grade. Upland Area B-3 was also paved because the PCB concentration in the excavation bottom exceeded the action level of 25 ppm. The majority of the Bank Area was also paved to provide additional erosion protection. This modification was authorized by EPA at the October 3, 2006 on-site weekly project meeting.

The pavement was constructed in accordance with the construction specifications specified in the Work Plan. The imported granular fill was constructed as the base course, and a minimum of 3 inches of Class B asphalt concrete was constructed at the surface. A concrete curb was installed along

the eastern edge of the paved area. Positive drainage was provided in the Bank Area and Upland Area B-3 towards the on-site catch basins.

A concrete curb constructed by the City around an off-site catch basin on Dallas Avenue South adjacent to Basin Oil property was temporarily removed during the TCRA to avoid the waste-hauling trucks from turning over. The concrete curb was restored at the completion of the TCRA.

4.8 Loading of Impacted Material and Truck Inspection / Decontamination

The impacted materials from the TCRA were transported by trucks. Trucks entered and exited the T-117 property through the South Gate. Upon entering the site, the trucks parked within the support zone (Basin D) and were inspected by PCS designated health and safety personnel for any visible soil or other materials adhered to the truck surface. After inspection, the trucks were lined with clean plastic sheeting. The trucks were loaded in the loading zone in Basin C by a loader. After the trucks were loaded, PCS field personnel inspected the cleanliness of the trucks. Any gross contamination or soil adhered to the truck or wheels during the loading process were either brushed off or pressure washed. The brushed off soil was swept and placed back to the stockpile. Pressure-washed water was collected in the sump (CB-2) and pumped to the water storage tanks. All the truck cleaning work was conducted by H&S qualified PCS workers within the bermed truck loading zone (Figure 3-1). Once loaded, the trucks exited the truck loading zone and the loads were covered in the support zone in Basin D before leaving the site.

4.9 Transportation and Disposal of Impacted Material

The designated truck route between the landfill and transfer station and T-117 was via the 16th Avenue South Bridge and Dallas Avenue South in order to minimize traffic impact to adjacent neighborhood. Dallas Avenue South was inspected daily to ensure no soils were tracked out by the trucks.

A handout with haul route map and health and safety information was provided to the truck drivers upon arrival at T-117. The information was intended to ensure the waste disposal transportation complied with the TCRA and any relevant community concerns.

Waste materials generated from the TCRA activities were transported to the following disposal facilities:

- **TSCA Material:** Chemical Waste Management (CWM) Landfill in Arlington, Oregon

- **Subtitle D Soil/Asphalt/Concrete:** Waste Management Alaska transfer station and Columbia Ridge Landfill
- **Wastewater:** Stormwater and decontamination water was taken to Emerald Services
- **Metal debris:** Seattle Iron and Metals
- **Vegetation:** Waste Management Construction Demolition Landfill.

An electronic copy of bills of lading and disposal weight tickets for the disposal of Subtitle D and TSCA materials are included in Appendices E and J, respectively. As shown, a total of 3,030 tons of TSCA material was disposed of at CWM landfill. Subtitle D materials, including removed soil, asphalt and concrete debris, totaled 612 tons were disposed of at WM Columbia Ridge landfill. Table 4-8 summarizes the types and quantities of waste disposed during the TCRA field activities.

4.10 Air Quality and Meteorological Monitoring

The air monitoring activities performed for the TCRA consisted of three components: (1) air quality monitoring, (2) meteorological monitoring, and (3) odor observations. These air monitoring activities were performed by Geomatrix in accordance with the Air Quality and Meteorological Monitoring Plan included in the Work Plan.

4.10.1 Perimeter Air Monitoring

Three designated air monitoring locations were selected by Geometrix (i.e., Central (C2), North (N1), and South (S3) Stations, shown on Figure 3-1) to quantify airborne concentrations of particular matter (PM_{10}) and PCBs. As requested by EPA, The North Station was relocated to another location closer to the Bank Area on September 25, 2006 to avoid the wind shadow created by the South Building.

PM10 concentrations in the ambient air were measured using DataRAM meters. The DataRAM meter provided real time particulate data, and average hourly PM10 concentrations. Results of DataRAM monitoring are included in Appendix B of the Geomatrix report (Geomatrix, 2006). As shown, the recorded PM10 concentrations during the TCRA activities were all below the action level of 105 $\mu g/m^3$.

All PM10 measurements are included in the Appendix A of the Air Quality and Meteorological Monitoring Summary prepared by Geomatrix. An electronic copy of the report is included in Appendix B of this report. As documented in the Geomatrix report, the action level for PM10 for the monitoring program based on a running 24-hour average PM10 concentration was 105 $\mu g/m^3$. Geomatrix reported that the highest hourly average

concentration for any work day between September 13 and October 16 was 72.5 µg/m^3 and it was occurred on October 3 at sampler N1 over the nine-hour day.

PCB concentrations in the ambient air were determined by collecting air samples for laboratory analysis. Air samples for the PCB analysis were collected at each of the three air sampling locations on eight different days during the TCRA using TE-1000 polyurethane foam cartridge (PUF) samplers. A total of eight sets of PCBs samples were collected and analyzed. The first set of air samples was collected prior to the excavation activities to document the background concentrations. The other seven sets of samples were collected during various stages of the TCRA excavation and loading activities.

Results of the PCBs sampling are shown in Appendix B of the Geomatrix Air Quality report (Geomatrix, 2006). As shown, all the air samples indicated non-detect with the exception of two sampling events on September 20 and September 30, with PCBs of 0.0213 µg/m^3 and 0.0076 µg/m^3, respectively. Both of these detections occurred at the Central sampling location. These results were significantly below the most stringent preliminary remediation goal for chronic inhalation exposure (0.11 µg/m^3).

4.10.2 Meteorological Monitoring

Meteorological monitoring was conducted throughout the TCRA. The meteorological monitoring included continuous measurements of wind speed/direction/standard deviation, temperature, barometric pressure, and rainfall. Monitoring began one week before any excavation work and continued throughout the duration of the TCRA, from September 8 through October 31, 2006. The meteorological monitoring results are included in Appendix B of the Geomatrix Air Quality report (Geomatrix, 2006).

4.10.3 Odor Observations

An on-site field representative of Geomatrix observed the excavation work for any odor. No quantifiable odors were reported by Geomatrix during the entire course of TCRA. Details of the odor monitoring activities are provided in Section 7.0 of the Geomatrix Air Quality report (Geomatrix, 2006).

4.11 Dust and Noise Management

Dust and noise controls during the TCRA were performed to meet City ordinance requirements and to minimize impacts to the general public as well as the on-site workers. The following dust control measures were implemented during the TCRA activities:

- Wetted the excavation areas and stockpiles using water obtained from water trucks and City water

- Covered all the trucks transporting waste materials for off-site disposal
- Covered stockpiles with plastic sheeting when loading and stockpiling were inactive
- Performed daily sweeping of on-site truck routes, the loader path, and the loading and stockpiling areas.

The following noise controls measures were performed during the TCRA activities:

- Performed field activities during daytime hours in accordance with City of Seattle noise ordinances
- Required waste-hauling trucks temporarily staged on Dallas Avenue South to turn off engines while waiting to be loaded
- Responded to adjacent residents' requests by adjusting some of the heavy equipment operations to the maximum extent practicable.

4.12 Recordkeeping and Reporting

RETEC field representatives prepared informal daily progress reports and submitted to EPA via emails from September 5 through November 10, 2006. The daily progress reports documented summary of construction activities accomplished, summary of weather, major changes in on-site resources (labor and equipment), problems encountered, preliminary analytical results received, samples collected, public complaints, media attention, accidents, spills, and incidents. Photographs of the construction activities were taken as part of the field documentation of the TCRA. The representative TCRA construction photographs are included in Appendix L.

Weekly progress reports were submitted to EPA via emails every Friday from September 5 through October 19, 2006. The weekly reports summarized the major development during the week, laboratory reports received, field measurements, and proposed schedule for the subsequent two weeks.

5 Site Restoration

Site restoration activities consisted of:

- Final Site Inspection
- Decontamination
- Removal of Basin A Stormwater Controls
- Removal and Decontamination of Stockpile Areas
- Sweeping Dallas Avenue South
- Reinstalling the City Curb
- Demobilization
- As-built Surveying
- Collected Adjacent Unpaved Roadway Samples.

5.1 Final Site Inspection

Upon completion of disposal of all impacted materials and installation of the interim asphalt cap at the site, EPA conducted the final site inspection on October 26, 2006. EPA accepted and verified the TCRA was performed in accordance with the Work Plan and other requirements developed during the course of the project.

5.2 Decontamination

Decontamination was performed prior to PCS demobilization, including:

- **Interim Asphalt Cap:** Sweeping and pressure washing were performed on the asphalt pavement of Basins A, B, and C, while Basin D was swept with no pressure washing due to minimal soil tracking within that area

- **Construction Equipment:** Heavy construction equipment (e.g., loader, excavator, dump truck) was decontaminated within Basin C

- **Stockpile Area:** The Ecology blocks used in the stockpile cells were pressure washed and demobilized off site

- **Water Storage Tanks:** Emerald Services pressure washed and sampled the water storage tanks prior to transporting the tanks off-site.

Water generated from the decontamination in the above areas was collected by the sumps in respective Basins. The water was pumped and stored in on-site storage tanks and characterized prior to off-site disposal.

5.3 Stormwater System Restoration

5.3.1 Removal of Basin A Sump

After the asphalt pavement in Basin A was cleaned, the temporary catch basin/sump (CB-8) was backfilled with clean imported fill material to near the adjacent ground surface and compacted. Asphalt pavement was installed on top of the compacted backfill matching the adjacent grade. Additionally, the asphalt berm between Basins A and B was removed to the original grade. The berm was repaved and all the asphalt debris was disposed of as Subtitle D material.

5.3.2 Restoration of City Curb

The concrete curb around the City catch basin on the north side of Dallas Avenue South near Basin Oil was removed during TCRA to allow trucks to turn while entering and exiting the site. At the completion of hauling activities, the concrete curb was restored to the original location and dimensions.

5.3.3 Stormwater System Cleaning Out

After the entire site pavement was swept and/or pressure-washed, wastewater was collected in the on-site catch basins and pumped to the storage tanks. The stormwater system was cleaned out by Madison Macri. The storm drain pipes between CB-3, CB-4, and CB-5 were cleaned out using hydro jetting to sweep the interior of the pipes and remove any sediments and/or debris inside the pipes. The outfall pipe at CB-5 remained capped during the hydro jetting to avoid discharge of the sediment/debris and wastewater into the waterway. The sediment/debris removed from the pipes and catch basins were pumped into a vacuum truck.

Three off-site catch basins, CB-6, CB-7 and the catch basin adjacent to the Basin Oil property, were also pressured washed and the wastewater was vacuumed into the vacuum truck. Because CB-2 was used to collect surface water generated within Basin C during the TCRA, CB-2 was decontaminated with methanol by Emerald prior to being pressured washed with clean water. The wastewater generated from the cleaning of CB-2 was collected separately by Emerald for treatment and disposal.

5.4 Demobilization

Demobilization activities consisted of removing all temporary structures and utilities, remaining materials and equipment, and construction-generated waste. The Ecology blocks used to construct temporary stockpile cells for the impacted materials and imported fill materials were removed from the site as part of the demobilization. On-site temporary water storage tanks were emptied by transferring to vacuum trucks provided by Emerald Service. The

interior of the tanks were pressure washed and final chemical testing on the tanks were performed to ensure the tanks were thoroughly cleaned. The demobilization was completed on November 9, 2006.

5.5 As-Built Surveying

The Port surveyed the TCRA as-built interim cap as shown on Figure 4-4. The drainage patterns at the site were modified due to the asphalt berms installed and the asphalt pavement constructed on the upland bank area during the TCRA. The asphalt berms will not affect the performance of the stormwater system because the on-site drainage structures and outfalls have been restored.

5.6 Dallas Avenue South Street Sweeping

As part of the site restoration activities, Dallas Avenue South (i.e., between 14th Avenue South and 17th Avenue South) was swept after site demobilization was complete. The street sweeping was performed by Davidson Macri Sweeping, using a regenerative air sweeper meeting the City's requirements.

5.7 Post-Construction Off-Site Roadside Samples

Seven unpaved roadside areas within the Dallas Avenue South right-of–way were re-sampled at the completion of the TCRA to assess any PCB migration that might have occurred as a result of the TCRA. The same sampling procedures were used on pre- and post-construction sampling events. Analytical results of the pre-construction and post-construction roadside samples are shown on Table 3-3. As shown in the table, the PCB concentrations of the pre-construction samples ranged from 0.089 to 3.6 ppm, and the post-construction PCB concentrations varied between 0.038 and 1.7 ppm. The results indicated no increase in PCB concentrations after the TCRA and thus no PCB impacted soil was released during the construction.

5.8 Construction Costs

The total cost associated with the TCRA activities incurred in complying the EPA's order was approximately $2.6 million. The cost included the direct field construction costs and other costs related to the TCRA.

6 Summary

The TCRA field activities for T-117 were conducted from September 5, 2006 through November 10, 2006 in accordance with the EPA's SOW. EPA conducted a final site inspection on October 26, 2006 and verified that the TCRA field activities were performed as specified in the TCRA Work Plan. This Final Report has been prepared to meet the requirements specified in EPA's SOW. Table 6-1 provides a cross-reference between each of the SOW requirements and the sections of the Final Report where compliance with each of the SOW requirements is documented. The following paragraphs provide a brief summary of the field activities conducted during the TCRA.

A pre-excavation subsurface investigation was performed on September 11, 2006 to refine the lateral and vertical delineation of PCB-impacted soils in Upland Area B-1. A temporary shoring system using trench boxes was constructed to facilitate the Upland Area B-1 excavation. The temporary shoring system was reviewed and approved by SDOT. Excavation of Area B-1 remained within the T-117 property without any encroachment onto the Dallas Avenue South right-of-way. Analytical results of the confirmation and informational samples collected in Area B-1 indicated the PCB concentrations at the excavation subgrade were all below the removal action level.

Upon completion of the Area B-1 excavation, Area B-3 and the Bank Area were excavated. The upper two feet of soils in these two areas were excavated. An asphalt cap was placed in both areas since PCB concentrations in the informational samples exceeded the TCRA removal action level.

Upland Area B-2 was excavated after the Area B-3 and Bank Area excavations. The Area B-2 excavation was extended laterally and vertically, as approved by EPA, due to elevated PCB concentrations in the confirmation samples.

During TCRA field activities, the following waste materials were removed from the site:

1) 3,030 tons of TSCA soil
2) 78 tons of Subtitle D soil
3) 533 tons of Subtitle D asphalt and concrete debris
4) 91,472 gallons of on-site runoff/decontamination water
5) 2.7 tons of metal debris
6) 1.2 tons of cleared and grubbed vegetative debris.

Clean backfill was placed in all the excavation areas after the analytical results for each excavation area were reviewed. A non-woven geotextile was installed on top of the excavation subgrade as an identifying layer. Asphalt pavement (i.e., interim cap) was installed after the backfill was placed and compacted. Final as-built surveying was conducted to document final locations and elevations of the asphalt cap and site surface features. The site was restored and secured after the demobilization.

7 References

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Tables

Table 3-1 Upland Area B-1 Pre-Excavation Samples

		Location ID	PES-1	PES-1	PES-1	PES-1	PES-2	PES-2	PES-2	PES-2	PES-2	PES-3	PES-3	PES-3
		Sample ID	PES-1-2.5-4	PES-1-5-6.5	PES-1-7.5-9	PES-1-0.5-2	PES-2-7.5-9	PES-2-0.5-2	PES-2-10-11.5	PES-2-2.5-4	PES-2-5-6.5	PES-3-2.5-4	PES-3-5-6.5	PES-3-7.5-9
		Sample Date	9/11/2006	9/11/2006	9/11/2006	9/11/2006	9/11/2006	9/11/2006	9/11/2006	9/11/2006	9/11/2006	9/11/2006	9/11/2006	9/11/2006
		Sample Type	N	N	N	N	N	N	N	N	N	N	N	N
Chemical Name	**Total/Dissolved**	**Unit**												
Aroclor 1016	N	µg/kg	< 750	< 740	< 780	< 1,800	< 5,100	< 44,000	< 760	< 780	< 5,000	< 780	< 740	< 780
Aroclor 1221	N	µg/kg	< 750	< 740	< 780	< 1,800	< 5,100	< 44,000	< 760	< 780	< 5,000	< 780	< 740	< 780
Aroclor 1232	N	µg/kg	< 750	< 740	< 780	< 1,800	< 5,100	< 44,000	< 760	< 780	< 5,000	< 780	< 740	< 780
Aroclor 1242	N	µg/kg	< 750	< 740	< 780	< 1,800	< 5,100	< 44,000	< 760	< 780	< 5,000	< 780	< 740	< 780
Aroclor 1248	N	µg/kg	< 750	< 740	< 780	< 1,800	< 5,100	< 44,000	< 760	< 780	< 5,000	< 780	< 740	< 780
Aroclor 1254	N	µg/kg	< 750	< 740	< 780	< 1,800	< 5,100	< 44,000	< 760	< 780	< 5,000	< 780	< 740	< 780
Aroclor 1260	N	µg/kg	< 750	**3,800**	< 780	**30,000**	**12,000**	**420,000**	**6,400**	**490 J**	**15,000**	**850**	**1,700**	< 780

		Location ID	PES-3	PES-4	PES-4	PES-4	PES-4	PES-4	PES-5	PES-5
		Sample ID	PES-3-0.5-2	PES-4-0.5-2	PES-4-10-11.5	PES-4-2.5-4	PES-4-5-6.5	PES-4-7.5-9	PES-5-2.5-4	PES-5-10-11.5
		Sample Date	9/11/2006	9/11/2006	9/11/2006	9/11/2006	9/11/2006	9/11/2006	9/11/2006	9/11/2006
		Sample Type	N	N	N	N	N	N	FD	FD
Chemical Name	**Total/Dissolved**	**Unit**								
Aroclor 1016	N	µg/kg	< 3,300	< 13,000	< 760	< 1,900	< 760	< 780	< 7,800	< 780
Aroclor 1221	N	µg/kg	< 3,300	< 13,000	< 760	< 1,900	< 760	< 780	< 7,800	< 780
Aroclor 1232	N	µg/kg	< 3,300	< 13,000	< 760	< 1,900	< 760	< 780	< 7,800	< 780
Aroclor 1242	N	µg/kg	< 3,300	< 13,000	< 760	< 1,900	< 760	< 780	< 7,800	< 780
Aroclor 1248	N	µg/kg	< 3,300	< 13,000	< 760	< 1,900	< 760	< 780	< 7,800	< 780
Aroclor 1254	N	µg/kg	< 3,300	< 13,000	< 760	< 1,900	< 760	< 780	< 7,800	< 780
Aroclor 1260	N	µg/kg	**21,000**	**100,000**	**1,600 J**	**11,000 J**	**540 J**	**820**	**21,000 J**	**440 J**

Notes:

Table 3-2 Catch Basin Sediment Samples

			Location ID	CB-1	CB-1	CB-2	CB-3	CB-4	CB-5 (DUP)	CB-5
			Sample ID	CB-1-09-11-06	CB-1	CB-2	CB-3	CB-4	CB-51	CB-5
			Sample Date	9/11/2006	10/10/2006	10/10/2006	10/9/2006	10/9/2006	10/9/2006	10/9/2006
Analytical Method	**Chemical Name**	**Total/ Dissolved**	**Unit**							
NWTPHD	Diesel Range Hydrocarbons	N	mg/kg	**200**	**1,500**	**1,800**	**890**	**1,400**	**260**	**330**
NWTPHD	Motor Oil Range Hydrocarbons	N	mg/kg	**1,200**	**15,000**	**12,000**	**5,600**	**7,900**	**1,500**	**1,700**
NWTPHG	Gasoline Range Hydrocarbons	N	mg/kg	NR	NR	NR	NR	NR	NR	NR
SW6010B	Arsenic	T	mg/kg	NR	NR	NR	NR	NR	NR	NR
SW6010B	Barium	T	mg/kg	NR	NR	NR	NR	NR	NR	NR
SW6010B	Cadmium	T	mg/kg	NR	NR	NR	NR	NR	NR	NR
SW6010B	Chromium	T	mg/kg	NR	NR	NR	NR	NR	NR	NR
SW6010B	Selenium	T	mg/kg	NR	NR	NR	NR	NR	NR	NR
SW6010B	Silver	T	mg/kg	NR	NR	NR	NR	NR	NR	NR
SW7421	Lead	T	mg/kg	NR	NR	NR	NR	NR	NR	NR
SW7471A	Mercury	T	mg/kg	NR	NR	NR	NR	NR	NR	NR
SW8082	Aroclor 1016	N	µg/kg	< 230	< 470	< 240	< 310	< 150	< 240	< 250
SW8082	Aroclor 1221	N	µg/kg	< 230	< 470	< 240	< 310	< 150	< 240	< 250
SW8082	Aroclor 1232	N	µg/kg	< 230	< 470	< 240	< 310	< 150	< 240	< 250
SW8082	Aroclor 1242	N	µg/kg	< 230	< 470	< 240	< 310	< 150	< 240	< 250
SW8082	Aroclor 1248	N	µg/kg	< 230	< 470	< 240	< 310	< 150	< 240	< 250
SW8082	Aroclor 1254	N	µg/kg	< 230	< 470	< 240	< 310	< 150	< 240	< 250
SW8082	Aroclor 1260	N	µg/kg	**2,800**	**6,100**	**19,000**	**11,000**	**19,000**	**2,000**	**2,700 J**

Table 3-3 Unpaved Roadside Samples (Soil and Sediment)

			Location ID	A1	A1 (DUP)	A2	A3	A4	A5	A6	A7	A1	A1 (FD)
			Sample ID	A1-11-06	A14-11-06	A2-11-06	A3-11-06	A4-11-06	A5-11-06	A6-11-06	A7-11-06	A1-09-14-06	A10-09-14-06
			Sample Date	11/10/2006	11/10/2006	11/10/2006	11/10/2006	11/10/2006	11/10/2006	11/10/2006	11/10/2006	9/14/2006	9/14/2006
			Sample Type	N	FD	N	N	N	N	N	N	N	FD
			Sample Matrix	SE	SE	SE	SE	SE	SE	SE	SE	SO	SO
Analytical Method	Chemical Name	Total/Dissolved	Unit										
SW8082	Aroclor 1016	N	µg/kg	< 82	< 29	< 120	< 58	< 29	< 30	< 29	< 240	< 220	< 210
SW8082	Aroclor 1221	N	µg/kg	< 82	< 29	< 120	< 58	< 29	< 30	< 29	< 240	< 220	< 210
SW8082	Aroclor 1232	N	µg/kg	< 82	< 29	< 120	< 58	< 29	< 30	< 29	< 240	< 220	< 210
SW8082	Aroclor 1242	N	µg/kg	< 82	< 29	< 120	< 58	< 29	< 30	< 29	< 240	< 220	< 210
SW8082	Aroclor 1248	N	µg/kg	< 82	< 29	< 120	< 58	< 29	< 30	< 29	< 240	< 220	< 210
SW8082	Aroclor 1254	N	µg/kg	< 82	< 29	< 120	< 58	< 29	< 30	< 29	< 240	< 220	< 210
SW8082	Aroclor 1260	N	µg/kg	**610 J**	**36 J**	**890**	**98**	**38**	**46**	**100**	**1,700**	**3,600 J**	**3,500**

			Location ID	A2	A3	A4	A5	A6	A7	A2
			Sample ID	A2-09-12-06	A3-09-15-06	A4-09-15-06	A5-09-15-06	A6-09-15-06	A7-09-15-06	A2-09-12-06
			Sample Date	9/12/2006	9/15/2006	9/15/2006	9/15/2006	9/15/2006	9/15/2006	9/12/2006
			Sample Type	N	N	N	N	N	N	N
			Sample Matrix	SO	SO	SO	SO	SO	SO	SO
Analytical Method	Chemical Name	Total/Dissolved	Unit							
SW8082	Aroclor 1016	N	µg/kg	< 200	< 30	< 29	< 29	< 29	< 29	< 200
SW8082	Aroclor 1221	N	µg/kg	< 200	< 30	< 29	< 29	< 29	< 29	< 200
SW8082	Aroclor 1232	N	µg/kg	< 200	< 30	< 29	< 29	< 29	< 29	< 200
SW8082	Aroclor 1242	N	µg/kg	< 200	< 30	< 29	< 29	< 29	< 29	< 200
SW8082	Aroclor 1248	N	µg/kg	< 200	< 30	< 29	< 29	< 29	< 29	< 200
SW8082	Aroclor 1254	N	µg/kg	< 200	< 30	< 29	< 29	< 29	< 29	< 200
SW8082	Aroclor 1260	N	µg/kg	**2,400**	**180**	**89 J**	**200 J**	**210 J**	**2,200**	**2,400**

Table 4-1 Water Samples from Storage Tanks

				Location ID	Basin B	Basin B	Basin C	Basin C	Basin C	Basin D	Basin D
				Sample ID	Basin B-09-21-06	Basin-B-10-10-06	Basin C-09-21-06	Basin-CC-10-10-06	Basin-C-10-10-06	Basin D-09-21-06	Basin-D-10-10-06
				Sample Date	9/21/2006	10/10/2006	9/21/2006	10/10/2006	10/10/2006	9/21/2006	10/10/2006
				Sample Type	N	N	N	FD	N	N	N
				Sample Matrix	WR	WR	WR	WR	WR	WR	WR
Analytical Method	**Chemical Name**	**Total/ Dissolved**	**Unit**								
E160.2	Total Suspended Solids	N	mg/L		NR	NR	NR	NR	NR	**14.6**	**79.6**
NWTPHD	Diesel Range Hydrocarbons	N	mg/L		**0.56**	**0.3**	**1.1**	**2.1**	**2.5 J**	**0.34**	**0.5**
NWTPHD	Motor Oil Range Hydrocarbons	N	mg/L		**1.4**	**0.98**	**3.2**	**5.3**	**5.3**	< 0.5	**1.8**
SW8082	Aroclor 1016	N	µg/L	<	0.5	< 5.1	< 0.1	< 57	< 15	< 0.5	< 1.2
SW8082	Aroclor 1221	N	µg/L	<	0.5	< 5.1	< 0.1	< 57	< 15	< 0.5	< 1.2
SW8082	Aroclor 1232	N	µg/L	<	0.5	< 5.1	< 0.25	< 57	< 15	< 0.5	< 1.2
SW8082	Aroclor 1242	N	µg/L	<	0.5	< 5.1	< 0.15	< 57	< 15	< 0.5	< 1.2
SW8082	Aroclor 1248	N	µg/L	<	0.5	< 5.1	< 0.3	< 57	< 15	< 0.5	< 1.2
SW8082	Aroclor 1254	N	µg/L	<	0.5	< 5.1	< 0.05	< 57	< 15	< 0.5	< 1.2
SW8082	Aroclor 1260	N	µg/L		**28**	**34**	**64**	**240 J**	**92 J**	**1.1**	**6.6**
SW8270D SIM	2-Methylnaphthalene	N	µg/L		**0.16**	< 0.1	< 0.1	**0.09 J**	**0.25 J**	< 0.1	< 0.1
SW8270D SIM	Acenaphthene	N	µg/L	<	0.1	< 0.1	< 0.1	**0.16 J**	**0.4 J**	< 0.1	< 0.1
SW8270D SIM	Acenaphthylene	N	µg/L	<	0.1	< 0.1	< 0.1	< 0.11	**0.05 J**	< 0.1	< 0.1
SW8270D SIM	Anthracene	N	µg/L	<	0.1	< 0.1	< 0.1	**0.15 J**	**0.5 J**	< 0.1	< 0.1
SW8270D SIM	Benzo(a)anthracene	N	µg/L	<	0.1	< 0.1	< 0.1	**0.38 J**	**1 J**	< 0.1	< 0.1
SW8270D SIM	Benzo(a)pyrene	N	µg/L	<	0.1	< 0.1	< 0.1	**0.32 J**	**1 J**	< 0.1	< 0.1
SW8270D SIM	Benzo(b)fluoranthene	N	µg/L	<	0.1	< 0.1	**0.18**	**0.44 J**	**1.3 J**	< 0.1	< 0.1
SW8270D SIM	Benzo(g,h,i)perylene	N	µg/L	<	0.1	< 0.1	< 0.1	**0.13 J**	**0.4 J**	< 0.1	< 0.1
SW8270D SIM	Benzo(k)fluoranthene	N	µg/L	<	0.1	< 0.1	**0.17**	**0.38 J**	**1.1 J**	< 0.1	< 0.1
SW8270D SIM	Chrysene	N	µg/L	<	0.1	< 0.1	**0.26**	**0.78 J**	**2.6 J**	< 0.1	**0.11**
SW8270D SIM	Dibenzo(a,h)anthracene	N	µg/L	<	0.1	< 0.1	< 0.1	< 0.11	**0.15**	< 0.1	< 0.1
SW8270D SIM	Dibenzofuran	N	µg/L	<	0.1	< 0.1	< 0.1	**0.06 J**	**0.21 J**	< 0.1	< 0.1
SW8270D SIM	Fluoranthene	N	µg/L	<	0.1	< 0.1	**0.13**	**1.1 J**	**3.1 J**	< 0.1	**0.16**
SW8270D SIM	Fluorene	N	µg/L	<	0.1	< 0.1	< 0.1	**0.19 J**	**0.45 J**	< 0.1	< 0.1
SW8270D SIM	Indeno(1,2,3-cd)pyrene	N	µg/L	<	0.1	< 0.1	< 0.1	**0.06 J**	**0.31 J**	< 0.1	< 0.1
SW8270D SIM	Naphthalene	N	µg/L	<	0.1	< 0.1	< 0.1	**0.09 J**	**0.25 J**	< 0.1	< 0.1
SW8270D SIM	Phenanthrene	N	µg/L		**0.17**	< 0.1	**0.24**	**0.92 J**	**2.8 J**	< 0.1	**0.09 J**
SW8270D SIM	Pyrene	N	µg/L	<	0.1	< 0.1	**0.18**	**1.2 J**	**2.8 J**	< 0.1	**0.14**

Table 4-2 Asphalt Samples

			Location ID	B-1	B-1	B-3
			Sample ID	B1-D	Asphalt B-1	Asphalt-B3
			Sample Date	9/26/2006	9/21/2006	9/26/2006
			Sample Type	N	N	N
Analytical Method	**Chemical Name**	**Total/ Dissolved**	**Unit**			
NWTPHD	Diesel Range Hydrocarbons	N	mg/kg	**12**	**37**	NR
NWTPHD	Motor Oil Range Hydrocarbons	N	mg/kg	**56**	**160**	NR
SW8082	Aroclor 1016	N	µg/kg	< 760	< 4,100	< 750
SW8082	Aroclor 1221	N	µg/kg	< 760	< 4,100	< 750
SW8082	Aroclor 1232	N	µg/kg	< 760	< 4,100	< 750
SW8082	Aroclor 1242	N	µg/kg	< 760	< 4,100	< 750
SW8082	Aroclor 1248	N	µg/kg	< 760	< 4,100	< 750
SW8082	Aroclor 1254	N	µg/kg	< 760	< 4,100	< 750
SW8082	Aroclor 1260	N	µg/kg	**4,400**	**45,000**	**4,100**

Table 4-3 Upland Area B-1 Confirmation and Informational Samples

			Location ID	B-1	B-1	B-1	B-1	B-1	B-1	B-1	B-1	B-1
			Sample ID	IS-B1-WS	CS-B1-B1	Asphalt B-1	CS-B1-B42	IS-B1-NS2	IS-B1-SS1	IS-B1-NS1	CS-B1-B2	CS-B1-CS2	CS-B1-ES
			Sample Date	9/20/2006	9/21/2006	9/21/2006	9/22/2006	9/22/2006	9/22/2006	9/22/2006	9/22/2006	9/23/2006	9/23/2006
			Sample Type	N	N	N	FD	N	N	N	N	N	N
Analytical Method	**Chemical Name**	**Total/Dissolved**	**Unit**										
NWTPHD	Diesel Range Hydrocarbons	N	mg/kg	**10**	**7.8**	**37**	**13**	**130 J**	< 5	< 5	**12**	< 5	< 5
NWTPHD	Motor Oil Range Hydrocarbons	N	mg/kg	**30**	**59**	**160**	**44**	**300**	**31**	< 10	**42**	< 10	< 10
SW8082	Aroclor 1016	N	µg/kg	< 960	< 33	< 4,100	< 940	< 1,500	< 780	< 790	< 960	< 740	< 790
SW8082	Aroclor 1221	N	µg/kg	< 960	< 33	< 4,100	< 940	< 1,500	< 780	< 790	< 960	< 740	< 790
SW8082	Aroclor 1232	N	µg/kg	< 960	< 33	< 4,100	< 940	< 1,500	< 780	< 790	< 960	< 740	< 790
SW8082	Aroclor 1242	N	µg/kg	< 960	< 33	< 4,100	< 940	< 1,500	< 780	< 790	< 960	< 740	< 790
SW8082	Aroclor 1248	N	µg/kg	< 960	< 33	< 4,100	< 940	< 1,500	< 780	< 790	< 960	< 740	< 790
SW8082	Aroclor 1254	N	µg/kg	< 960	< 33	< 4,100	< 940	< 1,500	< 780	< 790	< 960	< 740	< 790
SW8082	Aroclor 1260	N	µg/kg	**7,900**	**1,500**	**45,000**	**6,200**	**5,800**	**980**	< 790	**7,400**	**3,800**	< 790

			Location ID	B-1	B-1	B-1	B-1	B-1
			Sample ID	CS-B1-NS3	CS-B1-B4	CS-B1-B3	CS-B1-CS1	IS-B1-SS2
			Sample Date	9/23/2006	9/23/2006	9/23/2006	9/23/2006	9/23/2006
			Sample Type	N	N	N	N	N
Analytical Method	**Chemical Name**	**Total/Dissolved**	**Unit**					
NWTPHD	Diesel Range Hydrocarbons	N	mg/kg	**59**	< 5	**6.6**	**14**	< 5
NWTPHD	Motor Oil Range Hydrocarbons	N	mg/kg	**160**	< 10	**11**	**34**	**61**
SW8082	Aroclor 1016	N	µg/kg	< 760	< 750	< 780	< 740	< 770
SW8082	Aroclor 1221	N	µg/kg	< 760	< 750	< 780	< 740	< 770
SW8082	Aroclor 1232	N	µg/kg	< 760	< 750	< 780	< 740	< 770
SW8082	Aroclor 1242	N	µg/kg	< 760	< 750	< 780	< 740	< 770
SW8082	Aroclor 1248	N	µg/kg	< 760	< 750	< 780	< 740	< 770
SW8082	Aroclor 1254	N	µg/kg	< 760	< 750	< 780	< 740	< 770
SW8082	Aroclor 1260	N	µg/kg	**1,400**	< 750	< 780	**2,100**	< 770

Table 4-4 Upland Area B-3 Confirmation and Informational Samples

				Location ID	B-3	B-3	B-3	B-3	B-3	B-3	B-3	B-3	B-3	B-3	B-3	B-3
				Sample ID	Asphalt-B3	IS-B3-B41	IS-B3-B1	IS-B3-B2	IS-B3-S1	IS-B3-S2	IS-B3-S3	IS-B3-B3	IS-B3-S4	IS-B3-B4	IS-B3-B5	IS-B3-S6	IS-B3-S5
				Sample Date	9/26/2006	9/27/2006	9/27/2006	9/27/2006	9/27/2006	9/27/2006	9/29/2006	9/29/2006	9/30/2006	10/1/2006	10/2/2006	10/2/2006	10/2/2006
				Sample Type	N	FD	N	N	N	N	N	N	N	N	N	N	N
Analytical Method	**Chemical Name**	**Total/ Dissolved**	**Unit**														
NWTPHD	Diesel Range Hydrocarbons	N	mg/kg		NR	**410**	**420**	**1,500**	**1,200**	**1,700**	**2,000**	**1,200**	**2,300**	**370**	**570**	**140**	**170**
NWTPHD	Motor Oil Range Hydrocarbons	N	mg/kg		NR	**760**	**890**	**3,400**	**1,300**	**2,100**	**2,600**	**1,800**	**4,100**	**1,400**	**1,400**	**840**	**800**
SW8082	Aroclor 1016	N	µg/kg	<	750	< 46,000	< 45,000	< 13,000	< 13,000	< 750	< 4,300	< 4,200	< 1,500	< 1,700	< 3,500	< 1,700	< 1,800
SW8082	Aroclor 1221	N	µg/kg	<	750	< 46,000	< 45,000	< 13,000	< 13,000	< 750	< 4,300	< 4,200	< 1,500	< 1,700	< 3,500	< 1,700	< 1,800
SW8082	Aroclor 1232	N	µg/kg	<	750	< 46,000	< 45,000	< 13,000	< 13,000	< 750	< 4,300	< 4,200	< 1,500	< 1,700	< 3,500	< 1,700	< 1,800
SW8082	Aroclor 1242	N	µg/kg	<	750	< 46,000	< 45,000	< 13,000	< 13,000	< 750	< 4,300	< 4,200	< 1,500	< 1,700	< 3,500	< 1,700	< 1,800
SW8082	Aroclor 1248	N	µg/kg	<	750	< 46,000	< 45,000	< 13,000	< 13,000	< 750	< 4,300	< 4,200	< 1,500	< 1,700	< 3,500	< 1,700	< 1,800
SW8082	Aroclor 1254	N	µg/kg	<	750	< 46,000	< 45,000	< 13,000	< 13,000	< 750	< 4,300	< 4,200	< 1,500	< 1,700	< 3,500	< 1,700	< 1,800
SW8082	Aroclor 1260	N	µg/kg		**4,100**	**250,000**	**260,000**	**58,000**	**49,000**	**3,000**	**200,000**	**140,000**	**5,700**	**13,000**	**25,000**	**17,000**	**11,000**

Table 4-5 Bank Area Confirmation and Informational Samples

			Location ID	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA
			Sample ID	IS-BA-S1	IS-BA-S2	IS-BA-S3	IS-BA-B1	IS-BA-S4	IS-BA-B2	IS-BA-S7	IS-BA-B3	IS-BA-S5	IS-BA-S6
			Sample Date	9/27/2006	9/27/2006	9/27/2006	9/29/2006	9/30/2006	10/1/2006	10/2/2006	10/2/2006	10/2/2006	10/2/2006
			Sample Type	N	N	N	N	N	N	N	N	N	N
Analytical Method	Chemical Name	Total/ Dissolved	Unit										
NWTPHD	Diesel Range Hydrocarbons	N	mg/kg	**750**	**860**	**300**	**360**	**240**	**150**	**100**	**11**	**380**	**28**
NWTPHD	Motor Oil Range Hydrocarbons	N	mg/kg	**1,600**	**2,100**	**690**	**490**	**860**	**920**	**610**	**45**	**940**	**120**
SW8082	Aroclor 1016	N	µg/kg	< 200,000	< 200,000	< 41,000	< 1,700	< 40,000	< 730	< 1,700	< 770	< 41,000	< 1,700
SW8082	Aroclor 1221	N	µg/kg	< 200,000	< 200,000	< 41,000	< 1,700	< 40,000	< 730	< 1,700	< 770	< 41,000	< 1,700
SW8082	Aroclor 1232	N	µg/kg	< 200,000	< 200,000	< 41,000	< 1,700	< 40,000	< 730	< 1,700	< 770	< 41,000	< 1,700
SW8082	Aroclor 1242	N	µg/kg	< 200,000	< 200,000	< 41,000	< 1,700	< 40,000	< 730	< 1,700	< 770	< 41,000	< 1,700
SW8082	Aroclor 1248	N	µg/kg	< 200,000	< 200,000	< 41,000	< 1,700	< 40,000	< 730	< 1,700	< 770	< 41,000	< 1,700
SW8082	Aroclor 1254	N	µg/kg	< 200,000	< 200,000	< 41,000	< 1,700	< 40,000	< 730	< 1,700	< 770	< 41,000	< 1,700
SW8082	Aroclor 1260	N	µg/kg	**750,000**	**830,000**	**210,000**	**71,000**	**230,000**	< 730	**17,000**	**2,300**	**300,000**	**15,000**

Table 4-6 Upland Area B-2 Confirmation and Informational Samples

			Location ID	B-2	B-2	B-2	B-2	B-2	B-2	B-2	B-2	B-2	B-2	B-2	B-2
			Sample ID	CS-B2-S4	CS-B2-S3	CS-B2-S2	CS-B2-S1	CS-B2-B1	CS-B2-B2	CS-B2-S51	CS-B2-S5	IS-B2-S6	IS-B2-S2B	IS-B2-B1B	IS-B2-S5B	IS-B2-B2B
			Sample Date	10/4/2006	10/4/2006	10/4/2006	10/4/2006	10/4/2006	10/4/2006	10/5/2006	10/5/2006	10/5/2006	10/11/2006	10/11/2006	10/11/2006	10/11/2006
			Sample Type	N	N	N	N	N	N	FD	N	N	N	N	N	N
Analytical Method	Chemical Name	Total/ Dissolved	Unit													
NWTPHD	Diesel Range Hydrocarbons	N	mg/kg	360	320	1,100	69	610	120	280	360	120	22	21	10	< 5
NWTPHD	Motor Oil Range Hydrocarbons	N	mg/kg	680	570	2,900	410	1,600	290	510	600	510	120	44	41	< 10
SW8082	Aroclor 1016	N	µg/kg	< 750	< 1,700	< 14,000	< 780	< 42,000	< 4,100	< 4,500	< 4,300	< 1,600	< 1,500	< 1,500	< 770	< 780
SW8082	Aroclor 1221	N	µg/kg	< 750	< 1,700	< 14,000	< 780	< 42,000	< 4,100	< 4,500	< 4,300	< 1,600	< 1,500	< 1,500	< 770	< 780
SW8082	Aroclor 1232	N	µg/kg	< 750	< 1,700	< 14,000	< 780	< 42,000	< 4,100	< 4,500	< 4,300	< 1,600	< 1,500	< 1,500	< 770	< 780
SW8082	Aroclor 1242	N	µg/kg	< 750	< 1,700	< 14,000	< 780	< 42,000	< 4,100	< 4,500	< 4,300	< 1,600	< 1,500	< 1,500	< 770	< 780
SW8082	Aroclor 1248	N	µg/kg	< 750	< 1,700	< 14,000	< 780	< 42,000	< 4,100	< 4,500	< 4,300	< 1,600	< 1,500	< 1,500	< 770	< 780
SW8082	Aroclor 1254	N	µg/kg	< 750	< 1,700	< 14,000	< 780	< 42,000	< 4,100	< 4,500	< 4,300	< 1,600	< 1,500	< 1,500	< 770	< 780
SW8082	Aroclor 1260	N	µg/kg	14,000	20,000	420,000	5,500	760,000	77,000	130,000	160,000	11,000	5,700	2,900	< 770	< 780

Table 4-7 Import Fill Samples

			Location ID Sample ID Sample Date Sample Type	Glacier Pit GLACIER PIT 9/12/2006 N
Analytical Method	**Chemical Name**	**Total/Dissolved**	**Unit**	
NWTPHD	Diesel Range Hydrocarbons	N	mg/kg	< 5.1
NWTPHD	Motor Oil Range Hydrocarbons	N	mg/kg	< 10
NWTPHG	Gasoline Range Hydrocarbons	N	mg/kg	< 5.2
SW6010B	Arsenic	T	mg/kg	< 20
SW6010B	Barium	T	mg/kg	**17**
SW6010B	Cadmium	T	mg/kg	< 1
SW6010B	Chromium	T	mg/kg	< 2
SW6010B	Selenium	T	mg/kg	< 20
SW6010B	Silver	T	mg/kg	< 1
SW7421	Lead	T	mg/kg	**1.9**
SW7471A	Mercury	T	mg/kg	**0.04**
SW8082	Aroclor 1016	N	µg/kg	< 33
SW8082	Aroclor 1221	N	µg/kg	< 33
SW8082	Aroclor 1232	N	µg/kg	< 33
SW8082	Aroclor 1242	N	µg/kg	< 33
SW8082	Aroclor 1248	N	µg/kg	< 33
SW8082	Aroclor 1254	N	µg/kg	< 33
SW8082	Aroclor 1260	N	µg/kg	< 33

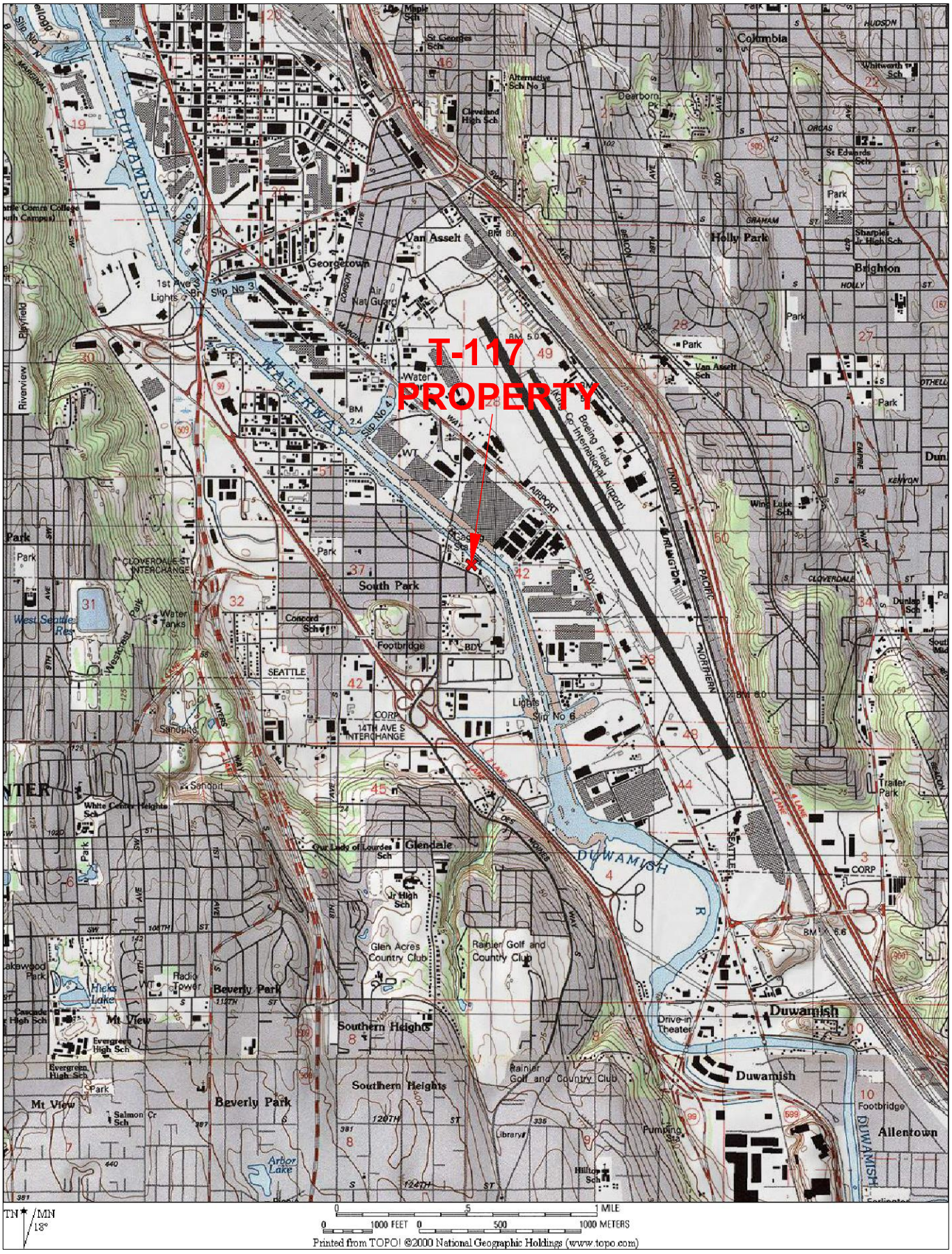
Table 4-8 Waste Disposal Information

Waste Type	Quantity		Off-Site Disposal Destination	Reference Sections in Final Report	Supporting Documents in Final Report
TSCA - Soil	3,030	tons	Chemical Waste Management (CWM) Landfill	Section 4.4	Appendix J
Subtitle D - Soil	78	tons	Waste Management Alaska Transfer Station and Columbia Ridge Landfill	Section 4.4	Appendix E
Subtitle D - Asphalt/Concrete	533	tons	Waste Management Alaska Transfer Station and Columbia Ridge Landfill	Section 4.3	Appendix E
Wastewater	91,742	gallons	Emerald Services	Section 4.2	Appendix D
Metal Debris	2.68	tons	Seattle Iron and Metals	Section 4.4.2	Appendix F
Vegetation Debris	1.2	tons	Waste Management Construction Demolition Landfill	Section 3.3	Appendix E

Table 6-1 SOW Requirements Compliance References

SOW Requirements	Final Report Relevant Sections/Tables/Figures/Appendices		
	Sections	Tables/Figures	Appendices
Statement of Actual Costs in Complying with the Order	5.8	—	—
Listing of Quantifies and Types of Materials Removal Off-Site or Handled On-Site	4.9	Table 4-8	D, E, F, J
Discussion of Removal and Disposal Activities Conducted	4.4, 4.8, 4.9	—	—
Listing of Ultimate Destination of Waste Materials Taken Off-Site	4.9	Table 4-8	D, E, F, J
Results of Sampling and Analyses	4.4	Tables 3-1 ~ 3-3 Tables 4-1 ~ 4-7	H
As-Built Surveys of Excavation Areas, Cap, and Stormwater Management System	5.5	Figures 3-1, 4-4	—
Appendices Containing All Relevant Documentation Generated During the Removal Action (e.g., manifest, photographic documentation, data validation information, and permits)	Various Sections	—	D, E, F, J, K

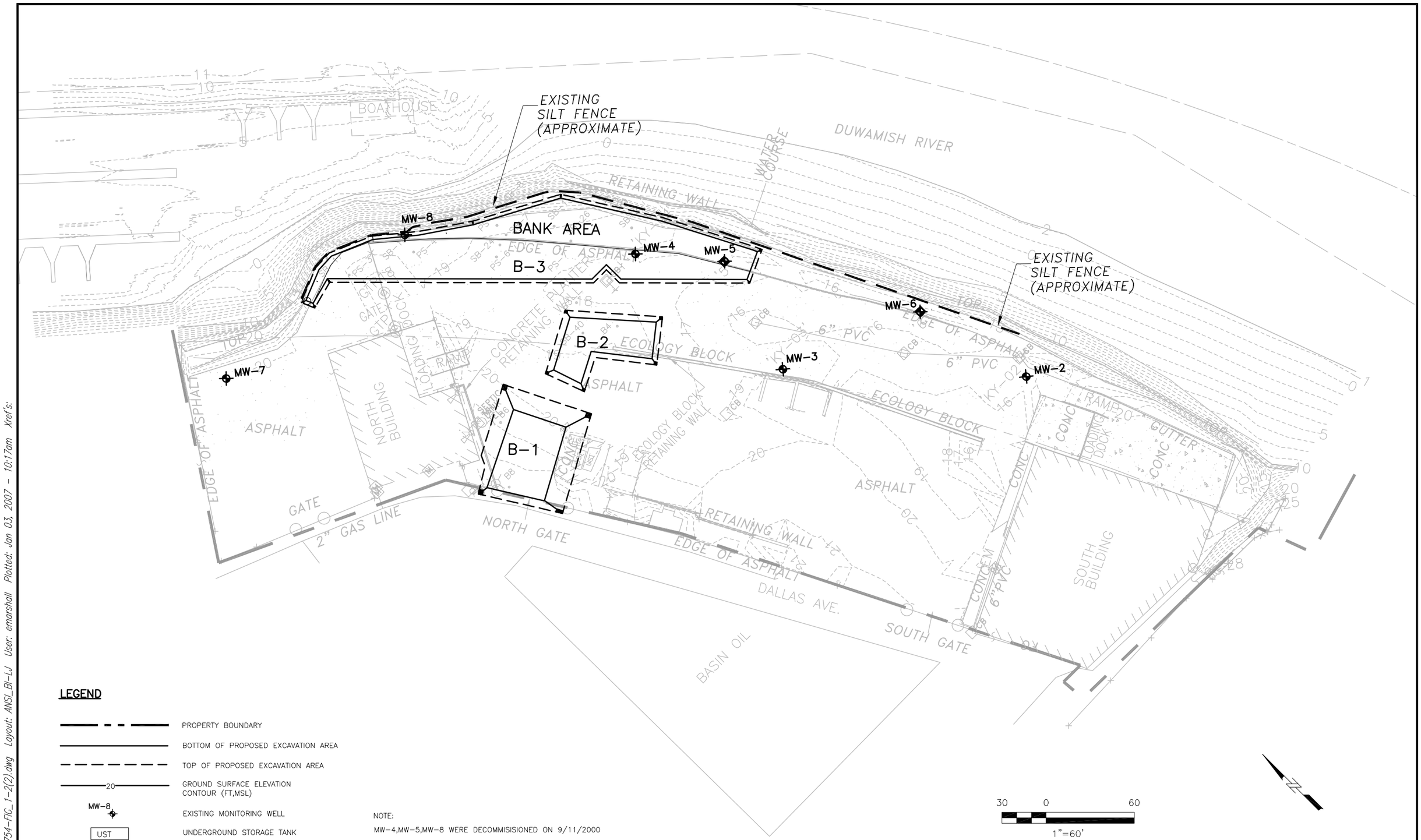
Figures



RETEC

TERMINAL 117 TIME CRITICAL REMOVAL ACTION PORS5-19754-500		**SITE LOCATION MAP**
DATE: 12/5/06	DRWN: E.M./SEA	**FIGURE 1-1**

File: H:\19754\19754-FIG_1-1.dwg Layout: FIGURE 1-1 User: emarshall Plotted: Jan 12, 2007 - 2:47pm Xref's:



LEGEND

- PROPERTY BOUNDARY
- BOTTOM OF PROPOSED EXCAVATION AREA
- TOP OF PROPOSED EXCAVATION AREA
- 20 — GROUND SURFACE ELEVATION CONTOUR (FT,MSL)
- MW-8 — EXISTING MONITORING WELL
- UST — UNDERGROUND STORAGE TANK

NOTE:
MW-4,MW-5,MW-8 WERE DECOMMISISIONED ON 9/11/2000

30 0 60
1"=60'

RETEC

TERMINAL 117 TIME CRITICAL REMOVAL ACTION PORS5-19754-500			PROPOSED EXCAVATION AREAS
DATE: 1/3/07	DRWN: EM,DJA /SEA		FIGURE 1-2

File: H:\19754\19754-FIG_1-2(2).dwg Layout: ANSL_BI-LJ User: emarshall Plotted: Jan 03, 2007 - 10:17am Xref's:

BOATHOUSE

EXISTING SILT FENCE (APPROXIMATE)

DUWAMISH RIVER

METEORLOGICAL STATION

EXISTING SILT FENCE (APPROXIMATE)

BANK AREA

MW-8

MW-4

MW-5

B-3

B-1

BASIN B

NORTH (N1)

CB-8 (SUMP)

B-2

CB-3

MW-6

CB-4

CB-5

SOUTH (S3)

MW-7

ASPHALT BERM

MW-3

ASPHALT BERM

MW-2

ECOLOGY BLOCKS

CB-2

PES-3

NORTH BUILDING

BASIN A

PES-2

PES-1

UST

UST

UST

CENTRAL (C2)

TSCA MATERIAL STOCKPILE CELL

BASIN C

TRUCK LOADING RAMP

PES-4

B-1

BASIN D

ASPHALT BERM

ECOLOGY BLOCKS

GATE

NORTH GATE

SOUTH BUILDING

IMPORTED FILL STOCKPILE AREA

ECOLOGY BLOCKS

B-7

DALLAS AVE. S

CB-6

SOUTH GATE

BASIN OIL

SUBTITLE D MATERIAL STOCKPILE AREA

LEGEND

- PROPERTY BOUNDARY
- DRAINAGE BASIN BOUNDARY
- BOTTOM OF PROPOSED EXCAVATION AREA
- TOP OF PROPOSED EXCAVATION AREA
- CHAIN LINK FENCE
- LUMINAIRE (SINGLE FIXTURE)
- GUY ANCHOR
- GATE POST
- CB-1 CATCH BASIN
- UTILITY POLE
- MW-8 ABANDONED MONITORING WELLS
- MW-6 EXISTING MONITORING WELL
- PES-1 PRE-EXCAVATION BOREHOLES
- CENTRAL AIR MONITORING STATION
- UST UNDERGROUND STORAGE TANK
- CONCRETE PAVEMENT
- ASPHALT PAVEMENT

30 0 60

1"=60'

RETEC

TERMINAL 117
TIME CRITICAL REMOVAL ACTION
PORS5-19754-500

PRE-CONSTRUCTION SITE PREPARATION MAP

DATE: 1/19/07	DRWN: E.M./SEA			**FIGURE 3-1**

File: H:\19754\19754-FIG_3-1-F.dwg Layout: FIGURE 3-1 User: emarshall Plotted: Jan 19, 2007 - 2:45pm Xref's:

LEGEND

ADJACENT UNPAVED ROADWAY SAMPLE AREAS

N

60 0 120

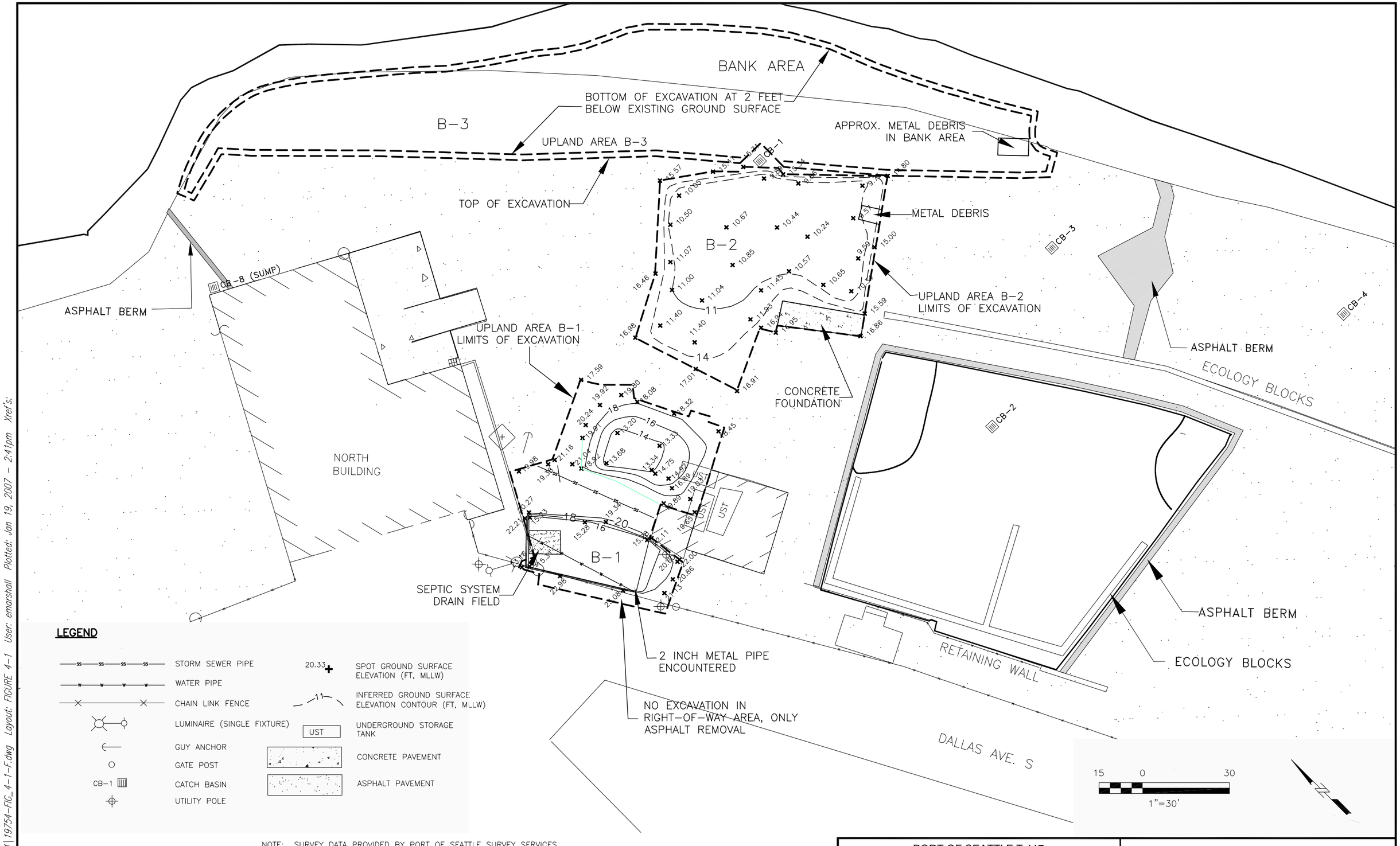
1"=120'

RETEC

TERMINAL 117
TIME CRITICAL REMOVAL ACTION
PORS5-19754-500

OFF-SITE
ROADSIDE SAMPLING AREAS

DATE: 12/27/06 | DRWN: E.M./SEA | **FIGURE 3-2**



LEGEND

- STORM SEWER PIPE
- WATER PIPE
- CHAIN LINK FENCE
- LUMINAIRE (SINGLE FIXTURE)
- GUY ANCHOR
- GATE POST
- CB-1 CATCH BASIN
- UTILITY POLE
- 20.33 SPOT GROUND SURFACE ELEVATION (FT, MLLW)
- 11 INFERRED GROUND SURFACE ELEVATION CONTOUR (FT, MLLW)
- UST UNDERGROUND STORAGE TANK
- CONCRETE PAVEMENT
- ASPHALT PAVEMENT

NOTE: SURVEY DATA PROVIDED BY PORT OF SEATTLE SURVEY SERVICES.

RETEC

PORT OF SEATTLE T-117 SEATTLE, WASHINGTON PORS5-19754-500			**AS-BUILT EXCAVATION AREAS**
DATE: 1/18/07	DRWN: E.M./SEA		**FIGURE 4-1**

IS-B3-B4
13

EDGE OF ASPHALT

IS-B3-B3
140

IS-BA-B1
71

IS-BA-B2
<0.8

IS-BA-B3
2.3

IS-B3-B5
25

IS-B3-B2
58

IS-B3-B1
260

APPROX. METAL DEBRIS
IN BANK AREA

BANK AREA

B-3

B-2

METAL DEBRIS

IS-B2-B2B
<0.8

IS-B2-B1B
2.9

CS-B2-B2
7.7

CS-B2-B1
760

CB-1

CB-3

CB-8 (SUMP)

ASPHALT BERM

MW-7

MW-3

ASPHALT BERM

CB-2

NORTH
BUILDING

B-1

UST

UST

UST

CONCRETE
FOUNDATION

ASPHALT BERM

ECOLOGY BLOCKS

CS-B1-B3
6.2

CS-B1-B2
7.4

NORTH GATE

CS-B1-B1
1.5

CS-B1-B4
<0.8

15 0 30

1"=30'

LEGEND

STORM SEWER PIPE	MW-6 EXISTING MONITORING WELL
WATER PIPE	UST UNDERGROUND STORAGE TANK
CHAIN LINK FENCE	CONCRETE PAVEMENT
LUMINAIRE (SINGLE FIXTURE)	ASPHALT PAVEMENT
GUY ANCHOR	IS-BA-B2 <0.8 APPROXIMATE SAMPLE LOCATION AND PCB CONCENTRATION (MG/KG)
GATE POST	
CB-1 CATCH BASIN	
UTILITY POLE	

NOTE: ALL CONFIRMATION/INFORMATIONAL SOIL SAMPLES ARE COMPOSITE SAMPLES. THE SAMPLE LOCATIONS INDICATED ON THE SITE PLAN REPRESENT THE SUB-AREAS SHOWN ON THE PLAN.

RETEC

TERMINAL 117
TIME CRITICAL REMOVAL ACTION
PORS5-19754-500

EXCAVATION BOTTOM SAMPLE LOCATIONS

DATE: 1/18/07 | DRWN: E.M./SEA | **FIGURE 4-2**

File: H:\19754\19754-FIG_4-2-F.dwg Layout: FIGURE 4-2 User: emarshall Plotted: Jan 19, 2007 - 2:46pm Xref's:

IS-BA-S3
210

IS-BA-S4
230

IS-BA-S5
300

EDGE OF ASPHALT

IS-BA-S2
830

IS-B3-S5
11

IS-BA-S6
15

IS-B3-S6
17

IS-B3-S2
3

IS-B3-S4
5.7

IS-B3-S3
200

IS-BA-S7
17

IS-BA-S1
750

BANK AREA

APPROX. METAL DEBRIS
IN BANK AREA

IS-B3-S1
49

B-3

CB-1

FINAL EXCAVATION

B-2

CS-B2-S2B
5.7

METAL DEBRIS

CB-3

INITIAL
EXCAVATION

CONCRETE
FOUNDATION

CB-8 (SUMP)

CS-B2-S2
420

ASPHALT BERM

MW-7

CS-B2-S3
20

MW-3

ASPHALT BERM

CS-B2-S4
14

CS-B2-S5B
<0.8

CS-B2-S1
5.5

CS-B1-NS3
14

CB-2

CS-B2-S5
160

NORTH
BUILDING

ASPHALT BERM

IS-B1-NS2
5.8

B-1

IS-B2-S6
11

IS-B1-NS1
<0.8

UST

UST

UST

IS-B1-SS2
<0.8

ECOLOGY BLOCKS

CS-B1-ES
<0.8

CS-B1-CS1
2.1

NORTH GATE

IS-B1-SS1
5.5

CS-B1-CS2
3.8

IS-B1-WS
7.9

LEGEND

STORM SEWER PIPE	EXISTING MONITORING WELL (MW-6)
WATER PIPE	UNDERGROUND STORAGE TANK (UST)
CHAIN LINK FENCE	CONCRETE PAVEMENT
GUY ANCHOR	ASPHALT PAVEMENT
GATE POST	APPROXIMATE SAMPLE LOCATION AND PCB CONCENTRATION (MG/KG) (IS-BA-B2 <0.8)
CATCH BASIN (CB-1)	
UTILITY POLE	

15 0 30

1"=30'

NOTE: ALL CONFIRMATION/INFORMATIONAL SOIL SAMPLES ARE COMPOSITE SAMPLES. THE SAMPLE LOCATIONS INDICATED ON THE SITE PLAN REPRESENT THE SUB-AREAS SHOWN ON THE PLAN.

RETEC

TERMINAL 117
TIME CRITICAL REMOVAL ACTION
PORS5-19754-500

EXCAVATION SIDEWALL SAMPLE LOCATIONS

DATE: 1/18/07 | DRWN: E.M./SEA | **FIGURE 4-3**

File: H:\19754\19754-FIG_4-3-F.dwg Layout: FIGURE 4-3 User: emarshall Plotted: Jan 19, 2007 - 2:47pm Xref's:

BOATHOUSE

DUWAMISH RIVER

EDGE OF ASPHALT

MW-7

MW-6

MW-3

MW-2

CB-1

CB-2

CB-3

CB-4

CB-5

CB-6

CB-7

NORTH BUILDING

SOUTH BUILDING

ASPHALT BERM

UST

DALLAS AVE. S

BASIN OIL

FENCE

LEGEND

- PROPERTY BOUNDARY
- LIMITS OF NEW ASPHALT PAVING
- EXISTING CONTOURS (20)
- CHAIN LINK FENCE
- LUMINAIRE (SINGLE FIXTURE)
- GUY ANCHOR
- GATE POST
- CB-1 CATCH BASIN
- UTILITY POLE
- MW-3 EXISTING MONITORING WELLS
- 16.83 FINAL ASPHALT ELEVATION (FT, MLLW)
- UST UNDERGROUND STORAGE TANK
- CONCRETE PAVEMENT
- ASPHALT PAVEMENT

30 0 60

1"=60'

NOTE: SURVEY DATA PROVIDED BY PORT OF SEATTLE SURVEY SERVICES.

RETEC

TERMINAL 117 TIME CRITICAL REMOVAL ACTION PORS5-19754-500			**AS-BUILT INTERIM CAP ELEVATIONS**
DATE: 1/19/07	DRWN: E.M./SEA		**FIGURE 4-4**

File: H:\19754\19754-FIG_4-4-F.dwg Layout: FIGURE 4-4 User: emarshall Plotted: Jan 19, 2007 - 2:24pm Xref's:

Appendix A

Revised Upland Area B-1 Excavation Plans

Area B-1 Pre-Excavation Boring Logs

T-117 Well Decommissioning Report

Appendix B

Geomatrix Air Quality and Meteorological Monitoring Summary Report

PCS Daily Air Monitoring Report

Appendix C

TCRA Work Plan Addendum – Stormwater Management Memorandum

Appendix D

Wastewater Disposal Laboratory Reports, Bill of Lading and Gallonage Ticket

Appendix E

Subtitle D Material Disposal Weight Tickets – Excavated Soil, Asphalt and Concrete Debris

Appendix F

Metal/Tar Material Removal Memorandum

Metal/Tar Removal Waste Disposal Weight Tickets

Appendix G

Imported Fill Weight Tickets Summary

Appendix H

Laboratory Reports – Confirmation and Informational Samples and Data Validation Report

Appendix I

Backfill Material Proctor Curve

Backfill Compaction Testing Reports

Appendix J
TSCA Material Disposal Bill of Lading and Weight Tickets

Appendix K

Construction Photographs